Ala Thr Leu Gly Leu Ser Gln Arg Leu Phe Ser Ile Arg His Arg Ser
660 665 670

Leu His Arg His Ser His Gly Pro Gln Phe Gly Ser Glu Val Glu Leu
675 680 685

Arg His Ser
690

<210> 4804
<211> 1242
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1056; "

<220>
<221> source
<223> /note="Gene Symbol: ACE; "

<220>
<221> source
<223> /note="Gene Name:
angiotensin I converting enzyme; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000397593"

<400> 4804
Met Gly Ala Ala Ser Gly Arg Arg Gly Pro Gly Leu Leu Leu Pro Leu
1 5 10 15

Pro Leu Leu Leu Leu Leu Pro Pro Gln Pro Ala Leu Ala Leu Asp Pro
20 25 30

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

Phe Ala Gln Ser Tyr Asn Ser Ser Ala Glu Gln Val Leu Phe Gln Ser
50 55 60

Val Ala Ala Ser Trp Ala His Asp Thr Asn Ile Thr Ala Glu Asn Ala
65 70 75 80

```
Arg Arg Gln Glu Glu Ala Ala Leu Leu Ser Gln Glu Phe Ala Glu Ala
                85                  90                  95

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

Thr Asp Pro Gln Leu Arg Arg Ile Ile Gly Ala Val Arg Thr Leu Gly
        115                 120                 125

Ser Ala Asn Leu Pro Leu Ala Lys Arg Gln Gln Tyr Asn Ala Leu Leu
    130                 135                 140

Ser Asn Met Ser Arg Ile Tyr Ser Thr Ala Lys Val Cys Leu Pro Asn
145                 150                 155                 160

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

Ala Ser Ser Arg Ser Tyr Ala Met Leu Leu Phe Ala Trp Glu Gly Trp
            180                 185                 190

His Asn Ala Ala Gly Ile Pro Leu Lys Pro Leu Tyr Glu Asp Phe Thr
        195                 200                 205

Ala Leu Ser Asn Glu Ala Tyr Lys Gln Asp Gly Phe Thr Asp Thr Gly
    210                 215                 220

Ala Tyr Trp Arg Ser Trp Tyr Asn Ser Pro Thr Phe Glu Asp Asp Leu
225                 230                 235                 240

Glu His Leu Tyr Gln Gln Leu Glu Pro Leu Tyr Leu Asn Leu His Ala
                245                 250                 255

Phe Val Arg Arg Ala Leu His Arg Arg Tyr Gly Asp Arg Tyr Ile Asn
            260                 265                 270

Leu Arg Gly Pro Ile Pro Ala His Leu Leu Gly Asp Met Trp Ala Gln
        275                 280                 285

Ser Trp Glu Asn Ile Tyr Asp Met Val Val Pro Phe Pro Asp Lys Pro
    290                 295                 300

Asn Leu Asp Val Thr Ser Thr Met Leu Gln Gln Gly Trp Asn Ala Thr
```

305 310 315 320

His Met Phe Arg Val Ala Glu Glu Phe Phe Thr Ser Leu Glu Leu Ser
325 330 335

Pro Met Pro Pro Glu Phe Trp Glu Gly Ser Met Leu Glu Lys Pro Ala
340 345 350

Asp Gly Arg Glu Val Val Cys His Ala Ser Ala Trp Asp Phe Tyr Asn
355 360 365

Arg Lys Asp Phe Arg Ile Lys Gln Cys Thr Arg Val Thr Met Asp Gln
370 375 380

Leu Ser Thr Val His His Glu Met Gly His Ile Gln Tyr Tyr Leu Gln
385 390 395 400

Tyr Lys Asp Leu Pro Val Ser Leu Arg Arg Gly Ala Asn Pro Gly Phe
405 410 415

His Glu Ala Ile Gly Asp Val Leu Ala Leu Ser Val Ser Thr Pro Glu
420 425 430

His Leu His Lys Ile Gly Leu Leu Asp Arg Val Thr Asn Asp Thr Glu
435 440 445

Ser Asp Ile Asn Tyr Leu Leu Lys Met Ala Leu Glu Lys Ile Ala Phe
450 455 460

Leu Pro Phe Gly Tyr Leu Val Asp Gln Trp Arg Trp Gly Val Phe Ser
465 470 475 480

Gly Arg Thr Pro Pro Ser Arg Tyr Asn Phe Asp Trp Trp Tyr Leu Arg
485 490 495

Thr Lys Tyr Gln Gly Ile Cys Pro Pro Val Thr Arg Asn Glu Thr His
500 505 510

Phe Asp Ala Gly Ala Lys Phe His Val Pro Asn Val Thr Pro Tyr Ile
515 520 525

Arg Tyr Phe Val Ser Phe Val Leu Gln Phe Gln Phe His Glu Ala Leu
530 535 540

```
Cys Lys Glu Ala Gly Tyr Glu Gly Pro Leu His Gln Cys Asp Ile Tyr
545                 550                 555                 560

Arg Ser Thr Lys Ala Gly Ala Lys Leu Arg Lys Val Leu Gln Ala Gly
                565                 570                 575

Ser Ser Arg Pro Trp Gln Glu Val Leu Lys Asp Met Val Gly Leu Asp
            580                 585                 590

Ala Leu Asp Ala Gln Pro Leu Leu Lys Tyr Phe Gln Pro Val Thr Gln
        595                 600                 605

Trp Leu Gln Glu Gln Asn Gln Gln Asn Gly Glu Val Leu Gly Trp Pro
    610                 615                 620

Glu Tyr Gln Trp His Pro Pro Leu Pro Asp Asn Tyr Pro Glu Gly Ile
625                 630                 635                 640

Asp Leu Val Thr Asp Glu Ala Glu Ala Ser Lys Phe Val Glu Glu Tyr
                645                 650                 655

Asp Arg Thr Ser Gln Val Val Trp Asn Glu Tyr Ala Glu Ala Asn Trp
            660                 665                 670

Asn Tyr Asn Thr Asn Ile Thr Thr Glu Thr Ser Lys Ile Leu Leu Gln
        675                 680                 685

Lys Asn Met Gln Ile Ala Asn His Thr Leu Lys Tyr Gly Thr Gln Ala
    690                 695                 700

Arg Lys Phe Asp Val Asn Gln Leu Gln Asn Thr Thr Ile Lys Arg Ile
705                 710                 715                 720

Ile Lys Lys Val Gln Asp Leu Glu Arg Ala Ala Leu Pro Ala Gln Glu
                725                 730                 735

Leu Glu Glu Tyr Asn Lys Ile Leu Leu Asp Met Glu Thr Thr Tyr Ser
            740                 745                 750

Val Ala Thr Val Cys His Pro Asn Gly Ser Cys Leu Gln Leu Glu Pro
        755                 760                 765
```

```
Asp Leu Thr Asn Val Met Ala Thr Ser Arg Lys Tyr Glu Asp Leu Leu
    770                 775                 780

Trp Ala Trp Glu Gly Trp Arg Asp Lys Ala Gly Arg Ala Ile Leu Gln
785                 790                 795                 800

Phe Tyr Pro Lys Tyr Val Glu Leu Ile Asn Gln Ala Ala Arg Leu Asn
                805                 810                 815

Gly Tyr Val Asp Ala Gly Asp Ser Trp Arg Ser Met Tyr Glu Thr Pro
            820                 825                 830

Ser Leu Glu Gln Asp Leu Glu Arg Leu Phe Gln Glu Leu Gln Pro Leu
        835                 840                 845

Tyr Leu Asn Leu His Ala Tyr Val Arg Arg Ala Leu His Arg His Tyr
    850                 855                 860

Gly Ala Gln His Ile Asn Leu Glu Gly Pro Ile Pro Ala His Leu Leu
865                 870                 875                 880

Gly Asn Met Trp Ala Gln Thr Trp Ser Asn Ile Tyr Asp Leu Val Val
                885                 890                 895

Pro Phe Pro Ser Ala Pro Ser Met Asp Thr Thr Glu Ala Met Leu Lys
            900                 905                 910

Gln Gly Trp Thr Pro Arg Arg Met Phe Lys Glu Ala Asp Asp Phe Phe
        915                 920                 925

Thr Ser Leu Gly Leu Leu Pro Val Pro Pro Glu Phe Trp Asn Lys Ser
    930                 935                 940

Met Leu Glu Lys Pro Thr Asp Gly Arg Glu Val Val Cys His Ala Ser
945                 950                 955                 960

Ala Trp Asp Phe Tyr Asn Gly Lys Asp Phe Arg Ile Lys Gln Cys Thr
                965                 970                 975

Thr Val Asn Leu Glu Asp Leu Val Val Ala His His Glu Met Gly His
            980                 985                 990
```

Ile Gln Tyr Phe Met Gln Tyr Lys Asp Leu Pro Val Ala Leu Arg Glu
995 1000 1005

Gly Ala Asn Pro Gly Phe His Glu Ala Ile Gly Asp Val Leu Ala
1010 1015 1020

Leu Ser Val Ser Thr Pro Lys His Leu His Ser Leu Asn Leu Leu
1025 1030 1035

Ser Ser Glu Gly Gly Ser Asp Glu His Asp Ile Asn Phe Leu Met
1040 1045 1050

Lys Met Ala Leu Asp Lys Ile Ala Phe Ile Pro Phe Ser Tyr Leu
1055 1060 1065

Val Asp Gln Trp Arg Trp Arg Val Phe Asp Gly Ser Ile Thr Lys
1070 1075 1080

Glu Asn Tyr Asn Gln Glu Trp Trp Ser Leu Arg Leu Lys Tyr Gln
1085 1090 1095

Gly Leu Cys Pro Pro Val Pro Arg Thr Gln Gly Asp Phe Asp Pro
1100 1105 1110

Gly Ala Lys Phe His Ile Pro Ser Ser Val Pro Tyr Ile Arg Tyr
1115 1120 1125

Phe Val Ser Phe Ile Ile Gln Phe Gln Phe His Glu Ala Leu Cys
1130 1135 1140

Gln Ala Ala Gly His Thr Gly Pro Leu His Lys Cys Asp Ile Tyr
1145 1150 1155

Gln Ser Lys Glu Ala Gly Gln Arg Leu Ala Thr Ala Met Lys Leu
1160 1165 1170

Gly Phe Ser Arg Pro Trp Pro Glu Ala Met Gln Leu Ile Thr Gly
1175 1180 1185

Gln Pro Asn Met Ser Ala Ser Ala Met Leu Ser Tyr Phe Lys Pro
1190 1195 1200

```
Leu Leu  Asp Trp Leu Arg Thr  Glu Asn Glu Leu His  Gly Glu Lys
    1205                1210                1215


Leu Gly  Trp Pro Gln Tyr Asn  Trp Thr Pro Asn Ser  Gly Thr Ala
    1220                1225                1230


Thr His  Pro Thr Ser Ser Leu  Gly Ser
    1235                1240


<210> 4805
<211> 145
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1056; "

<220>
<221> source
<223> /note="Gene Symbol: ACE; "

<220>
<221> source
<223> /note="Gene Name:
      angiotensin I converting enzyme; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000462002"

<400> 4805
Met Gly Gln Gly Trp Ala Thr Ala Gly Leu Pro Ser Leu Leu Phe Leu
1               5                  10                  15


Leu Leu Cys Tyr Gly His Pro Leu Leu Val Pro Ser Gln Glu Ala Ser
            20                  25                  30


Gln Gln Val Thr Val Thr His Gly Thr Ser Ser Gln Ala Thr Thr Ser
        35                  40                  45


Ser Gln Thr Thr Thr His Gln Ala Thr Ala His Gln Thr Ser Ala Gln
    50                  55                  60


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


Glu Tyr Asp Arg Thr Ser Gln Val Val Trp Asn Glu Tyr Ala Glu Ala
                85                  90                  95
```

```
Asn Trp Asn Tyr Asn Thr Asn Ile Thr Thr Glu Thr Ser Lys Ile Leu
            100                 105                 110

Gly Leu Tyr Asp Thr Trp Gly Ser Ser Leu Leu Cys Pro Cys Leu Asp
        115                 120                 125

Met Cys Cys Leu Thr Ala Gly Ile Gln Gly Gly Cys Arg Arg Thr Cys
    130                 135                 140

Lys
145
```

<210> 4806
<211> 36
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1056; "

<220>
<221> source
<223> /note="Gene Symbol: ACE; "

<220>
<221> source
<223> /note="Gene Name:
angiotensin I converting enzyme; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000462110"

<400> 4806

```
Met Gly Gln Gly Trp Ala Thr Ala Gly Leu Pro Ser Leu Leu Phe Leu
1               5                   10                  15

Leu Leu Cys Tyr Gly His Pro Leu Leu Val Pro Ser Gln Glu Ala Ser
            20                  25                  30

Gln Gln Thr Trp
        35
```

<210> 4807
<211> 314
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1056; "

<220>
<221> source
<223> /note="Gene Symbol: ACE; "

<220>
<221> source
<223> /note="Gene Name:
angiotensin I converting enzyme; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000462280"

<400> 4807

```
Met Asp Glu Gly Gly Cys Ser Gln Ala Ala Pro Ala Phe Ala Glu Gly
1               5                  10                  15

Ala Gly Leu Gly Ser Gly Ala Pro Ala Leu Ser Gly Ser Cys Leu Leu
            20                  25                  30

Thr Ser Gly Arg Cys Arg Cys His Arg His Arg Thr Ala Leu Ser Ile
        35                  40                  45

His Pro Pro Leu Ala Arg Pro Leu Phe Trp Ser Gln Phe Leu Leu His
    50                  55                  60

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

Gln Thr Lys Glu Glu Ala Ala Leu Leu Ser Gln Glu Phe Ala Glu Ala
                85                  90                  95

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

Thr Asp Pro Gln Leu Arg Arg Ile Ile Gly Ala Val Arg Thr Leu Gly
        115                 120                 125

Ser Ala Asn Leu Pro Leu Ala Lys Arg Gln Gln Tyr Asn Ala Leu Leu
    130                 135                 140

Ser Asn Met Ser Arg Ile Tyr Ser Thr Ala Lys Val Cys Leu Pro Asn
145                 150                 155                 160
```

```
Lys Thr Ala Thr Cys Trp Ser Leu Asp Pro Asp Leu Thr Asn Ile Leu
                165                 170                 175

Ala Ser Ser Arg Ser Tyr Ala Met Leu Leu Phe Ala Trp Glu Gly Trp
            180                 185                 190

His Asn Ala Ala Gly Ile Pro Leu Lys Pro Leu Tyr Glu Asp Phe Thr
        195                 200                 205

Ala Leu Ser Asn Glu Ala Tyr Lys Gln Asp Gly Phe Thr Asp Thr Gly
    210                 215                 220

Ala Tyr Trp Arg Ser Trp Tyr Asn Ser Pro Thr Phe Glu Asp Asp Leu
225                 230                 235                 240

Glu His Leu Tyr Gln Gln Leu Glu Pro Leu Tyr Leu Asn Leu His Ala
                245                 250                 255

Phe Val Arg Arg Ala Leu His Arg Arg Tyr Gly Asp Arg Tyr Ile Asn
            260                 265                 270

Leu Arg Gly Pro Ile Pro Ala His Leu Leu Gly Asp Met Trp Ala Gln
        275                 280                 285

Ser Trp Glu Asn Ile Tyr Asp Met Val Val Pro Phe Pro Asp Lys Pro
    290                 295                 300

Asn Leu Asp Val Thr Ser Thr Met Leu Gln
305                 310


<210> 4808
<211> 208
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1056; "

<220>
<221> source
<223> /note="Gene Symbol: ACE; "

<220>
<221> source
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<223> /note="Gene Name:
angiotensin I converting enzyme; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000462599"

<400> 4808

```
Met Gly Gln Gly Trp Ala Thr Ala Gly Leu Pro Ser Leu Leu Phe Leu
1               5                  10                  15

Leu Leu Cys Tyr Gly His Pro Leu Leu Val Pro Ser Gln Glu Ala Ser
            20                  25                  30

Gln Gln Val Thr Val Thr His Gly Thr Ser Ser Gln Ala Thr Thr Ser
        35                  40                  45

Ser Gln Thr Thr Thr His Gln Ala Thr Ala His Gln Thr Ser Ala Gln
    50                  55                  60

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

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

Asn Trp Asn Tyr Asn Thr Asn Ile Thr Thr Glu Thr Ser Lys Ile Leu
            100                 105                 110

Leu Gln Lys Asn Met Gln Ile Ala Asn His Thr Leu Lys Tyr Gly Thr
        115                 120                 125

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

Arg Ile Ile Lys Lys Val Gln Asp Leu Glu Arg Ala Ala Leu Pro Ala
145                 150                 155                 160

Gln Glu Leu Glu Glu Tyr Asn Lys Ile Leu Leu Asp Met Glu Thr Thr
                165                 170                 175

Tyr Ser Val Ala Thr Val Cys His Pro Asn Gly Ser Cys Leu Gln Leu
            180                 185                 190

Glu Pro Ala Leu Lys Phe Ser Glu Leu Pro Leu Gln Ala Glu Val Ser
```

195 200 205

<210> 4809
<211> 282
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1056; "

<220>
<221> source
<223> /note="Gene Symbol: ACE; "

<220>
<221> source
<223> /note="Gene Name:
angiotensin I converting enzyme; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000462909"

<400> 4809
Leu Asp Met Glu Thr Thr Tyr Ser Val Ala Thr Val Cys His Pro Asn
1 5 10 15

Gly Ser Cys Leu Gln Leu Glu Pro Asp Leu Thr Asn Val Met Ala Thr
20 25 30

Ser Arg Lys Tyr Glu Asp Leu Leu Trp Ala Trp Glu Gly Trp Arg Asp
35 40 45

Lys Ala Gly Arg Ala Ile Leu Gln Phe Tyr Pro Lys Tyr Val Glu Leu
50 55 60

Ile Asn Gln Ala Ala Arg Leu Asn Gly Tyr Val Asp Ala Gly Asp Ser
65 70 75 80

Trp Arg Ser Met Tyr Glu Thr Pro Ser Leu Glu Gln Asp Leu Glu Arg
85 90 95

Leu Phe Gln Glu Leu Gln Pro Leu Tyr Leu Asn Leu His Ala Tyr Val
100 105 110

Arg Arg Ala Leu His Arg His Tyr Gly Ala Gln His Ile Asn Leu Glu
115 120 125

```
Gly Pro Ile Pro Ala His Leu Leu Gly Asn Met Trp Ala Gln Thr Trp
    130                 135                 140

Ser Asn Ile Tyr Asp Leu Val Val Pro Phe Pro Ser Ala Pro Ser Met
145                 150                 155                 160

Asp Thr Thr Glu Ala Met Leu Lys Gln Gly Trp Thr Pro Arg Arg Met
                165                 170                 175

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

Pro Pro Glu Phe Trp Asn Lys Ser Met Leu Glu Lys Pro Thr Asp Gly
        195                 200                 205

Arg Glu Val Val Cys His Ala Ser Ala Trp Asp Phe Tyr Asn Glu His
    210                 215                 220

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

Pro Phe Ser Tyr Leu Val Asp Gln Trp Arg Trp Arg Val Phe Asp Gly
                245                 250                 255

Ser Ile Thr Lys Glu Asn Tyr Asn Gln Glu Trp Trp Ser Leu Arg Leu
            260                 265                 270

Lys Tyr Gln Gly Leu Cys Pro Pro Val Pro
        275                 280


<210> 4810
<211> 168
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1056; "

<220>
<221> source
<223> /note="Gene Symbol: ACE; "

<220>
<221> source
<223> /note="Gene Name:
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angiotensin I converting enzyme; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000462995"

<400> 4810
Met Gly Ala Ala Ser Gly Arg Arg Gly Pro Gly Leu Leu Leu Pro Leu
1 5 10 15

Pro Leu Leu Leu Leu Leu Pro Pro Gln Pro Ala Leu Ala Leu Asp Pro
20 25 30

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

Phe Ala Gln Ser Tyr Asn Ser Ser Ala Glu Gln Val Leu Phe Gln Ser
50 55 60

Val Ala Ala Ser Trp Ala His Asp Thr Asn Ile Thr Ala Glu Asn Ala
65 70 75 80

Arg Arg Gln Glu Glu Ala Ala Leu Leu Ser Gln Glu Phe Ala Glu Ala
85 90 95

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

Thr Asp Pro Gln Leu Arg Arg Ile Ile Gly Ala Val Arg Thr Leu Gly
115 120 125

Ser Ala Asn Leu Pro Leu Ala Lys Arg Gln Gln Ile Ser Pro Thr Ser
130 135 140

Trp Leu Pro Arg Glu Ala Thr Pro Cys Ser Cys Leu Pro Gly Arg Ala
145 150 155 160

Gly Thr Thr Leu Arg Ala Ser Arg
165

<210> 4811
<211> 119
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1056; "

<220>
<221> source
<223> /note="Gene Symbol: ACE; "

<220>
<221> source
<223> /note="Gene Name:
angiotensin I converting enzyme; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000463673"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 4811

```
Xaa Gln Ala Gly Ser Ser Arg Pro Trp Gln Glu Val Leu Lys Asp Met
1               5                  10                  15

Val Gly Leu Asp Ala Leu Asp Ala Gln Pro Leu Leu Lys Tyr Phe Gln
            20                  25                  30

Pro Val Thr Gln Trp Leu Gln Glu Gln Asn Gln Gln Asn Gly Glu Val
        35                  40                  45

Leu Gly Trp Pro Glu Tyr Gln Trp His Pro Pro Leu Pro Asp Asn Tyr
    50                  55                  60

Pro Glu Gly Ile Gly Asp Ser His Pro Trp Asp Lys Gln Pro Gly Asn
65                  70                  75                  80

Asn Gln Gln Pro Asp Asn His Pro Pro Gly Asp Gly Pro Pro Asp Ile
                85                  90                  95

Ser Pro Glu Pro Lys Trp Asp His Ala Gly Glu Gly Gln Gly Ala Arg
            100                 105                 110

Gly Gly Arg Gly Gly Ala Gly
        115
```

<210> 4812
<211> 138

<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1056; "

<220>
<221> source
<223> /note="Gene Symbol: ACE; "

<220>
<221> source
<223> /note="Gene Name:
angiotensin I converting enzyme; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000464428"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 4812
Xaa Arg Thr Gln Gly Asp Phe Asp Pro Gly Ala Lys Phe His Ile Pro
1 5 10 15

Ser Ser Val Pro Tyr Ile Arg Tyr Phe Val Ser Phe Ile Ile Gln Phe
20 25 30

Gln Phe His Glu Ala Leu Cys Gln Ala Ala Gly His Thr Gly Pro Leu
35 40 45

His Lys Cys Asp Ile Tyr Gln Ser Lys Glu Ala Gly Gln Arg Leu Ala
50 55 60

Thr Ala Met Lys Leu Gly Phe Ser Arg Pro Trp Pro Glu Ala Met Gln
65 70 75 80

Leu Ile Thr Gly Gln Pro Asn Met Ser Ala Ser Ala Met Leu Ser Tyr
85 90 95

Phe Lys Pro Leu Leu Asp Trp Leu Arg Thr Glu Asn Glu Leu His Gly
100 105 110

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

```
Ala Thr His Pro Thr Ser Ser Leu Gly Ser
    130                 135


<210> 4813
<211> 36
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1056; "

<220>
<221> source
<223> /note="Gene Symbol: ACE; "

<220>
<221> source
<223> /note="Gene Name:
      angiotensin I converting enzyme; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000464629"

<400> 4813
Met Gly Gln Gly Trp Ala Thr Ala Gly Leu Pro Ser Leu Leu Phe Leu
1               5                   10                  15


Leu Leu Cys Tyr Gly His Pro Leu Leu Val Pro Ser Gln Glu Ala Ser
            20                  25                  30


Gln Gln Thr Trp
        35


<210> 4814
<211> 805
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1057; "

<220>
<221> source
<223> /note="Gene Symbol: ACE2; "

<220>
<221> source
<223> /note="Gene Name:
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angiotensin I converting enzyme 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q9BYF1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000252519"

<400> 4814

```
Met Ser Ser Ser Ser Trp Leu Leu Leu Ser Leu Val Ala Val Thr Ala
1               5                  10                  15

Ala Gln Ser Thr Ile Glu Glu Gln Ala Lys Thr Phe Leu Asp Lys Phe
            20                  25                  30

Asn His Glu Ala Glu Asp Leu Phe Tyr Gln Ser Ser Leu Ala Ser Trp
        35                  40                  45

Asn Tyr Asn Thr Asn Ile Thr Glu Glu Asn Val Gln Asn Met Asn Asn
    50                  55                  60

Ala Gly Asp Lys Trp Ser Ala Phe Leu Lys Glu Gln Ser Thr Leu Ala
65                  70                  75                  80

Gln Met Tyr Pro Leu Gln Glu Ile Gln Asn Leu Thr Val Lys Leu Gln
                85                  90                  95

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

Ser Lys Arg Leu Asn Thr Ile Leu Asn Thr Met Ser Thr Ile Tyr Ser
        115                 120                 125

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

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

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

Arg Pro Leu Tyr Glu Glu Tyr Val Val Leu Lys Asn Glu Met Ala Arg
            180                 185                 190
```

```
Ala Asn His Tyr Glu Asp Tyr Gly Asp Tyr Trp Arg Gly Asp Tyr Glu
        195                 200                 205

Val Asn Gly Val Asp Gly Tyr Asp Tyr Ser Arg Gly Gln Leu Ile Glu
    210                 215                 220

Asp Val Glu His Thr Phe Glu Glu Ile Lys Pro Leu Tyr Glu His Leu
225                 230                 235                 240

His Ala Tyr Val Arg Ala Lys Leu Met Asn Ala Tyr Pro Ser Tyr Ile
                245                 250                 255

Ser Pro Ile Gly Cys Leu Pro Ala His Leu Leu Gly Asp Met Trp Gly
            260                 265                 270

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

Pro Asn Ile Asp Val Thr Asp Ala Met Val Asp Gln Ala Trp Asp Ala
    290                 295                 300

Gln Arg Ile Phe Lys Glu Ala Glu Lys Phe Phe Val Ser Val Gly Leu
305                 310                 315                 320

Pro Asn Met Thr Gln Gly Phe Trp Glu Asn Ser Met Leu Thr Asp Pro
                325                 330                 335

Gly Asn Val Gln Lys Ala Val Cys His Pro Thr Ala Trp Asp Leu Gly
            340                 345                 350

Lys Gly Asp Phe Arg Ile Leu Met Cys Thr Lys Val Thr Met Asp Asp
        355                 360                 365

Phe Leu Thr Ala His His Glu Met Gly His Ile Gln Tyr Asp Met Ala
    370                 375                 380

Tyr Ala Ala Gln Pro Phe Leu Leu Arg Asn Gly Ala Asn Glu Gly Phe
385                 390                 395                 400

His Glu Ala Val Gly Glu Ile Met Ser Leu Ser Ala Ala Thr Pro Lys
                405                 410                 415
```

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

Glu Thr Glu Ile Asn Phe Leu Leu Lys Gln Ala Leu Thr Ile Val Gly
        435                 440                 445

Thr Leu Pro Phe Thr Tyr Met Leu Glu Lys Trp Arg Trp Met Val Phe
    450                 455                 460

Lys Gly Glu Ile Pro Lys Asp Gln Trp Met Lys Lys Trp Trp Glu Met
465                 470                 475                 480

Lys Arg Glu Ile Val Gly Val Val Glu Pro Val Pro His Asp Glu Thr
                485                 490                 495

Tyr Cys Asp Pro Ala Ser Leu Phe His Val Ser Asn Asp Tyr Ser Phe
            500                 505                 510

Ile Arg Tyr Tyr Thr Arg Thr Leu Tyr Gln Phe Gln Phe Gln Glu Ala
        515                 520                 525

Leu Cys Gln Ala Ala Lys His Glu Gly Pro Leu His Lys Cys Asp Ile
    530                 535                 540

Ser Asn Ser Thr Glu Ala Gly Gln Lys Leu Phe Asn Met Leu Arg Leu
545                 550                 555                 560

Gly Lys Ser Glu Pro Trp Thr Leu Ala Leu Glu Asn Val Val Gly Ala
                565                 570                 575

Lys Asn Met Asn Val Arg Pro Leu Leu Asn Tyr Phe Glu Pro Leu Phe
            580                 585                 590

Thr Trp Leu Lys Asp Gln Asn Lys Asn Ser Phe Val Gly Trp Ser Thr
        595                 600                 605

Asp Trp Ser Pro Tyr Ala Asp Gln Ser Ile Lys Val Arg Ile Ser Leu
    610                 615                 620

Lys Ser Ala Leu Gly Asp Lys Ala Tyr Glu Trp Asn Asp Asn Glu Met
625                 630                 635                 640
```

```
Tyr Leu Phe Arg Ser Ser Val Ala Tyr Ala Met Arg Gln Tyr Phe Leu
                645                 650                 655

Lys Val Lys Asn Gln Met Ile Leu Phe Gly Glu Glu Asp Val Arg Val
            660                 665                 670

Ala Asn Leu Lys Pro Arg Ile Ser Phe Asn Phe Phe Val Thr Ala Pro
        675                 680                 685

Lys Asn Val Ser Asp Ile Ile Pro Arg Thr Glu Val Glu Lys Ala Ile
    690                 695                 700

Arg Met Ser Arg Ser Arg Ile Asn Asp Ala Phe Arg Leu Asn Asp Asn
705                 710                 715                 720

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

Pro Pro Val Ser Ile Trp Leu Ile Val Phe Gly Val Val Met Gly Val
            740                 745                 750

Ile Val Val Gly Ile Val Ile Leu Ile Phe Thr Gly Ile Arg Asp Arg
        755                 760                 765

Lys Lys Lys Asn Lys Ala Arg Ser Gly Glu Asn Pro Tyr Ala Ser Ile
    770                 775                 780

Asp Ile Ser Lys Gly Glu Asn Asn Pro Gly Phe Gln Asn Thr Asp Asp
785                 790                 795                 800

Val Gln Thr Ser Phe
                805


<210> 4815
<211> 805
<212> PRT
<213> Homo sapiens

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<223> /note="Gene Symbol: ACE2; "
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<220>
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<220>
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<220>
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<400> 4815

```
Met Ser Ser Ser Ser Trp Leu Leu Leu Ser Leu Val Ala Val Thr Ala
1               5                  10                  15

Ala Gln Ser Thr Ile Glu Glu Gln Ala Lys Thr Phe Leu Asp Lys Phe
            20                  25                  30

Asn His Glu Ala Glu Asp Leu Phe Tyr Gln Ser Ser Leu Ala Ser Trp
        35                  40                  45

Asn Tyr Asn Thr Asn Ile Thr Glu Glu Asn Val Gln Asn Met Asn Asn
    50                  55                  60

Ala Gly Asp Lys Trp Ser Ala Phe Leu Lys Glu Gln Ser Thr Leu Ala
65                  70                  75                  80

Gln Met Tyr Pro Leu Gln Glu Ile Gln Asn Leu Thr Val Lys Leu Gln
                85                  90                  95

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

Ser Lys Arg Leu Asn Thr Ile Leu Asn Thr Met Ser Thr Ile Tyr Ser
        115                 120                 125

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

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

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

```
Arg Pro Leu Tyr Glu Glu Tyr Val Val Leu Lys Asn Glu Met Ala Arg
            180                 185                 190

Ala Asn His Tyr Glu Asp Tyr Gly Asp Tyr Trp Arg Gly Asp Tyr Glu
        195                 200                 205

Val Asn Gly Val Asp Gly Tyr Asp Tyr Ser Arg Gly Gln Leu Ile Glu
    210                 215                 220

Asp Val Glu His Thr Phe Glu Glu Ile Lys Pro Leu Tyr Glu His Leu
225                 230                 235                 240

His Ala Tyr Val Arg Ala Lys Leu Met Asn Ala Tyr Pro Ser Tyr Ile
                245                 250                 255

Ser Pro Ile Gly Cys Leu Pro Ala His Leu Leu Gly Asp Met Trp Gly
            260                 265                 270

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

Pro Asn Ile Asp Val Thr Asp Ala Met Val Asp Gln Ala Trp Asp Ala
    290                 295                 300

Gln Arg Ile Phe Lys Glu Ala Glu Lys Phe Phe Val Ser Val Gly Leu
305                 310                 315                 320

Pro Asn Met Thr Gln Gly Phe Trp Glu Asn Ser Met Leu Thr Asp Pro
                325                 330                 335

Gly Asn Val Gln Lys Ala Val Cys His Pro Thr Ala Trp Asp Leu Gly
            340                 345                 350

Lys Gly Asp Phe Arg Ile Leu Met Cys Thr Lys Val Thr Met Asp Asp
        355                 360                 365

Phe Leu Thr Ala His His Glu Met Gly His Ile Gln Tyr Asp Met Ala
    370                 375                 380

Tyr Ala Ala Gln Pro Phe Leu Leu Arg Asn Gly Ala Asn Glu Gly Phe
385                 390                 395                 400
```

```
His Glu Ala Val Gly Glu Ile Met Ser Leu Ser Ala Ala Thr Pro Lys
                405                 410                 415

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

Glu Thr Glu Ile Asn Phe Leu Leu Lys Gln Ala Leu Thr Ile Val Gly
        435                 440                 445

Thr Leu Pro Phe Thr Tyr Met Leu Glu Lys Trp Arg Trp Met Val Phe
    450                 455                 460

Lys Gly Glu Ile Pro Lys Asp Gln Trp Met Lys Lys Trp Trp Glu Met
465                 470                 475                 480

Lys Arg Glu Ile Val Gly Val Val Glu Pro Val Pro His Asp Glu Thr
                485                 490                 495

Tyr Cys Asp Pro Ala Ser Leu Phe His Val Ser Asn Asp Tyr Ser Phe
            500                 505                 510

Ile Arg Tyr Tyr Thr Arg Thr Leu Tyr Gln Phe Gln Phe Gln Glu Ala
        515                 520                 525

Leu Cys Gln Ala Ala Lys His Glu Gly Pro Leu His Lys Cys Asp Ile
    530                 535                 540

Ser Asn Ser Thr Glu Ala Gly Gln Lys Leu Phe Asn Met Leu Arg Leu
545                 550                 555                 560

Gly Lys Ser Glu Pro Trp Thr Leu Ala Leu Glu Asn Val Val Gly Ala
                565                 570                 575

Lys Asn Met Asn Val Arg Pro Leu Leu Asn Tyr Phe Glu Pro Leu Phe
            580                 585                 590

Thr Trp Leu Lys Asp Gln Asn Lys Asn Ser Phe Val Gly Trp Ser Thr
        595                 600                 605

Asp Trp Ser Pro Tyr Ala Asp Gln Ser Ile Lys Val Arg Ile Ser Leu
    610                 615                 620

Lys Ser Ala Leu Gly Asp Lys Ala Tyr Glu Trp Asn Asp Asn Glu Met
```

625 630 635 640

Tyr Leu Phe Arg Ser Ser Val Ala Tyr Ala Met Arg Gln Tyr Phe Leu
645 650 655

Lys Val Lys Asn Gln Met Ile Leu Phe Gly Glu Glu Asp Val Arg Val
660 665 670

Ala Asn Leu Lys Pro Arg Ile Ser Phe Asn Phe Phe Val Thr Ala Pro
675 680 685

Lys Asn Val Ser Asp Ile Ile Pro Arg Thr Glu Val Glu Lys Ala Ile
690 695 700

Arg Met Ser Arg Ser Arg Ile Asn Asp Ala Phe Arg Leu Asn Asp Asn
705 710 715 720

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

Pro Pro Val Ser Ile Trp Leu Ile Val Phe Gly Val Val Met Gly Val
740 745 750

Ile Val Val Gly Ile Val Ile Leu Ile Phe Thr Gly Ile Arg Asp Arg
755 760 765

Lys Lys Lys Asn Lys Ala Arg Ser Gly Glu Asn Pro Tyr Ala Ser Ile
770 775 780

Asp Ile Ser Lys Gly Glu Asn Asn Pro Gly Phe Gln Asn Thr Asp Asp
785 790 795 800

Val Gln Thr Ser Phe
805

<210> 4816
<211> 359
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1058; "

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<221> source
<223> /note="Gene Symbol: AGTR1; "

<220>
<221> source
<223> /note="Gene Name:
angiotensin II receptor, type 1; "

<220>
<221> source
<223> /note="Uniprot ID: P30556; "

<220>
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<400> 4816

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Met Ile Leu Asn Ser Ser Thr Glu Asp Gly Ile Lys Arg Ile Gln Asp
1               5                  10                  15


Asp Cys Pro Lys Ala Gly Arg His Asn Tyr Ile Phe Val Met Ile Pro
            20                  25                  30


Thr Leu Tyr Ser Ile Ile Phe Val Val Gly Ile Phe Gly Asn Ser Leu
        35                  40                  45


Val Val Ile Val Ile Tyr Phe Tyr Met Lys Leu Lys Thr Val Ala Ser
    50                  55                  60


Val Phe Leu Leu Asn Leu Ala Leu Ala Asp Leu Cys Phe Leu Leu Thr
65                  70                  75                  80


Leu Pro Leu Trp Ala Val Tyr Thr Ala Met Glu Tyr Arg Trp Pro Phe
                85                  90                  95


Gly Asn Tyr Leu Cys Lys Ile Ala Ser Ala Ser Val Ser Phe Asn Leu
            100                 105                 110


Tyr Ala Ser Val Phe Leu Leu Thr Cys Leu Ser Ile Asp Arg Tyr Leu
        115                 120                 125


Ala Ile Val His Pro Met Lys Ser Arg Leu Arg Arg Thr Met Leu Val
    130                 135                 140


Ala Lys Val Thr Cys Ile Ile Ile Trp Leu Leu Ala Gly Leu Ala Ser
145                 150                 155                 160
```

```
Leu Pro Ala Ile Ile His Arg Asn Val Phe Phe Ile Glu Asn Thr Asn
                165                 170                 175

Ile Thr Val Cys Ala Phe His Tyr Glu Ser Gln Asn Ser Thr Leu Pro
            180                 185                 190

Ile Gly Leu Gly Leu Thr Lys Asn Ile Leu Gly Phe Leu Phe Pro Phe
        195                 200                 205

Leu Ile Ile Leu Thr Ser Tyr Thr Leu Ile Trp Lys Ala Leu Lys Lys
    210                 215                 220

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

Ile Ile Met Ala Ile Val Leu Phe Phe Phe Phe Ser Trp Ile Pro His
                245                 250                 255

Gln Ile Phe Thr Phe Leu Asp Val Leu Ile Gln Leu Gly Ile Ile Arg
            260                 265                 270

Asp Cys Arg Ile Ala Asp Ile Val Asp Thr Ala Met Pro Ile Thr Ile
        275                 280                 285

Cys Ile Ala Tyr Phe Asn Asn Cys Leu Asn Pro Leu Phe Tyr Gly Phe
    290                 295                 300

Leu Gly Lys Lys Phe Lys Arg Tyr Phe Leu Gln Leu Leu Lys Tyr Ile
305                 310                 315                 320

Pro Pro Lys Ala Lys Ser His Ser Asn Leu Ser Thr Lys Met Ser Thr
                325                 330                 335

Leu Ser Tyr Arg Pro Ser Asp Asn Val Ser Ser Ser Thr Lys Lys Pro
            340                 345                 350

Ala Pro Cys Phe Glu Val Glu
        355
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<210> 4817
<211> 359
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<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID: P30556; "

<220>
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<400> 4817

```
Met Ile Leu Asn Ser Ser Thr Glu Asp Gly Ile Lys Arg Ile Gln Asp
1               5                  10                  15

Asp Cys Pro Lys Ala Gly Arg His Asn Tyr Ile Phe Val Met Ile Pro
            20                  25                  30

Thr Leu Tyr Ser Ile Ile Phe Val Val Gly Ile Phe Gly Asn Ser Leu
        35                  40                  45

Val Val Ile Val Ile Tyr Phe Tyr Met Lys Leu Lys Thr Val Ala Ser
    50                  55                  60

Val Phe Leu Leu Asn Leu Ala Leu Ala Asp Leu Cys Phe Leu Leu Thr
65                  70                  75                  80

Leu Pro Leu Trp Ala Val Tyr Thr Ala Met Glu Tyr Arg Trp Pro Phe
                85                  90                  95

Gly Asn Tyr Leu Cys Lys Ile Ala Ser Ala Ser Val Ser Phe Asn Leu
            100                 105                 110

Tyr Ala Ser Val Phe Leu Leu Thr Cys Leu Ser Ile Asp Arg Tyr Leu
        115                 120                 125

Ala Ile Val His Pro Met Lys Ser Arg Leu Arg Arg Thr Met Leu Val
    130                 135                 140
```

```
Ala Lys Val Thr Cys Ile Ile Ile Trp Leu Leu Ala Gly Leu Ala Ser
145                 150                 155                 160

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

Ile Thr Val Cys Ala Phe His Tyr Glu Ser Gln Asn Ser Thr Leu Pro
            180                 185                 190

Ile Gly Leu Gly Leu Thr Lys Asn Ile Leu Gly Phe Leu Phe Pro Phe
        195                 200                 205

Leu Ile Ile Leu Thr Ser Tyr Thr Leu Ile Trp Lys Ala Leu Lys Lys
    210                 215                 220

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

Ile Ile Met Ala Ile Val Leu Phe Phe Phe Phe Ser Trp Ile Pro His
                245                 250                 255

Gln Ile Phe Thr Phe Leu Asp Val Leu Ile Gln Leu Gly Ile Ile Arg
            260                 265                 270

Asp Cys Arg Ile Ala Asp Ile Val Asp Thr Ala Met Pro Ile Thr Ile
        275                 280                 285

Cys Ile Ala Tyr Phe Asn Asn Cys Leu Asn Pro Leu Phe Tyr Gly Phe
    290                 295                 300

Leu Gly Lys Lys Phe Lys Arg Tyr Phe Leu Gln Leu Leu Lys Tyr Ile
305                 310                 315                 320

Pro Pro Lys Ala Lys Ser His Ser Asn Leu Ser Thr Lys Met Ser Thr
                325                 330                 335

Leu Ser Tyr Arg Pro Ser Asp Asn Val Ser Ser Ser Thr Lys Lys Pro
            340                 345                 350

Ala Pro Cys Phe Glu Val Glu
        355
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<210> 4818
<211> 388
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<213> Homo sapiens

<220>
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<220>
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<223> /note="ENSP ID: ENSP00000385641"

<400> 4818

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Met Leu Thr Phe Thr Ser Glu Cys Gly Cys Thr Thr Phe Gly Val Phe
1               5                  10                  15

Asp Ile Val Phe Ala Thr Asn Ser Thr Gln Val Ile Lys Met Ile Leu
            20                  25                  30

Asn Ser Ser Thr Glu Asp Gly Ile Lys Arg Ile Gln Asp Asp Cys Pro
        35                  40                  45

Lys Ala Gly Arg His Asn Tyr Ile Phe Val Met Ile Pro Thr Leu Tyr
    50                  55                  60

Ser Ile Ile Phe Val Val Gly Ile Phe Gly Asn Ser Leu Val Val Ile
65                  70                  75                  80

Val Ile Tyr Phe Tyr Met Lys Leu Lys Thr Val Ala Ser Val Phe Leu
                85                  90                  95

Leu Asn Leu Ala Leu Ala Asp Leu Cys Phe Leu Leu Thr Leu Pro Leu
            100                 105                 110

Trp Ala Val Tyr Thr Ala Met Glu Tyr Arg Trp Pro Phe Gly Asn Tyr
        115                 120                 125

Leu Cys Lys Ile Ala Ser Ala Ser Val Ser Phe Asn Leu Tyr Ala Ser
    130                 135                 140
```

```
Val Phe Leu Leu Thr Cys Leu Ser Ile Asp Arg Tyr Leu Ala Ile Val
145                 150                 155                 160

His Pro Met Lys Ser Arg Leu Arg Arg Thr Met Leu Val Ala Lys Val
                165                 170                 175

Thr Cys Ile Ile Ile Trp Leu Leu Ala Gly Leu Ala Ser Leu Pro Ala
            180                 185                 190

Ile Ile His Arg Asn Val Phe Phe Ile Glu Asn Thr Asn Ile Thr Val
        195                 200                 205

Cys Ala Phe His Tyr Glu Ser Gln Asn Ser Thr Leu Pro Ile Gly Leu
    210                 215                 220

Gly Leu Thr Lys Asn Ile Leu Gly Phe Leu Phe Pro Phe Leu Ile Ile
225                 230                 235                 240

Leu Thr Ser Tyr Thr Leu Ile Trp Lys Ala Leu Lys Lys Ala Tyr Glu
                245                 250                 255

Ile Gln Lys Asn Lys Pro Arg Asn Asp Asp Ile Phe Lys Ile Ile Met
            260                 265                 270

Ala Ile Val Leu Phe Phe Phe Phe Ser Trp Ile Pro His Gln Ile Phe
        275                 280                 285

Thr Phe Leu Asp Val Leu Ile Gln Leu Gly Ile Ile Arg Asp Cys Arg
    290                 295                 300

Ile Ala Asp Ile Val Asp Thr Ala Met Pro Ile Thr Ile Cys Ile Ala
305                 310                 315                 320

Tyr Phe Asn Asn Cys Leu Asn Pro Leu Phe Tyr Gly Phe Leu Gly Lys
                325                 330                 335

Lys Phe Lys Arg Tyr Phe Leu Gln Leu Leu Lys Tyr Ile Pro Pro Lys
            340                 345                 350

Ala Lys Ser His Ser Asn Leu Ser Thr Lys Met Ser Thr Leu Ser Tyr
        355                 360                 365
```

Arg Pro Ser Asp Asn Val Ser Ser Ser Thr Lys Lys Pro Ala Pro Cys
370 375 380

Phe Glu Val Glu
385

<210> 4819
<211> 394
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1058; "

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<221> source
<223> /note="Gene Symbol: AGTR1; "

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<223> /note="Gene Name:
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<220>
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<400> 4819
Met Lys Lys Met Asn His Lys Ser Thr Asp Ser Pro Lys Ala Pro Gln
1 5 10 15

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

Val Ile Lys Met Ile Leu Asn Ser Ser Thr Glu Asp Gly Ile Lys Arg
35 40 45

Ile Gln Asp Asp Cys Pro Lys Ala Gly Arg His Asn Tyr Ile Phe Val
50 55 60

Met Ile Pro Thr Leu Tyr Ser Ile Ile Phe Val Val Gly Ile Phe Gly
65 70 75 80

Asn Ser Leu Val Val Ile Val Ile Tyr Phe Tyr Met Lys Leu Lys Thr
85 90 95

Val Ala Ser Val Phe Leu Leu Asn Leu Ala Leu Ala Asp Leu Cys Phe

```
            100                 105                 110

Leu Leu Thr Leu Pro Leu Trp Ala Val Tyr Thr Ala Met Glu Tyr Arg
        115                 120                 125

Trp Pro Phe Gly Asn Tyr Leu Cys Lys Ile Ala Ser Ala Ser Val Ser
    130                 135                 140

Phe Asn Leu Tyr Ala Ser Val Phe Leu Leu Thr Cys Leu Ser Ile Asp
145                 150                 155                 160

Arg Tyr Leu Ala Ile Val His Pro Met Lys Ser Arg Leu Arg Arg Thr
                165                 170                 175

Met Leu Val Ala Lys Val Thr Cys Ile Ile Ile Trp Leu Leu Ala Gly
            180                 185                 190

Leu Ala Ser Leu Pro Ala Ile Ile His Arg Asn Val Phe Phe Ile Glu
        195                 200                 205

Asn Thr Asn Ile Thr Val Cys Ala Phe His Tyr Glu Ser Gln Asn Ser
    210                 215                 220

Thr Leu Pro Ile Gly Leu Gly Leu Thr Lys Asn Ile Leu Gly Phe Leu
225                 230                 235                 240

Phe Pro Phe Leu Ile Ile Leu Thr Ser Tyr Thr Leu Ile Trp Lys Ala
                245                 250                 255

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

Ile Phe Lys Ile Ile Met Ala Ile Val Leu Phe Phe Phe Phe Ser Trp
        275                 280                 285

Ile Pro His Gln Ile Phe Thr Phe Leu Asp Val Leu Ile Gln Leu Gly
    290                 295                 300

Ile Ile Arg Asp Cys Arg Ile Ala Asp Ile Val Asp Thr Ala Met Pro
305                 310                 315                 320

Ile Thr Ile Cys Ile Ala Tyr Phe Asn Asn Cys Leu Asn Pro Leu Phe
                325                 330                 335
```

```
Tyr Gly Phe Leu Gly Lys Lys Phe Lys Arg Tyr Phe Leu Gln Leu Leu
            340                 345                 350

Lys Tyr Ile Pro Pro Lys Ala Lys Ser His Ser Asn Leu Ser Thr Lys
        355                 360                 365

Met Ser Thr Leu Ser Tyr Arg Pro Ser Asp Asn Val Ser Ser Ser Thr
    370                 375                 380

Lys Lys Pro Ala Pro Cys Phe Glu Val Glu
385                 390


<210> 4820
<211> 359
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID:  P30556; "

<220>
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<223> /note="ENSP ID: ENSP00000418084"

<400> 4820
Met Ile Leu Asn Ser Ser Thr Glu Asp Gly Ile Lys Arg Ile Gln Asp
1               5                   10                  15

Asp Cys Pro Lys Ala Gly Arg His Asn Tyr Ile Phe Val Met Ile Pro
            20                  25                  30

Thr Leu Tyr Ser Ile Ile Phe Val Val Gly Ile Phe Gly Asn Ser Leu
        35                  40                  45
```

```
Val Val Ile Val Ile Tyr Phe Tyr Met Lys Leu Lys Thr Val Ala Ser
    50                  55                  60

Val Phe Leu Leu Asn Leu Ala Leu Ala Asp Leu Cys Phe Leu Leu Thr
65                  70                  75                  80

Leu Pro Leu Trp Ala Val Tyr Thr Ala Met Glu Tyr Arg Trp Pro Phe
                85                  90                  95

Gly Asn Tyr Leu Cys Lys Ile Ala Ser Ala Ser Val Ser Phe Asn Leu
            100                 105                 110

Tyr Ala Ser Val Phe Leu Leu Thr Cys Leu Ser Ile Asp Arg Tyr Leu
        115                 120                 125

Ala Ile Val His Pro Met Lys Ser Arg Leu Arg Arg Thr Met Leu Val
    130                 135                 140

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

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

Ile Thr Val Cys Ala Phe His Tyr Glu Ser Gln Asn Ser Thr Leu Pro
            180                 185                 190

Ile Gly Leu Gly Leu Thr Lys Asn Ile Leu Gly Phe Leu Phe Pro Phe
        195                 200                 205

Leu Ile Ile Leu Thr Ser Tyr Thr Leu Ile Trp Lys Ala Leu Lys Lys
    210                 215                 220

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

Ile Ile Met Ala Ile Val Leu Phe Phe Phe Phe Ser Trp Ile Pro His
                245                 250                 255

Gln Ile Phe Thr Phe Leu Asp Val Leu Ile Gln Leu Gly Ile Ile Arg
            260                 265                 270

Asp Cys Arg Ile Ala Asp Ile Val Asp Thr Ala Met Pro Ile Thr Ile
```

```
        275                 280                 285

Cys Ile Ala Tyr Phe Asn Asn Cys Leu Asn Pro Leu Phe Tyr Gly Phe
    290                 295                 300

Leu Gly Lys Lys Phe Lys Arg Tyr Phe Leu Gln Leu Leu Lys Tyr Ile
305                 310                 315                 320

Pro Pro Lys Ala Lys Ser His Ser Asn Leu Ser Thr Lys Met Ser Thr
                325                 330                 335

Leu Ser Tyr Arg Pro Ser Asp Asn Val Ser Ser Ser Thr Lys Lys Pro
            340                 345                 350

Ala Pro Cys Phe Glu Val Glu
        355


<210> 4821
<211> 359
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID:  P30556; "

<220>
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<223> /note="ENSP ID: ENSP00000418851"

<400> 4821
Met Ile Leu Asn Ser Ser Thr Glu Asp Gly Ile Lys Arg Ile Gln Asp
1               5                   10                  15

Asp Cys Pro Lys Ala Gly Arg His Asn Tyr Ile Phe Val Met Ile Pro
            20                  25                  30
```

```
Thr Leu Tyr Ser Ile Ile Phe Val Val Gly Ile Phe Gly Asn Ser Leu
        35                  40                  45

Val Val Ile Val Ile Tyr Phe Tyr Met Lys Leu Lys Thr Val Ala Ser
    50                  55                  60

Val Phe Leu Leu Asn Leu Ala Leu Ala Asp Leu Cys Phe Leu Leu Thr
65                  70                  75                  80

Leu Pro Leu Trp Ala Val Tyr Thr Ala Met Glu Tyr Arg Trp Pro Phe
                85                  90                  95

Gly Asn Tyr Leu Cys Lys Ile Ala Ser Ala Ser Val Ser Phe Asn Leu
            100                 105                 110

Tyr Ala Ser Val Phe Leu Leu Thr Cys Leu Ser Ile Asp Arg Tyr Leu
        115                 120                 125

Ala Ile Val His Pro Met Lys Ser Arg Leu Arg Arg Thr Met Leu Val
    130                 135                 140

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

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

Ile Thr Val Cys Ala Phe His Tyr Glu Ser Gln Asn Ser Thr Leu Pro
            180                 185                 190

Ile Gly Leu Gly Leu Thr Lys Asn Ile Leu Gly Phe Leu Phe Pro Phe
        195                 200                 205

Leu Ile Ile Leu Thr Ser Tyr Thr Leu Ile Trp Lys Ala Leu Lys Lys
    210                 215                 220

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

Ile Ile Met Ala Ile Val Leu Phe Phe Phe Phe Ser Trp Ile Pro His
                245                 250                 255
```

```
Gln Ile Phe Thr Phe Leu Asp Val Leu Ile Gln Leu Gly Ile Ile Arg
            260                 265                 270

Asp Cys Arg Ile Ala Asp Ile Val Asp Thr Ala Met Pro Ile Thr Ile
        275                 280                 285

Cys Ile Ala Tyr Phe Asn Asn Cys Leu Asn Pro Leu Phe Tyr Gly Phe
    290                 295                 300

Leu Gly Lys Lys Phe Lys Arg Tyr Phe Leu Gln Leu Leu Lys Tyr Ile
305                 310                 315                 320

Pro Pro Lys Ala Lys Ser His Ser Asn Leu Ser Thr Lys Met Ser Thr
                325                 330                 335

Leu Ser Tyr Arg Pro Ser Asp Asn Val Ser Ser Ser Thr Lys Lys Pro
            340                 345                 350

Ala Pro Cys Phe Glu Val Glu
        355


<210> 4822
<211> 359
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID:  P30556; "

<220>
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<223> /note="ENSP ID: ENSP00000419422"

<400> 4822
Met Ile Leu Asn Ser Ser Thr Glu Asp Gly Ile Lys Arg Ile Gln Asp
1               5                   10                  15
```

```
Asp Cys Pro Lys Ala Gly Arg His Asn Tyr Ile Phe Val Met Ile Pro
            20                  25                  30

Thr Leu Tyr Ser Ile Ile Phe Val Val Gly Ile Phe Gly Asn Ser Leu
        35                  40                  45

Val Val Ile Val Ile Tyr Phe Tyr Met Lys Leu Lys Thr Val Ala Ser
    50                  55                  60

Val Phe Leu Leu Asn Leu Ala Leu Ala Asp Leu Cys Phe Leu Leu Thr
65                  70                  75                  80

Leu Pro Leu Trp Ala Val Tyr Thr Ala Met Glu Tyr Arg Trp Pro Phe
                85                  90                  95

Gly Asn Tyr Leu Cys Lys Ile Ala Ser Ala Ser Val Ser Phe Asn Leu
            100                 105                 110

Tyr Ala Ser Val Phe Leu Leu Thr Cys Leu Ser Ile Asp Arg Tyr Leu
        115                 120                 125

Ala Ile Val His Pro Met Lys Ser Arg Leu Arg Arg Thr Met Leu Val
    130                 135                 140

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

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

Ile Thr Val Cys Ala Phe His Tyr Glu Ser Gln Asn Ser Thr Leu Pro
            180                 185                 190

Ile Gly Leu Gly Leu Thr Lys Asn Ile Leu Gly Phe Leu Phe Pro Phe
        195                 200                 205

Leu Ile Ile Leu Thr Ser Tyr Thr Leu Ile Trp Lys Ala Leu Lys Lys
    210                 215                 220

Ala Tyr Glu Ile Gln Lys Asn Lys Pro Arg Asn Asp Asp Ile Phe Lys
225                 230                 235                 240
```

```
Ile Ile Met Ala Ile Val Leu Phe Phe Phe Phe Ser Trp Ile Pro His
                245                 250                 255

Gln Ile Phe Thr Phe Leu Asp Val Leu Ile Gln Leu Gly Ile Ile Arg
            260                 265                 270

Asp Cys Arg Ile Ala Asp Ile Val Asp Thr Ala Met Pro Ile Thr Ile
        275                 280                 285

Cys Ile Ala Tyr Phe Asn Asn Cys Leu Asn Pro Leu Phe Tyr Gly Phe
    290                 295                 300

Leu Gly Lys Lys Phe Lys Arg Tyr Phe Leu Gln Leu Leu Lys Tyr Ile
305                 310                 315                 320

Pro Pro Lys Ala Lys Ser His Ser Asn Leu Ser Thr Lys Met Ser Thr
                325                 330                 335

Leu Ser Tyr Arg Pro Ser Asp Asn Val Ser Ser Ser Thr Lys Lys Pro
            340                 345                 350

Ala Pro Cys Phe Glu Val Glu
        355


<210> 4823
<211> 359
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1058; "

<220>
<221> source
<223> /note="Gene Symbol: AGTR1; "

<220>
<221> source
<223> /note="Gene Name:
      angiotensin II receptor, type 1; "

<220>
<221> source
<223> /note="Uniprot ID:  P30556; "

<220>
<221> source
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<223> /note="ENSP ID: ENSP00000419783"

<400> 4823

```
Met Ile Leu Asn Ser Ser Thr Glu Asp Gly Ile Lys Arg Ile Gln Asp
1               5                  10                  15

Asp Cys Pro Lys Ala Gly Arg His Asn Tyr Ile Phe Val Met Ile Pro
            20                  25                  30

Thr Leu Tyr Ser Ile Ile Phe Val Val Gly Ile Phe Gly Asn Ser Leu
        35                  40                  45

Val Val Ile Val Ile Tyr Phe Tyr Met Lys Leu Lys Thr Val Ala Ser
    50                  55                  60

Val Phe Leu Leu Asn Leu Ala Leu Ala Asp Leu Cys Phe Leu Leu Thr
65                  70                  75                  80

Leu Pro Leu Trp Ala Val Tyr Thr Ala Met Glu Tyr Arg Trp Pro Phe
                85                  90                  95

Gly Asn Tyr Leu Cys Lys Ile Ala Ser Ala Ser Val Ser Phe Asn Leu
            100                 105                 110

Tyr Ala Ser Val Phe Leu Leu Thr Cys Leu Ser Ile Asp Arg Tyr Leu
        115                 120                 125

Ala Ile Val His Pro Met Lys Ser Arg Leu Arg Arg Thr Met Leu Val
    130                 135                 140

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

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

Ile Thr Val Cys Ala Phe His Tyr Glu Ser Gln Asn Ser Thr Leu Pro
            180                 185                 190

Ile Gly Leu Gly Leu Thr Lys Asn Ile Leu Gly Phe Leu Phe Pro Phe
        195                 200                 205

Leu Ile Ile Leu Thr Ser Tyr Thr Leu Ile Trp Lys Ala Leu Lys Lys
    210                 215                 220
```

```
Ala Tyr Glu Ile Gln Lys Asn Lys Pro Arg Asn Asp Asp Ile Phe Lys
225                 230                 235                 240

Ile Ile Met Ala Ile Val Leu Phe Phe Phe Phe Ser Trp Ile Pro His
                245                 250                 255

Gln Ile Phe Thr Phe Leu Asp Val Leu Ile Gln Leu Gly Ile Ile Arg
            260                 265                 270

Asp Cys Arg Ile Ala Asp Ile Val Asp Thr Ala Met Pro Ile Thr Ile
        275                 280                 285

Cys Ile Ala Tyr Phe Asn Asn Cys Leu Asn Pro Leu Phe Tyr Gly Phe
    290                 295                 300

Leu Gly Lys Lys Phe Lys Arg Tyr Phe Leu Gln Leu Leu Lys Tyr Ile
305                 310                 315                 320

Pro Pro Lys Ala Lys Ser His Ser Asn Leu Ser Thr Lys Met Ser Thr
                325                 330                 335

Leu Ser Tyr Arg Pro Ser Asp Asn Val Ser Ser Ser Thr Lys Lys Pro
            340                 345                 350

Ala Pro Cys Phe Glu Val Glu
        355


<210> 4824
<211> 363
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1059; "

<220>
<221> source
<223> /note="Gene Symbol: AGTR2; "

<220>
<221> source
<223> /note="Gene Name:
      angiotensin II receptor, type 2; "

<220>
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<221> source
<223> /note="Uniprot ID: P50052; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000360973"

<400> 4824

```
Met Lys Gly Asn Ser Thr Leu Ala Thr Thr Ser Lys Asn Ile Thr Ser
1               5                  10                  15

Gly Leu His Phe Gly Leu Val Asn Ile Ser Gly Asn Asn Glu Ser Thr
            20                  25                  30

Leu Asn Cys Ser Gln Lys Pro Ser Asp Lys His Leu Asp Ala Ile Pro
        35                  40                  45

Ile Leu Tyr Tyr Ile Ile Phe Val Ile Gly Phe Leu Val Asn Ile Val
    50                  55                  60

Val Val Thr Leu Phe Cys Cys Gln Lys Gly Pro Lys Lys Val Ser Ser
65                  70                  75                  80

Ile Tyr Ile Phe Asn Leu Ala Val Ala Asp Leu Leu Leu Leu Ala Thr
                85                  90                  95

Leu Pro Leu Trp Ala Thr Tyr Tyr Ser Tyr Arg Tyr Asp Trp Leu Phe
            100                 105                 110

Gly Pro Val Met Cys Lys Val Phe Gly Ser Phe Leu Thr Leu Asn Met
        115                 120                 125

Phe Ala Ser Ile Phe Phe Ile Thr Cys Met Ser Val Asp Arg Tyr Gln
    130                 135                 140

Ser Val Ile Tyr Pro Phe Leu Ser Gln Arg Arg Asn Pro Trp Gln Ala
145                 150                 155                 160

Ser Tyr Ile Val Pro Leu Val Trp Cys Met Ala Cys Leu Ser Ser Leu
                165                 170                 175

Pro Thr Phe Tyr Phe Arg Asp Val Arg Thr Ile Glu Tyr Leu Gly Val
            180                 185                 190

Asn Ala Cys Ile Met Ala Phe Pro Pro Glu Lys Tyr Ala Gln Trp Ser
```

```
        195                 200                 205

Ala Gly Ile Ala Leu Met Lys Asn Ile Leu Gly Phe Ile Ile Pro Leu
    210                 215                 220

Ile Phe Ile Ala Thr Cys Tyr Phe Gly Ile Arg Lys His Leu Leu Lys
225                 230                 235                 240

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

Met Ala Ala Ala Val Val Leu Ala Phe Ile Ile Cys Trp Leu Pro Phe
            260                 265                 270

His Val Leu Thr Phe Leu Asp Ala Leu Ala Trp Met Gly Val Ile Asn
        275                 280                 285

Ser Cys Glu Val Ile Ala Val Ile Asp Leu Ala Leu Pro Phe Ala Ile
    290                 295                 300

Leu Leu Gly Phe Thr Asn Ser Cys Val Asn Pro Phe Leu Tyr Cys Phe
305                 310                 315                 320

Val Gly Asn Arg Phe Gln Gln Lys Leu Arg Ser Val Phe Arg Val Pro
                325                 330                 335

Ile Thr Trp Leu Gln Gly Lys Arg Glu Ser Met Ser Cys Arg Lys Ser
            340                 345                 350

Ser Ser Leu Arg Glu Met Glu Thr Phe Val Ser
        355                 360


<210> 4825
<211> 159
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1060; "

<220>
<221> source
<223> /note="Gene Symbol: AGTRAP; "

<220>
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<221> source
<223> /note="Gene Name:
angiotensin II receptor-associated prt; "

<220>
<221> source
<223> /note="Uniprot ID: Q6RW13; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000319713"

<400> 4825
Met Glu Leu Pro Ala Val Asn Leu Lys Val Ile Leu Leu Gly His Trp
1 5 10 15

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

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

Asp Ser Ile Asp Ala Ile Ser Met Phe Leu Gly Gly Leu Leu Ala Thr
50 55 60

Ile Phe Leu Asp Ile Val His Ile Ser Ile Phe Tyr Pro Arg Val Ser
65 70 75 80

Leu Thr Asp Thr Gly Arg Phe Gly Val Gly Met Ala Ile Leu Ser Leu
85 90 95

Leu Leu Lys Pro Leu Ser Cys Cys Phe Val Tyr His Met Tyr Arg Glu
100 105 110

Arg Gly Gly Glu Leu Leu Val His Thr Gly Phe Leu Gly Ser Ser Gln
115 120 125

Asp Arg Ser Ala Tyr Gln Thr Ile Asp Ser Ala Glu Ala Pro Ala Asp
130 135 140

Pro Phe Ala Val Pro Glu Gly Arg Ser Gln Asp Ala Arg Gly Tyr
145 150 155

<210> 4826
<211> 159
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1060; "

<220>
<221> source
<223> /note="Gene Symbol: AGTRAP; "

<220>
<221> source
<223> /note="Gene Name:
angiotensin II receptor-associated prt; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000365814"

<400> 4826
Met Glu Leu Pro Ala Val Asn Leu Lys Cys Ala Ser Ser Ser Val Pro
1 5 10 15

Arg Asn His Pro His Val Ile Leu Leu Gly His Trp Leu Leu Thr Thr
20 25 30

Cys Phe Trp Arg His Phe Ser Ala Lys Pro Arg Leu Glu Thr Ile Glu
35 40 45

Leu Thr Cys Ala Leu Cys Lys Leu Arg Ser Ala Ala His Arg Ala Thr
50 55 60

Ala Gly Leu His Cys Ile Leu Arg Leu Leu Cys Leu Gly Gln Leu His
65 70 75 80

His Pro Gly Leu Gly Arg Val Gly Cys Gly Ser Ala Gly Leu His Arg
85 90 95

Arg His Lys His Val Ser Gly Trp Leu Ala Gly His His Leu Pro Gly
100 105 110

His Arg Ala His Gln His Leu Leu Pro Ala Gly Gln Pro His Gly His
115 120 125

Gly Pro Leu Trp Arg Gly His Gly His Pro Gln Leu Ala Ala Gln Ala
130 135 140

Ala Leu Leu Leu Leu Arg Leu Pro His Val Pro Gly Ala Arg Gly
145 150 155

<210> 4827
<211> 152
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1060; "

<220>
<221> source
<223> /note="Gene Symbol: AGTRAP; "

<220>
<221> source
<223> /note="Gene Name:
angiotensin II receptor-associated prt; "

<220>
<221> source
<223> /note="Uniprot ID: Q6RW13; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000365816"

<400> 4827
Met Glu Leu Pro Ala Val Asn Leu Lys Val Ile Leu Leu Gly His Trp
1   5   10   15

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

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

Asp Ser Ile Asp Ala Ile Ser Met Phe Leu Gly Gly Leu Leu Ala Thr
    50   55   60

Ile Phe Leu Asp Ile Val His Ile Ser Ile Phe Tyr Pro Arg Val Ser
65   70   75   80

Leu Thr Asp Thr Gly Arg Phe Gly Val Gly Met Ala Ile Leu Ser Leu
                85   90   95

Leu Leu Lys Pro Leu Ser Cys Cys Phe Val Tyr His Met Tyr Arg Glu
            100   105   110

```
Arg Gly Gly Phe Leu Gly Ser Ser Gln Asp Arg Ser Ala Tyr Gln Thr
        115                 120                 125

Ile Asp Ser Ala Glu Ala Pro Ala Asp Pro Phe Ala Val Pro Glu Gly
    130                 135                 140

Arg Ser Gln Asp Ala Arg Gly Tyr
145                 150
```

<210> 4828
<211> 111
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1060; "

<220>
<221> source
<223> /note="Gene Symbol: AGTRAP; "

<220>
<221> source
<223> /note="Gene Name:
angiotensin II receptor-associated prt; "

<220>
<221> source
<223> /note="Uniprot ID: Q6RW13; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000365824"

<400> 4828

```
Met Glu Leu Pro Ala Val Asn Leu Lys Gly Leu His Cys Ile Leu Arg
1               5                   10                  15

Leu Leu Cys Leu Gly Gln Leu His His Pro Gly Leu Gly Arg Val Gly
            20                  25                  30

Cys Gly Ser Ala Gly Leu His Arg Arg His Lys His Val Ser Gly Trp
        35                  40                  45

Leu Ala Gly His His Leu Pro Gly His Arg Ala His Gln His Leu Leu
    50                  55                  60

Pro Ala Gly Gln Pro His Gly His Gly Pro Leu Trp Arg Gly His Gly
65                  70                  75                  80
```

```
His Pro Gln Leu Ala Ala Gln Ala Ala Leu Leu Leu Leu Arg Leu Pro
                85                  90                  95

His Val Pro Gly Ala Arg Gly Phe Pro Trp Val Phe Ser Gly Pro
            100                 105                 110


<210> 4829
<211> 147
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1060; "

<220>
<221> source
<223> /note="Gene Symbol: AGTRAP; "

<220>
<221> source
<223> /note="Gene Name:
      angiotensin II receptor-associated prt; "

<220>
<221> source
<223> /note="Uniprot ID:  Q6RW13; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000383688"

<400> 4829
Met Glu Leu Pro Ala Val Asn Leu Lys Val Ile Leu Leu Gly His Trp
1               5                   10                  15

Leu Leu Thr Thr Cys Phe Trp Arg His Phe Ser Ala Lys Pro Arg Leu
            20                  25                  30

Glu Thr Ile Glu Leu Thr Cys Ala Leu Cys Lys Leu Arg Ser Ala Ala
        35                  40                  45

His Arg Ala Thr Ala Gly Leu His Cys Ile Leu Arg Leu Leu Cys Leu
    50                  55                  60

Gly Gln Leu His His Pro Gly Leu Gly Arg Val Gly Cys Gly Ser Ala
65                  70                  75                  80
```

```
Gly Leu His Arg Arg His Lys His Val Ser Gly Trp Leu Ala Gly His
                85                  90                  95

His Leu Pro Gly His Arg Ala His Gln His Leu Leu Pro Ala Gly Gln
            100                 105                 110

Pro His Gly His Gly Pro Leu Trp Arg Gly His Gly His Pro Gln Leu
        115                 120                 125

Ala Ala Gln Ala Ala Leu Leu Leu Leu Arg Leu Pro His Val Pro Gly
    130                 135                 140

Ala Arg Gly
145
```

<210> 4830
<211> 155
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1060; "

<220>
<221> source
<223> /note="Gene Symbol: AGTRAP; "

<220>
<221> source
<223> /note="Gene Name:
angiotensin II receptor-associated prt; "

<220>
<221> source
<223> /note="Uniprot ID: Q6RW13; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000408505"

<400> 4830

```
Met Glu Leu Pro Ala Val Asn Leu Lys Val Ile Leu Leu Gly His Trp
1               5                   10                  15

Leu Leu Thr Thr Cys Phe Trp Arg His Phe Ser Ala Lys Pro Arg Leu
            20                  25                  30

Glu Thr Ile Glu Leu Thr Cys Ala Leu Cys Lys Leu Arg Ser Ala Ala
        35                  40                  45
```

```
His Arg Ala Thr Ala Gly Leu His Cys Ile Leu Arg Leu Leu Cys Leu
    50                  55                  60

Gly Gln Leu His His Pro Gly Leu Gly Arg Val Gly Cys Gly Ser Ala
65                  70                  75                  80

Gly Leu His Arg Arg His Lys His Val Ser Gly Trp Leu Ala Gly His
                85                  90                  95

His Leu Pro Gly His Arg Ala His Gln His Leu Leu Pro Ala Gly Gln
            100                 105                 110

Pro His Gly His Gly Pro Leu Trp Arg Gly His Gly His Pro Gln Leu
        115                 120                 125

Ala Ala Gln Ala Ala Leu Leu Leu Leu Arg Leu Pro His Val Pro Gly
    130                 135                 140

Ala Arg Gly Phe Pro Trp Val Phe Ser Gly Pro
145                 150                 155


<210> 4831
<211> 155
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1060; "

<220>
<221> source
<223> /note="Gene Symbol: AGTRAP; "

<220>
<221> source
<223> /note="Gene Name:
      angiotensin II receptor-associated prt; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000422647"

<400> 4831
Met Glu Leu Pro Ala Val Asn Leu Lys Val Ile Leu Leu Gly His Trp
1               5                   10                  15
```

```
Leu Leu Thr Thr Cys Phe Trp Val Ala Cys Trp Pro Pro Ser Ser Trp
            20                  25                  30

Thr Ser Cys Thr Ser Ala Ser Ser Thr Arg Gly Ser Ala Ser Arg Thr
        35                  40                  45

Arg Ala Ala Leu Ala Trp Ala Trp Pro Ser Ser Ala Cys Cys Ser Ser
    50                  55                  60

Arg Ser Pro Ala Ala Ser Ser Thr Thr Cys Thr Gly Ser Ala Gly Val
65                  70                  75                  80

Ser Ser Trp Ser Thr Leu Val Ser Leu Gly Leu Leu Arg Thr Val Val
                85                  90                  95

Pro Thr Arg Arg Leu Thr Gln Gln Arg Arg Pro Gln Ile Pro Leu Gln
            100                 105                 110

Ser Gln Arg Ala Gly Val Lys Met Pro Glu Gly Thr Glu Ala Ser His
        115                 120                 125

Ala Ala Pro Gly Pro Ala Pro Gly Leu Pro Arg Ala Trp Glu Val Val
    130                 135                 140

Leu Gly Met Leu Leu Thr Ser Val Ser Trp Thr
145                 150                 155


<210> 4832
<211> 63
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1060; "

<220>
<221> source
<223> /note="Gene Symbol: AGTRAP; "

<220>
<221> source
<223> /note="Gene Name:
      angiotensin II receptor-associated prt; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000424455"
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<400> 4832
Met Glu Leu Pro Ala Val Asn Leu Lys Val Ile Leu Leu Gly His Trp
1   5   10   15

Leu Leu Thr Thr Trp His Lys Asp Cys Thr Pro Cys Arg Ser Trp Glu
            20   25   30

Gly Asp Val Glu Val Leu Ile Arg Ala Pro Gln Gly Leu Pro His Ser
        35   40   45

Glu Ala Ser Ala Leu Gln Leu Asp Phe His Leu Tyr His Leu Phe
    50   55   60

<210> 4833
<211> 485
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1061; "

<220>
<221> source
<223> /note="Gene Symbol: AGT; "

<220>
<221> source
<223> /note="Gene Name:
      angiotensinogen (serpin peptidase inhibitor, clade A,
      member 8); "

<220>
<221> source
<223> /note="Uniprot ID: P01019; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000355627"

<400> 4833
Met Arg Lys Arg Ala Pro Gln Ser Glu Met Ala Pro Ala Gly Val Ser
1   5   10   15

Leu Arg Ala Thr Ile Leu Cys Leu Leu Ala Trp Ala Gly Leu Ala Ala
            20   25   30

Gly Asp Arg Val Tyr Ile His Pro Phe His Leu Val Ile His Asn Glu
        35   40   45

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

Pro Thr Phe Ile Pro Ala Pro Ile Gln Ala Lys Thr Ser Pro Val Asp
65                  70                  75                  80

Glu Lys Ala Leu Gln Asp Gln Leu Val Leu Val Ala Ala Lys Leu Asp
                85                  90                  95

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

Leu Gly Phe Arg Ile Tyr Gly Met His Ser Glu Leu Trp Gly Val Val
        115                 120                 125

His Gly Ala Thr Val Leu Ser Pro Thr Ala Val Phe Gly Thr Leu Ala
    130                 135                 140

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

Ile Leu Gly Val Pro Trp Lys Asp Lys Asn Cys Thr Ser Arg Leu Asp
                165                 170                 175

Ala His Lys Val Leu Ser Ala Leu Gln Ala Val Gln Gly Leu Leu Val
            180                 185                 190

Ala Gln Gly Arg Ala Asp Ser Gln Ala Gln Leu Leu Leu Ser Thr Val
        195                 200                 205

Val Gly Val Phe Thr Ala Pro Gly Leu His Leu Lys Gln Pro Phe Val
    210                 215                 220

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

Phe Thr Glu Leu Asp Val Ala Ala Glu Lys Ile Asp Arg Phe Met Gln
                245                 250                 255

Ala Val Thr Gly Trp Lys Thr Gly Cys Ser Leu Met Gly Ala Ser Val
            260                 265                 270
```

```
Asp Ser Thr Leu Ala Phe Asn Thr Tyr Val His Phe Gln Gly Lys Met
        275                 280                 285

Lys Gly Phe Ser Leu Leu Ala Glu Pro Gln Glu Phe Trp Val Asp Asn
    290                 295                 300

Ser Thr Ser Val Ser Val Pro Met Leu Ser Gly Met Gly Thr Phe Gln
305                 310                 315                 320

His Trp Ser Asp Ile Gln Asp Asn Phe Ser Val Thr Gln Val Pro Phe
                325                 330                 335

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

Leu Asp Lys Val Glu Gly Leu Thr Phe Gln Gln Asn Ser Leu Asn Trp
        355                 360                 365

Met Lys Lys Leu Ser Pro Arg Thr Ile His Leu Thr Met Pro Gln Leu
    370                 375                 380

Val Leu Gln Gly Ser Tyr Asp Leu Gln Asp Leu Leu Ala Gln Ala Glu
385                 390                 395                 400

Leu Pro Ala Ile Leu His Thr Glu Leu Asn Leu Gln Lys Leu Ser Asn
                405                 410                 415

Asp Arg Ile Arg Val Gly Glu Val Leu Asn Ser Ile Phe Phe Glu Leu
            420                 425                 430

Glu Ala Asp Glu Arg Glu Pro Thr Glu Ser Thr Gln Gln Leu Asn Lys
        435                 440                 445

Pro Glu Val Leu Glu Val Thr Leu Asn Arg Pro Phe Leu Phe Ala Val
    450                 455                 460

Tyr Asp Gln Ser Ala Thr Ala Leu His Phe Leu Gly Arg Val Ala Asn
465                 470                 475                 480

Pro Leu Ser Thr Ala
                485
```

<210> 4834

<211> 1124
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1062; "

<220>
<221> source
<223> /note="Gene Symbol: ANLN; "

<220>
<221> source
<223> /note="Gene Name:
anillin actin binding prt; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NQW6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000265748"

<400> 4834

Met	Asp	Pro	Phe	Thr	Glu	Lys	Leu	Leu	Glu	Arg	Thr	Arg	Ala	Arg	Arg
1				5					10						15

Glu	Asn	Leu	Gln	Arg	Lys	Met	Ala	Glu	Arg	Pro	Thr	Ala	Ala	Pro	Arg
			20					25					30		

Ser	Met	Thr	His	Ala	Lys	Arg	Ala	Arg	Gln	Pro	Leu	Ser	Glu	Ala	Ser
		35					40					45			

Asn	Gln	Gln	Pro	Leu	Ser	Gly	Gly	Glu	Glu	Lys	Ser	Cys	Thr	Lys	Pro
	50					55					60				

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

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

Ser	Pro	Ser	Pro	Val	Ser	Pro	Gln	Val	Gln	Pro	Gln	Ala	Ala	Asp	Thr
			100					105					110		

Ile	Ser	Asp	Ser	Val	Ala	Val	Pro	Ala	Ser	Leu	Leu	Gly	Met	Arg	Arg
		115					120					125			

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

Arg Met Gln Lys Leu Ala Glu Gln Arg Arg Arg Trp Asp Asn Asp Asp
145                 150                 155                 160

Met Thr Asp Asp Ile Pro Glu Ser Ser Leu Phe Ser Pro Met Pro Ser
                165                 170                 175

Glu Glu Lys Ala Ala Ser Pro Pro Arg Pro Leu Leu Ser Asn Ala Ser
            180                 185                 190

Ala Thr Pro Val Gly Arg Arg Gly Arg Leu Ala Asn Leu Ala Ala Thr
        195                 200                 205

Ile Cys Ser Trp Glu Asp Asp Val Asn His Ser Phe Ala Lys Gln Asn
    210                 215                 220

Ser Val Gln Glu Gln Pro Gly Thr Ala Cys Leu Ser Lys Phe Ser Ser
225                 230                 235                 240

Ala Ser Gly Ala Ser Ala Arg Ile Asn Ser Ser Ser Val Lys Gln Glu
                245                 250                 255

Ala Thr Phe Cys Ser Gln Arg Asp Gly Asp Ala Ser Leu Asn Lys Ala
            260                 265                 270

Leu Ser Ser Ser Ala Asp Asp Ala Ser Leu Val Asn Ala Ser Ile Ser
        275                 280                 285

Ser Ser Val Lys Ala Thr Ser Pro Val Lys Ser Thr Thr Ser Ile Thr
    290                 295                 300

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

Pro Ile Ser Pro Leu Lys Thr Gly Val Ser Lys Pro Ile Val Lys Ser
                325                 330                 335

Thr Leu Ser Gln Thr Val Pro Ser Lys Gly Glu Leu Ser Arg Glu Ile
            340                 345                 350
```

```
Cys Leu Gln Ser Gln Ser Lys Asp Lys Ser Thr Thr Pro Gly Gly Thr
        355                 360                 365

Gly Ile Lys Pro Phe Leu Glu Arg Phe Gly Glu Arg Cys Gln Glu His
    370                 375                 380

Ser Lys Glu Ser Pro Ala Arg Ser Thr Pro His Arg Thr Pro Ile Ile
385                 390                 395                 400

Thr Pro Asn Thr Lys Ala Ile Gln Glu Arg Leu Phe Lys Gln Asp Thr
                405                 410                 415

Ser Ser Ser Thr Thr His Leu Ala Gln Gln Leu Lys Gln Glu Arg Gln
            420                 425                 430

Lys Glu Leu Ala Cys Leu Arg Gly Arg Phe Asp Lys Gly Asn Ile Trp
        435                 440                 445

Ser Ala Glu Lys Gly Gly Asn Ser Lys Ser Lys Gln Leu Glu Thr Lys
    450                 455                 460

Gln Glu Thr His Cys Gln Ser Thr Pro Leu Lys Lys His Gln Gly Val
465                 470                 475                 480

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

Ile Pro Ala Lys Asn Ser Ser Thr Glu Pro Lys Gly Phe Thr Glu Cys
            500                 505                 510

Glu Met Thr Lys Ser Ser Pro Leu Lys Ile Thr Leu Phe Leu Glu Glu
        515                 520                 525

Asp Lys Ser Leu Lys Val Thr Ser Asp Pro Lys Val Glu Gln Lys Ile
    530                 535                 540

Glu Val Ile Arg Glu Ile Glu Met Ser Val Asp Asp Asp Asp Ile Asn
545                 550                 555                 560

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

Glu Leu Asp Met Glu Lys Ser Gln Glu Glu Met Asp Gln Ala Leu Ala
```

```
            580                 585                 590

Glu Ser Ser Glu Glu Gln Glu Asp Ala Leu Asn Ile Ser Ser Met Ser
        595                 600                 605

Leu Leu Ala Pro Leu Ala Gln Thr Val Gly Val Val Ser Pro Glu Ser
    610                 615                 620

Leu Val Ser Thr Pro Arg Leu Glu Leu Lys Asp Thr Ser Arg Ser Asp
625                 630                 635                 640

Glu Ser Pro Lys Pro Gly Lys Phe Gln Arg Thr Arg Val Pro Arg Ala
                645                 650                 655

Glu Ser Gly Asp Ser Leu Gly Ser Glu Asp Arg Asp Leu Leu Tyr Ser
            660                 665                 670

Ile Asp Ala Tyr Arg Ser Gln Arg Phe Lys Glu Thr Glu Arg Pro Ser
        675                 680                 685

Ile Lys Gln Val Ile Val Arg Lys Glu Asp Val Thr Ser Lys Leu Asp
    690                 695                 700

Glu Lys Asn Asn Ala Phe Pro Cys Gln Val Asn Ile Lys Gln Lys Met
705                 710                 715                 720

Gln Glu Leu Asn Asn Glu Ile Asn Met Gln Gln Thr Val Ile Tyr Gln
                725                 730                 735

Ala Ser Gln Ala Leu Asn Cys Cys Val Asp Glu Glu His Gly Lys Gly
            740                 745                 750

Ser Leu Glu Glu Ala Glu Ala Glu Arg Leu Leu Leu Ile Ala Thr Gly
        755                 760                 765

Lys Arg Thr Leu Leu Ile Asp Glu Leu Asn Lys Leu Lys Asn Glu Gly
    770                 775                 780

Pro Gln Arg Lys Asn Lys Ala Ser Pro Gln Ser Glu Phe Met Pro Ser
785                 790                 795                 800

Lys Gly Ser Val Thr Leu Ser Glu Ile Arg Leu Pro Leu Lys Ala Asp
                805                 810                 815
```

```
Phe Val Cys Ser Thr Val Gln Lys Pro Asp Ala Ala Asn Tyr Tyr Tyr
            820                 825                 830

Leu Ile Ile Leu Lys Ala Gly Ala Glu Asn Met Val Ala Thr Pro Leu
        835                 840                 845

Ala Ser Thr Ser Asn Ser Leu Asn Gly Asp Ala Leu Thr Phe Thr Thr
    850                 855                 860

Thr Phe Thr Leu Gln Asp Val Ser Asn Asp Phe Glu Ile Asn Ile Glu
865                 870                 875                 880

Val Tyr Ser Leu Val Gln Lys Lys Asp Pro Ser Gly Leu Asp Lys Lys
                885                 890                 895

Lys Lys Thr Ser Lys Ser Lys Ala Ile Thr Pro Lys Arg Leu Leu Thr
            900                 905                 910

Ser Ile Thr Thr Lys Ser Asn Ile His Ser Ser Val Met Ala Ser Pro
        915                 920                 925

Gly Gly Leu Ser Ala Val Arg Thr Ser Asn Phe Ala Leu Val Gly Ser
    930                 935                 940

Tyr Thr Leu Ser Leu Ser Ser Val Gly Asn Thr Lys Phe Val Leu Asp
945                 950                 955                 960

Lys Val Pro Phe Leu Ser Ser Leu Glu Gly His Ile Tyr Leu Lys Ile
                965                 970                 975

Lys Cys Gln Val Asn Ser Ser Val Glu Glu Arg Gly Phe Leu Thr Ile
            980                 985                 990

Phe Glu Asp Val Ser Gly Phe Gly  Ala Trp His Arg Arg  Trp Cys
Val
        995                 1000                1005

Leu Ser  Gly Asn Cys Ile Ser  Tyr Trp Thr Tyr Pro  Asp Asp Glu
    1010                1015                1020

Lys Arg  Lys Asn Pro Ile Gly  Arg Ile Asn Leu Ala  Asn Cys Thr
    1025                1030                1035
```

```
Ser Arg  Gln Ile Glu Pro Ala  Asn Arg Glu Phe Cys  Ala Arg Arg
    1040                1045                1050

Asn Thr  Phe Glu Leu Ile Thr  Val Arg Pro Gln Arg  Glu Asp Asp
    1055                1060                1065

Arg Glu  Thr Leu Val Ser Gln  Cys Arg Asp Thr Leu  Cys Val Thr
    1070                1075                1080

Lys Asn  Trp Leu Ser Ala Asp  Thr Lys Glu Glu Arg  Asp Leu Trp
    1085                1090                1095

Met Gln  Lys Leu Asn Gln Val  Leu Val Asp Ile Arg  Leu Trp Gln
    1100                1105                1110

Pro Asp  Ala Cys Tyr Lys Pro  Ile Gly Lys Pro
    1115                1120


<210> 4835
<211> 1087
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1062; "

<220>
<221> source
<223> /note="Gene Symbol: ANLN; "

<220>
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<223> /note="Gene Name:
      anillin actin binding prt; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9NQW6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000379380"

<400> 4835
Met Asp Pro Phe Thr Glu Lys Leu Leu Glu Arg Thr Arg Ala Arg Arg
1               5                  10                  15
```

```
Glu Asn Leu Gln Arg Lys Met Ala Glu Arg Pro Thr Ala Ala Pro Arg
            20                  25                  30

Ser Met Thr His Ala Lys Arg Ala Arg Gln Pro Leu Ser Glu Ala Ser
        35                  40                  45

Asn Gln Gln Pro Leu Ser Gly Gly Glu Glu Lys Ser Cys Thr Lys Pro
    50                  55                  60

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

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

Ser Pro Ser Pro Val Ser Pro Gln Val Gln Pro Gln Ala Ala Asp Thr
            100                 105                 110

Ile Ser Asp Ser Val Ala Val Pro Ala Ser Leu Leu Gly Met Arg Arg
        115                 120                 125

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

Arg Met Gln Lys Leu Ala Glu Gln Arg Arg Arg Trp Asp Asn Asp Asp
145                 150                 155                 160

Met Thr Asp Asp Ile Pro Glu Ser Ser Leu Phe Ser Pro Met Pro Ser
                165                 170                 175

Glu Glu Lys Ala Ala Ser Pro Pro Arg Pro Leu Leu Ser Asn Ala Ser
            180                 185                 190

Ala Thr Pro Val Gly Arg Arg Gly Arg Leu Ala Asn Leu Ala Ala Thr
        195                 200                 205

Ile Cys Ser Trp Glu Asp Asp Val Asn His Ser Phe Ala Lys Gln Asn
    210                 215                 220

Ser Val Gln Glu Gln Pro Gly Thr Ala Cys Leu Ser Lys Phe Ser Ser
225                 230                 235                 240

Ala Ser Gly Ala Ser Ala Arg Ile Asn Ser Ser Ser Val Lys Gln Glu
```

```
                245                 250                 255

Ala Thr Phe Cys Ser Gln Arg Asp Gly Asp Ala Ser Leu Asn Lys Ala
            260                 265                 270

Leu Ser Ser Ser Ala Asp Asp Ala Ser Leu Val Asn Ala Ser Ile Ser
        275                 280                 285

Ser Ser Val Lys Ala Thr Ser Pro Val Lys Ser Thr Thr Ser Ile Thr
    290                 295                 300

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

Pro Ile Ser Pro Leu Lys Thr Gly Val Ser Lys Pro Ile Val Lys Ser
                325                 330                 335

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

Cys Leu Gln Ser Gln Ser Lys Asp Lys Ser Thr Thr Pro Gly Gly Thr
        355                 360                 365

Gly Ile Lys Pro Phe Leu Glu Arg Phe Gly Glu Arg Cys Gln Glu His
    370                 375                 380

Ser Lys Glu Ser Pro Ala Arg Ser Thr Pro His Arg Thr Pro Ile Ile
385                 390                 395                 400

Thr Pro Asn Thr Lys Ala Ile Gln Glu Arg Leu Phe Lys Gln Asp Thr
                405                 410                 415

Ser Ser Ser Thr Thr His Leu Ala Gln Gln Leu Lys Gln Glu Arg Gln
            420                 425                 430

Lys Glu Leu Ala Cys Leu Arg Gly Arg Phe Asp Lys Gly Asn Ile Trp
        435                 440                 445

Ser Ala Glu Lys Gly Gly Asn Ser Lys Ser Lys Gln Leu Glu Thr Lys
    450                 455                 460

Gln Glu Thr His Cys Gln Ser Thr Pro Leu Lys Lys His Gln Gly Val
465                 470                 475                 480
```

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

Ile Pro Ala Lys Asn Ser Ser Thr Glu Pro Lys Glu Val Ile Arg Glu
500 505 510

Ile Glu Met Ser Val Asp Asp Asp Asp Ile Asn Ser Ser Lys Val Ile
515 520 525

Asn Asp Leu Phe Ser Asp Val Leu Glu Glu Gly Glu Leu Asp Met Glu
530 535 540

Lys Ser Gln Glu Glu Met Asp Gln Ala Leu Ala Glu Ser Ser Glu Glu
545 550 555 560

Gln Glu Asp Ala Leu Asn Ile Ser Ser Met Ser Leu Leu Ala Pro Leu
565 570 575

Ala Gln Thr Val Gly Val Val Ser Pro Glu Ser Leu Val Ser Thr Pro
580 585 590

Arg Leu Glu Leu Lys Asp Thr Ser Arg Ser Asp Glu Ser Pro Lys Pro
595 600 605

Gly Lys Phe Gln Arg Thr Arg Val Pro Arg Ala Glu Ser Gly Asp Ser
610 615 620

Leu Gly Ser Glu Asp Arg Asp Leu Leu Tyr Ser Ile Asp Ala Tyr Arg
625 630 635 640

Ser Gln Arg Phe Lys Glu Thr Glu Arg Pro Ser Ile Lys Gln Val Ile
645 650 655

Val Arg Lys Glu Asp Val Thr Ser Lys Leu Asp Glu Lys Asn Asn Ala
660 665 670

Phe Pro Cys Gln Val Asn Ile Lys Gln Lys Met Gln Glu Leu Asn Asn
675 680 685

Glu Ile Asn Met Gln Gln Thr Val Ile Tyr Gln Ala Ser Gln Ala Leu
690 695 700

```
Asn Cys Cys Val Asp Glu Glu His Gly Lys Gly Ser Leu Glu Glu Ala
705                 710                 715                 720

Glu Ala Glu Arg Leu Leu Leu Ile Ala Thr Gly Lys Arg Thr Leu Leu
                725                 730                 735

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

Lys Ala Ser Pro Gln Ser Glu Phe Met Pro Ser Lys Gly Ser Val Thr
        755                 760                 765

Leu Ser Glu Ile Arg Leu Pro Leu Lys Ala Asp Phe Val Cys Ser Thr
    770                 775                 780

Val Gln Lys Pro Asp Ala Ala Asn Tyr Tyr Tyr Leu Ile Ile Leu Lys
785                 790                 795                 800

Ala Gly Ala Glu Asn Met Val Ala Thr Pro Leu Ala Ser Thr Ser Asn
                805                 810                 815

Ser Leu Asn Gly Asp Ala Leu Thr Phe Thr Thr Thr Phe Thr Leu Gln
            820                 825                 830

Asp Val Ser Asn Asp Phe Glu Ile Asn Ile Glu Val Tyr Ser Leu Val
        835                 840                 845

Gln Lys Lys Asp Pro Ser Gly Leu Asp Lys Lys Lys Lys Thr Ser Lys
    850                 855                 860

Ser Lys Ala Ile Thr Pro Lys Arg Leu Leu Thr Ser Ile Thr Thr Lys
865                 870                 875                 880

Ser Asn Ile His Ser Ser Val Met Ala Ser Pro Gly Gly Leu Ser Ala
                885                 890                 895

Val Arg Thr Ser Asn Phe Ala Leu Val Gly Ser Tyr Thr Leu Ser Leu
            900                 905                 910

Ser Ser Val Gly Asn Thr Lys Phe Val Leu Asp Lys Val Pro Phe Leu
        915                 920                 925
```

```
Ser Ser Leu Glu Gly His Ile Tyr Leu Lys Ile Lys Cys Gln Val Asn
    930                 935                 940

Ser Ser Val Glu Glu Arg Gly Phe Leu Thr Ile Phe Glu Asp Val Ser
945                 950                 955                 960

Gly Phe Gly Ala Trp His Arg Arg Trp Cys Val Leu Ser Gly Asn Cys
                965                 970                 975

Ile Ser Tyr Trp Thr Tyr Pro Asp Asp Glu Lys Arg Lys Asn Pro Ile
            980                 985                 990

Gly Arg Ile Asn Leu Ala Asn Cys  Thr Ser Arg Gln Ile  Glu Pro
Ala
        995                 1000                1005

Asn Arg  Glu Phe Cys Ala Arg  Arg Asn Thr Phe Glu  Leu Ile Thr
    1010                1015                1020

Val Arg  Pro Gln Arg Glu Asp  Asp Arg Glu Thr Leu  Val Ser Gln
    1025                1030                1035

Cys Arg  Asp Thr Leu Cys Val  Thr Lys Asn Trp Leu  Ser Ala Asp
    1040                1045                1050

Thr Lys  Glu Glu Arg Asp Leu  Trp Met Gln Lys Leu  Asn Gln Val
    1055                1060                1065

Leu Val  Asp Ile Arg Leu Trp  Gln Pro Asp Ala Cys  Tyr Lys Pro
    1070                1075                1080

Ile Gly  Lys Pro
    1085
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<210> 4836
<211> 69
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1062; "

<220>
<221> source
<223> /note="Gene Symbol: ANLN; "

<220>
<221> source
<223> /note="Gene Name:
anillin actin binding prt; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000397465"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 4836
Xaa Phe Ser Ser Ala Ser Gly Ala Ser Ala Arg Ile Asn Ser Ser Ser
1 5 10 15

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

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

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

Tyr Tyr Ile Tyr His
65

<210> 4837
<211> 73
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1062; "

<220>
<221> source
<223> /note="Gene Symbol: ANLN; "

<220>
<221> source
<223> /note="Gene Name:
anillin actin binding prt; "

<220>
<221> source

<223> /note="ENSP ID: ENSP00000398712"

<400> 4837
Lys Phe Ser Ser Ala Ser Gly Ala Ser Ala Arg Ile Asn Ser Ser Ser
1   5   10   15

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

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

Ala Ser Ile Ser Ser Ser Val Cys Phe His Val Ser Glu Ser Tyr Phe
    50   55   60

Ser Ser Glu Ile Tyr Tyr Ile Tyr His
65   70

<210> 4838
<211> 252
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
<221> source
<223> /note="Gene Name:
      anillin actin binding prt; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000399553"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 4838
Xaa Met Pro Ser Lys Gly Ser Val Thr Leu Ser Glu Ile Arg Leu Pro
1   5   10   15

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

```
            20                  25                  30

Asn Tyr Tyr Tyr Leu Ile Ile Leu Lys Ala Gly Ala Glu Asn Met Val
        35                  40                  45

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

Thr Phe Thr Thr Thr Phe Thr Leu Gln Asp Val Ser Asn Asp Phe Glu
65                  70                  75                  80

Ile Asn Ile Glu Val Tyr Ser Leu Val Gln Lys Lys Asp Pro Ser Gly
                85                  90                  95

Leu Asp Lys Lys Lys Lys Thr Ser Lys Ser Lys Ala Ile Thr Pro Lys
            100                 105                 110

Arg Leu Leu Thr Ser Ile Thr Thr Lys Ser Asn Ile His Ser Ser Val
        115                 120                 125

Met Ala Ser Pro Gly Gly Leu Ser Ala Val Arg Thr Ser Asn Phe Ala
    130                 135                 140

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

Phe Val Leu Asp Lys Ile Asn Tyr Asp Val Arg Glu Arg Glu Leu Leu
                165                 170                 175

Gly Tyr Leu Phe Gln Glu Lys Val Pro Phe Leu Ser Ser Leu Glu Gly
            180                 185                 190

His Ile Tyr Leu Lys Ile Lys Cys Gln Val Asn Ser Ser Val Glu Glu
        195                 200                 205

Arg Gly Phe Leu Thr Ile Phe Glu Asp Val Ser Gly Phe Gly Ala Trp
    210                 215                 220

His Arg Arg Trp Cys Val Leu Ser Gly Asn Cys Ile Ser Tyr Trp Thr
225                 230                 235                 240

Tyr Pro Asp Asp Glu Lys Arg Lys Asn Pro Ile Gly
                245                 250
```

<210> 4839
<211> 276
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
anillin actin binding prt; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000400777"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 4839
Xaa Pro Lys Pro Gly Lys Phe Gln Arg Thr Arg Val Pro Arg Ala Glu
1 5 10 15

Ser Gly Asp Ser Leu Gly Ser Glu Asp Arg Asp Leu Leu Tyr Arg Ser
20 25 30

Gln Arg Phe Lys Glu Thr Glu Arg Pro Ser Ile Lys Gln Val Ile Val
35 40 45

Arg Lys Glu Asp Val Thr Ser Lys Leu Asp Glu Lys Asn Asn Ala Phe
50 55 60

Pro Cys Gln Val Asn Ile Lys Gln Lys Met Gln Glu Leu Asn Asn Glu
65 70 75 80

Ile Asn Met Gln Gln Thr Val Ile Tyr Gln Ala Ser Gln Ala Leu Asn
85 90 95

Cys Cys Val Asp Glu Glu His Gly Lys Gly Ser Leu Glu Glu Ala Glu
100 105 110

```
Ala Glu Arg Leu Leu Leu Ile Ala Thr Gly Lys Arg Thr Leu Leu Ile
        115                 120                 125

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

Ala Ser Pro Gln Ser Glu Phe Met Pro Ser Lys Gly Ser Val Thr Leu
145                 150                 155                 160

Ser Glu Ile Arg Leu Pro Leu Lys Ala Asp Phe Val Cys Ser Thr Val
                165                 170                 175

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

Gly Ala Glu Asn Met Val Ala Thr Pro Leu Ala Ser Thr Ser Asn Ser
        195                 200                 205

Leu Asn Gly Asp Ala Leu Thr Phe Thr Thr Thr Phe Thr Leu Gln Asp
    210                 215                 220

Val Ser Asn Asp Phe Glu Ile Asn Ile Glu Val Tyr Ser Leu Val Gln
225                 230                 235                 240

Lys Lys Asp Pro Ser Gly Leu Asp Lys Lys Lys Lys Thr Ser Lys Ser
                245                 250                 255

Lys Ala Ile Thr Pro Lys Arg Leu Leu Thr Ser Ile Thr Thr Lys Ser
            260                 265                 270

Asn Ile His Ser
        275


<210> 4840
<211> 169
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1062; "

<220>
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<223> /note="Gene Symbol: ANLN; "

<220>
<221> source
<223> /note="Gene Name:
anillin actin binding prt; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000404979"

<400> 4840

```
Met Ala Glu Arg Pro Thr Ala Ala Pro Arg Ser Met Thr His Ala Lys
1               5                  10                  15

Arg Ala Arg Gln Pro Leu Ser Glu Ala Ser Asn Gln Gln Pro Leu Ser
            20                  25                  30

Gly Gly Glu Glu Lys Ser Cys Thr Lys Pro Ser Pro Ser Lys Lys Arg
        35                  40                  45

Cys Ser Asp Asn Thr Glu Val Glu Val Ser Asn Leu Glu Asn Lys Gln
    50                  55                  60

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

Pro Gln Val Gln Pro Gln Ala Ala Asp Thr Ile Ser Asp Ser Val Ala
                85                  90                  95

Val Pro Ala Ser Leu Leu Gly Met Arg Arg Gly Leu Asn Ser Arg Leu
            100                 105                 110

Glu Ala Thr Ala Ala Ser Ser Val Lys Thr Arg Met Gln Lys Leu Ala
        115                 120                 125

Glu Gln Arg Arg Arg Trp Asp Asn Asp Asp Met Thr Asp Asp Ile Pro
    130                 135                 140

Glu Ser Ser Leu Phe Ser Pro Met Pro Ser Glu Glu Lys Ala Ala Ser
145                 150                 155                 160

Pro Pro Arg Pro Leu Leu Ser Asn Ala
                165
```

<210> 4841

<211> 36
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1062; "

<220>
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<220>
<221> source
<223> /note="Gene Name:
anillin actin binding prt; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406584"

<400> 4841
Met Ala Glu Arg Pro Thr Ala Ala Pro Arg Ser Met Thr His Ala Lys
1 5 10 15

Arg Ala Arg Gln Pro Leu Ser Glu Ala Ser Asn Gln Gln Pro Leu Ser
20 25 30

Gly Gly Glu Gly
35

<210> 4842
<211> 26
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
anillin actin binding prt; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000413441"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 4842
Xaa Ser Leu Val Asn Ala Ser Ile Ser Ser Ser Val Val Lys Ser Tyr
1   5   10   15

Phe Ser Ser Glu Ile Tyr Tyr Ile Tyr His
            20   25

<210> 4843
<211> 236
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
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<220>
<221> source
<223> /note="Gene Name:
anillin actin binding prt; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000413522"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 4843
Xaa Gln Glu His Ser Lys Glu Ser Pro Ala Arg Ser Thr Pro His Arg
1   5   10   15

Thr Pro Ile Ile Thr Pro Asn Thr Lys Ala Ile Gln Glu Arg Leu Phe
            20   25   30

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

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

```
Ser Lys Ser Lys Ala Ile Thr Pro Lys Arg Leu Leu Thr Ser Ile Thr
65                  70                  75                  80

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

Ser Ala Val Arg Thr Ser Asn Phe Ala Leu Val Gly Ser Tyr Thr Leu
            100                 105                 110

Ser Leu Ser Ser Val Gly Asn Thr Lys Phe Val Leu Asp Lys Val Pro
        115                 120                 125

Phe Leu Ser Ser Leu Glu Gly His Ile Tyr Leu Lys Ile Lys Cys Gln
    130                 135                 140

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

Val Ser Gly Phe Gly Ala Trp His Arg Arg Trp Cys Val Leu Ser Gly
                165                 170                 175

Asn Cys Ile Ser Tyr Trp Thr Tyr Pro Asp Asp Glu Lys Arg Lys Asn
            180                 185                 190

Pro Ile Gly Arg Ile Asn Leu Ala Asn Cys Thr Ser Arg Gln Ile Glu
        195                 200                 205

Pro Ala Asn Arg Glu Phe Cys Ala Arg Arg Asn Thr Phe Glu Leu Ile
    210                 215                 220

Thr Val Arg Pro Gln Arg Glu Asp Asp Arg Glu Thr
225                 230                 235


<210> 4844
<211> 492
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1063; "

<220>
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<223> /note="Gene Symbol: ANKH; "

<220>
<221> source
<223> /note="Gene Name:
ANKH inorganic pyrophosphate transport
regulator; "

<220>
<221> source
<223> /note="Uniprot ID: Q9HCJ1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000284268"

<400> 4844

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Met Val Lys Phe Pro Ala Leu Thr His Tyr Trp Pro Leu Ile Arg Phe
1               5                  10                  15

Leu Val Pro Leu Gly Ile Thr Asn Ile Ala Ile Asp Phe Gly Glu Gln
            20                  25                  30

Ala Leu Asn Arg Gly Ile Ala Ala Val Lys Glu Asp Ala Val Glu Met
        35                  40                  45

Leu Ala Ser Tyr Gly Leu Ala Tyr Ser Leu Met Lys Phe Phe Thr Gly
    50                  55                  60

Pro Met Ser Asp Phe Lys Asn Val Gly Leu Val Phe Val Asn Ser Lys
65                  70                  75                  80

Arg Asp Arg Thr Lys Ala Val Leu Cys Met Val Val Ala Gly Ala Ile
                85                  90                  95

Ala Ala Val Phe His Thr Leu Ile Ala Tyr Ser Asp Leu Gly Tyr Tyr
            100                 105                 110

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

Arg Arg Ala Phe Leu Tyr Leu Ala Ala Phe Pro Phe Met Asp Ala Met
    130                 135                 140

Ala Trp Thr His Ala Gly Ile Leu Leu Lys His Lys Tyr Ser Phe Leu
145                 150                 155                 160
```

```
Val Gly Cys Ala Ser Ile Ser Asp Val Ile Ala Gln Val Val Phe Val
                165                 170                 175

Ala Ile Leu Leu His Ser His Leu Glu Cys Arg Glu Pro Leu Leu Ile
            180                 185                 190

Pro Ile Leu Ser Leu Tyr Met Gly Ala Leu Val Arg Cys Thr Thr Leu
        195                 200                 205

Cys Leu Gly Tyr Tyr Lys Asn Ile His Asp Ile Ile Pro Asp Arg Ser
    210                 215                 220

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

Trp Trp Pro Leu Ala Leu Ile Leu Ala Thr Gln Arg Ile Ser Arg Pro
                245                 250                 255

Ile Val Asn Leu Phe Val Ser Arg Asp Leu Gly Gly Ser Ser Ala Ala
            260                 265                 270

Thr Glu Ala Val Ala Ile Leu Thr Ala Thr Tyr Pro Val Gly His Met
        275                 280                 285

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

Lys Asn Asn Pro Ser Asn Lys Leu Val Ser Thr Ser Asn Thr Val Thr
305                 310                 315                 320

Ala Ala His Ile Lys Lys Phe Thr Phe Val Cys Met Ala Leu Ser Leu
                325                 330                 335

Thr Leu Cys Phe Val Met Phe Trp Thr Pro Asn Val Ser Glu Lys Ile
            340                 345                 350

Leu Ile Asp Ile Ile Gly Val Asp Phe Ala Phe Ala Glu Leu Cys Val
        355                 360                 365

Val Pro Leu Arg Ile Phe Ser Phe Phe Pro Val Pro Val Thr Val Arg
    370                 375                 380

Ala His Leu Thr Gly Trp Leu Met Thr Leu Lys Lys Thr Phe Val Leu
```

```
385                 390                 395                 400

Ala Pro Ser Ser Val Leu Arg Ile Ile Val Leu Ile Ala Ser Leu Val
                405                 410                 415

Val Leu Pro Tyr Leu Gly Val His Gly Ala Thr Leu Gly Val Gly Ser
            420                 425                 430

Leu Leu Ala Gly Phe Val Gly Glu Ser Thr Met Val Ala Ile Ala Ala
        435                 440                 445

Cys Tyr Val Tyr Arg Lys Gln Lys Lys Lys Met Glu Asn Glu Ser Ala
    450                 455                 460

Thr Glu Gly Glu Asp Ser Ala Met Thr Asp Met Pro Pro Thr Glu Glu
465                 470                 475                 480

Val Thr Asp Ile Val Glu Met Arg Glu Glu Asn Glu
                485                 490


<210> 4845
<211> 126
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1063; "

<220>
<221> source
<223> /note="Gene Symbol: ANKH; "

<220>
<221> source
<223> /note="Gene Name:
      ANKH inorganic pyrophosphate transport
      regulator; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000426332"

<400> 4845
Met Val Lys Phe Pro Ala Leu Thr His Tyr Trp Pro Leu Ile Arg Phe
1               5                   10                  15

Leu Val Pro Leu Gly Ile Thr Asn Ile Ala Ile Asp Phe Gly Glu Gln
            20                  25                  30
```

```
Val Ser Pro Gly Pro Ala Pro His Ala Arg Ser Pro Cys Leu Gly Leu
        35                  40                  45

Thr Arg Pro Asp Thr Gly Ala Glu Gly Ser His Leu Leu Arg Val Pro
    50                  55                  60

Leu Tyr Pro Glu Thr Phe Gly Arg Val Cys Ser Leu Ser Arg Val Thr
65                  70                  75                  80

Phe Pro Ala Pro His Ser Leu Pro Pro Ser Pro Gln Leu Phe Ser Arg
                85                  90                  95

Leu Phe Gln Pro Ser Leu Glu Asn Val Lys Lys Thr Gly Trp Cys Glu
            100                 105                 110

Ala Ser Pro Met Glu Gly Phe Leu Val His Gly Ser Ile Met
        115                 120                 125


<210> 4846
<211> 636
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1064; "

<220>
<221> source
<223> /note="Gene Symbol: ANKHD1-EIF4EBP3; "

<220>
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<223> /note="Gene Name:
      ANKHD1-EIF4EBP3 readthrough; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000396882"

<400> 4846
Ser Ser Ala Pro Ile Thr Ser Gly Gln Ala Pro Thr Thr Phe Leu Pro
1               5                   10                  15

Ala Ser Thr Ser Gln Ala Gln Leu Ser Ser Gln Lys Met Glu Ser Phe
            20                  25                  30
```

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

Met Ala Asn Leu Cys Thr Pro Ser Ser Thr Ala Asn Ser Cys Ser Ser
    50                  55                  60

Ser Ala Ser Asn Thr Pro Gly Ala Pro Glu Thr His Pro Ser Ser Ser
65                  70                  75                  80

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

Val Ser Asp Leu Ser Pro Met Ser Met Pro Phe Ala Ser Asn Ser Glu
            100                 105                 110

Pro Ala Pro Leu Thr Leu Thr Ser Pro Arg Met Val Ala Ala Asp Asn
        115                 120                 125

Gln Asp Thr Ser Asn Leu Pro Gln Leu Ala Val Pro Ala Pro Arg Val
    130                 135                 140

Ser His Arg Met Gln Pro Arg Gly Ser Phe Tyr Ser Met Val Pro Asn
145                 150                 155                 160

Ala Thr Ile His Gln Asp Pro Gln Ser Ile Phe Val Thr Asn Pro Val
                165                 170                 175

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

Ala Val Asn Ile Met Asn Gly Ser Gln Met His Ile Asn Pro Ala Asn
        195                 200                 205

Lys Ser Leu Pro Pro Thr Phe Gly Pro Ala Thr Leu Phe Asn His Phe
    210                 215                 220

Ser Ser Leu Phe Asp Ser Ser Gln Val Pro Ala Asn Gln Gly Trp Gly
225                 230                 235                 240

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

Gln Ser Ala Phe Leu Gly Asn Ser Val Leu Gly His Leu Glu Asn Met
```

```
            260                 265                 270

His Pro Asp Asn Ser Lys Ala Pro Gly Phe Arg Pro Pro Ser Gln Arg
        275                 280                 285

Val Ser Thr Ser Pro Val Gly Leu Pro Ser Ile Asp Pro Ser Gly Ser
    290                 295                 300

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

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

Phe Asn Arg Gln His Phe Ser Pro His Pro Trp Thr Ser Ala Ser Asn
            340                 345                 350

Ser Cys Asp Ser Pro Ile Pro Ser Val Ser Ser Gly Ser Ser Ser Pro
        355                 360                 365

Leu Ser Ala Thr Ser Ala Pro Pro Thr Leu Gly Gln Pro Lys Gly Val
    370                 375                 380

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

Leu Ala Arg Ile Arg Gln Gly Gly Ser Val Ala Gln Ala Pro Ala Gly
                405                 410                 415

Thr Ser Phe Val Ala Pro Val Gly His Ser Gly Ile Trp Ser Phe Gly
            420                 425                 430

Val Asn Ala Val Ser Glu Gly Leu Ser Gly Trp Ser Gln Ser Val Met
        435                 440                 445

Gly Asn His Pro Met His Gln Gln Leu Ser Asp Pro Ser Thr Phe Ser
    450                 455                 460

Gln His Gln Pro Met Glu Arg Asp Asp Ser Gly Met Val Ala Pro Ser
465                 470                 475                 480

Asn Ile Phe His Gln Pro Met Gly Leu Pro Ile Ser Met Tyr Gly Gly
                485                 490                 495
```

```
Thr Ile Ile Pro Ser His Pro Gln Leu Ala Asp Val Pro Gly Gly Pro
            500                 505                 510

Leu Phe Asn Gly Leu His Asn Pro Asp Pro Ala Trp Asn Pro Met Ile
        515                 520                 525

Lys Val Ile Gln Asn Ser Thr Glu Cys Thr Asp Ala Gln Gln Ala Ser
    530                 535                 540

Leu Leu Pro Ser Val Pro Ala Leu Lys Gly Glu Ile Pro Ser Pro Gln
545                 550                 555                 560

Leu Thr Arg Pro Lys Lys Arg Ile Gly Arg Pro Met Val Ala Ser Pro
                565                 570                 575

Asn Gln Arg His Gln Asp His Leu Arg Pro Lys Val Pro Ala Gly Val
            580                 585                 590

Gln Glu Leu Thr His Cys Pro Asp Thr Pro Leu Leu Pro Pro Ser Asp
        595                 600                 605

Ser Arg Gly His Asn Ser Ser Asn Ser Pro Ser Leu Gln Ala Gly Gly
    610                 615                 620

Ala Glu Gly Ala Gly Asp Arg Gly Arg Asp Thr Arg
625                 630                 635
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<210> 4847
<211> 2617
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1064; "

<220>
<221> source
<223> /note="Gene Symbol: ANKHD1-EIF4EBP3; "

<220>
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<223> /note="Gene Name:
ANKHD1-EIF4EBP3 readthrough; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000432016"

<400> 4847
Met Leu Thr Asp Ser Gly Gly Gly Gly Thr Ser Phe Glu Glu Asp Leu
1 5 10 15

Asp Ser Val Ala Pro Arg Ser Ala Pro Ala Gly Ala Ser Glu Pro Pro
20 25 30

Pro Pro Gly Gly Val Gly Leu Gly Ile Arg Thr Val Arg Leu Phe Gly
35 40 45

Glu Ala Gly Pro Ala Ser Gly Val Gly Ser Ser Gly Gly Gly Gly Ser
50 55 60

Gly Ser Gly Thr Gly Gly Gly Asp Ala Ala Leu Asp Phe Lys Leu Ala
65 70 75 80

Ala Ala Val Leu Arg Thr Gly Gly Gly Gly Gly Ala Ser Gly Ser Asp
85 90 95

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

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

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

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

Ala Asp Gly Lys Ala Phe Ala Asp Pro Glu Val Leu Arg Arg Leu Thr
165 170 175

Ser Ser Val Ser Cys Ala Leu Asp Glu Ala Ala Ala Ala Leu Thr Arg
180 185 190

Met Lys Ala Glu Asn Ser His Asn Ala Gly Gln Val Asp Thr Arg Ser
195 200 205

Leu Ala Glu Ala Cys Ser Asp Gly Asp Val Asn Ala Val Arg Lys Leu

```
    210                 215                 220

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

Leu Leu Cys Leu Ala Cys Ser Ala Gly Tyr Tyr Glu Leu Ala Gln Val
                245                 250                 255

Leu Leu Ala Met His Ala Asn Val Glu Asp Arg Gly Asn Lys Gly Asp
            260                 265                 270

Ile Thr Pro Leu Met Ala Ala Ser Ser Gly Gly Tyr Leu Asp Ile Val
        275                 280                 285

Lys Leu Leu Leu Leu His Asp Ala Asp Val Asn Ser Gln Ser Ala Thr
    290                 295                 300

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

Val Lys Val Leu Leu Asn Glu Gly Ala Asn Ile Glu Asp His Asn Glu
                325                 330                 335

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

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

Asn Glu Phe Lys Glu Ser Ala Leu Thr Leu Ala Cys Tyr Lys Gly His
    370                 375                 380

Leu Asp Met Val Arg Phe Leu Leu Glu Ala Gly Ala Asp Gln Glu His
385                 390                 395                 400

Lys Thr Asp Glu Met His Thr Ala Leu Met Glu Ala Cys Met Asp Gly
                405                 410                 415

His Val Glu Val Ala Arg Leu Leu Leu Asp Ser Gly Ala Gln Val Asn
            420                 425                 430

Met Pro Ala Asp Ser Phe Glu Ser Pro Leu Thr Leu Ala Ala Cys Gly
        435                 440                 445
```

```
Gly His Val Glu Leu Ala Ala Leu Leu Ile Glu Arg Gly Ala Asn Leu
    450                 455                 460

Glu Glu Val Asn Asp Glu Gly Tyr Thr Pro Leu Met Glu Ala Ala Arg
465                 470                 475                 480

Glu Gly His Glu Glu Met Val Ala Leu Leu Leu Ala Gln Gly Ala Asn
                485                 490                 495

Ile Asn Ala Gln Thr Glu Glu Thr Gln Glu Thr Ala Leu Thr Leu Ala
            500                 505                 510

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

Ala Asp Ile Glu Leu Gly Cys Ser Thr Pro Leu Met Glu Ala Ser Gln
    530                 535                 540

Glu Gly His Leu Glu Leu Val Lys Tyr Leu Leu Ala Ser Gly Ala Asn
545                 550                 555                 560

Val His Ala Thr Thr Ala Thr Gly Asp Thr Ala Leu Thr Tyr Ala Cys
                565                 570                 575

Glu Asn Gly His Thr Asp Val Ala Asp Val Leu Leu Gln Ala Gly Ala
            580                 585                 590

Asp Leu Glu His Glu Ser Glu Gly Gly Arg Thr Pro Leu Met Lys Ala
        595                 600                 605

Ala Arg Ala Gly His Leu Cys Thr Val Gln Phe Leu Ile Ser Lys Gly
    610                 615                 620

Ala Asn Val Asn Arg Ala Thr Ala Asn Asn Asp His Thr Val Val Ser
625                 630                 635                 640

Leu Ala Cys Ala Gly Gly His Leu Ala Val Val Glu Leu Leu Leu Ala
                645                 650                 655

His Gly Ala Asp Pro Thr His Arg Leu Lys Asp Gly Ser Thr Met Leu
            660                 665                 670
```

```
Ile Glu Ala Ala Lys Gly Gly His Thr Asn Val Val Ser Tyr Leu Leu
        675                 680                 685

Asp Tyr Pro Asn Asn Val Leu Ser Val Pro Thr Thr Asp Val Ser Gln
    690                 695                 700

Leu Pro Pro Pro Ser Gln Asp Gln Ser Gln Val Pro Arg Val Pro Thr
705                 710                 715                 720

His Thr Leu Ala Met Val Val Pro Pro Gln Glu Pro Asp Arg Thr Ser
                725                 730                 735

Gln Glu Asn Ser Pro Ala Leu Leu Gly Val Gln Lys Gly Thr Ser Lys
            740                 745                 750

Gln Lys Ser Ser Ser Leu Gln Val Ala Asp Gln Asp Leu Leu Pro Ser
        755                 760                 765

Phe His Pro Tyr Gln Pro Leu Glu Cys Ile Val Glu Glu Thr Glu Gly
    770                 775                 780

Lys Leu Asn Glu Leu Gly Gln Arg Ile Ser Ala Ile Glu Lys Ala Gln
785                 790                 795                 800

Leu Lys Ser Leu Glu Leu Ile Gln Gly Glu Pro Leu Asn Lys Asp Lys
                805                 810                 815

Ile Glu Glu Leu Lys Lys Asn Arg Glu Glu Gln Val Gln Lys Lys Lys
            820                 825                 830

Lys Ile Leu Lys Glu Leu Gln Lys Val Glu Arg Gln Leu Gln Met Lys
        835                 840                 845

Thr Gln Gln Gln Phe Thr Lys Glu Tyr Leu Glu Thr Lys Gly Gln Lys
    850                 855                 860

Asp Thr Val Ser Leu His Gln Gln Cys Ser His Arg Gly Val Phe Pro
865                 870                 875                 880

Glu Gly Glu Gly Asp Gly Ser Leu Pro Glu Asp His Phe Ser Glu Leu
                885                 890                 895
```

```
Pro Gln Val Asp Thr Ile Leu Phe Lys Asp Asn Asp Val Asp Asp Glu
            900                 905                 910

Gln Gln Ser Pro Pro Ser Ala Glu Gln Ile Asp Phe Val Pro Val Gln
        915                 920                 925

Pro Leu Ser Ser Pro Gln Cys Asn Phe Ser Ser Asp Leu Gly Ser Asn
    930                 935                 940

Gly Thr Asn Ser Leu Glu Leu Gln Lys Val Ser Gly Asn Gln Gln Ile
945                 950                 955                 960

Val Gly Gln Pro Gln Ile Ala Ile Thr Gly His Asp Gln Gly Leu Leu
                965                 970                 975

Val Gln Glu Pro Asp Gly Leu Met Val Ala Thr Pro Ala Gln Thr Leu
            980                 985                 990

Thr Asp Thr Leu Asp Asp Leu Ile  Ala Ala Val Ser Thr  Arg Val
Pro
        995                 1000                1005

Thr Gly  Ser Asn Ser Ser Ser  Gln Thr Thr Glu Cys  Leu Thr Pro
    1010                1015                1020

Glu Ser  Cys Ser Gln Thr Thr  Ser Asn Val Ala Ser  Gln Ser Met
    1025                1030                1035

Pro Pro  Val Tyr Pro Ser Val  Asp Ile Asp Ala His  Thr Glu Ser
    1040                1045                1050

Asn His  Asp Thr Ala Leu Thr  Leu Ala Cys Ala Gly  Gly His Glu
    1055                1060                1065

Glu Leu  Val Ser Val Leu Ile  Ala Arg Asp Ala Lys  Ile Glu His
    1070                1075                1080

Arg Asp  Lys Lys Gly Phe Thr  Pro Leu Ile Leu Ala  Ala Thr Ala
    1085                1090                1095

Gly His  Val Gly Val Val Glu  Ile Leu Leu Asp Lys  Gly Gly Asp
    1100                1105                1110
```

```
Ile Glu  Ala Gln Ser Glu Arg  Thr Lys Asp Thr Pro  Leu Ser Leu
    1115                1120                1125

Ala Cys  Ser Gly Gly Arg Gln  Glu Val Val Asp Leu  Leu Leu Ala
    1130                1135                1140

Arg Gly  Ala Asn Lys Glu His  Arg Asn Val Ser Asp  Tyr Thr Pro
    1145                1150                1155

Leu Ser  Leu Ala Ala Ser Gly  Gly Tyr Val Asn Ile  Ile Lys Ile
    1160                1165                1170

Leu Leu  Asn Ala Gly Ala Glu  Ile Asn Ser Arg Thr  Gly Ser Lys
    1175                1180                1185

Leu Gly  Ile Ser Pro Leu Met  Leu Ala Ala Met Asn  Gly His Val
    1190                1195                1200

Pro Ala  Val Lys Leu Leu Leu  Asp Met Gly Ser Asp  Ile Asn Ala
    1205                1210                1215

Gln Ile  Glu Thr Asn Arg Asn  Thr Ala Leu Thr Leu  Ala Cys Phe
    1220                1225                1230

Gln Gly  Arg Ala Glu Val Val  Ser Leu Leu Leu Asp  Arg Lys Ala
    1235                1240                1245

Asn Val  Glu His Arg Ala Lys  Thr Gly Leu Thr Pro  Leu Met Glu
    1250                1255                1260

Ala Ala  Ser Gly Gly Tyr Ala  Glu Val Gly Arg Val  Leu Leu Asp
    1265                1270                1275

Lys Gly  Ala Asp Val Asn Ala  Pro Pro Val Pro Ser  Ser Arg Asp
    1280                1285                1290

Thr Ala  Leu Thr Ile Ala Ala  Asp Lys Gly His Tyr  Lys Phe Cys
    1295                1300                1305

Glu Leu  Leu Ile His Arg Gly  Ala His Ile Asp Val  Arg Asn Lys
    1310                1315                1320

Lys Gly  Asn Thr Pro Leu Trp  Leu Ala Ser Asn Gly  Gly His Phe
```

1325 1330 1335

Asp Val Val Gln Leu Leu Val Gln Ala Gly Ala Asp Val Asp Ala
1340 1345 1350

Ala Asp Asn Arg Lys Ile Thr Pro Leu Met Ser Ala Phe Arg Lys
1355 1360 1365

Gly His Val Lys Val Val Gln Tyr Leu Val Lys Glu Val Asn Gln
1370 1375 1380

Phe Pro Ser Asp Ile Glu Cys Met Arg Tyr Ile Ala Thr Ile Thr
1385 1390 1395

Asp Lys Glu Leu Leu Lys Lys Cys His Gln Cys Val Glu Thr Ile
1400 1405 1410

Val Lys Ala Lys Asp Gln Gln Ala Ala Glu Ala Asn Lys Asn Ala
1415 1420 1425

Ser Ile Leu Leu Lys Glu Leu Asp Leu Glu Lys Ser Arg Glu Glu
1430 1435 1440

Ser Arg Lys Gln Ala Leu Ala Ala Lys Arg Glu Lys Arg Lys Glu
1445 1450 1455

Lys Arg Lys Lys Lys Lys Glu Glu Gln Lys Arg Lys Gln Glu Glu
1460 1465 1470

Asp Glu Glu Asn Lys Pro Lys Glu Asn Ser Glu Leu Pro Glu Asp
1475 1480 1485

Glu Asp Glu Glu Glu Asn Asp Glu Asp Val Glu Gln Glu Val Pro
1490 1495 1500

Ile Glu Pro Pro Ser Ala Thr Thr Thr Thr Thr Ile Gly Ile Ser
1505 1510 1515

Ala Thr Ser Ala Thr Phe Thr Asn Val Phe Gly Lys Lys Arg Ala
1520 1525 1530

Asn Val Val Thr Thr Pro Ser Thr Asn Arg Lys Asn Lys Lys Asn
1535 1540 1545

```
Lys Thr  Lys Glu Thr Pro Pro  Thr Ala His Leu Ile  Leu Pro Glu
    1550                1555                1560

Gln His  Met Ser Leu Ala Gln  Gln Lys Ala Asp Lys  Asn Lys Ile
    1565                1570                1575

Asn Gly  Glu Pro Arg Gly Gly  Gly Ala Gly Gly Asn  Ser Asp Ser
    1580                1585                1590

Asp Asn  Leu Asp Ser Thr Asp  Cys Asn Ser Glu Ser  Ser Ser Gly
    1595                1600                1605

Gly Lys  Ser Gln Glu Leu Asn  Phe Val Met Asp Val  Asn Ser Ser
    1610                1615                1620

Lys Tyr  Pro Ser Leu Leu Leu  His Ser Gln Glu Glu  Lys Thr Ser
    1625                1630                1635

Thr Ala  Thr Ser Lys Thr Gln  Thr Arg Leu Glu Gly  Glu Val Thr
    1640                1645                1650

Pro Asn  Ser Leu Ser Thr Ser  Tyr Lys Thr Val Ser  Leu Pro Leu
    1655                1660                1665

Ser Ser  Pro Asn Ile Lys Leu  Asn Leu Thr Ser Pro  Lys Arg Gly
    1670                1675                1680

Gln Lys  Arg Glu Glu Gly Trp  Lys Glu Val Val Arg  Arg Ser Lys
    1685                1690                1695

Lys Leu  Ser Val Pro Ala Ser  Val Val Ser Arg Ile  Met Gly Arg
    1700                1705                1710

Gly Gly  Cys Asn Ile Thr Ala  Ile Gln Asp Val Thr  Gly Ala His
    1715                1720                1725

Ile Asp  Val Asp Lys Gln Lys  Asp Lys Asn Gly Glu  Arg Met Ile
    1730                1735                1740

Thr Ile  Arg Gly Gly Thr Glu  Ser Thr Arg Tyr Ala  Val Gln Leu
    1745                1750                1755
```

```
Ile Asn  Ala Leu Ile Gln Asp  Pro Ala Lys Glu Leu  Glu Asp Leu
    1760                1765                1770

Ile Pro  Lys Asn His Ile Arg  Thr Pro Ala Ser Thr  Lys Ser Ile
    1775                1780                1785

His Ala  Asn Phe Ser Ser Gly  Val Gly Thr Thr Ala  Ala Ser Ser
    1790                1795                1800

Lys Asn  Ala Phe Pro Leu Gly  Ala Pro Thr Leu Val  Thr Ser Gln
    1805                1810                1815

Ala Thr  Thr Leu Ser Thr Phe  Gln Pro Ala Asn Lys  Leu Asn Lys
    1820                1825                1830

Asn Val  Pro Thr Asn Val Arg  Ser Ser Phe Pro Val  Ser Leu Pro
    1835                1840                1845

Leu Ala  Tyr Pro His Pro His  Phe Ala Leu Leu Ala  Ala Gln Thr
    1850                1855                1860

Met Gln  Gln Ile Arg His Pro  Arg Leu Pro Met Ala  Gln Phe Gly
    1865                1870                1875

Gly Thr  Phe Ser Pro Ser Pro  Asn Thr Trp Gly Pro  Phe Pro Val
    1880                1885                1890

Arg Pro  Val Asn Pro Gly Asn  Thr Asn Ser Ser Pro  Lys His Asn
    1895                1900                1905

Asn Thr  Ser Arg Leu Pro Asn  Gln Asn Gly Thr Val  Leu Pro Ser
    1910                1915                1920

Glu Ser  Ala Gly Leu Ala Thr  Ala Ser Cys Pro Ile  Thr Val Ser
    1925                1930                1935

Ser Val  Val Ala Ala Ser Gln  Gln Leu Cys Val Thr  Asn Thr Arg
    1940                1945                1950

Thr Pro  Ser Ser Val Arg Lys  Gln Leu Phe Ala Cys  Val Pro Lys
    1955                1960                1965
```

Thr Ser Pro Pro Ala Thr Val Ile Ser Ser Val Thr Ser Thr Cys
1970 1975 1980

Ser Ser Leu Pro Ser Val Ser Ser Ala Pro Ile Thr Ser Gly Gln
1985 1990 1995

Ala Pro Thr Thr Phe Leu Pro Ala Ser Thr Ser Gln Ala Gln Leu
2000 2005 2010

Ser Ser Gln Lys Met Glu Ser Phe Ser Ala Val Pro Pro Thr Lys
2015 2020 2025

Glu Lys Val Ser Thr Gln Asp Gln Pro Met Ala Asn Leu Cys Thr
2030 2035 2040

Pro Ser Ser Thr Ala Asn Ser Cys Ser Ser Ser Ala Ser Asn Thr
2045 2050 2055

Pro Gly Ala Pro Glu Thr His Pro Ser Ser Ser Pro Thr Pro Thr
2060 2065 2070

Ser Ser Asn Thr Gln Glu Glu Ala Gln Pro Ser Ser Val Ser Asp
2075 2080 2085

Leu Ser Pro Met Ser Met Pro Phe Ala Ser Asn Ser Glu Pro Ala
2090 2095 2100

Pro Leu Thr Leu Thr Ser Pro Arg Met Val Ala Ala Asp Asn Gln
2105 2110 2115

Asp Thr Ser Asn Leu Pro Gln Leu Ala Val Pro Ala Pro Arg Val
2120 2125 2130

Ser His Arg Met Gln Pro Arg Gly Ser Phe Tyr Ser Met Val Pro
2135 2140 2145

Asn Ala Thr Ile His Gln Asp Pro Gln Ser Ile Phe Val Thr Asn
2150 2155 2160

Pro Val Thr Leu Thr Pro Pro Gln Gly Pro Pro Ala Ala Val Gln
2165 2170 2175

Leu Ser Ser Ala Val Asn Ile Met Asn Gly Ser Gln Met His Ile

2180 2185 2190

Asn Pro Ala Asn Lys Ser Leu Pro Pro Thr Phe Gly Pro Ala Thr
2195 2200 2205

Leu Phe Asn His Phe Ser Ser Leu Phe Asp Ser Ser Gln Val Pro
2210 2215 2220

Ala Asn Gln Gly Trp Gly Asp Gly Pro Leu Ser Ser Arg Val Ala
2225 2230 2235

Thr Asp Ala Ser Phe Thr Val Gln Ser Ala Phe Leu Gly Asn Ser
2240 2245 2250

Val Leu Gly His Leu Glu Asn Met His Pro Asp Asn Ser Lys Ala
2255 2260 2265

Pro Gly Phe Arg Pro Pro Ser Gln Arg Val Ser Thr Ser Pro Val
2270 2275 2280

Gly Leu Pro Ser Ile Asp Pro Ser Gly Ser Ser Pro Ser Ser Ser
2285 2290 2295

Ser Ala Pro Leu Ala Ser Phe Ser Gly Ile Pro Gly Thr Arg Val
2300 2305 2310

Phe Leu Gln Gly Pro Ala Pro Val Gly Thr Pro Ser Phe Asn Arg
2315 2320 2325

Gln His Phe Ser Pro His Pro Trp Thr Ser Ala Ser Asn Ser Ser
2330 2335 2340

Thr Ser Ala Pro Pro Thr Leu Gly Gln Pro Lys Gly Val Ser Ala
2345 2350 2355

Ser Gln Asp Arg Lys Ile Pro Pro Pro Ile Gly Thr Glu Arg Leu
2360 2365 2370

Ala Arg Ile Arg Gln Gly Gly Ser Val Ala Gln Ala Pro Ala Gly
2375 2380 2385

Thr Ser Phe Val Ala Pro Val Gly His Ser Gly Ile Trp Ser Phe
2390 2395 2400

```
Gly Val  Asn Ala Val Ser Glu  Gly Leu Ser Gly Trp  Ser Gln Ser
    2405                2410                2415

Val Met  Gly Asn His Pro Met  His Gln Gln Leu Ser  Asp Pro Ser
    2420                2425                2430

Thr Phe  Ser Gln His Gln Pro  Met Glu Arg Asp Asp  Ser Gly Met
    2435                2440                2445

Val Ala  Pro Ser Asn Ile Phe  His Gln Pro Met Ala  Ser Gly Phe
    2450                2455                2460

Val Asp  Phe Ser Lys Gly Leu  Pro Ile Ser Met Tyr  Gly Gly Thr
    2465                2470                2475

Ile Ile  Pro Ser His Pro Gln  Leu Ala Asp Val Pro  Gly Gly Pro
    2480                2485                2490

Leu Phe  Asn Gly Leu His Asn  Pro Asp Pro Ala Trp  Asn Pro Met
    2495                2500                2505

Ile Lys  Val Ile Gln Asn Ser  Thr Glu Cys Thr Asp  Ala Gln Gln
    2510                2515                2520

Ala Ser  Leu Leu Pro Ser Val  Pro Ala Leu Lys Gly  Glu Ile Pro
    2525                2530                2535

Ser Pro  Gln Leu Thr Arg Pro  Lys Lys Arg Ile Gly  Arg Pro Met
    2540                2545                2550

Val Ala  Ser Pro Asn Gln Arg  His Gln Asp His Leu  Arg Pro Lys
    2555                2560                2565

Val Pro  Ala Gly Val Gln Glu  Leu Thr His Cys Pro  Asp Thr Pro
    2570                2575                2580

Leu Leu  Pro Pro Ser Asp Ser  Arg Gly His Asn Ser  Ser Asn Ser
    2585                2590                2595

Pro Ser  Leu Gln Ala Gly Gly  Ala Glu Gly Ala Gly  Asp Arg Gly
    2600                2605                2610
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Arg Asp Thr Arg
    2615

<210> 4848
<211> 1897
<212> PRT
<213> Homo sapiens

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<223> /note="Payload ID: 1065; "

<220>
<221> source
<223> /note="Gene Symbol: ANK1; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin 1, erythrocytic; "

<220>
<221> source
<223> /note="Uniprot ID: P16157; "

<220>
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Met Ala Gln Ala Ala Lys Gln Leu Lys Lys Ile Lys Asp Ile Glu Ala
1   5   10   15

Gln Ala Leu Gln Glu Gln Lys Glu Lys Glu Glu Ser Asn Arg Lys Arg
            20   25   30

Arg Asn Arg Ser Arg Asp Arg Lys Lys Lys Ala Asp Ala Ala Thr Ser
        35   40   45

Phe Leu Arg Ala Ala Arg Ser Gly Asn Leu Asp Lys Ala Leu Asp His
    50   55   60

Leu Arg Asn Gly Val Asp Ile Asn Thr Cys Asn Gln Asn Gly Leu Asn
65   70   75   80

Gly Leu His Leu Ala Ser Lys Glu Gly His Val Lys Met Val Val Glu
                85   90   95

Leu Leu His Lys Glu Ile Ile Leu Glu Thr Thr Thr Lys Lys Gly Asn

```
            100                 105                 110

Thr Ala Leu His Ile Ala Ala Leu Ala Gly Gln Asp Glu Val Val Arg
        115                 120                 125

Glu Leu Val Asn Tyr Gly Ala Asn Val Asn Ala Gln Ser Gln Lys Gly
    130                 135                 140

Phe Thr Pro Leu Tyr Met Ala Ala Gln Glu Asn His Leu Glu Val Val
145                 150                 155                 160

Lys Phe Leu Leu Glu Asn Gly Ala Asn Gln Asn Val Ala Thr Glu Asp
                165                 170                 175

Gly Phe Thr Pro Leu Ala Val Ala Leu Gln Gln Gly His Glu Asn Val
            180                 185                 190

Val Ala His Leu Ile Asn Tyr Gly Thr Lys Gly Lys Val Arg Leu Pro
        195                 200                 205

Ala Leu His Ile Ala Ala Arg Asn Asp Asp Thr Arg Thr Ala Ala Val
    210                 215                 220

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

Thr Pro Leu His Ile Ala Ala His Tyr Glu Asn Leu Asn Val Ala Gln
                245                 250                 255

Leu Leu Leu Asn Arg Gly Ala Ser Val Asn Phe Thr Pro Gln Asn Gly
            260                 265                 270

Ile Thr Pro Leu His Ile Ala Ser Arg Arg Gly Asn Val Ile Met Val
        275                 280                 285

Arg Leu Leu Leu Asp Arg Gly Ala Gln Ile Glu Thr Lys Thr Lys Asp
    290                 295                 300

Glu Leu Thr Pro Leu His Cys Ala Ala Arg Asn Gly His Val Arg Ile
305                 310                 315                 320

Ser Glu Ile Leu Leu Asp His Gly Ala Pro Ile Gln Ala Lys Thr Lys
                325                 330                 335
```

```
Asn Gly Leu Ser Pro Ile His Met Ala Ala Gln Gly Asp His Leu Asp
            340                 345                 350

Cys Val Arg Leu Leu Leu Gln Tyr Asp Ala Glu Ile Asp Asp Ile Thr
        355                 360                 365

Leu Asp His Leu Thr Pro Leu His Val Ala Ala His Cys Gly His His
    370                 375                 380

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

Ala Leu Asn Gly Phe Thr Pro Leu His Ile Ala Cys Lys Lys Asn His
                405                 410                 415

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

Val Thr Glu Ser Gly Leu Thr Pro Leu His Val Ala Ser Phe Met Gly
        435                 440                 445

His Leu Pro Ile Val Lys Asn Leu Leu Gln Arg Gly Ala Ser Pro Asn
    450                 455                 460

Val Ser Asn Val Lys Val Glu Thr Pro Leu His Met Ala Ala Arg Ala
465                 470                 475                 480

Gly His Thr Glu Val Ala Lys Tyr Leu Leu Gln Asn Lys Ala Lys Val
                485                 490                 495

Asn Ala Lys Ala Lys Asp Asp Gln Thr Pro Leu His Cys Ala Ala Arg
            500                 505                 510

Ile Gly His Thr Asn Met Val Lys Leu Leu Leu Glu Asn Asn Ala Asn
        515                 520                 525

Pro Asn Leu Ala Thr Thr Ala Gly His Thr Pro Leu His Ile Ala Ala
    530                 535                 540

Arg Glu Gly His Val Glu Thr Val Leu Ala Leu Leu Glu Lys Glu Ala
545                 550                 555                 560
```

Ser Gln Ala Cys Met Thr Lys Lys Gly Phe Thr Pro Leu His Val Ala
565 570 575

Ala Lys Tyr Gly Lys Val Arg Val Ala Glu Leu Leu Leu Glu Arg Asp
580 585 590

Ala His Pro Asn Ala Ala Gly Lys Asn Gly Leu Thr Pro Leu His Val
595 600 605

Ala Val His His Asn Asn Leu Asp Ile Val Lys Leu Leu Leu Pro Arg
610 615 620

Gly Gly Ser Pro His Ser Pro Ala Trp Asn Gly Tyr Thr Pro Leu His
625 630 635 640

Ile Ala Ala Lys Gln Asn Gln Val Glu Val Ala Arg Ser Leu Leu Gln
645 650 655

Tyr Gly Gly Ser Ala Asn Ala Glu Ser Val Gln Gly Val Thr Pro Leu
660 665 670

His Leu Ala Ala Gln Glu Gly His Ala Glu Met Val Ala Leu Leu Leu
675 680 685

Ser Lys Gln Ala Asn Gly Asn Leu Gly Asn Lys Ser Gly Leu Thr Pro
690 695 700

Leu His Leu Val Ala Gln Glu Gly His Val Pro Val Ala Asp Val Leu
705 710 715 720

Ile Lys His Gly Val Met Val Asp Ala Thr Thr Arg Met Gly Tyr Thr
725 730 735

Pro Leu His Val Ala Ser His Tyr Gly Asn Ile Lys Leu Val Lys Phe
740 745 750

Leu Leu Gln His Gln Ala Asp Val Asn Ala Lys Thr Lys Leu Gly Tyr
755 760 765

Ser Pro Leu His Gln Ala Ala Gln Gln Gly His Thr Asp Ile Val Thr
770 775 780

```
Leu Leu Leu Lys Asn Gly Ala Ser Pro Asn Glu Val Ser Ser Asp Gly
785                 790                 795                 800

Thr Thr Pro Leu Ala Ile Ala Lys Arg Leu Gly Tyr Ile Ser Val Thr
                805                 810                 815

Asp Val Leu Lys Val Val Thr Asp Glu Thr Ser Phe Val Leu Val Ser
            820                 825                 830

Asp Lys His Arg Met Ser Phe Pro Glu Thr Val Asp Glu Ile Leu Asp
        835                 840                 845

Val Ser Glu Asp Glu Gly Thr Ala His Ile Thr Ile Met Gly Glu Glu
    850                 855                 860

Leu Ile Ser Phe Lys Ala Glu Arg Arg Asp Ser Arg Asp Val Asp Glu
865                 870                 875                 880

Glu Lys Glu Leu Leu Asp Phe Val Pro Lys Leu Asp Gln Val Val Glu
                885                 890                 895

Ser Pro Ala Ile Pro Arg Ile Pro Cys Ala Met Pro Glu Thr Val Val
            900                 905                 910

Ile Arg Ser Glu Glu Gln Glu Gln Ala Ser Lys Glu Tyr Asp Glu Asp
        915                 920                 925

Ser Leu Ile Pro Ser Ser Pro Ala Thr Glu Thr Ser Asp Asn Ile Ser
    930                 935                 940

Pro Val Ala Ser Pro Val His Thr Gly Phe Leu Val Ser Phe Met Val
945                 950                 955                 960

Asp Ala Arg Gly Gly Ser Met Arg Gly Ser Arg His Asn Gly Leu Arg
                965                 970                 975

Val Val Ile Pro Pro Arg Thr Cys Ala Ala Pro Thr Arg Ile Thr Cys
            980                 985                 990

Arg Leu Val Lys Pro Gln Lys Leu  Ser Thr Pro Pro Pro  Leu Ala
Glu
        995                 1000                1005
```

```
Glu Glu  Gly Leu Ala Ser Arg  Ile Ile Ala Leu Gly  Pro Thr Gly
    1010                 1015                 1020

Ala Gln  Phe Leu Ser Pro Val  Ile Val Glu Ile Pro  His Phe Ala
    1025                 1030                 1035

Ser His  Gly Arg Gly Asp Arg  Glu Leu Val Val Leu  Arg Ser Glu
    1040                 1045                 1050

Asn Gly  Ser Val Trp Lys Glu  His Arg Ser Arg Tyr  Gly Glu Ser
    1055                 1060                 1065

Tyr Leu  Asp Gln Ile Leu Asn  Gly Met Asp Glu Glu  Leu Gly Ser
    1070                 1075                 1080

Leu Glu  Glu Leu Glu Lys Lys  Arg Val Cys Arg Ile  Ile Thr Thr
    1085                 1090                 1095

Asp Phe  Pro Leu Tyr Phe Val  Ile Met Ser Arg Leu  Cys Gln Asp
    1100                 1105                 1110

Tyr Asp  Thr Ile Gly Pro Glu  Gly Gly Ser Leu Lys  Ser Lys Leu
    1115                 1120                 1125

Val Pro  Leu Val Gln Ala Thr  Phe Pro Glu Asn Ala  Val Thr Lys
    1130                 1135                 1140

Arg Val  Lys Leu Ala Leu Gln  Ala Gln Pro Val Pro  Asp Glu Leu
    1145                 1150                 1155

Val Thr  Lys Leu Leu Gly Asn  Gln Ala Thr Phe Ser  Pro Ile Val
    1160                 1165                 1170

Thr Val  Glu Pro Arg Arg Arg  Lys Phe His Arg Pro  Ile Gly Leu
    1175                 1180                 1185

Arg Ile  Pro Leu Pro Pro Ser  Trp Thr Asp Asn Pro  Arg Asp Ser
    1190                 1195                 1200

Gly Glu  Gly Asp Thr Thr Ser  Leu Arg Leu Leu Cys  Ser Val Ile
    1205                 1210                 1215

Gly Gly  Thr Asp Gln Ala Gln  Trp Glu Asp Ile Thr  Gly Thr Thr
```

1220 1225 1230

Lys Leu Val Tyr Ala Asn Glu Cys Ala Asn Phe Thr Thr Asn Val
1235 1240 1245

Ser Ala Arg Phe Trp Leu Ser Asp Cys Pro Arg Thr Ala Glu Ala
1250 1255 1260

Val Asn Phe Ala Thr Leu Leu Tyr Lys Glu Leu Thr Ala Val Pro
1265 1270 1275

Tyr Met Ala Lys Phe Val Ile Phe Ala Lys Met Asn Asp Pro Arg
1280 1285 1290

Glu Gly Arg Leu Arg Cys Tyr Cys Met Thr Asp Asp Lys Val Asp
1295 1300 1305

Lys Thr Leu Glu Gln His Glu Asn Phe Val Glu Val Ala Arg Ser
1310 1315 1320

Arg Asp Ile Glu Val Leu Glu Gly Met Ser Leu Phe Ala Glu Leu
1325 1330 1335

Ser Gly Asn Leu Val Pro Val Lys Lys Ala Ala Gln Gln Arg Ser
1340 1345 1350

Phe His Phe Gln Ser Phe Arg Glu Asn Arg Leu Ala Met Pro Val
1355 1360 1365

Lys Val Arg Asp Ser Ser Arg Glu Pro Gly Gly Ser Leu Ser Phe
1370 1375 1380

Leu Arg Lys Ala Met Lys Tyr Glu Asp Thr Gln His Ile Leu Cys
1385 1390 1395

His Leu Asn Ile Thr Met Pro Pro Cys Ala Lys Gly Ser Gly Ala
1400 1405 1410

Glu Asp Arg Arg Arg Thr Pro Thr Pro Leu Ala Leu Arg Tyr Ser
1415 1420 1425

Ile Leu Ser Glu Ser Thr Pro Gly Ser Leu Ser Gly Thr Glu Gln
1430 1435 1440

```
Ala Glu  Met Lys Met Ala Val  Ile Ser Glu His Leu  Gly Leu Ser
    1445                1450                1455

Trp Ala  Glu Leu Ala Arg Glu  Leu Gln Phe Ser Val  Glu Asp Ile
    1460                1465                1470

Asn Arg  Ile Arg Val Glu Asn  Pro Asn Ser Leu Leu  Glu Gln Ser
    1475                1480                1485

Val Ala  Leu Leu Asn Leu Trp  Val Ile Arg Glu Gly  Gln Asn Ala
    1490                1495                1500

Asn Met  Glu Asn Leu Tyr Thr  Ala Leu Gln Ser Ile  Asp Arg Gly
    1505                1510                1515

Glu Ile  Val Asn Met Leu Glu  Gly Ser Gly Arg Gln  Ser Arg Asn
    1520                1525                1530

Leu Lys  Pro Asp Arg Arg His  Thr Asp Arg Asp Tyr  Ser Leu Ser
    1535                1540                1545

Pro Ser  Gln Met Asn Gly Tyr  Ser Ser Leu Gln Asp  Glu Leu Leu
    1550                1555                1560

Ser Pro  Ala Ser Leu Gly Cys  Ala Leu Ser Ser Pro  Leu Arg Ala
    1565                1570                1575

Asp Gln  Tyr Trp Asn Glu Val  Ala Val Leu Asp Ala  Ile Pro Leu
    1580                1585                1590

Ala Ala  Thr Glu His Asp Thr  Met Leu Glu Met Ser  Asp Met Gln
    1595                1600                1605

Val Trp  Ser Ala Gly Leu Thr  Pro Ser Leu Val Thr  Ala Glu Asp
    1610                1615                1620

Ser Ser  Leu Glu Cys Ser Lys  Ala Glu Asp Ser Asp  Ala Thr Gly
    1625                1630                1635

His Glu  Trp Lys Leu Glu Gly  Ala Leu Ser Glu Glu  Pro Arg Gly
    1640                1645                1650
```

```
Pro Glu  Leu Gly Ser Leu Glu  Leu Val Glu Asp Asp  Thr Val Asp
    1655                 1660                 1665

Ser Asp  Ala Thr Asn Gly Leu  Ile Asp Leu Leu Glu  Gln Glu Glu
    1670                 1675                 1680

Gly Gln  Arg Ser Glu Glu Lys  Leu Pro Gly Ser Lys  Arg Gln Asp
    1685                 1690                 1695

Asp Ala  Thr Gly Ala Gly Gln  Asp Ser Glu Asn Glu  Val Ser Leu
    1700                 1705                 1710

Val Ser  Gly His Gln Arg Gly  Gln Ala Arg Ile Thr  His Ser Pro
    1715                 1720                 1725

Thr Val  Ser Gln Val Thr Glu  Arg Ser Gln Asp Arg  Leu Gln Asp
    1730                 1735                 1740

Trp Asp  Ala Asp Gly Ser Ile  Val Ser Tyr Leu Gln  Asp Ala Ala
    1745                 1750                 1755

Gln Gly  Ser Trp Gln Glu Glu  Val Thr Gln Gly Pro  His Ser Phe
    1760                 1765                 1770

Gln Gly  Thr Ser Thr Met Thr  Glu Gly Leu Glu Pro  Gly Gly Ser
    1775                 1780                 1785

Gln Glu  Tyr Glu Lys Val Leu  Val Ser Val Ser Glu  His Thr Trp
    1790                 1795                 1800

Thr Glu  Gln Pro Glu Ala Glu  Ser Ser Gln Ala Asp  Arg Asp Arg
    1805                 1810                 1815

Arg Gln  Gln Gly Gln Glu Glu  Gln Val Gln Glu Ala  Lys Asn Thr
    1820                 1825                 1830

Phe Thr  Gln Val Val Gln Gly  Asn Glu Phe Gln Asn  Ile Pro Gly
    1835                 1840                 1845

Glu Gln  Val Thr Glu Glu Gln  Phe Thr Asp Glu Gln  Gly Asn Ile
    1850                 1855                 1860
```

```
Val Thr  Lys Lys Ile Ile Arg  Lys Val Val Arg Gln  Ile Asp Leu
    1865                1870                1875


Ser Ser  Ala Asp Ala Ala Gln  Glu His Glu Glu Asp  His Thr Ser
    1880                1885                1890


Thr Pro  Asn Pro
    1895


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


Arg Asn Gly Val Asp Ile Asn Thr Cys Asn Gln Asn Gly Leu Asn Gly
        35                  40                  45


Leu His Leu Ala Ser Lys Glu Gly His Val Lys Met Val Val Glu Leu
    50                  55                  60


Leu His Lys Glu Ile Ile Leu Glu Thr Thr Thr Lys Lys Gly Asn Thr
65                  70                  75                  80
```

```
Ala Leu His Ile Ala Ala Leu Ala Gly Gln Asp Glu Val Val Arg Glu
                85                  90                  95

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

Thr Pro Leu Tyr Met Ala Ala Gln Glu Asn His Leu Glu Val Val Lys
        115                 120                 125

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

Phe Thr Pro Leu Ala Val Ala Leu Gln Gln Gly His Glu Asn Val Val
145                 150                 155                 160

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

Leu His Ile Ala Ala Arg Asn Asp Asp Thr Arg Thr Ala Ala Val Leu
            180                 185                 190

Leu Gln Asn Asp Pro Asn Pro Asp Val Leu Ser Lys Thr Gly Phe Thr
        195                 200                 205

Pro Leu His Ile Ala Ala His Tyr Glu Asn Leu Asn Val Ala Gln Leu
    210                 215                 220

Leu Leu Asn Arg Gly Ala Ser Val Asn Phe Thr Pro Gln Asn Gly Ile
225                 230                 235                 240

Thr Pro Leu His Ile Ala Ser Arg Arg Gly Asn Val Ile Met Val Arg
                245                 250                 255

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

Leu Thr Pro Leu His Cys Ala Ala Arg Asn Gly His Val Arg Ile Ser
        275                 280                 285

Glu Ile Leu Leu Asp His Gly Ala Pro Ile Gln Ala Lys Thr Lys Asn
    290                 295                 300
```

```
Gly Leu Ser Pro Ile His Met Ala Ala Gln Gly Asp His Leu Asp Cys
305                 310                 315                 320

Val Arg Leu Leu Leu Gln Tyr Asp Ala Glu Ile Asp Asp Ile Thr Leu
                325                 330                 335

Asp His Leu Thr Pro Leu His Val Ala Ala His Cys Gly His His Arg
            340                 345                 350

Val Ala Lys Val Leu Leu Asp Lys Gly Ala Lys Pro Asn Ser Arg Ala
        355                 360                 365

Leu Asn Gly Phe Thr Pro Leu His Ile Ala Cys Lys Lys Asn His Val
    370                 375                 380

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

Thr Glu Ser Gly Leu Thr Pro Leu His Val Ala Ser Phe Met Gly His
                405                 410                 415

Leu Pro Ile Val Lys Asn Leu Leu Gln Arg Gly Ala Ser Pro Asn Val
            420                 425                 430

Ser Asn Val Lys Val Glu Thr Pro Leu His Met Ala Ala Arg Ala Gly
        435                 440                 445

His Thr Glu Val Ala Lys Tyr Leu Leu Gln Asn Lys Ala Lys Val Asn
    450                 455                 460

Ala Lys Ala Lys Asp Asp Gln Thr Pro Leu His Cys Ala Ala Arg Ile
465                 470                 475                 480

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

Asn Leu Ala Thr Thr Ala Gly His Thr Pro Leu His Ile Ala Ala Arg
            500                 505                 510

Glu Gly His Val Glu Thr Val Leu Ala Leu Leu Glu Lys Glu Ala Ser
        515                 520                 525
```

```
Gln Ala Cys Met Thr Lys Lys Gly Phe Thr Pro Leu His Val Ala Ala
    530                 535                 540

Lys Tyr Gly Lys Val Arg Val Ala Glu Leu Leu Leu Glu Arg Asp Ala
545                 550                 555                 560

His Pro Asn Ala Ala Gly Lys Asn Gly Leu Thr Pro Leu His Val Ala
                565                 570                 575

Val His His Asn Asn Leu Asp Ile Val Lys Leu Leu Leu Pro Arg Gly
            580                 585                 590

Gly Ser Pro His Ser Pro Ala Trp Asn Gly Tyr Thr Pro Leu His Ile
        595                 600                 605

Ala Ala Lys Gln Asn Gln Val Glu Val Ala Arg Ser Leu Leu Gln Tyr
    610                 615                 620

Gly Gly Ser Ala Asn Ala Glu Ser Val Gln Gly Val Thr Pro Leu His
625                 630                 635                 640

Leu Ala Ala Gln Glu Gly His Ala Glu Met Val Ala Leu Leu Leu Ser
                645                 650                 655

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

His Leu Val Ala Gln Glu Gly His Val Pro Val Ala Asp Val Leu Ile
        675                 680                 685

Lys His Gly Val Met Val Asp Ala Thr Thr Arg Met Gly Tyr Thr Pro
    690                 695                 700

Leu His Val Ala Ser His Tyr Gly Asn Ile Lys Leu Val Lys Phe Leu
705                 710                 715                 720

Leu Gln His Gln Ala Asp Val Asn Ala Lys Thr Lys Leu Gly Tyr Ser
                725                 730                 735

Pro Leu His Gln Ala Ala Gln Gln Gly His Thr Asp Ile Val Thr Leu
            740                 745                 750

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

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        755                 760                 765

Thr Pro Leu Ala Ile Ala Lys Arg Leu Gly Tyr Ile Ser Val Thr Asp
    770                 775                 780

Val Leu Lys Val Val Thr Asp Glu Thr Ser Phe Val Leu Val Ser Asp
785                 790                 795                 800

Lys His Arg Met Ser Phe Pro Glu Thr Val Asp Glu Ile Leu Asp Val
                805                 810                 815

Ser Glu Asp Glu Gly Glu Glu Leu Ile Ser Phe Lys Ala Glu Arg Arg
            820                 825                 830

Asp Ser Arg Asp Val Asp Glu Glu Lys Glu Leu Leu Asp Phe Val Pro
        835                 840                 845

Lys Leu Asp Gln Val Val Glu Ser Pro Ala Ile Pro Arg Ile Pro Cys
    850                 855                 860

Ala Met Pro Glu Thr Val Val Ile Arg Ser Glu Glu Gln Glu Gln Ala
865                 870                 875                 880

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

Glu Thr Ser Asp Asn Ile Ser Pro Val Ala Ser Pro Val His Thr Gly
            900                 905                 910

Phe Leu Val Ser Phe Met Val Asp Ala Arg Gly Gly Ser Met Arg Gly
        915                 920                 925

Ser Arg His Asn Gly Leu Arg Val Val Ile Pro Pro Arg Thr Cys Ala
    930                 935                 940

Ala Pro Thr Arg Ile Thr Cys Arg Leu Val Lys Pro Gln Lys Leu Ser
945                 950                 955                 960

Thr Pro Pro Pro Leu Ala Glu Glu Glu Gly Leu Ala Ser Arg Ile Ile
                965                 970                 975

Ala Leu Gly Pro Thr Gly Ala Gln Phe Leu Ser Pro Val Ile Val Glu
            980                 985                 990
```

Ile Pro His Phe Ala Ser His Gly Arg Gly Asp Arg Glu Leu Val Val
995 1000 1005

Leu Arg Ser Glu Asn Gly Ser Val Trp Lys Glu His Arg Ser Arg
1010 1015 1020

Tyr Gly Glu Ser Tyr Leu Asp Gln Ile Leu Asn Gly Met Asp Glu
1025 1030 1035

Glu Leu Gly Ser Leu Glu Glu Leu Glu Lys Lys Arg Val Cys Arg
1040 1045 1050

Ile Ile Thr Thr Asp Phe Pro Leu Tyr Phe Val Ile Met Ser Arg
1055 1060 1065

Leu Cys Gln Asp Tyr Asp Thr Ile Gly Pro Glu Gly Gly Ser Leu
1070 1075 1080

Lys Ser Lys Leu Val Pro Leu Val Gln Ala Thr Phe Pro Glu Asn
1085 1090 1095

Ala Val Thr Lys Arg Val Lys Leu Ala Leu Gln Ala Gln Pro Val
1100 1105 1110

Pro Asp Glu Leu Val Thr Lys Leu Leu Gly Asn Gln Ala Thr Phe
1115 1120 1125

Ser Pro Ile Val Thr Val Glu Pro Arg Arg Arg Lys Phe His Arg
1130 1135 1140

Pro Ile Gly Leu Arg Ile Pro Leu Pro Pro Ser Trp Thr Asp Asn
1145 1150 1155

Pro Arg Asp Ser Gly Glu Gly Asp Thr Thr Ser Leu Arg Leu Leu
1160 1165 1170

Cys Ser Val Ile Gly Gly Thr Asp Gln Ala Gln Trp Glu Asp Ile
1175 1180 1185

Thr Gly Thr Thr Lys Leu Val Tyr Ala Asn Glu Cys Ala Asn Phe
1190 1195 1200

```
Thr Thr  Asn Val Ser Ala Arg  Phe Trp Leu Ser Asp  Cys Pro Arg
    1205                 1210                 1215

Thr Ala  Glu Ala Val Asn Phe  Ala Thr Leu Leu Tyr  Lys Glu Leu
    1220                 1225                 1230

Thr Ala  Val Pro Tyr Met Ala  Lys Phe Val Ile Phe  Ala Lys Met
    1235                 1240                 1245

Asn Asp  Pro Arg Glu Gly Arg  Leu Arg Cys Tyr Cys  Met Thr Asp
    1250                 1255                 1260

Asp Lys  Val Asp Lys Thr Leu  Glu Gln His Glu Asn  Phe Val Glu
    1265                 1270                 1275

Val Ala  Arg Ser Arg Asp Ile  Glu Val Leu Glu Gly  Met Ser Leu
    1280                 1285                 1290

Phe Ala  Glu Leu Ser Gly Asn  Leu Val Pro Val Lys  Lys Ala Ala
    1295                 1300                 1305

Gln Gln  Arg Ser Phe His Phe  Gln Ser Phe Arg Glu  Asn Arg Leu
    1310                 1315                 1320

Ala Met  Pro Val Lys Val Arg  Asp Ser Ser Arg Glu  Pro Gly Gly
    1325                 1330                 1335

Ser Leu  Ser Phe Leu Arg Lys  Ala Met Lys Tyr Glu  Asp Thr Gln
    1340                 1345                 1350

His Ile  Leu Cys His Leu Asn  Ile Thr Met Pro Pro  Cys Ala Lys
    1355                 1360                 1365

Gly Ser  Gly Ala Glu Asp Arg  Arg Arg Thr Pro Thr  Pro Leu Ala
    1370                 1375                 1380

Leu Arg  Tyr Ser Ile Leu Ser  Glu Ser Thr Pro Gly  Ser Leu Ser
    1385                 1390                 1395

Gly Thr  Glu Gln Ala Glu Met  Lys Met Ala Val Ile  Ser Glu His
    1400                 1405                 1410
```

```
Leu Gly  Leu Ser Trp Ala Glu  Leu Ala Arg Glu Leu  Gln Phe Ser
    1415                 1420                 1425

Val Glu  Asp Ile Asn Arg Ile  Arg Val Glu Asn Pro  Asn Ser Leu
    1430                 1435                 1440

Leu Glu  Gln Ser Val Ala Leu  Leu Asn Leu Trp Val  Ile Arg Glu
    1445                 1450                 1455

Gly Gln  Asn Ala Asn Met Glu  Asn Leu Tyr Thr Ala  Leu Gln Ser
    1460                 1465                 1470

Ile Asp  Arg Gly Glu Ile Val  Asn Met Leu Glu Gly  Ser Gly Arg
    1475                 1480                 1485

Gln Ser  Arg Asn Leu Lys Pro  Asp Arg Arg His Thr  Asp Arg Asp
    1490                 1495                 1500

Tyr Ser  Leu Ser Pro Ser Gln  Met Asn Gly Tyr Ser  Ser Leu Gln
    1505                 1510                 1515

Asp Glu  Leu Leu Ser Pro Ala  Ser Leu Gly Cys Ala  Leu Ser Ser
    1520                 1525                 1530

Pro Leu  Arg Ala Asp Gln Tyr  Trp Asn Glu Val Ala  Val Leu Asp
    1535                 1540                 1545

Ala Ile  Pro Leu Ala Ala Thr  Glu His Asp Thr Met  Leu Glu Met
    1550                 1555                 1560

Ser Asp  Met Gln Val Trp Ser  Ala Gly Leu Thr Pro  Ser Leu Val
    1565                 1570                 1575

Thr Ala  Glu Asp Ser Ser Leu  Glu Cys Ser Lys Ala  Glu Asp Ser
    1580                 1585                 1590

Asp Ala  Thr Gly His Glu Trp  Lys Leu Glu Gly Ala  Leu Ser Glu
    1595                 1600                 1605

Glu Pro  Arg Gly Pro Glu Leu  Gly Ser Leu Glu Leu  Val Glu Asp
    1610                 1615                 1620
```

```
Asp Thr  Val Asp Ser Asp Ala  Thr Asn Gly Leu Ile  Asp Leu Leu
    1625                1630                1635

Glu Gln  Glu Glu Gly Gln Arg  Ser Glu Glu Lys Leu  Pro Gly Ser
    1640                1645                1650

Lys Arg  Gln Asp Asp Ala Thr  Gly Ala Gly Gln Asp  Ser Glu Asn
    1655                1660                1665

Glu Val  Ser Leu Val Ser Gly  His Gln Arg Gly Gln  Ala Arg Ile
    1670                1675                1680

Thr His  Ser Pro Thr Val Ser  Gln Val Thr Glu Arg  Ser Gln Asp
    1685                1690                1695

Arg Leu  Gln Asp Trp Asp Ala  Asp Gly Ser Ile Val  Ser Tyr Leu
    1700                1705                1710

Gln Asp  Ala Ala Gln Gly Ser  Trp Gln Glu Glu Val  Thr Gln Gly
    1715                1720                1725

Pro His  Ser Phe Gln Gly Thr  Ser Thr Met Thr Glu  Gly Leu Glu
    1730                1735                1740

Pro Gly  Gly Ser Gln Glu Tyr  Glu Lys Val Leu Val  Ser Val Ser
    1745                1750                1755

Glu His  Thr Trp Thr Glu Gln  Pro Glu Ala Glu Ser  Ser Gln Ala
    1760                1765                1770

Asp Arg  Asp Arg Arg Gln Gln  Gly Gln Glu Glu Gln  Val Gln Glu
    1775                1780                1785

Ala Lys  Asn Thr Phe Thr Gln  Val Val Gln Gly Asn  Glu Phe Gln
    1790                1795                1800

Asn Ile  Pro Gly Glu Gln Val  Thr Glu Glu Gln Phe  Thr Asp Glu
    1805                1810                1815

Gln Gly  Asn Ile Val Thr Lys  Lys Ile Ile Arg Lys  Val Val Arg
    1820                1825                1830

Gln Ile  Asp Leu Ser Ser Ala  Asp Ala Ala Gln Glu  His Glu Glu
```

```
    1835                1840                1845

Val Glu  Leu Arg Gly Ser Gly  Leu Gln Pro Asp Leu  Ile Glu Gly
    1850                1855                1860

Arg Lys  Gly Ala Gln Ile Val  Lys Arg Ala Ser Leu  Lys Arg Gly
    1865                1870                1875

Lys Gln
    1880
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<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ANK1; "

<220>
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<223> /note="Gene Name:
ankyrin 1, erythrocytic; "

<220>
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<220>
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<223> /note="ENSP ID: ENSP00000297744"

<400> 4850

```
Met Trp Thr Phe Val Thr Gln Leu Leu Val Thr Leu Val Leu Leu Ser
1               5                  10                  15

Phe Phe Leu Val Ser Cys Gln Asn Val Met His Ile Val Arg Gly Ser
            20                  25                  30

Leu Cys Phe Val Leu Lys His Ile His Gln Glu Leu Asp Lys Glu Leu
        35                  40                  45

Gly Glu Ser Glu Gly Leu Ser Asp Asp Glu Glu Thr Ile Ser Thr Arg
    50                  55                  60
```

```
Val Val Arg Arg Arg Val Phe Leu Lys Gly Asn Glu Phe Gln Asn Ile
65                  70                  75                  80


Pro Gly Glu Gln Val Thr Glu Glu Gln Phe Thr Asp Glu Gln Gly Asn
                85                  90                  95


Ile Val Thr Lys Lys Asp His Thr Ser Thr Pro Asn Pro
            100                 105


<210> 4851
<211> 155
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Uniprot ID:  P16157; "

<220>
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<400> 4851
Met Trp Thr Phe Val Thr Gln Leu Leu Val Thr Leu Val Leu Leu Ser
1               5                   10                  15


Phe Phe Leu Val Ser Cys Gln Asn Val Met His Ile Val Arg Gly Ser
            20                  25                  30


Leu Cys Phe Val Leu Lys His Ile His Gln Glu Leu Asp Lys Glu Leu
        35                  40                  45


Gly Glu Ser Glu Gly Leu Ser Asp Asp Glu Glu Thr Ile Ser Thr Arg
    50                  55                  60


Val Val Arg Arg Arg Val Phe Leu Lys Gly Asn Glu Phe Gln Asn Ile
```

65 70 75 80

Pro Gly Glu Gln Val Thr Glu Glu Gln Phe Thr Asp Glu Gln Gly Asn
85 90 95

Ile Val Thr Lys Lys Ile Ile Arg Lys Val Val Arg Gln Ile Asp Leu
100 105 110

Ser Ser Ala Asp Ala Ala Gln Glu His Glu Glu Val Glu Leu Arg Gly
115 120 125

Ser Gly Leu Gln Pro Asp Leu Ile Glu Gly Arg Lys Gly Ala Gln Ile
130 135 140

Val Lys Arg Ala Ser Leu Lys Arg Gly Lys Gln
145 150 155

<210> 4852
<211> 113
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<400> 4852
Met Trp Thr Phe Val Thr Gln Leu Leu Val Thr Leu Val Leu Leu Ser
1 5 10 15

Phe Phe Leu Val Ser Cys Gln Asn Val Met His Ile Val Arg Gly Ser
20 25 30

Leu Cys Phe Val Leu Lys His Ile His Gln Glu Leu Asp Lys Glu Leu
35 40 45

```
Gly Glu Ser Glu Gly Leu Ser Asp Asp Glu Glu Thr Ile Ser Thr Arg
    50                  55                  60

Val Val Arg Arg Arg Val Phe Leu Lys Gly Asn Glu Phe Gln Asn Ile
65                  70                  75                  80

Pro Gly Glu Gln Val Thr Glu Glu Gln Phe Thr Asp Glu Gln Gly Asn
                85                  90                  95

Ile Val Thr Lys Lys Val Glu Leu Arg Gly Ser Gly Leu Gln Pro Asp
            100                 105                 110

Leu
```

<210> 4853
<211> 1881
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000339620"

<400> 4853

```
Met Pro Tyr Ser Val Gly Phe Arg Glu Ala Asp Ala Ala Thr Ser Phe
1               5                   10                  15

Leu Arg Ala Ala Arg Ser Gly Asn Leu Asp Lys Ala Leu Asp His Leu
            20                  25                  30

Arg Asn Gly Val Asp Ile Asn Thr Cys Asn Gln Asn Gly Leu Asn Gly
```

```
        35                  40                  45

Leu His Leu Ala Ser Lys Glu Gly His Val Lys Met Val Val Glu Leu
    50                  55                  60

Leu His Lys Glu Ile Ile Leu Glu Thr Thr Thr Lys Lys Gly Asn Thr
65                  70                  75                  80

Ala Leu His Ile Ala Ala Leu Ala Gly Gln Asp Glu Val Val Arg Glu
                85                  90                  95

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

Thr Pro Leu Tyr Met Ala Ala Gln Glu Asn His Leu Glu Val Val Lys
        115                 120                 125

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

Phe Thr Pro Leu Ala Val Ala Leu Gln Gln Gly His Glu Asn Val Val
145                 150                 155                 160

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

Leu His Ile Ala Ala Arg Asn Asp Asp Thr Arg Thr Ala Ala Val Leu
            180                 185                 190

Leu Gln Asn Asp Pro Asn Pro Asp Val Leu Ser Lys Thr Gly Phe Thr
        195                 200                 205

Pro Leu His Ile Ala Ala His Tyr Glu Asn Leu Asn Val Ala Gln Leu
    210                 215                 220

Leu Leu Asn Arg Gly Ala Ser Val Asn Phe Thr Pro Gln Asn Gly Ile
225                 230                 235                 240

Thr Pro Leu His Ile Ala Ser Arg Arg Gly Asn Val Ile Met Val Arg
                245                 250                 255

Leu Leu Leu Asp Arg Gly Ala Gln Ile Glu Thr Lys Thr Lys Asp Glu
            260                 265                 270
```

```
Leu Thr Pro Leu His Cys Ala Ala Arg Asn Gly His Val Arg Ile Ser
        275                 280                 285

Glu Ile Leu Leu Asp His Gly Ala Pro Ile Gln Ala Lys Thr Lys Asn
    290                 295                 300

Gly Leu Ser Pro Ile His Met Ala Ala Gln Gly Asp His Leu Asp Cys
305                 310                 315                 320

Val Arg Leu Leu Leu Gln Tyr Asp Ala Glu Ile Asp Asp Ile Thr Leu
                325                 330                 335

Asp His Leu Thr Pro Leu His Val Ala Ala His Cys Gly His His Arg
            340                 345                 350

Val Ala Lys Val Leu Leu Asp Lys Gly Ala Lys Pro Asn Ser Arg Ala
        355                 360                 365

Leu Asn Gly Phe Thr Pro Leu His Ile Ala Cys Lys Lys Asn His Val
    370                 375                 380

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

Thr Glu Ser Gly Leu Thr Pro Leu His Val Ala Ser Phe Met Gly His
                405                 410                 415

Leu Pro Ile Val Lys Asn Leu Leu Gln Arg Gly Ala Ser Pro Asn Val
            420                 425                 430

Ser Asn Val Lys Val Glu Thr Pro Leu His Met Ala Ala Arg Ala Gly
        435                 440                 445

His Thr Glu Val Ala Lys Tyr Leu Leu Gln Asn Lys Ala Lys Val Asn
    450                 455                 460

Ala Lys Ala Lys Asp Asp Gln Thr Pro Leu His Cys Ala Ala Arg Ile
465                 470                 475                 480

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

```
Asn Leu Ala Thr Thr Ala Gly His Thr Pro Leu His Ile Ala Ala Arg
            500                 505                 510

Glu Gly His Val Glu Thr Val Leu Ala Leu Leu Glu Lys Glu Ala Ser
        515                 520                 525

Gln Ala Cys Met Thr Lys Lys Gly Phe Thr Pro Leu His Val Ala Ala
    530                 535                 540

Lys Tyr Gly Lys Val Arg Val Ala Glu Leu Leu Leu Glu Arg Asp Ala
545                 550                 555                 560

His Pro Asn Ala Ala Gly Lys Asn Gly Leu Thr Pro Leu His Val Ala
                565                 570                 575

Val His His Asn Asn Leu Asp Ile Val Lys Leu Leu Leu Pro Arg Gly
            580                 585                 590

Gly Ser Pro His Ser Pro Ala Trp Asn Gly Tyr Thr Pro Leu His Ile
        595                 600                 605

Ala Ala Lys Gln Asn Gln Val Glu Val Ala Arg Ser Leu Leu Gln Tyr
    610                 615                 620

Gly Gly Ser Ala Asn Ala Glu Ser Val Gln Gly Val Thr Pro Leu His
625                 630                 635                 640

Leu Ala Ala Gln Glu Gly His Ala Glu Met Val Ala Leu Leu Leu Ser
                645                 650                 655

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

His Leu Val Ala Gln Glu Gly His Val Pro Val Ala Asp Val Leu Ile
        675                 680                 685

Lys His Gly Val Met Val Asp Ala Thr Thr Arg Met Gly Tyr Thr Pro
    690                 695                 700

Leu His Val Ala Ser His Tyr Gly Asn Ile Lys Leu Val Lys Phe Leu
705                 710                 715                 720
```

```
Leu Gln His Gln Ala Asp Val Asn Ala Lys Thr Lys Leu Gly Tyr Ser
                725                 730                 735

Pro Leu His Gln Ala Ala Gln Gln Gly His Thr Asp Ile Val Thr Leu
            740                 745                 750

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

Thr Pro Leu Ala Ile Ala Lys Arg Leu Gly Tyr Ile Ser Val Thr Asp
    770                 775                 780

Val Leu Lys Val Val Thr Asp Glu Thr Ser Phe Val Leu Val Ser Asp
785                 790                 795                 800

Lys His Arg Met Ser Phe Pro Glu Thr Val Asp Glu Ile Leu Asp Val
                805                 810                 815

Ser Glu Asp Glu Gly Glu Glu Leu Ile Ser Phe Lys Ala Glu Arg Arg
            820                 825                 830

Asp Ser Arg Asp Val Asp Glu Glu Lys Glu Leu Leu Asp Phe Val Pro
        835                 840                 845

Lys Leu Asp Gln Val Val Glu Ser Pro Ala Ile Pro Arg Ile Pro Cys
    850                 855                 860

Ala Met Pro Glu Thr Val Val Ile Arg Ser Glu Glu Gln Glu Gln Ala
865                 870                 875                 880

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

Glu Thr Ser Asp Asn Ile Ser Pro Val Ala Ser Pro Val His Thr Gly
            900                 905                 910

Phe Leu Val Ser Phe Met Val Asp Ala Arg Gly Gly Ser Met Arg Gly
        915                 920                 925

Ser Arg His Asn Gly Leu Arg Val Val Ile Pro Pro Arg Thr Cys Ala
    930                 935                 940

Ala Pro Thr Arg Ile Thr Cys Arg Leu Val Lys Pro Gln Lys Leu Ser
```

945 950 955 960

Thr Pro Pro Pro Leu Ala Glu Glu Glu Gly Leu Ala Ser Arg Ile Ile
965 970 975

Ala Leu Gly Pro Thr Gly Ala Gln Phe Leu Ser Pro Val Ile Val Glu
980 985 990

Ile Pro His Phe Ala Ser His Gly Arg Gly Asp Arg Glu Leu Val Val
995 1000 1005

Leu Arg Ser Glu Asn Gly Ser Val Trp Lys Glu His Arg Ser Arg
1010 1015 1020

Tyr Gly Glu Ser Tyr Leu Asp Gln Ile Leu Asn Gly Met Asp Glu
1025 1030 1035

Glu Leu Gly Ser Leu Glu Glu Leu Glu Lys Lys Arg Val Cys Arg
1040 1045 1050

Ile Ile Thr Thr Asp Phe Pro Leu Tyr Phe Val Ile Met Ser Arg
1055 1060 1065

Leu Cys Gln Asp Tyr Asp Thr Ile Gly Pro Glu Gly Gly Ser Leu
1070 1075 1080

Lys Ser Lys Leu Val Pro Leu Val Gln Ala Thr Phe Pro Glu Asn
1085 1090 1095

Ala Val Thr Lys Arg Val Lys Leu Ala Leu Gln Ala Gln Pro Val
1100 1105 1110

Pro Asp Glu Leu Val Thr Lys Leu Leu Gly Asn Gln Ala Thr Phe
1115 1120 1125

Ser Pro Ile Val Thr Val Glu Pro Arg Arg Arg Lys Phe His Arg
1130 1135 1140

Pro Ile Gly Leu Arg Ile Pro Leu Pro Pro Ser Trp Thr Asp Asn
1145 1150 1155

Pro Arg Asp Ser Gly Glu Gly Asp Thr Thr Ser Leu Arg Leu Leu

1160 1165 1170

Cys Ser Val Ile Gly Gly Thr Asp Gln Ala Gln Trp Glu Asp Ile
1175 1180 1185

Thr Gly Thr Thr Lys Leu Val Tyr Ala Asn Glu Cys Ala Asn Phe
1190 1195 1200

Thr Thr Asn Val Ser Ala Arg Phe Trp Leu Ser Asp Cys Pro Arg
1205 1210 1215

Thr Ala Glu Ala Val Asn Phe Ala Thr Leu Leu Tyr Lys Glu Leu
1220 1225 1230

Thr Ala Val Pro Tyr Met Ala Lys Phe Val Ile Phe Ala Lys Met
1235 1240 1245

Asn Asp Pro Arg Glu Gly Arg Leu Arg Cys Tyr Cys Met Thr Asp
1250 1255 1260

Asp Lys Val Asp Lys Thr Leu Glu Gln His Glu Asn Phe Val Glu
1265 1270 1275

Val Ala Arg Ser Arg Asp Ile Glu Val Leu Glu Gly Met Ser Leu
1280 1285 1290

Phe Ala Glu Leu Ser Gly Asn Leu Val Pro Val Lys Lys Ala Ala
1295 1300 1305

Gln Gln Arg Ser Phe His Phe Gln Ser Phe Arg Glu Asn Arg Leu
1310 1315 1320

Ala Met Pro Val Lys Val Arg Asp Ser Ser Arg Glu Pro Gly Gly
1325 1330 1335

Ser Leu Ser Phe Leu Arg Lys Ala Met Lys Tyr Glu Asp Thr Gln
1340 1345 1350

His Ile Leu Cys His Leu Asn Ile Thr Met Pro Pro Cys Ala Lys
1355 1360 1365

Gly Ser Gly Ala Glu Asp Arg Arg Arg Thr Pro Thr Pro Leu Ala
1370 1375 1380

```
Leu Arg  Tyr Ser Ile Leu Ser  Glu Ser Thr Pro Gly  Ser Leu Ser
    1385                1390                1395

Gly Thr  Glu Gln Ala Glu Met  Lys Met Ala Val Ile  Ser Glu His
    1400                1405                1410

Leu Gly  Leu Ser Trp Ala Glu  Leu Ala Arg Glu Leu  Gln Phe Ser
    1415                1420                1425

Val Glu  Asp Ile Asn Arg Ile  Arg Val Glu Asn Pro  Asn Ser Leu
    1430                1435                1440

Leu Glu  Gln Ser Val Ala Leu  Leu Asn Leu Trp Val  Ile Arg Glu
    1445                1450                1455

Gly Gln  Asn Ala Asn Met Glu  Asn Leu Tyr Thr Ala  Leu Gln Ser
    1460                1465                1470

Ile Asp  Arg Gly Glu Ile Val  Asn Met Leu Glu Gly  Ser Gly Arg
    1475                1480                1485

Gln Ser  Arg Asn Leu Lys Pro  Asp Arg Arg His Thr  Asp Arg Asp
    1490                1495                1500

Tyr Ser  Leu Ser Pro Ser Gln  Met Asn Gly Tyr Ser  Ser Leu Gln
    1505                1510                1515

Asp Glu  Leu Leu Ser Pro Ala  Ser Leu Gly Cys Ala  Leu Ser Ser
    1520                1525                1530

Pro Leu  Arg Ala Asp Gln Tyr  Trp Asn Glu Val Ala  Val Leu Asp
    1535                1540                1545

Ala Ile  Pro Leu Ala Ala Thr  Glu His Asp Thr Met  Leu Glu Met
    1550                1555                1560

Ser Asp  Met Gln Val Trp Ser  Ala Gly Leu Thr Pro  Ser Leu Val
    1565                1570                1575

Thr Ala  Glu Asp Ser Ser Leu  Glu Cys Ser Lys Ala  Glu Asp Ser
    1580                1585                1590
```

```
Asp Ala  Thr Gly His Glu Trp  Lys Leu Glu Gly Ala  Leu Ser Glu
    1595                1600                1605

Glu Pro  Arg Gly Pro Glu Leu  Gly Ser Leu Glu Leu  Val Glu Asp
    1610                1615                1620

Asp Thr  Val Asp Ser Asp Ala  Thr Asn Gly Leu Ile  Asp Leu Leu
    1625                1630                1635

Glu Gln  Glu Glu Gly Gln Arg  Ser Glu Glu Lys Leu  Pro Gly Ser
    1640                1645                1650

Lys Arg  Gln Asp Asp Ala Thr  Gly Ala Gly Gln Asp  Ser Glu Asn
    1655                1660                1665

Glu Val  Ser Leu Val Ser Gly  His Gln Arg Gly Gln  Ala Arg Ile
    1670                1675                1680

Thr His  Ser Pro Thr Val Ser  Gln Val Thr Glu Arg  Ser Gln Asp
    1685                1690                1695

Arg Leu  Gln Asp Trp Asp Ala  Asp Gly Ser Ile Val  Ser Tyr Leu
    1700                1705                1710

Gln Asp  Ala Ala Gln Gly Ser  Trp Gln Glu Glu Val  Thr Gln Gly
    1715                1720                1725

Pro His  Ser Phe Gln Gly Thr  Ser Thr Met Thr Glu  Gly Leu Glu
    1730                1735                1740

Pro Gly  Gly Ser Gln Glu Tyr  Glu Lys Val Leu Val  Ser Val Ser
    1745                1750                1755

Glu His  Thr Trp Thr Glu Gln  Pro Glu Ala Glu Ser  Ser Gln Ala
    1760                1765                1770

Asp Arg  Asp Arg Arg Gln Gln  Gly Gln Glu Glu Gln  Val Gln Glu
    1775                1780                1785

Ala Lys  Asn Thr Phe Thr Gln  Val Val Gln Gly Asn  Glu Phe Gln
    1790                1795                1800
```

```
Asn Ile  Pro Gly Glu Gln Val  Thr Glu Glu Gln Phe  Thr Asp Glu
    1805                1810                1815

Gln Gly  Asn Ile Val Thr Lys  Lys Ile Ile Arg Lys  Val Val Arg
    1820                1825                1830

Gln Ile  Asp Leu Ser Ser Ala  Asp Ala Ala Gln Glu  His Glu Glu
    1835                1840                1845

Val Thr  Val Glu Gly Pro Leu  Glu Asp Pro Ser Glu  Leu Glu Val
    1850                1855                1860

Asp Ile  Asp Tyr Phe Met Lys  His Ser Lys Asp His  Thr Ser Thr
    1865                1870                1875

Pro Asn  Pro
    1880
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<210> 4854
<211> 177
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1065; "

<220>
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<220>
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<223> /note="Gene Name:
ankyrin 1, erythrocytic; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000428315"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 4854

```
Xaa Glu Asp Thr Gln His Ile Leu Cys His Leu Asn Ile Thr Met Pro
1               5                  10                  15
```

```
Pro Cys Ala Lys Gly Ser Gly Ala Glu Asp Arg Arg Arg Thr Pro Thr
            20                  25                  30

Pro Leu Ala Leu Arg Tyr Ser Ile Leu Ser Glu Ser Thr Pro Gly Ser
        35                  40                  45

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

His Leu Gly Leu Ser Trp Ala Glu Leu Ala Arg Glu Leu Gln Phe Ser
65                  70                  75                  80

Val Glu Asp Ile Asn Arg Ile Arg Val Glu Asn Pro Asn Ser Leu Leu
                85                  90                  95

Glu Gln Ser Val Ala Leu Leu Asn Leu Trp Val Ile Arg Glu Gly Gln
            100                 105                 110

Asn Ala Asn Met Glu Asn Leu Tyr Thr Ala Leu Gln Ser Ile Asp Arg
        115                 120                 125

Gly Glu Ile Val Asn Met Leu Glu Gly Ser Gly Arg Gln Ser Arg Asn
    130                 135                 140

Leu Lys Pro Asp Arg Arg His Thr Asp Arg Asp Tyr Ser Leu Ser Pro
145                 150                 155                 160

Ser Gln Met Asn Gly Gly Arg Ser Glu Val Arg Arg Glu Ala Ala Arg
                165                 170                 175

Phe
```

<210> 4855
<211> 131
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1065; "

<220>
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<223> /note="Gene Symbol: ANK1; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin 1, erythrocytic; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000428750"

<400> 4855
Met Trp Thr Phe Val Thr Gln Leu Leu Val Thr Leu Val Leu Leu Ser
1 5 10 15

Phe Phe Leu Val Ser Cys Gln Asn Val Met His Ile Val Arg Gly Ser
20 25 30

Leu Cys Phe Val Leu Lys His Ile His Gln Glu Leu Asp Lys Glu Leu
35 40 45

Gly Glu Ser Glu Gly Leu Ser Asp Asp Glu Glu Thr Ile Ser Thr Arg
50 55 60

Val Val Arg Arg Arg Val Phe Leu Lys Gly Asn Glu Phe Gln Asn Ile
65 70 75 80

Pro Gly Glu Gln Val Thr Glu Glu Gln Phe Thr Asp Glu Gln Gly Asn
85 90 95

Ile Val Thr Lys Lys Ile Ile Arg Lys Val Val Arg Gln Ile Asp Leu
100 105 110

Ser Ser Ala Asp Ala Ala Gln Glu His Glu Glu Asp His Thr Ser Thr
115 120 125

Pro Asn Pro
130

<210> 4856
<211> 1040
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source

<223> /note="Gene Symbol: ANK1; "

<220>
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<223> /note="Gene Name:
ankyrin 1, erythrocytic; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430174"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 4856

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Xaa Ile Lys His Gly Val Met Val Asp Ala Thr Thr Arg Met Gly Tyr
1               5                  10                  15

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

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

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

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

Gly Thr Thr Pro Leu Ala Ile Ala Lys Arg Leu Gly Tyr Ile Ser Val
                85                  90                  95

Thr Asp Val Leu Lys Val Val Thr Asp Glu Thr Ser Phe Val Leu Val
            100                 105                 110

Ser Asp Lys His Arg Met Ser Phe Pro Glu Thr Val Asp Glu Ile Leu
        115                 120                 125

Asp Val Ser Glu Asp Glu Gly Thr Ala His Ile Thr Ile Met Gly Glu
    130                 135                 140

Glu Leu Ile Ser Phe Lys Ala Glu Arg Arg Asp Ser Arg Asp Val Asp
145                 150                 155                 160
```

```
Glu Glu Lys Glu Leu Leu Asp Phe Val Pro Lys Leu Asp Gln Val Val
                165                 170                 175

Glu Ser Pro Ala Ile Pro Arg Ile Pro Cys Ala Met Pro Glu Thr Val
            180                 185                 190

Val Ile Arg Ser Glu Glu Gln Glu Gln Ala Ser Lys Glu Tyr Asp Glu
        195                 200                 205

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

Ser Pro Val Ala Ser Pro Val His Thr Gly Phe Leu Val Ser Phe Met
225                 230                 235                 240

Val Asp Ala Arg Gly Gly Ser Met Arg Gly Ser Arg His Asn Gly Leu
                245                 250                 255

Arg Val Val Ile Pro Pro Arg Thr Cys Ala Ala Pro Thr Arg Ile Thr
            260                 265                 270

Cys Arg Leu Val Lys Pro Gln Lys Leu Ser Thr Pro Pro Pro Leu Ala
        275                 280                 285

Glu Glu Glu Gly Leu Ala Ser Arg Ile Ile Ala Leu Gly Pro Thr Gly
    290                 295                 300

Ala Gln Phe Leu Ser Pro Val Ile Val Glu Ile Pro His Phe Ala Ser
305                 310                 315                 320

His Gly Arg Gly Asp Arg Glu Leu Val Val Leu Arg Ser Glu Asn Gly
                325                 330                 335

Ser Val Trp Lys Glu His Arg Ser Arg Tyr Gly Glu Ser Tyr Leu Asp
            340                 345                 350

Gln Ile Leu Asn Gly Met Asp Glu Glu Leu Gly Ser Leu Glu Glu Leu
        355                 360                 365

Glu Lys Lys Arg Val Cys Arg Ile Ile Thr Thr Asp Phe Pro Leu Tyr
    370                 375                 380
```

```
Phe Val Ile Met Ser Arg Leu Cys Gln Asp Tyr Asp Thr Ile Gly Pro
385                 390                 395                 400

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

Phe Pro Glu Asn Ala Val Thr Lys Arg Val Lys Leu Ala Leu Gln Ala
            420                 425                 430

Gln Pro Val Pro Asp Glu Leu Val Thr Lys Leu Leu Gly Asn Gln Ala
        435                 440                 445

Thr Phe Ser Pro Ile Val Thr Val Glu Pro Arg Arg Arg Lys Phe His
    450                 455                 460

Arg Pro Ile Gly Leu Arg Ile Pro Leu Pro Pro Ser Trp Thr Asp Asn
465                 470                 475                 480

Pro Arg Asp Ser Gly Glu Gly Asp Thr Thr Ser Leu Arg Leu Leu Cys
                485                 490                 495

Ser Val Ile Gly Gly Thr Asp Gln Ala Gln Trp Glu Asp Ile Thr Gly
            500                 505                 510

Thr Thr Lys Leu Val Tyr Ala Asn Glu Cys Ala Asn Phe Thr Thr Asn
        515                 520                 525

Val Ser Ala Arg Phe Trp Leu Ser Asp Cys Pro Arg Thr Ala Glu Ala
    530                 535                 540

Val Asn Phe Ala Thr Leu Leu Tyr Lys Glu Leu Thr Ala Val Pro Tyr
545                 550                 555                 560

Met Ala Lys Phe Val Ile Phe Ala Lys Met Asn Asp Pro Arg Glu Gly
                565                 570                 575

Arg Leu Arg Cys Tyr Cys Met Thr Asp Asp Lys Val Asp Lys Thr Leu
            580                 585                 590

Glu Gln His Glu Asn Phe Val Glu Val Ala Arg Ser Arg Asp Ile Glu
        595                 600                 605

Val Leu Glu Gly Met Ser Leu Phe Ala Glu Leu Ser Gly Asn Leu Val
```

610 615 620

Pro Val Lys Lys Ala Ala Gln Gln Arg Ser Phe His Phe Gln Ser Phe
625 630 635 640

Arg Glu Asn Arg Leu Ala Met Pro Val Lys Val Arg Asp Ser Ser Arg
645 650 655

Glu Pro Gly Gly Ser Leu Ser Phe Leu Arg Lys Ala Met Lys Tyr Glu
660 665 670

Asp Thr Gln His Ile Leu Cys His Leu Asn Ile Thr Met Pro Pro Cys
675 680 685

Ala Lys Gly Ser Gly Ala Glu Asp Arg Arg Arg Thr Pro Thr Pro Leu
690 695 700

Ala Leu Arg Tyr Ser Ile Leu Ser Glu Ser Thr Pro Gly Ser Leu Ser
705 710 715 720

Gly Thr Glu Gln Ala Glu Met Lys Met Ala Val Ile Ser Glu His Leu
725 730 735

Gly Leu Ser Trp Ala Glu Leu Ala Arg Glu Leu Gln Phe Ser Val Glu
740 745 750

Asp Ile Asn Arg Ile Arg Val Glu Asn Pro Asn Ser Leu Leu Glu Gln
755 760 765

Ser Val Ala Leu Leu Asn Leu Trp Val Ile Arg Glu Gly Gln Asn Ala
770 775 780

Asn Met Glu Asn Leu Tyr Thr Ala Leu Gln Ser Ile Asp Arg Gly Glu
785 790 795 800

Ile Val Asn Met Leu Glu Gly Ser Gly Arg Gln Ser Arg Asn Leu Lys
805 810 815

Pro Asp Arg Arg His Thr Asp Arg Asp Tyr Ser Leu Ser Pro Ser Gln
820 825 830

Met Asn Gly His Gln Arg Gly Gln Ala Arg Ile Thr His Ser Pro Thr
835 840 845

```
Val Ser Gln Val Thr Glu Arg Ser Gln Asp Arg Leu Gln Asp Trp Asp
    850                 855                 860

Ala Asp Gly Ser Ile Val Ser Tyr Leu Gln Asp Ala Ala Gln Gly Ser
865                 870                 875                 880

Trp Gln Glu Glu Val Thr Gln Gly Pro His Ser Phe Gln Gly Thr Ser
                885                 890                 895

Thr Met Thr Glu Gly Leu Glu Pro Gly Gly Ser Gln Glu Tyr Glu Lys
            900                 905                 910

Val Leu Val Ser Val Ser Glu His Thr Trp Thr Glu Gln Pro Glu Ala
        915                 920                 925

Glu Ser Ser Gln Ala Asp Arg Asp Arg Arg Gln Gln Gly Gln Glu Glu
    930                 935                 940

Gln Val Gln Glu Ala Lys Asn Thr Phe Thr Gln Val Val Gln Gly Asn
945                 950                 955                 960

Glu Phe Gln Asn Ile Pro Gly Glu Gln Val Thr Glu Glu Gln Phe Thr
                965                 970                 975

Asp Glu Gln Gly Asn Ile Val Thr Lys Lys Ile Ile Arg Lys Val Val
            980                 985                 990

Arg Gln Ile Asp Leu Ser Ser Ala  Asp Ala Ala Gln Glu  His Glu
Glu
        995                 1000                1005

Val Glu  Leu Arg Gly Ser Gly  Leu Gln Pro Asp Leu  Ile Glu Gly
    1010                1015                1020

Arg Lys  Gly Ala Gln Ile Val  Lys Arg Ala Ser Leu  Lys Arg Gly
    1025                1030                1035

Lys Gln
    1040
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<210> 4857
<211> 156

<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ANK1; "

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<223> /note="Gene Name:
ankyrin 1, erythrocytic; "

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<400> 4857

Met	Trp	Thr	Phe	Val	Thr	Gln	Leu	Leu	Val	Thr	Leu	Val	Leu	Leu	Ser
1				5					10						15

Phe	Phe	Leu	Val	Ser	Cys	Gln	Asn	Val	Met	His	Ile	Val	Arg	Gly	Ser
			20					25					30		

Leu	Cys	Phe	Val	Leu	Lys	His	Ile	His	Gln	Glu	Leu	Asp	Lys	Glu	Leu
		35					40					45			

Gly	Glu	Ser	Glu	Gly	Leu	Ser	Asp	Asp	Glu	Glu	Thr	Ile	Ser	Thr	Arg
	50					55				60					

Val	Val	Arg	Arg	Arg	Val	Phe	Leu	Lys	Gly	Asn	Glu	Phe	Gln	Asn	Ile
65				70					75						80

Pro	Gly	Glu	Gln	Val	Thr	Glu	Glu	Gln	Phe	Thr	Asp	Glu	Gln	Gly	Asn
				85					90					95	

Ile	Val	Thr	Lys	Lys	Ile	Ile	Arg	Lys	Val	Val	Arg	Gln	Ile	Asp	Leu
			100					105					110		

Ser	Ser	Ala	Asp	Ala	Ala	Gln	Glu	His	Glu	Glu	Val	Thr	Val	Glu	Gly
			115					120					125		

```
Pro Leu Glu Asp Pro Ser Glu Leu Glu Val Asp Ile Asp Tyr Phe Met
    130                 135                 140

Lys His Ser Lys Asp His Thr Ser Thr Pro Asn Pro
145                 150                 155


<210> 4858
<211> 3924
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
      ankyrin 2, neuronal; "

<220>
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<400> 4858
Met Met Asn Glu Asp Ala Ala Gln Lys Ser Asp Ser Gly Glu Lys Phe
1               5                   10                  15

Asn Gly Ser Ser Gln Arg Arg Lys Arg Pro Lys Lys Ser Asp Ser Asn
            20                  25                  30

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

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

Leu Asn Ala Leu His Leu Ala Ala Lys Glu Gly His Val Gly Leu Val
65                  70                  75                  80

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

Gly Asn Thr Ala Leu His Ile Ala Ser Leu Ala Gly Gln Ala Glu Val
            100                 105                 110
```

```
Val Lys Val Leu Val Lys Glu Gly Ala Asn Ile Asn Ala Gln Ser Gln
        115                 120                 125

Asn Gly Phe Thr Pro Leu Tyr Met Ala Ala Gln Glu Asn His Ile Asp
    130                 135                 140

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

Glu Asp Gly Phe Thr Pro Leu Ala Val Ala Leu Gln Gln Gly His Asn
                165                 170                 175

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

Leu Pro Ala Leu His Ile Ala Ala Arg Lys Asp Asp Thr Lys Ser Ala
        195                 200                 205

Ala Leu Leu Leu Gln Asn Asp His Asn Ala Asp Val Gln Ser Lys Met
    210                 215                 220

Met Val Asn Arg Thr Thr Glu Ser Gly Phe Thr Pro Leu His Ile Ala
225                 230                 235                 240

Ala His Tyr Gly Asn Val Asn Val Ala Thr Leu Leu Leu Asn Arg Gly
                245                 250                 255

Ala Ala Val Asp Phe Thr Ala Arg Asn Gly Ile Thr Pro Leu His Val
            260                 265                 270

Ala Ser Lys Arg Gly Asn Thr Asn Met Val Lys Leu Leu Leu Asp Arg
        275                 280                 285

Gly Gly Gln Ile Asp Ala Lys Thr Arg Asp Gly Leu Thr Pro Leu His
    290                 295                 300

Cys Ala Ala Arg Ser Gly His Asp Gln Val Val Glu Leu Leu Leu Glu
305                 310                 315                 320

Arg Gly Ala Pro Leu Leu Ala Arg Thr Lys Asn Gly Leu Ser Pro Leu
                325                 330                 335
```

```
His Met Ala Ala Gln Gly Asp His Val Glu Cys Val Lys His Leu Leu
            340                 345                 350

Gln His Lys Ala Pro Val Asp Asp Val Thr Leu Asp Tyr Leu Thr Ala
        355                 360                 365

Leu His Val Ala Ala His Cys Gly His Tyr Arg Val Thr Lys Leu Leu
    370                 375                 380

Leu Asp Lys Arg Ala Asn Pro Asn Ala Arg Ala Leu Asn Gly Phe Thr
385                 390                 395                 400

Pro Leu His Ile Ala Cys Lys Lys Asn Arg Ile Lys Val Met Glu Leu
                405                 410                 415

Leu Val Lys Tyr Gly Ala Ser Ile Gln Ala Ile Thr Glu Ser Gly Leu
            420                 425                 430

Thr Pro Ile His Val Ala Ala Phe Met Gly His Leu Asn Ile Val Leu
        435                 440                 445

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

Glu Thr Ala Leu His Met Ala Ala Arg Ala Gly Gln Val Glu Val Val
465                 470                 475                 480

Arg Cys Leu Leu Arg Asn Gly Ala Leu Val Asp Ala Arg Ala Arg Glu
                485                 490                 495

Glu Gln Thr Pro Leu His Ile Ala Ser Arg Leu Gly Lys Thr Glu Ile
            500                 505                 510

Val Gln Leu Leu Leu Gln His Met Ala His Pro Asp Ala Ala Thr Thr
        515                 520                 525

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

Val Ala Ser Val Leu Leu Glu Ala Gly Ala Ala His Ser Leu Ala Thr
545                 550                 555                 560
```

Lys Lys Gly Phe Thr Pro Leu His Val Ala Ala Lys Tyr Gly Ser Leu
565 570 575

Asp Val Ala Lys Leu Leu Leu Gln Arg Arg Ala Ala Ala Asp Ser Ala
580 585 590

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

Gln Lys Val Ala Leu Leu Leu Leu Glu Lys Gly Ala Ser Pro His Ala
610 615 620

Thr Ala Lys Asn Gly Tyr Thr Pro Leu His Ile Ala Ala Lys Lys Asn
625 630 635 640

Gln Met Gln Ile Ala Ser Thr Leu Leu Asn Tyr Gly Ala Glu Thr Asn
645 650 655

Ile Val Thr Lys Gln Gly Val Thr Pro Leu His Leu Ala Ser Gln Glu
660 665 670

Gly His Thr Asp Met Val Thr Leu Leu Leu Asp Lys Gly Ala Asn Ile
675 680 685

His Met Ser Thr Lys Ser Gly Leu Thr Ser Leu His Leu Ala Ala Gln
690 695 700

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

Gln Asp Ala His Thr Lys Leu Gly Tyr Thr Pro Leu Ile Val Ala Cys
725 730 735

His Tyr Gly Asn Val Lys Met Val Asn Phe Leu Leu Lys Gln Gly Ala
740 745 750

Asn Val Asn Ala Lys Thr Lys Asn Gly Tyr Thr Pro Leu His Gln Ala
755 760 765

Ala Gln Gln Gly His Thr His Ile Ile Asn Val Leu Leu Gln His Gly
770 775 780

Ala Lys Pro Asn Ala Thr Thr Ala Asn Gly Asn Thr Ala Leu Ala Ile

785 790 795 800

Ala Lys Arg Leu Gly Tyr Ile Ser Val Val Asp Thr Leu Lys Val Val
805 810 815

Thr Glu Glu Val Thr Thr Thr Thr Thr Thr Ile Thr Glu Lys His Lys
820 825 830

Leu Asn Val Pro Glu Thr Met Thr Glu Val Leu Asp Val Ser Asp Glu
835 840 845

Glu Gly Asp Asp Thr Met Thr Gly Asp Gly Gly Glu Tyr Leu Arg Pro
850 855 860

Glu Asp Leu Lys Glu Leu Gly Asp Asp Ser Leu Pro Ser Ser Gln Phe
865 870 875 880

Leu Asp Gly Met Asn Tyr Leu Arg Tyr Ser Leu Glu Gly Gly Arg Ser
885 890 895

Asp Ser Leu Arg Ser Phe Ser Ser Asp Arg Ser His Thr Leu Ser His
900 905 910

Ala Ser Tyr Leu Arg Asp Ser Ala Val Met Asp Asp Ser Val Val Ile
915 920 925

Pro Ser His Gln Val Ser Thr Leu Ala Lys Glu Ala Glu Arg Asn Ser
930 935 940

Tyr Arg Leu Ser Trp Gly Thr Glu Asn Leu Asp Asn Val Ala Leu Ser
945 950 955 960

Ser Ser Pro Ile His Ser Gly Phe Leu Val Ser Phe Met Val Asp Ala
965 970 975

Arg Gly Gly Ala Met Arg Gly Cys Arg His Asn Gly Leu Arg Ile Ile
980 985 990

Ile Pro Pro Arg Lys Cys Thr Ala Pro Thr Arg Val Thr Cys Arg
Leu
995 1000 1005

Val Lys Arg His Arg Leu Ala Thr Met Pro Pro Met Val Glu Gly

1010 1015 1020

Glu Gly Leu Ala Ser Arg Leu Ile Glu Val Gly Pro Ser Gly Ala
1025 1030 1035

Gln Phe Leu Gly Pro Val Ile Val Glu Ile Pro His Phe Ala Ala
1040 1045 1050

Leu Arg Gly Lys Glu Arg Glu Leu Val Val Leu Arg Ser Glu Asn
1055 1060 1065

Gly Asp Ser Trp Lys Glu His Phe Cys Asp Tyr Thr Glu Asp Glu
1070 1075 1080

Leu Asn Glu Ile Leu Asn Gly Met Asp Glu Val Leu Asp Ser Pro
1085 1090 1095

Glu Asp Leu Glu Lys Lys Arg Ile Cys Arg Ile Ile Thr Arg Asp
1100 1105 1110

Phe Pro Gln Tyr Phe Ala Val Val Ser Arg Ile Lys Gln Asp Ser
1115 1120 1125

Asn Leu Ile Gly Pro Glu Gly Gly Val Leu Ser Ser Thr Val Val
1130 1135 1140

Pro Gln Val Gln Ala Val Phe Pro Glu Gly Ala Leu Thr Lys Arg
1145 1150 1155

Ile Arg Val Gly Leu Gln Ala Gln Pro Met His Ser Glu Leu Val
1160 1165 1170

Lys Lys Ile Leu Gly Asn Lys Ala Thr Phe Ser Pro Ile Val Thr
1175 1180 1185

Leu Glu Pro Arg Arg Arg Lys Phe His Lys Pro Ile Thr Met Thr
1190 1195 1200

Ile Pro Val Pro Lys Ala Ser Ser Asp Val Met Leu Asn Gly Phe
1205 1210 1215

Gly Gly Asp Ala Pro Thr Leu Arg Leu Leu Cys Ser Ile Thr Gly
1220 1225 1230

```
Gly Thr  Thr Pro Ala Gln Trp  Glu Asp Ile Thr Gly  Thr Thr Pro
    1235                1240                1245

Leu Thr  Phe Val Asn Glu Cys  Val Ser Phe Thr Thr  Asn Val Ser
    1250                1255                1260

Ala Arg  Phe Trp Leu Ile Asp  Cys Arg Gln Ile Gln  Glu Ser Val
    1265                1270                1275

Thr Phe  Ala Ser Gln Val Tyr  Arg Glu Ile Ile Cys  Val Pro Tyr
    1280                1285                1290

Met Ala  Lys Phe Val Val Phe  Ala Lys Ser His Asp  Pro Ile Glu
    1295                1300                1305

Ala Arg  Leu Arg Cys Phe Cys  Met Thr Asp Asp Lys  Val Asp Lys
    1310                1315                1320

Thr Leu  Glu Gln Gln Glu Asn  Phe Ala Glu Val Ala  Arg Ser Arg
    1325                1330                1335

Asp Val  Glu Val Leu Glu Gly  Lys Pro Ile Tyr Val  Asp Cys Phe
    1340                1345                1350

Gly Asn  Leu Val Pro Leu Thr  Lys Ser Gly Gln His  His Ile Phe
    1355                1360                1365

Ser Phe  Phe Ala Phe Lys Glu  Asn Arg Leu Pro Leu  Phe Val Lys
    1370                1375                1380

Val Arg  Asp Thr Thr Gln Glu  Pro Cys Gly Arg Leu  Ser Phe Met
    1385                1390                1395

Lys Glu  Pro Lys Ser Thr Arg  Gly Leu Val His Gln  Ala Ile Cys
    1400                1405                1410

Asn Leu  Asn Ile Thr Leu Pro  Ile Tyr Thr Lys Glu  Ser Glu Ser
    1415                1420                1425

Asp Gln  Glu Gln Glu Glu Glu  Ile Asp Met Thr Ser  Glu Lys Asn
    1430                1435                1440
```

```
Asp Glu  Thr Glu Ser Thr Glu  Thr Ser Val Leu Lys  Ser His Leu
    1445                1450                1455

Val Asn  Glu Val Pro Val Leu  Ala Ser Pro Asp Leu  Leu Ser Glu
    1460                1465                1470

Val Ser  Glu Met Lys Gln Asp  Leu Ile Lys Met Thr  Ala Ile Leu
    1475                1480                1485

Thr Thr  Asp Val Ser Asp Lys  Ala Gly Ser Ile Lys  Val Lys Glu
    1490                1495                1500

Leu Val  Lys Ala Ala Glu Glu  Glu Pro Gly Glu Pro  Phe Glu Ile
    1505                1510                1515

Val Glu  Arg Val Lys Glu Asp  Leu Glu Lys Val Asn  Glu Ile Leu
    1520                1525                1530

Arg Ser  Gly Thr Cys Thr Arg  Asp Glu Ser Ser Val  Gln Ser Ser
    1535                1540                1545

Arg Ser  Glu Arg Gly Leu Val  Glu Glu Glu Trp Val  Ile Val Ser
    1550                1555                1560

Asp Glu  Glu Ile Glu Glu Ala  Arg Gln Lys Ala Pro  Leu Glu Ile
    1565                1570                1575

Thr Glu  Tyr Pro Cys Val Glu  Val Arg Ile Asp Lys  Glu Ile Lys
    1580                1585                1590

Gly Lys  Val Glu Lys Asp Ser  Thr Gly Leu Val Asn  Tyr Leu Thr
    1595                1600                1605

Asp Asp  Leu Asn Thr Cys Val  Pro Leu Pro Lys Glu  Gln Leu Gln
    1610                1615                1620

Thr Val  Gln Asp Lys Ala Gly  Lys Lys Cys Glu Ala  Leu Ala Val
    1625                1630                1635

Gly Arg  Ser Ser Glu Lys Glu  Gly Lys Asp Ile Pro  Pro Asp Glu
    1640                1645                1650
```

```
Thr Gln  Ser Thr Gln Lys Gln  His Lys Pro Ser Leu  Gly Ile Lys
    1655                1660                1665

Lys Pro  Val Arg Arg Lys Leu  Lys Glu Lys Gln Lys  Gln Lys Glu
    1670                1675                1680

Glu Gly  Leu Gln Ala Ser Ala  Glu Lys Ala Glu Leu  Lys Lys Gly
    1685                1690                1695

Ser Ser  Glu Glu Ser Leu Gly  Glu Asp Pro Gly Leu  Ala Pro Glu
    1700                1705                1710

Pro Leu  Pro Thr Val Lys Ala  Thr Ser Pro Leu Ile  Glu Glu Thr
    1715                1720                1725

Pro Ile  Gly Ser Ile Lys Asp  Lys Val Lys Ala Leu  Gln Lys Arg
    1730                1735                1740

Val Glu  Asp Glu Gln Lys Gly  Arg Ser Lys Leu Pro  Ile Arg Val
    1745                1750                1755

Lys Gly  Lys Glu Asp Val Pro  Lys Lys Thr Thr His  Arg Pro His
    1760                1765                1770

Pro Ala  Ala Ser Pro Ser Leu  Lys Ser Glu Arg His  Ala Pro Gly
    1775                1780                1785

Ser Pro  Ser Pro Lys Thr Glu  Arg His Ser Thr Leu  Ser Ser Ser
    1790                1795                1800

Ala Lys  Thr Glu Arg His Pro  Pro Val Ser Pro Ser  Ser Lys Thr
    1805                1810                1815

Glu Lys  His Ser Pro Val Ser  Pro Ser Ala Lys Thr  Glu Arg His
    1820                1825                1830

Ser Pro  Ala Ser Ser Ser Ser  Lys Thr Glu Lys His  Ser Pro Val
    1835                1840                1845

Ser Pro  Ser Thr Lys Thr Glu  Arg His Ser Pro Val  Ser Ser Thr
    1850                1855                1860

Lys Thr  Glu Arg His Pro Pro  Val Ser Pro Ser Gly  Lys Thr Asp
```

1865 1870 1875

Lys Arg Pro Pro Val Ser Pro Ser Gly Arg Thr Glu Lys His Pro
1880 1885 1890

Pro Val Ser Pro Gly Arg Thr Glu Lys Arg Leu Pro Val Ser Pro
1895 1900 1905

Ser Gly Arg Thr Asp Lys His Gln Pro Val Ser Thr Ala Gly Lys
1910 1915 1920

Thr Glu Lys His Leu Pro Val Ser Pro Ser Gly Lys Thr Glu Lys
1925 1930 1935

Gln Pro Pro Val Ser Pro Thr Ser Lys Thr Glu Arg Ile Glu Glu
1940 1945 1950

Thr Met Ser Val Arg Glu Leu Met Lys Ala Phe Gln Ser Gly Gln
1955 1960 1965

Asp Pro Ser Lys His Lys Thr Gly Leu Phe Glu His Lys Ser Ala
1970 1975 1980

Lys Gln Lys Gln Pro Gln Glu Lys Gly Lys Val Arg Val Glu Lys
1985 1990 1995

Glu Lys Gly Pro Ile Leu Thr Gln Arg Glu Ala Gln Lys Thr Glu
2000 2005 2010

Asn Gln Thr Ile Lys Arg Gly Gln Arg Leu Pro Val Thr Gly Thr
2015 2020 2025

Ala Glu Ser Lys Arg Gly Val Arg Val Ser Ser Ile Gly Val Lys
2030 2035 2040

Lys Glu Asp Ala Ala Gly Gly Lys Glu Lys Val Leu Ser His Lys
2045 2050 2055

Ile Pro Glu Pro Val Gln Ser Val Pro Glu Glu Glu Ser His Arg
2060 2065 2070

Glu Ser Glu Val Pro Lys Glu Lys Met Ala Asp Glu Gln Gly Asp
2075 2080 2085

```
Met Asp  Leu Gln Ile Ser Pro  Asp Arg Lys Thr Ser  Thr Asp Phe
    2090                2095                2100

Ser Glu  Val Ile Lys Gln Glu  Leu Glu Asp Asn Asp  Lys Tyr Gln
    2105                2110                2115

Gln Phe  Arg Leu Ser Glu Glu  Thr Glu Lys Ala Gln  Leu His Leu
    2120                2125                2130

Asp Gln  Val Leu Thr Ser Pro  Phe Asn Thr Thr Phe  Pro Leu Asp
    2135                2140                2145

Tyr Met  Lys Asp Glu Phe Leu  Pro Ala Leu Ser Leu  Gln Ser Gly
    2150                2155                2160

Ala Leu  Asp Gly Ser Ser Glu  Ser Leu Lys Asn Glu  Gly Val Ala
    2165                2170                2175

Gly Ser  Pro Cys Gly Ser Leu  Met Glu Gly Thr Pro  Gln Ile Ser
    2180                2185                2190

Ser Glu  Glu Ser Tyr Lys His  Glu Gly Leu Ala Glu  Thr Pro Glu
    2195                2200                2205

Thr Ser  Pro Glu Ser Leu Ser  Phe Ser Pro Lys Lys  Ser Glu Glu
    2210                2215                2220

Gln Thr  Gly Glu Thr Lys Glu  Ser Thr Lys Thr Glu  Thr Thr Thr
    2225                2230                2235

Glu Ile  Arg Ser Glu Lys Glu  His Pro Thr Thr Lys  Asp Ile Thr
    2240                2245                2250

Gly Gly  Ser Glu Glu Arg Gly  Ala Thr Val Thr Glu  Asp Ser Glu
    2255                2260                2265

Thr Ser  Thr Glu Ser Phe Gln  Lys Glu Ala Thr Leu  Gly Ser Pro
    2270                2275                2280

Lys Asp  Thr Ser Pro Lys Arg  Gln Asp Asp Cys Thr  Gly Ser Cys
    2285                2290                2295
```

Ser Val Ala Leu Ala Lys Glu Thr Pro Thr Gly Leu Thr Glu Glu
2300 2305 2310

Ala Ala Cys Asp Glu Gly Gln Arg Thr Phe Gly Ser Ser Ala His
2315 2320 2325

Lys Thr Gln Thr Asp Ser Glu Val Gln Glu Ser Thr Ala Thr Ser
2330 2335 2340

Asp Glu Thr Lys Ala Leu Pro Leu Pro Glu Ala Ser Val Lys Thr
2345 2350 2355

Asp Thr Gly Thr Glu Ser Lys Pro Gln Gly Val Ile Arg Ser Pro
2360 2365 2370

Gln Gly Leu Glu Leu Ala Leu Pro Ser Arg Asp Ser Glu Val Leu
2375 2380 2385

Ser Ala Val Ala Asp Asp Ser Leu Ala Val Ser His Lys Asp Ser
2390 2395 2400

Leu Glu Ala Ser Pro Val Leu Glu Asp Asn Ser Ser His Lys Thr
2405 2410 2415

Pro Asp Ser Leu Glu Pro Ser Pro Leu Lys Glu Ser Pro Cys Arg
2420 2425 2430

Asp Ser Leu Glu Ser Ser Pro Val Glu Pro Lys Met Lys Ala Gly
2435 2440 2445

Ile Phe Pro Ser His Phe Pro Leu Pro Ala Ala Val Ala Lys Thr
2450 2455 2460

Glu Leu Leu Thr Glu Val Ala Ser Val Arg Ser Arg Leu Leu Arg
2465 2470 2475

Asp Pro Asp Gly Ser Ala Glu Asp Asp Ser Leu Glu Gln Thr Ser
2480 2485 2490

Leu Met Glu Ser Ser Gly Lys Ser Pro Leu Ser Pro Asp Thr Pro
2495 2500 2505

Ser Ser Glu Glu Val Ser Tyr Glu Val Thr Pro Lys Thr Thr Asp
2510 2515 2520

Val Ser Thr Pro Lys Pro Ala Val Ile His Glu Cys Ala Glu Glu
2525 2530 2535

Asp Asp Ser Glu Asn Gly Glu Lys Lys Arg Phe Thr Pro Glu Glu
2540 2545 2550

Glu Met Phe Lys Met Val Thr Lys Ile Lys Met Phe Asp Glu Leu
2555 2560 2565

Glu Gln Glu Ala Lys Gln Lys Arg Asp Tyr Lys Lys Glu Pro Lys
2570 2575 2580

Gln Glu Glu Ser Ser Ser Ser Ser Asp Pro Asp Ala Asp Cys Ser
2585 2590 2595

Val Asp Val Asp Glu Pro Lys His Thr Gly Ser Gly Glu Asp Glu
2600 2605 2610

Ser Gly Val Pro Val Leu Val Thr Ser Glu Ser Arg Lys Val Ser
2615 2620 2625

Ser Ser Ser Glu Ser Glu Pro Glu Leu Ala Gln Leu Lys Lys Gly
2630 2635 2640

Ala Asp Ser Gly Leu Leu Pro Glu Pro Val Ile Arg Val Gln Pro
2645 2650 2655

Pro Ser Pro Leu Pro Ser Ser Met Asp Ser Asn Ser Ser Pro Glu
2660 2665 2670

Glu Val Gln Phe Gln Pro Val Val Ser Lys Gln Tyr Thr Phe Lys
2675 2680 2685

Met Asn Glu Asp Thr Gln Glu Glu Pro Gly Lys Ser Glu Glu Glu
2690 2695 2700

Lys Asp Ser Glu Ser His Leu Ala Glu Asp Arg His Ala Val Ser
2705 2710 2715

Thr Glu Ala Glu Asp Arg Ser Tyr Asp Lys Leu Asn Arg Asp Thr

2720 2725 2730

Asp Gln Pro Lys Ile Cys Asp Gly His Gly Cys Glu Ala Met Ser
2735 2740 2745

Pro Ser Ser Ser Ala Ala Pro Val Ser Ser Gly Leu Gln Ser Pro
2750 2755 2760

Thr Gly Asp Asp Val Asp Glu Gln Pro Val Ile Tyr Lys Glu Ser
2765 2770 2775

Leu Ala Leu Gln Gly Thr His Glu Lys Asp Thr Glu Gly Glu Glu
2780 2785 2790

Leu Asp Val Ser Arg Ala Glu Ser Pro Gln Ala Asp Cys Pro Ser
2795 2800 2805

Glu Ser Phe Ser Ser Ser Ser Ser Leu Pro His Cys Leu Val Ser
2810 2815 2820

Glu Gly Lys Glu Leu Asp Glu Asp Ile Ser Ala Thr Ser Ser Ile
2825 2830 2835

Gln Lys Thr Glu Val Thr Lys Thr Asp Glu Thr Phe Glu Asn Leu
2840 2845 2850

Pro Lys Asp Cys Pro Ser Gln Asp Ser Ser Ile Thr Thr Gln Thr
2855 2860 2865

Asp Arg Phe Ser Met Asp Val Pro Val Ser Asp Leu Ala Glu Asn
2870 2875 2880

Asp Glu Ile Tyr Asp Pro Gln Ile Thr Ser Pro Tyr Glu Asn Val
2885 2890 2895

Pro Ser Gln Ser Phe Phe Ser Ser Glu Glu Ser Lys Thr Gln Thr
2900 2905 2910

Asp Ala Asn His Thr Thr Ser Phe His Ser Ser Glu Val Tyr Ser
2915 2920 2925

Val Thr Ile Thr Ser Pro Val Glu Asp Val Val Val Ala Ser Ser
2930 2935 2940

```
Ser Ser  Gly Thr Val Leu Ser  Lys Glu Ser Asn Phe  Glu Gly Gln
    2945                2950                2955

Asp Ile  Lys Met Glu Ser Gln  Gln Glu Ser Thr Leu  Trp Glu Met
    2960                2965                2970

Gln Ser  Asp Ser Val Ser Ser  Ser Phe Glu Pro Thr  Met Ser Ala
    2975                2980                2985

Thr Thr  Thr Val Val Gly Glu  Gln Ile Ser Lys Val  Ile Ile Thr
    2990                2995                3000

Lys Thr  Asp Val Asp Ser Asp  Ser Trp Ser Glu Ile  Arg Glu Asp
    3005                3010                3015

Asp Glu  Ala Phe Glu Ala Arg  Val Lys Glu Glu Glu  Gln Lys Ile
    3020                3025                3030

Phe Gly  Leu Met Val Asp Arg  Gln Ser Gln Gly Thr  Thr Pro Asp
    3035                3040                3045

Thr Thr  Pro Ala Arg Thr Pro  Thr Glu Glu Gly Thr  Pro Thr Ser
    3050                3055                3060

Glu Gln  Asn Pro Phe Leu Phe  Gln Glu Gly Lys Leu  Phe Glu Met
    3065                3070                3075

Thr Arg  Ser Gly Ala Ile Asp  Met Thr Lys Arg Ser  Tyr Ala Asp
    3080                3085                3090

Glu Ser  Phe His Phe Phe Gln  Ile Gly Gln Glu Ser  Arg Glu Glu
    3095                3100                3105

Thr Leu  Ser Glu Asp Val Lys  Glu Gly Ala Thr Gly  Ala Asp Pro
    3110                3115                3120

Leu Pro  Leu Glu Thr Ser Ala  Glu Ser Leu Ala Leu  Ser Glu Ser
    3125                3130                3135

Lys Glu  Thr Val Asp Asp Glu  Ala Asp Leu Leu Pro  Asp Asp Val
    3140                3145                3150
```

Ser Glu Glu Val Glu Glu Ile Pro Ala Ser Asp Ala Gln Leu Asn
3155 3160 3165

Ser Gln Met Gly Ile Ser Ala Ser Thr Glu Thr Pro Thr Lys Glu
3170 3175 3180

Ala Val Ser Val Gly Thr Lys Asp Leu Pro Thr Val Gln Thr Gly
3185 3190 3195

Asp Ile Pro Pro Leu Ser Gly Val Lys Gln Ile Ser Cys Pro Asp
3200 3205 3210

Ser Ser Glu Pro Ala Val Gln Val Gln Leu Asp Phe Ser Thr Leu
3215 3220 3225

Thr Arg Ser Val Tyr Ser Asp Arg Gly Asp Asp Ser Pro Asp Ser
3230 3235 3240

Ser Pro Glu Glu Gln Lys Ser Val Ile Glu Ile Pro Thr Ala Pro
3245 3250 3255

Met Glu Asn Val Pro Phe Thr Glu Ser Lys Ser Lys Ile Pro Val
3260 3265 3270

Arg Thr Met Pro Thr Ser Thr Pro Ala Pro Pro Ser Ala Glu Tyr
3275 3280 3285

Glu Ser Ser Val Ser Glu Asp Phe Leu Ser Ser Val Asp Glu Glu
3290 3295 3300

Asn Lys Ala Asp Glu Ala Lys Pro Lys Ser Lys Leu Pro Val Lys
3305 3310 3315

Val Pro Leu Gln Arg Val Glu Gln Gln Leu Ser Asp Leu Asp Thr
3320 3325 3330

Ser Val Gln Lys Thr Val Ala Pro Gln Gly Gln Asp Met Ala Ser
3335 3340 3345

Ile Ala Pro Asp Asn Arg Ser Lys Ser Glu Ser Asp Ala Ser Ser
3350 3355 3360

```
Leu Asp  Ser Lys Thr Lys Cys  Pro Val Lys Thr Arg  Ser Tyr Thr
    3365                 3370                 3375

Glu Thr  Glu Thr Glu Ser Arg  Glu Arg Ala Glu Glu  Leu Glu Leu
    3380                 3385                 3390

Glu Ser  Glu Glu Gly Ala Thr  Arg Pro Lys Ile Leu  Thr Ser Arg
    3395                 3400                 3405

Leu Pro  Val Lys Ser Arg Ser  Thr Thr Ser Ser Cys  Arg Gly Gly
    3410                 3415                 3420

Thr Ser  Pro Thr Lys Glu Ser  Lys Glu His Phe Phe  Asp Leu Tyr
    3425                 3430                 3435

Arg Asn  Ser Ile Glu Phe Phe  Glu Glu Ile Ser Asp  Glu Ala Ser
    3440                 3445                 3450

Lys Leu  Val Asp Arg Leu Thr  Gln Ser Glu Arg Glu  Gln Glu Ile
    3455                 3460                 3465

Val Ser  Asp Asp Glu Ser Ser  Ser Ala Leu Glu Val  Ser Val Ile
    3470                 3475                 3480

Glu Asn  Leu Pro Pro Val Glu  Thr Glu His Ser Val  Pro Glu Asp
    3485                 3490                 3495

Ile Phe  Asp Thr Arg Pro Ile  Trp Asp Glu Ser Ile  Glu Thr Leu
    3500                 3505                 3510

Ile Glu  Arg Ile Pro Asp Glu  Asn Gly His Asp His  Ala Glu Asp
    3515                 3520                 3525

Pro Gln  Asp Glu Gln Glu Arg  Ile Glu Glu Arg Leu  Ala Tyr Ile
    3530                 3535                 3540

Ala Asp  His Leu Gly Phe Ser  Trp Thr Glu Leu Ala  Arg Glu Leu
    3545                 3550                 3555

Asp Phe  Thr Glu Glu Gln Ile  His Gln Ile Arg Ile  Glu Asn Pro
    3560                 3565                 3570

Asn Ser  Leu Gln Asp Gln Ser  His Ala Leu Leu Lys  Tyr Trp Leu
```

3575 3580 3585

Glu Arg Asp Gly Lys His Ala Thr Asp Thr Asn Leu Val Glu Cys
3590 3595 3600

Leu Thr Lys Ile Asn Arg Met Asp Ile Val His Leu Met Glu Thr
3605 3610 3615

Asn Thr Glu Pro Leu Gln Glu Arg Ile Ser His Ser Tyr Ala Glu
3620 3625 3630

Ile Glu Gln Thr Ile Thr Leu Asp His Ser Glu Gly Phe Ser Val
3635 3640 3645

Leu Gln Glu Glu Leu Cys Thr Ala Gln His Lys Gln Lys Glu Glu
3650 3655 3660

Gln Ala Val Ser Lys Glu Ser Glu Thr Cys Asp His Pro Pro Ile
3665 3670 3675

Val Ser Glu Glu Asp Ile Ser Val Gly Tyr Ser Thr Phe Gln Asp
3680 3685 3690

Gly Val Pro Lys Thr Glu Gly Asp Ser Ser Ala Thr Ala Leu Phe
3695 3700 3705

Pro Gln Thr His Lys Glu Gln Val Gln Gln Asp Phe Ser Gly Lys
3710 3715 3720

Met Gln Asp Leu Pro Glu Glu Ser Ser Leu Glu Tyr Gln Gln Glu
3725 3730 3735

Tyr Phe Val Thr Thr Pro Gly Thr Glu Thr Ser Glu Thr Gln Lys
3740 3745 3750

Ala Met Ile Val Pro Ser Ser Pro Ser Lys Thr Pro Glu Glu Val
3755 3760 3765

Ser Thr Pro Ala Glu Glu Glu Lys Leu Tyr Leu Gln Thr Pro Thr
3770 3775 3780

Ser Ser Glu Arg Gly Gly Ser Pro Ile Ile Gln Glu Pro Glu Glu
3785 3790 3795

```
Pro Ser  Glu His Arg Glu Glu  Ser Ser Pro Arg Lys  Thr Ser Leu
    3800                3805                3810

Val Ile  Val Glu Ser Ala Asp  Asn Gln Pro Glu Thr  Cys Glu Arg
    3815                3820                3825

Leu Asp  Glu Asp Ala Ala Phe  Glu Lys Gly Asp Asp  Met Pro Glu
    3830                3835                3840

Ile Pro  Pro Glu Thr Val Thr  Glu Glu Glu Tyr Ile  Asp Glu His
    3845                3850                3855

Gly His  Thr Val Val Lys Lys  Val Thr Arg Lys Ile  Ile Arg Arg
    3860                3865                3870

Tyr Val  Ser Ser Glu Gly Thr  Glu Lys Glu Glu Ile  Met Val Gln
    3875                3880                3885

Gly Met  Pro Gln Glu Pro Val  Asn Ile Glu Glu Gly  Asp Gly Tyr
    3890                3895                3900

Ser Lys  Val Ile Lys Arg Val  Val Leu Lys Ser Asp  Thr Glu Gln
    3905                3910                3915

Ser Glu  Asp Asn Asn Glu
    3920


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Asn Gly Ser Ser Gln Arg Arg Lys Arg Pro Lys Lys Ser Asp Ser Asn
            20                  25                  30

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

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

Leu Asn Ala Leu His Leu Ala Ala Lys Glu Gly His Val Gly Leu Val
65                  70                  75                  80

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

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

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

Asn Gly Phe Thr Pro Leu Tyr Met Ala Ala Gln Glu Asn His Ile Asp
    130                 135                 140

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

Glu Asp Gly Phe Thr Pro Leu Ala Val Ala Leu Gln Gln Gly His Asn
                165                 170                 175

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

Leu Pro Ala Leu His Ile Ala Ala Arg Lys Asp Asp Thr Lys Ser Ala
```

```
        195                 200                 205

Ala Leu Leu Leu Gln Asn Asp His Asn Ala Asp Val Gln Ser Lys Met
    210                 215                 220

Met Val Asn Arg Thr Thr Glu Ser Gly Phe Thr Pro Leu His Ile Ala
225                 230                 235                 240

Ala His Tyr Gly Asn Val Asn Val Ala Thr Leu Leu Leu Asn Arg Gly
                245                 250                 255

Ala Ala Val Asp Phe Thr Ala Arg Asn Gly Ile Thr Pro Leu His Val
            260                 265                 270

Ala Ser Lys Arg Gly Asn Thr Asn Met Val Lys Leu Leu Leu Asp Arg
        275                 280                 285

Gly Gly Gln Ile Asp Ala Lys Thr Arg Asp Gly Leu Thr Pro Leu His
    290                 295                 300

Cys Ala Ala Arg Ser Gly His Asp Gln Val Val Glu Leu Leu Leu Glu
305                 310                 315                 320

Arg Gly Ala Pro Leu Leu Ala Arg Thr Lys Asn Gly Leu Ser Pro Leu
                325                 330                 335

His Met Ala Ala Gln Gly Asp His Val Glu Cys Val Lys His Leu Leu
            340                 345                 350

Gln His Lys Ala Pro Val Asp Asp Val Thr Leu Asp Tyr Leu Thr Ala
        355                 360                 365

Leu His Val Ala Ala His Cys Gly His Tyr Arg Val Thr Lys Leu Leu
    370                 375                 380

Leu Asp Lys Arg Ala Asn Pro Asn Ala Arg Ala Leu Asn Gly Phe Thr
385                 390                 395                 400

Pro Leu His Ile Ala Cys Lys Lys Asn Arg Ile Lys Val Met Glu Leu
                405                 410                 415

Leu Val Lys Tyr Gly Ala Ser Ile Gln Ala Ile Thr Glu Ser Gly Leu
            420                 425                 430
```

```
Thr Pro Ile His Val Ala Ala Phe Met Gly His Leu Asn Ile Val Leu
        435                 440                 445

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

Glu Thr Ala Leu His Met Ala Ala Arg Ala Gly Gln Val Glu Val Val
465                 470                 475                 480

Arg Cys Leu Leu Arg Asn Gly Ala Leu Val Asp Ala Arg Ala Arg Glu
                485                 490                 495

Glu Gln Thr Pro Leu His Ile Ala Ser Arg Leu Gly Lys Thr Glu Ile
            500                 505                 510

Val Gln Leu Leu Leu Gln His Met Ala His Pro Asp Ala Ala Thr Thr
        515                 520                 525

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

Val Ala Ser Val Leu Leu Glu Ala Gly Ala Ala His Ser Leu Ala Thr
545                 550                 555                 560

Lys Lys Gly Phe Thr Pro Leu His Val Ala Ala Lys Tyr Gly Ser Leu
                565                 570                 575

Asp Val Ala Lys Leu Leu Leu Gln Arg Arg Ala Ala Ala Asp Ser Ala
            580                 585                 590

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

Gln Lys Val Ala Leu Leu Leu Leu Glu Lys Gly Ala Ser Pro His Ala
    610                 615                 620

Thr Ala Lys Asn Gly Tyr Thr Pro Leu His Ile Ala Ala Lys Lys Asn
625                 630                 635                 640

Gln Met Gln Ile Ala Ser Thr Leu Leu Asn Tyr Gly Ala Glu Thr Asn
                645                 650                 655
```

```
Ile Val Thr Lys Gln Gly Val Thr Pro Leu His Leu Ala Ser Gln Glu
            660                 665                 670

Gly His Thr Asp Met Val Thr Leu Leu Leu Asp Lys Gly Ala Asn Ile
        675                 680                 685

His Met Ser Thr Lys Ser Gly Leu Thr Ser Leu His Leu Ala Ala Gln
    690                 695                 700

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

Gln Asp Ala His Thr Lys Leu Gly Tyr Thr Pro Leu Ile Val Ala Cys
                725                 730                 735

His Tyr Gly Asn Val Lys Met Val Asn Phe Leu Leu Lys Gln Gly Ala
            740                 745                 750

Asn Val Asn Ala Lys Thr Lys Asn Gly Tyr Thr Pro Leu His Gln Ala
        755                 760                 765

Ala Gln Gln Gly His Thr His Ile Ile Asn Val Leu Leu Gln His Gly
    770                 775                 780

Ala Lys Pro Asn Ala Thr Thr Ala Asn Gly Asn Thr Ala Leu Ala Ile
785                 790                 795                 800

Ala Lys Arg Leu Gly Tyr Ile Ser Val Val Asp Thr Leu Lys Val Val
                805                 810                 815

Thr Glu Glu Val Thr Thr Thr Thr Thr Thr Thr Ile Thr Glu Lys His Lys
            820                 825                 830

Leu Asn Val Pro Glu Thr Met Thr Glu Val Leu Asp Val Ser Asp Glu
        835                 840                 845

Glu Gly Asp Asp Thr Met Thr Gly Asp Gly Gly Glu Tyr Leu Arg Pro
    850                 855                 860

Glu Asp Leu Lys Glu Leu Gly Asp Asp Ser Leu Pro Ser Ser Gln Phe
865                 870                 875                 880
```

```
Leu Asp Gly Met Asn Tyr Leu Arg Tyr Ser Leu Glu Gly Gly Arg Ser
                885                 890                 895

Asp Ser Leu Arg Ser Phe Ser Ser Asp Arg Ser His Thr Leu Ser His
            900                 905                 910

Ala Ser Tyr Leu Arg Asp Ser Ala Val Met Asp Asp Ser Val Val Ile
        915                 920                 925

Pro Ser His Gln Val Ser Thr Leu Ala Lys Glu Ala Glu Arg Asn Ser
    930                 935                 940

Tyr Arg Leu Ser Trp Gly Thr Glu Asn Leu Asp Asn Val Ala Leu Ser
945                 950                 955                 960

Ser Ser Pro Ile His Ser Gly Phe Leu Val Ser Phe Met Val Asp Ala
                965                 970                 975

Arg Gly Gly Ala Met Arg Gly Cys Arg His Asn Gly Leu Arg Ile Ile
            980                 985                 990

Ile Pro Pro Arg Lys Cys Thr Ala  Pro Thr Arg Val Thr  Cys Arg
Leu
        995                 1000                1005

Val Lys  Arg His Arg Leu Ala  Thr Met Pro Pro Met  Val Glu Gly
    1010                1015                1020

Glu Gly  Leu Ala Ser Arg Leu  Ile Glu Val Gly Pro  Ser Gly Ala
    1025                1030                1035

Gln Phe  Leu Gly Lys Leu His  Leu Pro Thr Ala Pro  Pro Pro Leu
    1040                1045                1050

Asn Glu  Gly Glu Ser Leu Val  Ser Arg Ile Leu Gln  Leu Gly Pro
    1055                1060                1065

Pro Gly  Thr Lys Phe Leu Gly  Pro Val Ile Val Glu  Ile Pro His
    1070                1075                1080

Phe Ala  Ala Leu Arg Gly Lys  Glu Arg Glu Leu Val  Val Leu Arg
    1085                1090                1095
```

```
Ser Glu  Asn Gly Asp Ser Trp  Lys Glu His Phe Cys  Asp Tyr Thr
    1100                1105                1110

Glu Asp  Glu Leu Asn Glu Ile  Leu Asn Gly Met Asp  Glu Val Leu
    1115                1120                1125

Asp Ser  Pro Glu Asp Leu Glu  Lys Lys Arg Ile Cys  Arg Ile Ile
    1130                1135                1140

Thr Arg  Asp Phe Pro Gln Tyr  Phe Ala Val Val Ser  Arg Ile Lys
    1145                1150                1155

Gln Asp  Ser Asn Leu Ile Gly  Pro Glu Gly Gly Val  Leu Ser Ser
    1160                1165                1170

Thr Val  Val Pro Gln Val Gln  Ala Val Phe Pro Glu  Gly Ala Leu
    1175                1180                1185

Thr Lys  Arg Ile Arg Val Gly  Leu Gln Ala Gln Pro  Met His Ser
    1190                1195                1200

Glu Leu  Val Lys Lys Ile Leu  Gly Asn Lys Ala Thr  Phe Ser Pro
    1205                1210                1215

Ile Val  Thr Leu Glu Pro Arg  Arg Arg Lys Phe His  Lys Pro Ile
    1220                1225                1230

Thr Met  Thr Ile Pro Val Pro  Lys Ala Ser Ser Asp  Val Met Leu
    1235                1240                1245

Asn Gly  Phe Gly Gly Asp Ala  Pro Thr Leu Arg Leu  Leu Cys Ser
    1250                1255                1260

Ile Thr  Gly Gly Thr Thr Pro  Ala Gln Trp Glu Asp  Ile Thr Gly
    1265                1270                1275

Thr Thr  Pro Leu Thr Phe Val  Asn Glu Cys Val Ser  Phe Thr Thr
    1280                1285                1290

Asn Val  Ser Ala Arg Phe Trp  Leu Ile Asp Cys Arg  Gln Ile Gln
    1295                1300                1305

Glu Ser  Val Thr Phe Ala Ser  Gln Val Tyr Arg Glu  Ile Ile Cys
```

1310 1315 1320

Val Pro Tyr Met Ala Lys Phe Val Val Phe Ala Lys Ser His Asp
1325 1330 1335

Pro Ile Glu Ala Arg Leu Arg Cys Phe Cys Met Thr Asp Asp Lys
1340 1345 1350

Val Asp Lys Thr Leu Glu Gln Gln Glu Asn Phe Ala Glu Val Ala
1355 1360 1365

Arg Ser Arg Asp Val Glu Val Leu Glu Gly Lys Pro Ile Tyr Val
1370 1375 1380

Asp Cys Phe Gly Asn Leu Val Pro Leu Thr Lys Ser Gly Gln His
1385 1390 1395

His Ile Phe Ser Phe Phe Ala Phe Lys Glu Asn Arg Leu Pro Leu
1400 1405 1410

Phe Val Lys Val Arg Asp Thr Thr Gln Glu Pro Cys Gly Arg Leu
1415 1420 1425

Ser Phe Met Lys Glu Pro Lys Ser Thr Arg Gly Leu Val His Gln
1430 1435 1440

Ala Ile Cys Asn Leu Asn Ile Thr Leu Pro Ile Tyr Thr Lys Glu
1445 1450 1455

Ser Glu Ser Asp Gln Glu Gln Glu Glu Glu Ile Asp Met Thr Ser
1460 1465 1470

Glu Lys Asn Asp Glu Thr Glu Ser Thr Glu Thr Ser Val Leu Lys
1475 1480 1485

Ser His Leu Val Asn Glu Val Pro Val Leu Ala Ser Pro Asp Leu
1490 1495 1500

Leu Ser Glu Val Ser Glu Met Lys Gln Asp Leu Ile Lys Met Thr
1505 1510 1515

Ala Ile Leu Thr Thr Asp Val Ser Asp Lys Ala Gly Ser Ile Lys
1520 1525 1530

```
Val Lys  Glu Leu Val Lys Ala  Ala Glu Glu Glu Pro  Gly Glu Pro
    1535                1540                1545

Phe Glu  Ile Val Glu Arg Val  Lys Glu Asp Leu Glu  Lys Val Asn
    1550                1555                1560

Glu Ile  Leu Arg Ser Gly Thr  Cys Thr Arg Asp Glu  Ser Ser Val
    1565                1570                1575

Gln Ser  Ser Arg Ser Glu Arg  Gly Leu Val Glu Glu  Glu Trp Val
    1580                1585                1590

Ile Val  Ser Asp Glu Glu Ile  Glu Glu Ala Arg Gln  Lys Ala Pro
    1595                1600                1605

Leu Glu  Ile Thr Glu Tyr Pro  Cys Val Glu Val Arg  Ile Asp Lys
    1610                1615                1620

Glu Ile  Lys Gly Lys Val Glu  Lys Asp Ser Thr Gly  Leu Val Asn
    1625                1630                1635

Tyr Leu  Thr Asp Asp Leu Asn  Thr Cys Val Pro Leu  Pro Lys Glu
    1640                1645                1650

Gln Leu  Gln Thr Val Gln Asp  Lys Ala Gly Lys Lys  Cys Glu Ala
    1655                1660                1665

Leu Ala  Val Gly Arg Ser Ser  Glu Lys Glu Gly Lys  Asp Ile Pro
    1670                1675                1680

Pro Asp  Glu Thr Gln Ser Thr  Gln Lys Gln His Lys  Pro Ser Leu
    1685                1690                1695

Gly Ile  Lys Lys Pro Val Arg  Arg Lys Leu Lys Glu  Lys Gln Lys
    1700                1705                1710

Gln Lys  Glu Glu Gly Leu Gln  Ala Ser Ala Glu Lys  Ala Glu Leu
    1715                1720                1725

Lys Lys  Gly Ser Ser Glu Glu  Ser Leu Gly Glu Asp  Pro Gly Leu
    1730                1735                1740
```

Ala Pro Glu Pro Leu Pro Thr Val Lys Ala Thr Ser Pro Leu Ile
1745 1750 1755

Glu Glu Thr Pro Ile Gly Ser Ile Lys Asp Lys Val Lys Ala Leu
1760 1765 1770

Gln Lys Arg Val Glu Asp Glu Gln Lys Gly Arg Ser Lys Leu Pro
1775 1780 1785

Ile Arg Val Lys Gly Lys Glu Asp Val Pro Lys Lys Thr Thr His
1790 1795 1800

Arg Pro His Pro Ala Ala Ser Pro Ser Leu Lys Ser Glu Arg His
1805 1810 1815

Ala Pro Gly Ser Pro Ser Pro Lys Thr Glu Arg His Ser Thr Leu
1820 1825 1830

Ser Ser Ser Ala Lys Thr Glu Arg His Pro Pro Val Ser Pro Ser
1835 1840 1845

Ser Lys Thr Glu Lys His Ser Pro Val Ser Pro Ser Ala Lys Thr
1850 1855 1860

Glu Arg His Ser Pro Ala Ser Ser Ser Ser Lys Thr Glu Lys His
1865 1870 1875

Ser Pro Val Ser Pro Ser Thr Lys Thr Glu Arg His Ser Pro Val
1880 1885 1890

Ser Ser Thr Lys Thr Glu Arg His Pro Pro Val Ser Pro Ser Gly
1895 1900 1905

Lys Thr Asp Lys Arg Pro Pro Val Ser Pro Ser Gly Arg Thr Glu
1910 1915 1920

Lys His Pro Pro Val Ser Pro Gly Arg Thr Glu Lys Arg Leu Pro
1925 1930 1935

Val Ser Pro Ser Gly Arg Thr Asp Lys His Gln Pro Val Ser Thr
1940 1945 1950

Ala Gly Lys Thr Glu Lys His Leu Pro Val Ser Pro Ser Gly Lys
1955 1960 1965

Thr Glu Lys Gln Pro Pro Val Ser Pro Thr Ser Lys Thr Glu Arg
1970 1975 1980

Ile Glu Glu Thr Met Ser Val Arg Glu Leu Met Lys Ala Phe Gln
1985 1990 1995

Ser Gly Gln Asp Pro Ser Lys His Lys Thr Gly Leu Phe Glu His
2000 2005 2010

Lys Ser Ala Lys Gln Lys Gln Pro Gln Glu Lys Gly Lys Val Arg
2015 2020 2025

Val Glu Lys Glu Lys Gly Pro Ile Leu Thr Gln Arg Glu Ala Gln
2030 2035 2040

Lys Thr Glu Asn Gln Thr Ile Lys Arg Gly Gln Arg Leu Pro Val
2045 2050 2055

Thr Gly Thr Ala Glu Ser Lys Arg Gly Val Arg Val Ser Ser Ile
2060 2065 2070

Gly Val Lys Lys Glu Asp Ala Ala Gly Gly Lys Glu Lys Val Leu
2075 2080 2085

Ser His Lys Ile Pro Glu Pro Val Gln Ser Val Pro Glu Glu Glu
2090 2095 2100

Ser His Arg Glu Ser Glu Val Pro Lys Glu Lys Met Ala Asp Glu
2105 2110 2115

Gln Gly Asp Met Asp Leu Gln Ile Ser Pro Asp Arg Lys Thr Ser
2120 2125 2130

Thr Asp Phe Ser Glu Val Ile Lys Gln Glu Leu Glu Asp Asn Asp
2135 2140 2145

Lys Tyr Gln Gln Phe Arg Leu Ser Glu Glu Thr Glu Lys Ala Gln
2150 2155 2160

Leu His Leu Asp Gln Val Leu Thr Ser Pro Phe Asn Thr Thr Phe

2165 2170 2175

Pro Leu Asp Tyr Met Lys Asp Glu Phe Leu Pro Ala Leu Ser Leu
2180 2185 2190

Gln Ser Gly Ala Leu Asp Gly Ser Ser Glu Ser Leu Lys Asn Glu
2195 2200 2205

Gly Val Ala Gly Ser Pro Cys Gly Ser Leu Met Glu Gly Thr Pro
2210 2215 2220

Gln Ile Ser Ser Glu Glu Ser Tyr Lys His Glu Gly Leu Ala Glu
2225 2230 2235

Thr Pro Glu Thr Ser Pro Glu Ser Leu Ser Phe Ser Pro Lys Lys
2240 2245 2250

Ser Glu Glu Gln Thr Gly Glu Thr Lys Glu Ser Thr Lys Thr Glu
2255 2260 2265

Thr Thr Thr Glu Ile Arg Ser Glu Lys Glu His Pro Thr Thr Lys
2270 2275 2280

Asp Ile Thr Gly Gly Ser Glu Glu Arg Gly Ala Thr Val Thr Glu
2285 2290 2295

Asp Ser Glu Thr Ser Thr Glu Ser Phe Gln Lys Glu Ala Thr Leu
2300 2305 2310

Gly Ser Pro Lys Asp Thr Ser Pro Lys Arg Gln Asp Asp Cys Thr
2315 2320 2325

Gly Ser Cys Ser Val Ala Leu Ala Lys Glu Thr Pro Thr Gly Leu
2330 2335 2340

Thr Glu Glu Ala Ala Cys Asp Glu Gly Gln Arg Thr Phe Gly Ser
2345 2350 2355

Ser Ala His Lys Thr Gln Thr Asp Ser Glu Val Gln Glu Ser Thr
2360 2365 2370

Ala Thr Ser Asp Glu Thr Lys Ala Leu Pro Leu Pro Glu Ala Ser
2375 2380 2385

```
Val Lys  Thr Asp Thr Gly Thr  Glu Ser Lys Pro Gln  Gly Val Ile
    2390                2395                2400

Arg Ser  Pro Gln Gly Leu Glu  Leu Ala Leu Pro Ser  Arg Asp Ser
    2405                2410                2415

Glu Val  Leu Ser Ala Val Ala  Asp Asp Ser Leu Ala  Val Ser His
    2420                2425                2430

Lys Asp  Ser Leu Glu Ala Ser  Pro Val Leu Glu Asp  Asn Ser Ser
    2435                2440                2445

His Lys  Thr Pro Asp Ser Leu  Glu Pro Ser Pro Leu  Lys Glu Ser
    2450                2455                2460

Pro Cys  Arg Asp Ser Leu Glu  Ser Ser Pro Val Glu  Pro Lys Met
    2465                2470                2475

Lys Ala  Gly Ile Phe Pro Ser  His Phe Pro Leu Pro  Ala Ala Val
    2480                2485                2490

Ala Lys  Thr Glu Leu Leu Thr  Glu Val Ala Ser Val  Arg Ser Arg
    2495                2500                2505

Leu Leu  Arg Asp Pro Asp Gly  Ser Ala Glu Asp Asp  Ser Leu Glu
    2510                2515                2520

Gln Thr  Ser Leu Met Glu Ser  Ser Gly Lys Ser Pro  Leu Ser Pro
    2525                2530                2535

Asp Thr  Pro Ser Ser Glu Glu  Val Ser Tyr Glu Val  Thr Pro Lys
    2540                2545                2550

Thr Thr  Asp Val Ser Thr Pro  Lys Pro Ala Val Ile  His Glu Cys
    2555                2560                2565

Ala Glu  Glu Asp Asp Ser Glu  Asn Gly Glu Lys Lys  Arg Phe Thr
    2570                2575                2580

Pro Glu  Glu Glu Met Phe Lys  Met Val Thr Lys Ile  Lys Met Phe
    2585                2590                2595
```

```
Asp Glu  Leu Glu Gln Glu Ala  Lys Gln Lys Arg Asp  Tyr Lys Lys
    2600                2605                2610

Glu Pro  Lys Gln Glu Glu Ser  Ser Ser Ser Ser Asp  Pro Asp Ala
    2615                2620                2625

Asp Cys  Ser Val Asp Val Asp  Glu Pro Lys His Thr  Gly Ser Gly
    2630                2635                2640

Glu Asp  Glu Ser Gly Val Pro  Val Leu Val Thr Ser  Glu Ser Arg
    2645                2650                2655

Lys Val  Ser Ser Ser Ser Glu  Ser Glu Pro Glu Leu  Ala Gln Leu
    2660                2665                2670

Lys Lys  Gly Ala Asp Ser Gly  Leu Leu Pro Glu Pro  Val Ile Arg
    2675                2680                2685

Val Gln  Pro Pro Ser Pro Leu  Pro Ser Ser Met Asp  Ser Asn Ser
    2690                2695                2700

Ser Pro  Glu Glu Val Gln Phe  Gln Pro Val Val Ser  Lys Gln Tyr
    2705                2710                2715

Thr Phe  Lys Met Asn Glu Asp  Thr Gln Glu Glu Pro  Gly Lys Ser
    2720                2725                2730

Glu Glu  Glu Lys Asp Ser Glu  Ser His Leu Ala Glu  Asp Arg His
    2735                2740                2745

Ala Val  Ser Thr Glu Ala Glu  Asp Arg Ser Tyr Asp  Lys Leu Asn
    2750                2755                2760

Arg Asp  Thr Asp Gln Pro Lys  Ile Cys Asp Gly His  Gly Cys Glu
    2765                2770                2775

Ala Met  Ser Pro Ser Ser Ser  Ala Ala Pro Val Ser  Ser Gly Leu
    2780                2785                2790

Gln Ser  Pro Thr Gly Asp Asp  Val Asp Glu Gln Pro  Val Ile Tyr
    2795                2800                2805
```

Lys Glu Ser Leu Ala Leu Gln Gly Thr His Glu Lys Asp Thr Glu
2810 2815 2820

Gly Glu Glu Leu Asp Val Ser Arg Ala Glu Ser Pro Gln Ala Asp
2825 2830 2835

Cys Pro Ser Glu Ser Phe Ser Ser Ser Ser Ser Leu Pro His Cys
2840 2845 2850

Leu Val Ser Glu Gly Lys Glu Leu Asp Glu Asp Ile Ser Ala Thr
2855 2860 2865

Ser Ser Ile Gln Lys Thr Glu Val Thr Lys Thr Asp Glu Thr Phe
2870 2875 2880

Glu Asn Leu Pro Lys Asp Cys Pro Ser Gln Asp Ser Ser Ile Thr
2885 2890 2895

Thr Gln Thr Asp Arg Phe Ser Met Asp Val Pro Val Ser Asp Leu
2900 2905 2910

Ala Glu Asn Asp Glu Ile Tyr Asp Pro Gln Ile Thr Ser Pro Tyr
2915 2920 2925

Glu Asn Val Pro Ser Gln Ser Phe Phe Ser Ser Glu Glu Ser Lys
2930 2935 2940

Thr Gln Thr Asp Ala Asn His Thr Thr Ser Phe His Ser Ser Glu
2945 2950 2955

Val Tyr Ser Val Thr Ile Thr Ser Pro Val Glu Asp Val Val Val
2960 2965 2970

Ala Ser Ser Ser Ser Gly Thr Val Leu Ser Lys Glu Ser Asn Phe
2975 2980 2985

Glu Gly Gln Asp Ile Lys Met Glu Ser Gln Gln Glu Ser Thr Leu
2990 2995 3000

Trp Glu Met Gln Ser Asp Ser Val Ser Ser Ser Phe Glu Pro Thr
3005 3010 3015

Met Ser Ala Thr Thr Thr Val Val Gly Glu Gln Ile Ser Lys Val

3020 3025 3030

Ile Ile Thr Lys Thr Asp Val Asp Ser Asp Ser Trp Ser Glu Ile
3035 3040 3045

Arg Glu Asp Asp Glu Ala Phe Glu Ala Arg Val Lys Glu Glu Glu
3050 3055 3060

Gln Lys Ile Phe Gly Leu Met Val Asp Arg Gln Ser Gln Gly Thr
3065 3070 3075

Thr Pro Asp Thr Thr Pro Ala Arg Thr Pro Thr Glu Glu Gly Thr
3080 3085 3090

Pro Thr Ser Glu Gln Asn Pro Phe Leu Phe Gln Glu Gly Lys Leu
3095 3100 3105

Phe Glu Met Thr Arg Ser Gly Ala Ile Asp Met Thr Lys Arg Ser
3110 3115 3120

Tyr Ala Asp Glu Ser Phe His Phe Phe Gln Ile Gly Gln Glu Ser
3125 3130 3135

Arg Glu Glu Thr Leu Ser Glu Asp Val Lys Glu Gly Ala Thr Gly
3140 3145 3150

Ala Asp Pro Leu Pro Leu Glu Thr Ser Ala Glu Ser Leu Ala Leu
3155 3160 3165

Ser Glu Ser Lys Glu Thr Val Asp Asp Glu Ala Asp Leu Leu Pro
3170 3175 3180

Asp Asp Val Ser Glu Glu Val Glu Glu Ile Pro Ala Ser Asp Ala
3185 3190 3195

Gln Leu Asn Ser Gln Met Gly Ile Ser Ala Ser Thr Glu Thr Pro
3200 3205 3210

Thr Lys Glu Ala Val Ser Val Gly Thr Lys Asp Leu Pro Thr Val
3215 3220 3225

Gln Thr Gly Asp Ile Pro Pro Leu Ser Gly Val Lys Gln Ile Ser
3230 3235 3240

```
Cys Pro  Asp Ser Ser Glu Pro  Ala Val Gln Val Gln  Leu Asp Phe
    3245                3250                3255

Ser Thr  Leu Thr Arg Ser Val  Tyr Ser Asp Arg Gly  Asp Asp Ser
    3260                3265                3270

Pro Asp  Ser Ser Pro Glu Glu  Gln Lys Ser Val Ile  Glu Ile Pro
    3275                3280                3285

Thr Ala  Pro Met Glu Asn Val  Pro Phe Thr Glu Ser  Lys Ser Lys
    3290                3295                3300

Ile Pro  Val Arg Thr Met Pro  Thr Ser Thr Pro Ala  Pro Pro Ser
    3305                3310                3315

Ala Glu  Tyr Glu Ser Ser Val  Ser Glu Asp Phe Leu  Ser Ser Val
    3320                3325                3330

Asp Glu  Glu Asn Lys Ala Asp  Glu Ala Lys Pro Lys  Ser Lys Leu
    3335                3340                3345

Pro Val  Lys Val Pro Leu Gln  Arg Val Glu Gln Gln  Leu Ser Asp
    3350                3355                3360

Leu Asp  Thr Ser Val Gln Lys  Thr Val Ala Pro Gln  Gly Gln Asp
    3365                3370                3375

Met Ala  Ser Ile Ala Pro Asp  Asn Arg Ser Lys Ser  Glu Ser Asp
    3380                3385                3390

Ala Ser  Ser Leu Asp Ser Lys  Thr Lys Cys Pro Val  Lys Thr Arg
    3395                3400                3405

Ser Tyr  Thr Glu Thr Glu Thr  Glu Ser Arg Glu Arg  Ala Glu Glu
    3410                3415                3420

Leu Glu  Leu Glu Ser Glu Glu  Gly Ala Thr Arg Pro  Lys Ile Leu
    3425                3430                3435

Thr Ser  Arg Leu Pro Val Lys  Ser Arg Ser Thr Thr  Ser Ser Cys
    3440                3445                3450
```

```
Arg Gly  Gly Thr Ser Pro Thr  Lys Glu Ser Lys Glu  His Phe Phe
    3455                 3460                 3465

Asp Leu  Tyr Arg Asn Ser Ile  Glu Phe Phe Glu Glu  Ile Ser Asp
    3470                 3475                 3480

Glu Ala  Ser Lys Leu Val Asp  Arg Leu Thr Gln Ser  Glu Arg Glu
    3485                 3490                 3495

Gln Glu  Ile Val Ser Asp Asp  Glu Ser Ser Ser Ala  Leu Glu Val
    3500                 3505                 3510

Ser Val  Ile Glu Asn Leu Pro  Pro Val Glu Thr Glu  His Ser Val
    3515                 3520                 3525

Pro Glu  Asp Ile Phe Asp Thr  Arg Pro Ile Trp Asp  Glu Ser Ile
    3530                 3535                 3540

Glu Thr  Leu Ile Glu Arg Ile  Pro Asp Glu Asn Gly  His Asp His
    3545                 3550                 3555

Ala Glu  Asp Pro Gln Asp Glu  Gln Glu Arg Ile Glu  Glu Arg Leu
    3560                 3565                 3570

Ala Tyr  Ile Ala Asp His Leu  Gly Phe Ser Trp Thr  Glu Leu Ala
    3575                 3580                 3585

Arg Glu  Leu Asp Phe Thr Glu  Glu Gln Ile His Gln  Ile Arg Ile
    3590                 3595                 3600

Glu Asn  Pro Asn Ser Leu Gln  Asp Gln Ser His Ala  Leu Leu Lys
    3605                 3610                 3615

Tyr Trp  Leu Glu Arg Asp Gly  Lys His Ala Thr Asp  Thr Asn Leu
    3620                 3625                 3630

Val Glu  Cys Leu Thr Lys Ile  Asn Arg Met Asp Ile  Val His Leu
    3635                 3640                 3645

Met Glu  Thr Asn Thr Glu Pro  Leu Gln Glu Arg Ile  Ser His Ser
    3650                 3655                 3660
```

Tyr Ala Glu Ile Glu Gln Thr Ile Thr Leu Asp His Ser Glu Gly
3665 3670 3675

Phe Ser Val Leu Gln Glu Glu Leu Cys Thr Ala Gln His Lys Gln
3680 3685 3690

Lys Glu Glu Gln Ala Val Ser Lys Glu Ser Glu Thr Cys Asp His
3695 3700 3705

Pro Pro Ile Val Ser Glu Glu Asp Ile Ser Val Gly Tyr Ser Thr
3710 3715 3720

Phe Gln Asp Gly Val Pro Lys Thr Glu Gly Asp Ser Ser Ala Thr
3725 3730 3735

Ala Leu Phe Pro Gln Thr His Lys Glu Gln Val Gln Gln Asp Phe
3740 3745 3750

Ser Gly Lys Met Gln Asp Leu Pro Glu Glu Ser Ser Leu Glu Tyr
3755 3760 3765

Gln Gln Glu Tyr Phe Val Thr Thr Pro Gly Thr Glu Thr Ser Glu
3770 3775 3780

Thr Gln Lys Ala Met Ile Val Pro Ser Ser Pro Ser Lys Thr Pro
3785 3790 3795

Glu Glu Val Ser Thr Pro Ala Glu Glu Glu Lys Leu Tyr Leu Gln
3800 3805 3810

Thr Pro Thr Ser Ser Glu Arg Gly Gly Ser Pro Ile Ile Gln Glu
3815 3820 3825

Pro Glu Glu Pro Ser Glu His Arg Glu Glu Ser Ser Pro Arg Lys
3830 3835 3840

Thr Ser Leu Val Ile Val Glu Ser Ala Asp Asn Gln Pro Glu Thr
3845 3850 3855

Cys Glu Arg Leu Asp Glu Asp Ala Ala Phe Glu Lys Gly Asp Asp
3860 3865 3870

Met Pro Glu Ile Pro Pro Glu Thr Val Thr Glu Glu Glu Tyr Ile

```
    3875                3880                3885

Asp Glu  His Gly His Thr Val  Val Lys Lys Val Thr  Arg Lys Ile
    3890                3895                3900

Ile Arg  Arg Tyr Val Ser Ser  Glu Gly Thr Glu Lys  Glu Glu Ile
    3905                3910                3915

Met Val  Gln Gly Met Pro Gln  Glu Pro Val Asn Ile  Glu Glu Gly
    3920                3925                3930

Asp Gly  Tyr Ser Lys Val Ile  Lys Arg Val Val Leu  Lys Ser Asp
    3935                3940                3945

Thr Glu  Gln Ser Glu Asp Asn  Asn Glu
    3950                3955
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<210> 4860
<211> 1872
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<400> 4860

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Met Met Asn Glu Asp Ala Ala Gln Lys Ser Asp Ser Gly Glu Lys Phe
1               5                  10                  15

Asn Gly Ser Ser Gln Arg Arg Lys Arg Pro Lys Lys Ser Asp Ser Asn
            20                  25                  30
```

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

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

Leu Asn Ala Leu His Leu Ala Ala Lys Glu Gly His Val Gly Leu Val
65                  70                  75                  80

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

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

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

Asn Gly Phe Thr Pro Leu Tyr Met Ala Ala Gln Glu Asn His Ile Asp
    130                 135                 140

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

Glu Asp Gly Phe Thr Pro Leu Ala Val Ala Leu Gln Gln Gly His Asn
                165                 170                 175

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

Leu Pro Ala Leu His Ile Ala Ala Arg Lys Asp Asp Thr Lys Ser Ala
        195                 200                 205

Ala Leu Leu Leu Gln Asn Asp His Asn Ala Asp Val Gln Ser Lys Met
    210                 215                 220

Met Val Asn Arg Thr Thr Glu Ser Gly Phe Thr Pro Leu His Ile Ala
225                 230                 235                 240

Ala His Tyr Gly Asn Val Asn Val Ala Thr Leu Leu Leu Asn Arg Gly
                245                 250                 255
```

```
Ala Ala Val Asp Phe Thr Ala Arg Asn Gly Ile Thr Pro Leu His Val
            260                 265                 270

Ala Ser Lys Arg Gly Asn Thr Asn Met Val Lys Leu Leu Leu Asp Arg
        275                 280                 285

Gly Gly Gln Ile Asp Ala Lys Thr Arg Asp Gly Leu Thr Pro Leu His
    290                 295                 300

Cys Ala Ala Arg Ser Gly His Asp Gln Val Val Glu Leu Leu Leu Glu
305                 310                 315                 320

Arg Gly Ala Pro Leu Leu Ala Arg Thr Lys Asn Gly Leu Ser Pro Leu
                325                 330                 335

His Met Ala Ala Gln Gly Asp His Val Glu Cys Val Lys His Leu Leu
            340                 345                 350

Gln His Lys Ala Pro Val Asp Asp Val Thr Leu Asp Tyr Leu Thr Ala
        355                 360                 365

Leu His Val Ala Ala His Cys Gly His Tyr Arg Val Thr Lys Leu Leu
    370                 375                 380

Leu Asp Lys Arg Ala Asn Pro Asn Ala Arg Ala Leu Asn Gly Phe Thr
385                 390                 395                 400

Pro Leu His Ile Ala Cys Lys Lys Asn Arg Ile Lys Val Met Glu Leu
                405                 410                 415

Leu Val Lys Tyr Gly Ala Ser Ile Gln Ala Ile Thr Glu Ser Gly Leu
            420                 425                 430

Thr Pro Ile His Val Ala Ala Phe Met Gly His Leu Asn Ile Val Leu
        435                 440                 445

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

Glu Thr Ala Leu His Met Ala Ala Arg Ala Gly Gln Val Glu Val Val
465                 470                 475                 480

Arg Cys Leu Leu Arg Asn Gly Ala Leu Val Asp Ala Arg Ala Arg Glu
```

485 490 495

Glu Gln Thr Pro Leu His Ile Ala Ser Arg Leu Gly Lys Thr Glu Ile
500 505 510

Val Gln Leu Leu Leu Gln His Met Ala His Pro Asp Ala Ala Thr Thr
515 520 525

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

Val Ala Ser Val Leu Leu Glu Ala Gly Ala Ala His Ser Leu Ala Thr
545 550 555 560

Lys Lys Gly Phe Thr Pro Leu His Val Ala Ala Lys Tyr Gly Ser Leu
565 570 575

Asp Val Ala Lys Leu Leu Leu Gln Arg Arg Ala Ala Ala Asp Ser Ala
580 585 590

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

Gln Lys Val Ala Leu Leu Leu Leu Glu Lys Gly Ala Ser Pro His Ala
610 615 620

Thr Ala Lys Asn Gly Tyr Thr Pro Leu His Ile Ala Ala Lys Lys Asn
625 630 635 640

Gln Met Gln Ile Ala Ser Thr Leu Leu Asn Tyr Gly Ala Glu Thr Asn
645 650 655

Ile Val Thr Lys Gln Gly Val Thr Pro Leu His Leu Ala Ser Gln Glu
660 665 670

Gly His Thr Asp Met Val Thr Leu Leu Leu Asp Lys Gly Ala Asn Ile
675 680 685

His Met Ser Thr Lys Ser Gly Leu Thr Ser Leu His Leu Ala Ala Gln
690 695 700

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

```
Gln Asp Ala His Thr Lys Leu Gly Tyr Thr Pro Leu Ile Val Ala Cys
                725                 730                 735

His Tyr Gly Asn Val Lys Met Val Asn Phe Leu Leu Lys Gln Gly Ala
            740                 745                 750

Asn Val Asn Ala Lys Thr Lys Asn Gly Tyr Thr Pro Leu His Gln Ala
        755                 760                 765

Ala Gln Gln Gly His Thr His Ile Ile Asn Val Leu Leu Gln His Gly
    770                 775                 780

Ala Lys Pro Asn Ala Thr Thr Ala Asn Gly Asn Thr Ala Leu Ala Ile
785                 790                 795                 800

Ala Lys Arg Leu Gly Tyr Ile Ser Val Val Asp Thr Leu Lys Val Val
                805                 810                 815

Thr Glu Glu Val Thr Thr Thr Thr Thr Thr Thr Ile Thr Glu Lys His Lys
            820                 825                 830

Leu Asn Val Pro Glu Thr Met Thr Glu Val Leu Asp Val Ser Asp Glu
        835                 840                 845

Glu Gly Asp Asp Thr Met Thr Gly Asp Gly Gly Glu Tyr Leu Arg Pro
    850                 855                 860

Glu Asp Leu Lys Glu Leu Gly Asp Asp Ser Leu Pro Ser Ser Gln Phe
865                 870                 875                 880

Leu Asp Gly Met Asn Tyr Leu Arg Tyr Ser Leu Glu Gly Gly Arg Ser
                885                 890                 895

Asp Ser Leu Arg Ser Phe Ser Ser Asp Arg Ser His Thr Leu Ser His
            900                 905                 910

Ala Ser Tyr Leu Arg Asp Ser Ala Val Met Asp Asp Ser Val Val Ile
        915                 920                 925

Pro Ser His Gln Val Ser Thr Leu Ala Lys Glu Ala Glu Arg Asn Ser
    930                 935                 940
```

```
Tyr Arg Leu Ser Trp Gly Thr Glu Asn Leu Asp Asn Val Ala Leu Ser
945                 950                 955                 960

Ser Ser Pro Ile His Ser Gly Phe Leu Val Ser Phe Met Val Asp Ala
                965                 970                 975

Arg Gly Gly Ala Met Arg Gly Cys Arg His Asn Gly Leu Arg Ile Ile
            980                 985                 990

Ile Pro Pro Arg Lys Cys Thr Ala  Pro Thr Arg Val Thr  Cys Arg
Leu
        995                 1000                1005

Val Lys  Arg His Arg Leu Ala  Thr Met Pro Pro Met  Val Glu Gly
    1010                1015                1020

Glu Gly  Leu Ala Ser Arg Leu  Ile Glu Val Gly Pro  Ser Gly Ala
    1025                1030                1035

Gln Phe  Leu Gly Lys Leu His  Leu Pro Thr Ala Pro  Pro Pro Leu
    1040                1045                1050

Asn Glu  Gly Glu Ser Leu Val  Ser Arg Ile Leu Gln  Leu Gly Pro
    1055                1060                1065

Pro Gly  Thr Lys Phe Leu Gly  Pro Val Ile Val Glu  Ile Pro His
    1070                1075                1080

Phe Ala  Ala Leu Arg Gly Lys  Glu Arg Glu Leu Val  Val Leu Arg
    1085                1090                1095

Ser Glu  Asn Gly Asp Ser Trp  Lys Glu His Phe Cys  Asp Tyr Thr
    1100                1105                1110

Glu Asp  Glu Leu Asn Glu Ile  Leu Asn Gly Met Asp  Glu Val Leu
    1115                1120                1125

Asp Ser  Pro Glu Asp Leu Glu  Lys Lys Arg Ile Cys  Arg Ile Ile
    1130                1135                1140

Thr Arg  Asp Phe Pro Gln Tyr  Phe Ala Val Val Ser  Arg Ile Lys
    1145                1150                1155
```

```
Gln Asp  Ser Asn Leu Ile Gly  Pro Glu Gly Gly Val  Leu Ser Ser
    1160                1165                1170

Thr Val  Val Pro Gln Val Gln  Ala Val Phe Pro Glu  Gly Ala Leu
    1175                1180                1185

Thr Lys  Arg Ile Arg Val Gly  Leu Gln Ala Gln Pro  Met His Ser
    1190                1195                1200

Glu Leu  Val Lys Lys Ile Leu  Gly Asn Lys Ala Thr  Phe Ser Pro
    1205                1210                1215

Ile Val  Thr Leu Glu Pro Arg  Arg Arg Lys Phe His  Lys Pro Ile
    1220                1225                1230

Thr Met  Thr Ile Pro Val Pro  Lys Ala Ser Ser Asp  Val Met Leu
    1235                1240                1245

Asn Gly  Phe Gly Gly Asp Ala  Pro Thr Leu Arg Leu  Leu Cys Ser
    1250                1255                1260

Ile Thr  Gly Gly Thr Thr Pro  Ala Gln Trp Glu Asp  Ile Thr Gly
    1265                1270                1275

Thr Thr  Pro Leu Thr Phe Val  Asn Glu Cys Val Ser  Phe Thr Thr
    1280                1285                1290

Asn Val  Ser Ala Arg Phe Trp  Leu Ile Asp Cys Arg  Gln Ile Gln
    1295                1300                1305

Glu Ser  Val Thr Phe Ala Ser  Gln Val Tyr Arg Glu  Ile Ile Cys
    1310                1315                1320

Val Pro  Tyr Met Ala Lys Phe  Val Val Phe Ala Lys  Ser His Asp
    1325                1330                1335

Pro Ile  Glu Ala Arg Leu Arg  Cys Phe Cys Met Thr  Asp Asp Lys
    1340                1345                1350

Val Asp  Lys Thr Leu Glu Gln  Gln Glu Asn Phe Ala  Glu Val Ala
    1355                1360                1365
```

```
Arg Ser  Arg Asp Val Glu Val  Leu Glu Gly Lys Pro  Ile Tyr Val
    1370                 1375                 1380

Asp Cys  Phe Gly Asn Leu Val  Pro Leu Thr Lys Ser  Gly Gln His
    1385                 1390                 1395

His Ile  Phe Ser Phe Phe Ala  Phe Lys Glu Asn Arg  Leu Pro Leu
    1400                 1405                 1410

Phe Val  Lys Val Arg Asp Thr  Thr Gln Glu Pro Cys  Gly Arg Leu
    1415                 1420                 1425

Ser Phe  Met Lys Glu Pro Lys  Ser Thr Arg Gly Leu  Val His Gln
    1430                 1435                 1440

Ala Ile  Cys Asn Leu Asn Ile  Thr Leu Pro Ile Tyr  Thr Lys Glu
    1445                 1450                 1455

Ser Glu  Ser Asp Gln Glu Gln  Glu Glu Glu Ile Asp  Met Thr Ser
    1460                 1465                 1470

Glu Lys  Asn Pro Gln Asp Glu  Gln Glu Arg Ile Glu  Glu Arg Leu
    1475                 1480                 1485

Ala Tyr  Ile Ala Asp His Leu  Gly Phe Ser Trp Thr  Glu Leu Ala
    1490                 1495                 1500

Arg Glu  Leu Asp Phe Thr Glu  Glu Gln Ile His Gln  Ile Arg Ile
    1505                 1510                 1515

Glu Asn  Pro Asn Ser Leu Gln  Asp Gln Ser His Ala  Leu Leu Lys
    1520                 1525                 1530

Tyr Trp  Leu Glu Arg Asp Gly  Lys His Ala Thr Asp  Thr Asn Leu
    1535                 1540                 1545

Val Glu  Cys Leu Thr Lys Ile  Asn Arg Met Asp Ile  Val His Leu
    1550                 1555                 1560

Met Glu  Thr Asn Thr Glu Pro  Leu Gln Glu Arg Ile  Ser His Ser
    1565                 1570                 1575

Tyr Ala  Glu Ile Glu Gln Thr  Ile Thr Leu Asp His  Ser Glu Gly
```

1580 1585 1590

Phe Ser Val Leu Gln Glu Glu Leu Cys Thr Ala Gln His Lys Gln
1595 1600 1605

Lys Glu Glu Gln Ala Val Ser Lys Glu Ser Glu Thr Cys Asp His
1610 1615 1620

Pro Pro Ile Val Ser Glu Glu Asp Ile Ser Val Gly Tyr Ser Thr
1625 1630 1635

Phe Gln Asp Gly Val Pro Lys Thr Glu Gly Asp Ser Ser Ala Thr
1640 1645 1650

Ala Leu Phe Pro Gln Thr His Lys Glu Gln Val Gln Gln Asp Phe
1655 1660 1665

Ser Gly Lys Met Gln Asp Leu Pro Glu Glu Ser Ser Leu Glu Tyr
1670 1675 1680

Gln Gln Glu Tyr Phe Val Thr Thr Pro Gly Thr Glu Thr Ser Glu
1685 1690 1695

Thr Gln Lys Ala Met Ile Val Pro Ser Ser Pro Ser Lys Thr Pro
1700 1705 1710

Glu Glu Val Ser Thr Pro Ala Glu Glu Glu Lys Leu Tyr Leu Gln
1715 1720 1725

Thr Pro Thr Ser Ser Glu Arg Gly Gly Ser Pro Ile Ile Gln Glu
1730 1735 1740

Pro Glu Glu Pro Ser Glu His Arg Glu Glu Ser Ser Pro Arg Lys
1745 1750 1755

Thr Ser Leu Val Ile Val Glu Ser Ala Asp Asn Gln Pro Glu Thr
1760 1765 1770

Cys Glu Arg Leu Asp Glu Asp Ala Ala Phe Glu Lys Gly Asp Asp
1775 1780 1785

Met Pro Glu Ile Pro Pro Glu Thr Val Thr Glu Glu Glu Tyr Ile
1790 1795 1800

```
Asp Glu  His Gly His Thr Val  Val Lys Lys Val Thr  Arg Lys Ile
    1805                 1810                 1815


Ile Arg  Arg Tyr Val Ser Ser  Glu Gly Thr Glu Lys  Glu Glu Ile
    1820                 1825                 1830


Met Val  Gln Gly Met Pro Gln  Glu Pro Val Asn Ile  Glu Glu Gly
    1835                 1840                 1845


Asp Gly  Tyr Ser Lys Val Ile  Lys Arg Val Val Leu  Lys Ser Asp
    1850                 1855                 1860


Thr Glu  Gln Ser Glu Asp Asn  Asn Glu
    1865                 1870
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<210> 4861
<211> 1611
<212> PRT
<213> Homo sapiens

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<400> 4861

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Met Thr Thr Met Leu Gln Lys Ser Asp Ser Asn Ala Ser Phe Leu Arg
1               5                  10                  15


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


Gly Ile Asp Ile Asn Thr Cys Asn Gln Asn Gly Leu Asn Ala Leu His
        35                  40                  45
```

```
Leu Ala Ala Lys Glu Gly His Val Gly Leu Val Gln Glu Leu Leu Gly
    50                  55                  60

Arg Gly Ser Ser Val Asp Ser Ala Thr Lys Lys Gly Asn Thr Ala Leu
65                  70                  75                  80

His Ile Ala Ser Leu Ala Gly Gln Ala Glu Val Val Lys Val Leu Val
                85                  90                  95

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

Leu Tyr Met Ala Ala Gln Glu Asn His Ile Asp Val Val Lys Tyr Leu
        115                 120                 125

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

Pro Leu Ala Val Ala Leu Gln Gln Gly His Asn Gln Ala Val Ala Ile
145                 150                 155                 160

Leu Leu Glu Asn Asp Thr Lys Gly Lys Val Arg Leu Pro Ala Leu His
                165                 170                 175

Ile Ala Ala Arg Lys Asp Asp Thr Lys Ser Ala Ala Leu Leu Leu Gln
            180                 185                 190

Asn Asp His Asn Ala Asp Val Gln Ser Lys Met Met Val Asn Arg Thr
        195                 200                 205

Thr Glu Ser Gly Phe Thr Pro Leu His Ile Ala Ala His Tyr Gly Asn
    210                 215                 220

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

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

Asn Thr Asn Met Val Lys Leu Leu Leu Asp Arg Gly Gly Gln Ile Asp
            260                 265                 270

Ala Lys Thr Arg Asp Gly Leu Thr Pro Leu His Cys Ala Ala Arg Ser
```

```
        275                 280                 285

Gly His Asp Gln Val Val Glu Leu Leu Leu Glu Arg Gly Ala Pro Leu
    290                 295                 300

Leu Ala Arg Thr Lys Asn Gly Leu Ser Pro Leu His Met Ala Ala Gln
305                 310                 315                 320

Gly Asp His Val Glu Cys Val Lys His Leu Leu Gln His Lys Ala Pro
                325                 330                 335

Val Asp Asp Val Thr Leu Asp Tyr Leu Thr Ala Leu His Val Ala Ala
            340                 345                 350

His Cys Gly His Tyr Arg Val Thr Lys Leu Leu Leu Asp Lys Arg Ala
        355                 360                 365

Asn Pro Asn Ala Arg Ala Leu Asn Gly Phe Thr Pro Leu His Ile Ala
    370                 375                 380

Cys Lys Lys Asn Arg Ile Lys Val Met Glu Leu Leu Val Lys Tyr Gly
385                 390                 395                 400

Ala Ser Ile Gln Ala Ile Thr Glu Ser Gly Leu Thr Pro Ile His Val
                405                 410                 415

Ala Ala Phe Met Gly His Leu Asn Ile Val Leu Leu Leu Leu Gln Asn
            420                 425                 430

Gly Ala Ser Pro Asp Val Thr Asn Ile Arg Gly Glu Thr Ala Leu His
        435                 440                 445

Met Ala Ala Arg Ala Gly Gln Val Glu Val Val Arg Cys Leu Leu Arg
    450                 455                 460

Asn Gly Ala Leu Val Asp Ala Arg Ala Arg Glu Glu Gln Thr Pro Leu
465                 470                 475                 480

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

Gln His Met Ala His Pro Asp Ala Ala Thr Thr Asn Gly Tyr Thr Pro
            500                 505                 510
```

```
Leu His Ile Ser Ala Arg Glu Gly Gln Val Asp Val Ala Ser Val Leu
        515                 520                 525

Leu Glu Ala Gly Ala Ala His Ser Leu Ala Thr Lys Lys Gly Phe Thr
    530                 535                 540

Pro Leu His Val Ala Ala Lys Tyr Gly Ser Leu Asp Val Ala Lys Leu
545                 550                 555                 560

Leu Leu Gln Arg Arg Ala Ala Ala Asp Ser Ala Gly Lys Asn Gly Tyr
                565                 570                 575

Thr Pro Leu His Ile Ala Ala Lys Lys Asn Gln Met Gln Ile Ala Ser
            580                 585                 590

Thr Leu Leu Asn Tyr Gly Ala Glu Thr Asn Ile Val Thr Lys Gln Gly
        595                 600                 605

Val Thr Pro Leu His Leu Ala Ser Gln Glu Gly His Thr Asp Met Val
    610                 615                 620

Thr Leu Leu Leu Asp Lys Gly Ala Asn Ile His Met Ser Thr Lys Ser
625                 630                 635                 640

Gly Leu Thr Ser Leu His Leu Ala Ala Gln Glu Asp Lys Val Asn Val
                645                 650                 655

Ala Asp Ile Leu Thr Lys His Gly Ala Asp Gln Asp Ala His Thr Lys
            660                 665                 670

Leu Gly Tyr Thr Pro Leu Ile Val Ala Cys His Tyr Gly Asn Val Lys
        675                 680                 685

Met Val Asn Phe Leu Leu Lys Gln Gly Ala Asn Val Asn Ala Lys Thr
    690                 695                 700

Lys Asn Gly Tyr Thr Pro Leu His Gln Ala Ala Gln Gln Gly His Thr
705                 710                 715                 720

His Ile Ile Asn Val Leu Leu Gln His Gly Ala Lys Pro Asn Ala Thr
                725                 730                 735
```

```
Thr Ala Asn Gly Asn Thr Ala Leu Ala Ile Ala Lys Arg Leu Gly Tyr
            740                 745                 750

Ile Ser Val Val Asp Thr Leu Lys Val Val Thr Glu Glu Val Thr Thr
        755                 760                 765

Thr Thr Thr Thr Ile Thr Glu Lys His Lys Leu Asn Val Pro Glu Thr
    770                 775                 780

Met Thr Glu Val Leu Asp Val Ser Asp Glu Glu Gly Asp Asp Thr Met
785                 790                 795                 800

Thr Gly Asp Gly Gly Glu Tyr Leu Arg Pro Glu Asp Leu Lys Glu Leu
                805                 810                 815

Gly Asp Asp Ser Leu Pro Ser Ser Gln Phe Leu Asp Gly Met Asn Tyr
            820                 825                 830

Leu Arg Tyr Ser Leu Glu Gly Gly Arg Ser Asp Ser Leu Arg Ser Phe
        835                 840                 845

Ser Ser Asp Arg Ser His Thr Leu Ser His Ala Ser Tyr Leu Arg Asp
    850                 855                 860

Ser Ala Val Met Asp Asp Ser Val Val Ile Pro Ser His Gln Val Ser
865                 870                 875                 880

Thr Leu Ala Lys Glu Ala Glu Arg Asn Ser Tyr Arg Leu Ser Trp Gly
                885                 890                 895

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

Gly Phe Leu Val Ser Phe Met Val Asp Ala Arg Gly Gly Ala Met Arg
        915                 920                 925

Gly Cys Arg His Asn Gly Leu Arg Ile Ile Ile Pro Pro Arg Lys Cys
    930                 935                 940

Thr Ala Pro Thr Arg Val Thr Cys Arg Leu Val Lys Arg His Arg Leu
945                 950                 955                 960
```

```
Ala Thr Met Pro Pro Met Val Glu Gly Glu Gly Leu Ala Ser Arg Leu
                965                 970                 975

Ile Glu Val Gly Pro Ser Gly Ala Gln Phe Leu Gly Pro Val Ile Val
            980                 985                 990

Glu Ile Pro His Phe Ala Ala Leu  Arg Gly Lys Glu Arg  Glu Leu
Val
        995                 1000                1005

Val Leu  Arg Ser Glu Asn Gly  Asp Ser Trp Lys Glu  His Phe Cys
    1010                1015                1020

Asp Tyr  Thr Glu Asp Glu Leu  Asn Glu Ile Leu Asn  Gly Met Asp
    1025                1030                1035

Glu Val  Leu Asp Ser Pro Glu  Asp Leu Glu Lys Lys  Arg Ile Cys
    1040                1045                1050

Arg Ile  Ile Thr Arg Asp Phe  Pro Gln Tyr Phe Ala  Val Val Ser
    1055                1060                1065

Arg Ile  Lys Gln Asp Ser Asn  Leu Ile Gly Pro Glu  Gly Gly Val
    1070                1075                1080

Leu Ser  Ser Thr Val Val Pro  Gln Val Gln Ala Val  Phe Pro Glu
    1085                1090                1095

Gly Ala  Leu Thr Lys Arg Ile  Arg Val Gly Leu Gln  Ala Gln Pro
    1100                1105                1110

Met His  Ser Glu Leu Val Lys  Lys Ile Leu Gly Asn  Lys Ala Thr
    1115                1120                1125

Phe Ser  Pro Ile Val Thr Leu  Glu Pro Arg Arg Arg  Lys Phe His
    1130                1135                1140

Lys Pro  Ile Thr Met Thr Ile  Pro Val Pro Lys Ala  Ser Ser Asp
    1145                1150                1155

Val Met  Leu Asn Gly Phe Gly  Gly Asp Ala Pro Thr  Leu Arg Leu
    1160                1165                1170
```

Leu Cys Ser Ile Thr Gly Gly Thr Thr Pro Ala Gln Trp Glu Asp
1175 1180 1185

Ile Thr Gly Thr Thr Pro Leu Thr Phe Val Asn Glu Cys Val Ser
1190 1195 1200

Phe Thr Thr Asn Val Ser Ala Arg Phe Trp Leu Ile Asp Cys Arg
1205 1210 1215

Gln Ile Gln Glu Ser Val Thr Phe Ala Ser Gln Val Tyr Arg Glu
1220 1225 1230

Ile Ile Cys Val Pro Tyr Met Ala Lys Phe Val Val Phe Ala Lys
1235 1240 1245

Ser His Asp Pro Ile Glu Ala Arg Leu Arg Cys Phe Cys Met Thr
1250 1255 1260

Asp Asp Lys Val Asp Lys Thr Leu Glu Gln Gln Glu Asn Phe Ala
1265 1270 1275

Glu Val Ala Arg Ser Arg Asp Val Glu Val Leu Glu Gly Lys Pro
1280 1285 1290

Ile Tyr Val Asp Cys Phe Gly Asn Leu Val Pro Leu Thr Lys Ser
1295 1300 1305

Gly Gln His His Ile Phe Ser Phe Phe Ala Phe Lys Glu Asn Arg
1310 1315 1320

Leu Pro Leu Phe Val Lys Val Arg Asp Thr Thr Gln Glu Pro Cys
1325 1330 1335

Gly Arg Leu Ser Phe Met Lys Glu Pro Lys Ser Thr Arg Gly Leu
1340 1345 1350

Val His Gln Ala Ile Cys Asn Leu Asn Ile Thr Leu Pro Ile Tyr
1355 1360 1365

Thr Lys Glu Ser Glu Ser Asp Gln Glu Gln Glu Glu Glu Ile Asp
1370 1375 1380

Met Thr Ser Glu Lys Asn Asp Glu Thr Glu Ser Thr Glu Thr Ser

1385 1390 1395

Val Leu Lys Ser His Leu Val Asn Glu Val Pro Val Leu Ala Ser
1400 1405 1410

Pro Asp Leu Leu Ser Glu Val Ser Glu Met Lys Gln Asp Leu Ile
1415 1420 1425

Lys Met Thr Ala Ile Leu Thr Thr Asp Val Ser Asp Lys Ala Gly
1430 1435 1440

Ser Ile Lys Val Lys Glu Leu Val Lys Ala Ala Glu Glu Glu Pro
1445 1450 1455

Gly Glu Pro Phe Glu Ile Val Glu Arg Val Lys Glu Asp Leu Glu
1460 1465 1470

Lys Val Asn Glu Ile Leu Arg Ser Gly Thr Cys Thr Arg Asp Glu
1475 1480 1485

Ser Ser Val Gln Ser Ser Arg Ser Glu Arg Gly Leu Val Glu Glu
1490 1495 1500

Glu Trp Val Ile Val Ser Asp Glu Glu Ile Glu Glu Ala Arg Gln
1505 1510 1515

Lys Ala Pro Leu Glu Ile Thr Glu Tyr Pro Cys Val Glu Val Arg
1520 1525 1530

Ile Asp Lys Glu Ile Lys Gly Lys Val Glu Lys Asp Ser Thr Gly
1535 1540 1545

Leu Val Asn Tyr Leu Thr Asp Asp Leu Asn Thr Cys Val Pro Leu
1550 1555 1560

Pro Lys Glu Gln Leu Gln Thr Val Gln Asp Lys Ala Gly Lys Lys
1565 1570 1575

Cys Glu Ala Leu Ala Val Gly Arg Ser Ser Glu Lys Glu Gly Lys
1580 1585 1590

Asp Ile Pro Pro Asp Glu Thr Gln Ser Thr Gln Lys Gln His Lys
1595 1600 1605

Pro Ser Leu
1610

<210> 4862
<211> 555
<212> PRT
<213> Homo sapiens

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ankyrin 2, neuronal; "

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<221> source
<223> /note="Uniprot ID: Q01484; "

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<400> 4862
Met Thr Asp Asp Lys Val Asp Lys Thr Leu Glu Gln Gln Glu Asn Phe
1 5 10 15

Ala Glu Val Ala Arg Ser Arg Asp Val Glu Val Leu Glu Gly Lys Pro
20 25 30

Ile Tyr Val Asp Cys Phe Gly Asn Leu Val Pro Leu Thr Lys Ser Gly
35 40 45

Gln His His Ile Phe Ser Phe Phe Ala Phe Lys Glu Asn Arg Leu Pro
50 55 60

Leu Phe Val Lys Val Arg Asp Thr Thr Gln Glu Pro Cys Gly Arg Leu
65 70 75 80

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

```
Ile Cys Asn Leu Asn Ile Thr Leu Pro Ile Tyr Thr Lys Glu Ser Glu
            100                 105                 110

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

Pro Gln Asp Glu Gln Glu Arg Ile Glu Glu Arg Leu Ala Tyr Ile Ala
    130                 135                 140

Asp His Leu Gly Phe Ser Trp Thr Glu Leu Ala Arg Glu Leu Asp Phe
145                 150                 155                 160

Thr Glu Glu Gln Ile His Gln Ile Arg Ile Glu Asn Pro Asn Ser Leu
                165                 170                 175

Gln Asp Gln Ser His Ala Leu Leu Lys Tyr Trp Leu Glu Arg Asp Gly
            180                 185                 190

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

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

Glu Arg Ile Ser His Ser Tyr Ala Glu Ile Glu Gln Thr Ile Thr Leu
225                 230                 235                 240

Asp His Ser Glu Gly Phe Ser Val Leu Gln Glu Glu Leu Cys Thr Ala
                245                 250                 255

Gln His Lys Gln Lys Glu Glu Gln Ala Val Ser Lys Glu Ser Glu Thr
            260                 265                 270

Cys Asp His Pro Pro Ile Val Ser Glu Glu Asp Ile Ser Val Gly Tyr
        275                 280                 285

Ser Thr Phe Gln Asp Gly Val Pro Lys Thr Glu Gly Asp Ser Ser Ala
    290                 295                 300

Thr Ala Leu Phe Pro Gln Thr His Lys Glu Gln Val Gln Gln Asp Phe
305                 310                 315                 320

Ser Gly Lys Met Gln Asp Leu Pro Glu Glu Ser Ser Leu Glu Tyr Gln
```

```
                325                 330                 335

Gln Glu Tyr Phe Val Thr Thr Pro Gly Thr Glu Thr Ser Glu Thr Gln
            340                 345                 350

Lys Ala Met Ile Val Pro Ser Ser Pro Ser Lys Thr Pro Glu Glu Val
        355                 360                 365

Ser Thr Pro Ala Glu Glu Glu Lys Leu Tyr Leu Gln Thr Pro Thr Ser
    370                 375                 380

Ser Glu Arg Gly Gly Ser Pro Ile Ile Gln Glu Pro Glu Glu Pro Ser
385                 390                 395                 400

Glu His Arg Glu Glu Ser Ser Pro Arg Lys Thr Ser Leu Val Ile Val
                405                 410                 415

Glu Ser Ala Asp Asn Gln Pro Glu Thr Cys Glu Arg Leu Asp Glu Asp
            420                 425                 430

Ala Ala Phe Glu Lys Glu Leu Thr Glu Glu Leu Gly Glu Leu Glu Ala
        435                 440                 445

Ser Ser Asp Glu Glu Ala Met Val Thr Thr Arg Val Val Arg Arg Arg
    450                 455                 460

Val Ile Ile Gln Gly Asp Asp Met Pro Glu Ile Pro Pro Glu Thr Val
465                 470                 475                 480

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

Val Thr Arg Lys Ile Ile Arg Arg Tyr Val Ser Ser Glu Gly Thr Glu
            500                 505                 510

Lys Glu Glu Ile Met Val Gln Gly Met Pro Gln Glu Pro Val Asn Ile
        515                 520                 525

Glu Glu Gly Asp Gly Tyr Ser Lys Val Ile Lys Arg Val Val Leu Lys
    530                 535                 540

Ser Asp Thr Glu Gln Ser Glu Asp Asn Asn Glu
545                 550                 555
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<210> 4863
<211> 65
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<213> Homo sapiens

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ankyrin 2, neuronal; "

<220>
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<400> 4863
Met Ala Ala Gln Glu Asn His Ile Asp Val Val Lys Tyr Leu Leu Glu
1 5 10 15

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

Ala Val Ala Leu Gln Gln Gly His Asn Gln Ala Val Ala Ile Leu Leu
35 40 45

Glu Asn Asp Thr Lys Gly Lys Val Arg Leu Pro Ala Leu His Ile Ala
50 55 60

Ala
65

<210> 4864
<211> 1863
<212> PRT
<213> Homo sapiens

<220>
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<400> 4864

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Met Thr Thr Met Leu Gln Lys Ser Asp Ser Asn Ala Ser Phe Leu Arg
1               5                  10                  15

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

Gly Ile Asp Ile Asn Thr Cys Asn Gln Asn Gly Leu Asn Ala Leu His
        35                  40                  45

Leu Ala Ala Lys Glu Gly His Val Gly Leu Val Gln Glu Leu Leu Gly
    50                  55                  60

Arg Gly Ser Ser Val Asp Ser Ala Thr Lys Lys Gly Asn Thr Ala Leu
65                  70                  75                  80

His Ile Ala Ser Leu Ala Gly Gln Ala Glu Val Val Lys Val Leu Val
                85                  90                  95

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

Leu Tyr Met Ala Ala Gln Glu Asn His Ile Asp Val Val Lys Tyr Leu
        115                 120                 125

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

Pro Leu Ala Val Ala Leu Gln Gln Gly His Asn Gln Ala Val Ala Ile
145                 150                 155                 160

Leu Leu Glu Asn Asp Thr Lys Gly Lys Val Arg Leu Pro Ala Leu His
                165                 170                 175
```

```
Ile Ala Ala Arg Lys Asp Asp Thr Lys Ser Ala Ala Leu Leu Leu Gln
            180                 185                 190

Asn Asp His Asn Ala Asp Val Gln Ser Lys Met Met Val Asn Arg Thr
        195                 200                 205

Thr Glu Ser Gly Phe Thr Pro Leu His Ile Ala Ala His Tyr Gly Asn
    210                 215                 220

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

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

Asn Thr Asn Met Val Lys Leu Leu Leu Asp Arg Gly Gly Gln Ile Asp
            260                 265                 270

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

Gly His Asp Gln Val Val Glu Leu Leu Leu Glu Arg Gly Ala Pro Leu
    290                 295                 300

Leu Ala Arg Thr Lys Asn Gly Leu Ser Pro Leu His Met Ala Ala Gln
305                 310                 315                 320

Gly Asp His Val Glu Cys Val Lys His Leu Leu Gln His Lys Ala Pro
                325                 330                 335

Val Asp Asp Val Thr Leu Asp Tyr Leu Thr Ala Leu His Val Ala Ala
            340                 345                 350

His Cys Gly His Tyr Arg Val Thr Lys Leu Leu Leu Asp Lys Arg Ala
        355                 360                 365

Asn Pro Asn Ala Arg Ala Leu Asn Gly Phe Thr Pro Leu His Ile Ala
    370                 375                 380

Cys Lys Lys Asn Arg Ile Lys Val Met Glu Leu Leu Val Lys Tyr Gly
385                 390                 395                 400
```

```
Ala Ser Ile Gln Ala Ile Thr Glu Ser Gly Leu Thr Pro Ile His Val
                405                 410                 415

Ala Ala Phe Met Gly His Leu Asn Ile Val Leu Leu Leu Gln Asn
            420                 425                 430

Gly Ala Ser Pro Asp Val Thr Asn Ile Arg Gly Glu Thr Ala Leu His
        435                 440                 445

Met Ala Ala Arg Ala Gly Gln Val Glu Val Val Arg Cys Leu Leu Arg
    450                 455                 460

Asn Gly Ala Leu Val Asp Ala Arg Ala Arg Glu Glu Gln Thr Pro Leu
465                 470                 475                 480

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

Gln His Met Ala His Pro Asp Ala Ala Thr Thr Asn Gly Tyr Thr Pro
            500                 505                 510

Leu His Ile Ser Ala Arg Glu Gly Gln Val Asp Val Ala Ser Val Leu
        515                 520                 525

Leu Glu Ala Gly Ala Ala His Ser Leu Ala Thr Lys Lys Gly Phe Thr
    530                 535                 540

Pro Leu His Val Ala Ala Lys Tyr Gly Ser Leu Asp Val Ala Lys Leu
545                 550                 555                 560

Leu Leu Gln Arg Arg Ala Ala Ala Asp Ser Ala Gly Lys Asn Gly Leu
                565                 570                 575

Thr Pro Leu His Val Ala Ala His Tyr Asp Asn Gln Lys Val Ala Leu
            580                 585                 590

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

Tyr Thr Pro Leu His Ile Ala Ala Lys Lys Asn Gln Met Gln Ile Ala
    610                 615                 620
```

```
Ser Thr Leu Leu Asn Tyr Gly Ala Glu Thr Asn Ile Val Thr Lys Gln
625                 630                 635                 640

Gly Val Thr Pro Leu His Leu Ala Ser Gln Glu Gly His Thr Asp Met
                645                 650                 655

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

Ser Gly Leu Thr Ser Leu His Leu Ala Ala Gln Glu Asp Lys Val Asn
        675                 680                 685

Val Ala Asp Ile Leu Thr Lys His Gly Ala Asp Gln Asp Ala His Thr
    690                 695                 700

Lys Leu Gly Tyr Thr Pro Leu Ile Val Ala Cys His Tyr Gly Asn Val
705                 710                 715                 720

Lys Met Val Asn Phe Leu Leu Lys Gln Gly Ala Asn Val Asn Ala Lys
                725                 730                 735

Thr Lys Asn Gly Tyr Thr Pro Leu His Gln Ala Ala Gln Gln Gly His
            740                 745                 750

Thr His Ile Ile Asn Val Leu Leu Gln His Gly Ala Lys Pro Asn Ala
        755                 760                 765

Thr Thr Ala Asn Gly Asn Thr Ala Leu Ala Ile Ala Lys Arg Leu Gly
    770                 775                 780

Tyr Ile Ser Val Val Asp Thr Leu Lys Val Val Thr Glu Glu Val Thr
785                 790                 795                 800

Thr Thr Thr Thr Thr Ile Thr Glu Lys His Lys Leu Asn Val Pro Glu
                805                 810                 815

Thr Met Thr Glu Val Leu Asp Val Ser Asp Glu Glu Gly Asp Asp Thr
            820                 825                 830

Met Thr Gly Asp Gly Gly Glu Tyr Leu Arg Pro Glu Asp Leu Lys Glu
        835                 840                 845

Leu Gly Asp Asp Ser Leu Pro Ser Ser Gln Phe Leu Asp Gly Met Asn
```

```
    850                 855                 860

Tyr Leu Arg Tyr Ser Leu Glu Gly Gly Arg Ser Asp Ser Leu Arg Ser
865                 870                 875                 880

Phe Ser Ser Asp Arg Ser His Thr Leu Ser His Ala Ser Tyr Leu Arg
                885                 890                 895

Asp Ser Ala Val Met Asp Asp Ser Val Val Ile Pro Ser His Gln Val
            900                 905                 910

Ser Thr Leu Ala Lys Glu Ala Glu Arg Asn Ser Tyr Arg Leu Ser Trp
        915                 920                 925

Gly Thr Glu Asn Leu Asp Asn Val Ala Leu Ser Ser Ser Pro Ile His
    930                 935                 940

Ser Gly Arg Ala Ser Pro Cys Leu Glu Arg Asp Asn Ser Ser Phe Leu
945                 950                 955                 960

Val Ser Phe Met Val Asp Ala Arg Gly Gly Ala Met Arg Gly Cys Arg
                965                 970                 975

His Asn Gly Leu Arg Ile Ile Ile Pro Pro Arg Lys Cys Thr Ala Pro
            980                 985                 990

Thr Arg Val Thr Cys Arg Leu Val  Lys Arg His Arg Leu  Ala Thr
Met
        995                 1000                1005

Pro Pro  Met Val Glu Gly Glu  Gly Leu Ala Ser Arg  Leu Ile Glu
    1010                1015                1020

Val Gly  Pro Ser Gly Ala Gln  Phe Leu Gly Lys Leu  His Leu Pro
    1025                1030                1035

Thr Ala  Pro Pro Pro Leu Asn  Glu Gly Glu Ser Leu  Val Ser Arg
    1040                1045                1050

Ile Leu  Gln Leu Gly Pro Pro  Gly Thr Lys Phe Leu  Gly Pro Val
    1055                1060                1065

Ile Val  Glu Ile Pro His Phe  Ala Ala Leu Arg Gly  Lys Glu Arg
```

1070 1075 1080

Glu Leu Val Val Leu Arg Ser Glu Asn Gly Asp Ser Trp Lys Glu
1085 1090 1095

His Phe Cys Asp Tyr Thr Glu Asp Glu Leu Asn Glu Ile Leu Asn
1100 1105 1110

Gly Met Asp Glu Val Leu Asp Ser Pro Glu Asp Leu Glu Lys Lys
1115 1120 1125

Arg Ile Cys Arg Ile Ile Thr Arg Asp Phe Pro Gln Tyr Phe Ala
1130 1135 1140

Val Val Ser Arg Ile Lys Gln Asp Ser Asn Leu Ile Gly Pro Glu
1145 1150 1155

Gly Gly Val Leu Ser Ser Thr Val Val Pro Gln Val Gln Ala Val
1160 1165 1170

Phe Pro Glu Gly Ala Leu Thr Lys Arg Ile Arg Val Gly Leu Gln
1175 1180 1185

Ala Gln Pro Met His Ser Glu Leu Val Lys Lys Ile Leu Gly Asn
1190 1195 1200

Lys Ala Thr Phe Ser Pro Ile Val Thr Leu Glu Pro Arg Arg Arg
1205 1210 1215

Lys Phe His Lys Pro Ile Thr Met Thr Ile Pro Val Pro Lys Ala
1220 1225 1230

Ser Ser Asp Val Met Leu Asn Gly Phe Gly Gly Asp Ala Pro Thr
1235 1240 1245

Leu Arg Leu Leu Cys Ser Ile Thr Gly Gly Thr Thr Pro Ala Gln
1250 1255 1260

Trp Glu Asp Ile Thr Gly Thr Thr Pro Leu Thr Phe Val Asn Glu
1265 1270 1275

Cys Val Ser Phe Thr Thr Asn Val Ser Ala Arg Phe Trp Leu Ile
1280 1285 1290

```
Asp Cys  Arg Gln Ile Gln Glu  Ser Val Thr Phe Ala  Ser Gln Val
    1295                 1300                 1305

Tyr Arg  Glu Ile Ile Cys Val  Pro Tyr Met Ala Lys  Phe Val Val
    1310                 1315                 1320

Phe Ala  Lys Ser His Asp Pro  Ile Glu Ala Arg Leu  Arg Cys Phe
    1325                 1330                 1335

Cys Met  Thr Asp Asp Lys Val  Asp Lys Thr Leu Glu  Gln Gln Glu
    1340                 1345                 1350

Asn Phe  Ala Glu Val Ala Arg  Ser Arg Asp Val Glu  Val Leu Glu
    1355                 1360                 1365

Gly Lys  Pro Ile Tyr Val Asp  Cys Phe Gly Asn Leu  Val Pro Leu
    1370                 1375                 1380

Thr Lys  Ser Gly Gln His His  Ile Phe Ser Phe Phe  Ala Phe Lys
    1385                 1390                 1395

Glu Asn  Arg Leu Pro Leu Phe  Val Lys Val Arg Asp  Thr Thr Gln
    1400                 1405                 1410

Glu Pro  Cys Gly Arg Leu Ser  Phe Met Lys Glu Pro  Lys Ser Thr
    1415                 1420                 1425

Arg Gly  Leu Val His Gln Ala  Ile Cys Asn Leu Asn  Ile Thr Leu
    1430                 1435                 1440

Pro Ile  Tyr Thr Lys Glu Ser  Glu Ser Asp Gln Glu  Gln Glu Glu
    1445                 1450                 1455

Glu Ile  Asp Met Thr Ser Glu  Lys Asn Pro Gln Asp  Glu Gln Glu
    1460                 1465                 1470

Arg Ile  Glu Glu Arg Leu Ala  Tyr Ile Ala Asp His  Leu Gly Phe
    1475                 1480                 1485

Ser Trp  Thr Glu Leu Ala Arg  Glu Leu Asp Phe Thr  Glu Glu Gln
    1490                 1495                 1500
```

```
Ile His  Gln Ile Arg Ile Glu  Asn Pro Asn Ser Leu  Gln Asp Gln
    1505                1510                1515

Ser His  Ala Leu Leu Lys Tyr  Trp Leu Glu Arg Asp  Gly Lys His
    1520                1525                1530

Ala Thr  Asp Thr Asn Leu Val  Glu Cys Leu Thr Lys  Ile Asn Arg
    1535                1540                1545

Met Asp  Ile Val His Leu Met  Glu Thr Asn Thr Glu  Pro Leu Gln
    1550                1555                1560

Glu Arg  Ile Ser His Ser Tyr  Ala Glu Ile Glu Gln  Thr Ile Thr
    1565                1570                1575

Leu Asp  His Ser Glu Gly Phe  Ser Val Leu Gln Glu  Glu Leu Cys
    1580                1585                1590

Thr Ala  Gln His Lys Gln Lys  Glu Glu Gln Ala Val  Ser Lys Glu
    1595                1600                1605

Ser Glu  Thr Cys Asp His Pro  Pro Ile Val Ser Glu  Glu Asp Ile
    1610                1615                1620

Ser Val  Gly Tyr Ser Thr Phe  Gln Asp Gly Val Pro  Lys Thr Glu
    1625                1630                1635

Gly Asp  Ser Ser Ala Thr Ala  Leu Phe Pro Gln Thr  His Lys Glu
    1640                1645                1650

Gln Val  Gln Gln Asp Phe Ser  Gly Lys Met Gln Asp  Leu Pro Glu
    1655                1660                1665

Glu Ser  Ser Leu Glu Tyr Gln  Gln Glu Tyr Phe Val  Thr Thr Pro
    1670                1675                1680

Gly Thr  Glu Thr Ser Glu Thr  Gln Lys Ala Met Ile  Val Pro Ser
    1685                1690                1695

Ser Pro  Ser Lys Thr Pro Glu  Glu Val Ser Thr Pro  Ala Glu Glu
    1700                1705                1710
```

```
Glu Lys  Leu Tyr Leu Gln Thr  Pro Thr Ser Ser Glu  Arg Gly Gly
    1715                1720                1725

Ser Pro  Ile Ile Gln Glu Pro  Glu Glu Pro Ser Glu  His Arg Glu
    1730                1735                1740

Glu Ser  Ser Pro Arg Lys Thr  Ser Leu Val Ile Val  Glu Ser Ala
    1745                1750                1755

Asp Asn  Gln Pro Glu Thr Cys  Glu Arg Leu Asp Glu  Asp Ala Ala
    1760                1765                1770

Phe Glu  Lys Gly Asp Asp Met  Pro Glu Ile Pro Pro  Glu Thr Val
    1775                1780                1785

Thr Glu  Glu Glu Tyr Ile Asp  Glu His Gly His Thr  Val Val Lys
    1790                1795                1800

Lys Val  Thr Arg Lys Ile Ile  Arg Arg Tyr Val Ser  Ser Glu Gly
    1805                1810                1815

Thr Glu  Lys Glu Glu Ile Met  Val Gln Gly Met Pro  Gln Glu Pro
    1820                1825                1830

Val Asn  Ile Glu Glu Gly Asp  Gly Tyr Ser Lys Val  Ile Lys Arg
    1835                1840                1845

Val Val  Leu Lys Ser Asp Thr  Glu Gln Ser Glu Asp  Asn Asn Glu
    1850                1855                1860
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<210> 4865
<211> 81
<212> PRT
<213> Homo sapiens

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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 4865
Xaa Pro Gln Glu Pro Val Asn Ile Glu Glu Gly Asp Gly Tyr Ser Lys
1 5 10 15

Val Ile Lys Arg Val Val Leu Lys Ser Asp Thr Glu Gln Ser Glu Ala
20 25 30

Leu Ser Tyr Thr Gly Ser His Met Lys Val His Leu Pro Ser Leu Val
35 40 45

Glu Asn Glu Ile Leu Lys Glu Asp Gly Ser Ile Ile Lys Arg Thr Thr
50 55 60

Met Ser Lys Ala Ile Thr Gln Lys Arg Ala Val Val Lys Asp Gln His
65 70 75 80

Gly

<210> 4866
<211> 1028
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="ENSP ID: ENSP00000422498"

<400> 4866
Gln Asp Ile Lys Met Glu Ser Gln Gln Glu Ser Thr Leu Trp Glu Met
1 5 10 15

Gln Ser Asp Ser Val Ser Ser Ser Phe Glu Pro Thr Met Ser Ala Thr
20 25 30

Thr Thr Val Val Gly Glu Gln Ile Ser Lys Val Ile Ile Thr Lys Thr
35 40 45

Asp Val Asp Ser Asp Ser Trp Ser Glu Ile Arg Glu Asp Asp Glu Ala
50 55 60

Phe Glu Ala Arg Val Lys Glu Glu Glu Gln Lys Ile Phe Gly Leu Met
65 70 75 80

Val Asp Arg Gln Ser Gln Gly Thr Thr Pro Asp Thr Thr Pro Ala Arg
85 90 95

Thr Pro Thr Glu Glu Gly Thr Pro Thr Ser Glu Gln Asn Pro Phe Leu
100 105 110

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

Met Thr Lys Arg Ser Tyr Ala Asp Glu Ser Phe His Phe Phe Gln Ile
130 135 140

Gly Gln Glu Ser Arg Glu Glu Thr Leu Ser Glu Asp Val Lys Glu Gly
145 150 155 160

Ala Thr Gly Ala Asp Pro Leu Pro Leu Glu Thr Ser Ala Glu Ser Leu
165 170 175

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

Pro Asp Asp Val Ser Glu Glu Val Glu Glu Ile Pro Ala Ser Asp Ala
195 200 205

Gln Leu Asn Ser Gln Met Gly Ile Ser Ala Ser Thr Glu Thr Pro Thr
210 215 220

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

Gly Asp Ile Pro Pro Leu Ser Gly Val Lys Gln Ile Ser Cys Pro Asp
                245                 250                 255

Ser Ser Glu Pro Ala Val Gln Val Gln Leu Asp Phe Ser Thr Leu Thr
            260                 265                 270

Arg Ser Val Tyr Ser Asp Arg Gly Asp Asp Ser Pro Asp Ser Ser Pro
        275                 280                 285

Glu Glu Gln Lys Ser Val Ile Glu Ile Pro Thr Ala Pro Met Glu Asn
    290                 295                 300

Val Pro Phe Thr Glu Ser Lys Ser Lys Ile Pro Val Arg Thr Met Pro
305                 310                 315                 320

Thr Ser Thr Pro Ala Pro Pro Ser Ala Glu Tyr Glu Ser Ser Val Ser
                325                 330                 335

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

Lys Pro Lys Ser Lys Leu Pro Val Lys Val Pro Leu Gln Arg Val Glu
        355                 360                 365

Gln Gln Leu Ser Asp Leu Asp Thr Ser Val Gln Lys Thr Val Ala Pro
    370                 375                 380

Gln Gly Gln Asp Met Ala Ser Ile Ala Pro Asp Asn Arg Ser Lys Ser
385                 390                 395                 400

Glu Ser Asp Ala Ser Ser Leu Asp Ser Lys Thr Lys Cys Pro Val Lys
                405                 410                 415

Thr Arg Ser Tyr Thr Glu Thr Glu Thr Glu Ser Arg Glu Arg Ala Glu
            420                 425                 430

Glu Leu Glu Leu Glu Ser Glu Glu Gly Ala Thr Arg Pro Lys Ile Leu
        435                 440                 445
```

```
Thr Ser Arg Leu Pro Val Lys Ser Arg Ser Thr Thr Ser Ser Cys Arg
    450                 455                 460

Gly Gly Thr Ser Pro Thr Lys Glu Ser Lys Glu His Phe Phe Asp Leu
465                 470                 475                 480

Tyr Arg Asn Ser Ile Glu Phe Phe Glu Glu Ile Ser Asp Glu Ala Ser
                485                 490                 495

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

Ser Asp Asp Glu Ser Ser Ser Ala Leu Glu Val Ser Val Ile Glu Asn
        515                 520                 525

Leu Pro Pro Val Glu Thr Glu His Ser Val Pro Glu Asp Ile Phe Asp
    530                 535                 540

Thr Arg Pro Ile Trp Asp Glu Ser Ile Glu Thr Leu Ile Glu Arg Ile
545                 550                 555                 560

Pro Asp Glu Asn Gly His Asp His Ala Glu Asp Pro Gln Asp Glu Gln
                565                 570                 575

Glu Arg Ile Glu Glu Arg Leu Ala Tyr Ile Ala Asp His Leu Gly Phe
            580                 585                 590

Ser Trp Thr Glu Leu Ala Arg Glu Leu Asp Phe Thr Glu Glu Gln Ile
        595                 600                 605

His Gln Ile Arg Ile Glu Asn Pro Asn Ser Leu Gln Asp Gln Ser His
    610                 615                 620

Ala Leu Leu Lys Tyr Trp Leu Glu Arg Asp Gly Lys His Ala Thr Asp
625                 630                 635                 640

Thr Asn Leu Val Glu Cys Leu Thr Lys Ile Asn Arg Met Asp Ile Val
                645                 650                 655

His Leu Met Glu Thr Asn Thr Glu Pro Leu Gln Glu Arg Ile Ser His
            660                 665                 670

Ser Tyr Ala Glu Ile Glu Gln Thr Ile Thr Leu Asp His Ser Glu Gly
```

675 680 685

Phe Ser Val Leu Gln Glu Glu Leu Cys Thr Ala Gln His Lys Gln Lys
690 695 700

Glu Glu Gln Ala Val Ser Lys Glu Ser Glu Thr Cys Asp His Pro Pro
705 710 715 720

Ile Val Ser Glu Glu Asp Ile Ser Val Gly Tyr Ser Thr Phe Gln Asp
725 730 735

Gly Val Pro Lys Thr Glu Gly Asp Ser Ser Ala Thr Ala Leu Phe Pro
740 745 750

Gln Thr His Lys Glu Gln Val Gln Gln Asp Phe Ser Gly Lys Met Gln
755 760 765

Asp Leu Pro Glu Glu Ser Ser Leu Glu Tyr Gln Gln Glu Tyr Phe Val
770 775 780

Thr Thr Pro Gly Thr Glu Thr Ser Glu Thr Gln Lys Ala Met Ile Val
785 790 795 800

Pro Ser Ser Pro Ser Lys Thr Pro Glu Glu Val Ser Thr Pro Ala Glu
805 810 815

Glu Glu Lys Leu Tyr Leu Gln Thr Pro Thr Ser Ser Glu Arg Gly Gly
820 825 830

Ser Pro Ile Ile Gln Glu Pro Glu Glu Pro Ser Glu His Arg Glu Glu
835 840 845

Ser Ser Pro Arg Lys Thr Ser Leu Val Ile Val Glu Ser Ala Asp Asn
850 855 860

Gln Pro Glu Thr Cys Glu Arg Leu Asp Glu Asp Ala Ala Phe Glu Lys
865 870 875 880

Gly Asp Asp Met Pro Glu Ile Pro Pro Glu Thr Val Thr Glu Glu Glu
885 890 895

Tyr Ile Asp Glu His Gly His Thr Val Val Lys Lys Val Thr Arg Lys
900 905 910

```
Ile Ile Arg Arg Tyr Val Ser Ser Glu Gly Thr Glu Lys Glu Glu Ile
        915                 920                 925

Met Val Gln Gly Met Pro Gln Glu Pro Val Asn Ile Glu Glu Gly Asp
    930                 935                 940

Gly Tyr Ser Lys Val Ile Lys Arg Val Val Leu Lys Ser Asp Thr Glu
945                 950                 955                 960

Gln Ser Glu Val Thr Leu Cys Glu Pro Ser Ile Leu Ser Ser Thr Ser
                965                 970                 975

Gln Phe Gln Ala Glu Pro Val Glu Gly Arg Arg Val Ser Lys Val Val
            980                 985                 990

Lys Thr Thr Val Val Leu Gly Glu  Arg Met Glu Lys His  Leu Gly
Asp
        995                 1000                1005

Ser Ser  Leu Ala Thr Asp Leu  Pro Ser Ala Lys Asp  Asp Phe Glu
    1010                1015                1020

Glu Asp  Asn Asn Glu
    1025


<210> 4867
<211> 966
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1066; "

<220>
<221> source
<223> /note="Gene Symbol: ANK2; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin 2, neuronal; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000422853"
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<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 4867
Xaa Asn Val Ala Leu Ser Ser Ser Pro Ile His Ser Gly Phe Leu Val
1 5 10 15

Ser Phe Met Val Asp Ala Arg Gly Gly Ala Met Arg Gly Cys Arg His
20 25 30

Asn Gly Leu Arg Ile Ile Ile Pro Pro Arg Lys Cys Thr Ala Pro Thr
35 40 45

Arg Val Thr Cys Arg Leu Val Lys Arg His Arg Leu Ala Thr Met Pro
50 55 60

Pro Met Val Glu Gly Glu Gly Leu Ala Ser Arg Leu Ile Glu Val Gly
65 70 75 80

Pro Ser Gly Ala Gln Phe Leu Gly Pro Val Ile Val Glu Ile Pro His
85 90 95

Phe Ala Ala Leu Arg Gly Lys Glu Arg Glu Leu Val Val Leu Arg Ser
100 105 110

Glu Asn Gly Asp Ser Trp Lys Glu His Phe Cys Asp Tyr Thr Glu Asp
115 120 125

Glu Leu Asn Glu Ile Leu Asn Gly Met Asp Glu Val Leu Asp Ser Pro
130 135 140

Glu Asp Leu Glu Lys Lys Arg Ile Cys Arg Ile Ile Thr Arg Asp Phe
145 150 155 160

Pro Gln Tyr Phe Ala Val Val Ser Arg Ile Lys Gln Asp Ser Asn Leu
165 170 175

Ile Gly Pro Glu Gly Gly Val Leu Ser Ser Thr Val Val Pro Gln Val
180 185 190

Gln Ala Val Phe Pro Glu Gly Ala Leu Thr Lys Arg Ile Arg Val Gly
195 200 205

```
Leu Gln Ala Gln Pro Met His Ser Glu Leu Val Lys Lys Ile Leu Gly
    210                 215                 220

Asn Lys Ala Thr Phe Ser Pro Ile Val Thr Leu Glu Pro Arg Arg Arg
225                 230                 235                 240

Lys Phe His Lys Pro Ile Thr Met Thr Ile Pro Val Pro Lys Ala Ser
                245                 250                 255

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

Leu Leu Cys Ser Ile Thr Gly Gly Thr Thr Pro Ala Gln Trp Glu Asp
        275                 280                 285

Ile Thr Gly Thr Thr Pro Leu Thr Phe Val Asn Glu Cys Val Ser Phe
    290                 295                 300

Thr Thr Asn Val Ser Ala Arg Phe Trp Leu Ile Asp Cys Arg Gln Ile
305                 310                 315                 320

Gln Glu Ser Val Thr Phe Ala Ser Gln Val Tyr Arg Glu Ile Ile Cys
                325                 330                 335

Val Pro Tyr Met Ala Lys Phe Val Val Phe Ala Lys Ser His Asp Pro
            340                 345                 350

Ile Glu Ala Arg Leu Arg Cys Phe Cys Met Thr Asp Asp Lys Val Asp
        355                 360                 365

Lys Thr Leu Glu Gln Gln Glu Asn Phe Ala Glu Val Ala Arg Ser Arg
    370                 375                 380

Asp Val Glu Val Leu Glu Gly Lys Pro Ile Tyr Val Asp Cys Phe Gly
385                 390                 395                 400

Asn Leu Val Pro Leu Thr Lys Ser Gly Gln His His Ile Phe Ser Phe
                405                 410                 415

Phe Ala Phe Lys Glu Asn Arg Leu Pro Leu Phe Val Lys Val Arg Asp
            420                 425                 430
```

```
Thr Thr Gln Glu Pro Cys Gly Arg Leu Ser Phe Met Lys Glu Pro Lys
        435                 440                 445

Ser Thr Arg Gly Leu Val His Gln Ala Ile Cys Asn Leu Asn Ile Thr
    450                 455                 460

Leu Pro Ile Tyr Thr Lys Ile Asp Met Thr Ser Glu Lys Asn Pro Gln
465                 470                 475                 480

Asp Glu Gln Glu Arg Ile Glu Glu Arg Leu Ala Tyr Ile Ala Asp His
                485                 490                 495

Leu Gly Phe Ser Trp Thr Glu Leu Ala Arg Glu Leu Asp Phe Thr Glu
            500                 505                 510

Glu Gln Ile His Gln Ile Arg Ile Glu Asn Pro Asn Ser Leu Gln Asp
        515                 520                 525

Gln Ser His Ala Leu Leu Lys Tyr Trp Leu Glu Arg Asp Gly Lys His
    530                 535                 540

Ala Thr Asp Thr Asn Leu Val Glu Cys Leu Thr Lys Ile Asn Arg Met
545                 550                 555                 560

Asp Ile Val His Leu Met Glu Thr Asn Thr Glu Pro Leu Gln Glu Arg
                565                 570                 575

Ile Ser His Ser Tyr Ala Glu Ile Glu Gln Thr Ile Thr Leu Asp His
            580                 585                 590

Ser Glu Gly Phe Ser Val Leu Gln Glu Glu Leu Cys Thr Ala Gln His
        595                 600                 605

Lys Gln Lys Glu Glu Gln Ala Val Ser Lys Glu Ser Glu Thr Cys Asp
    610                 615                 620

His Pro Pro Ile Val Ser Glu Glu Asp Ile Ser Val Gly Tyr Ser Thr
625                 630                 635                 640

Phe Gln Asp Gly Val Pro Lys Thr Glu Gly Asp Ser Ser Ala Thr Ala
                645                 650                 655
```

```
Leu Phe Pro Gln Thr His Lys Glu Gln Val Gln Gln Asp Phe Ser Gly
            660                 665                 670

Lys Met Gln Asp Leu Pro Glu Glu Ser Ser Leu Glu Tyr Gln Gln Glu
        675                 680                 685

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

Met Ile Val Pro Ser Ser Pro Ser Lys Thr Pro Glu Glu Val Ser Thr
705                 710                 715                 720

Pro Ala Glu Glu Glu Lys Leu Tyr Leu Gln Thr Pro Thr Ser Ser Glu
                725                 730                 735

Arg Gly Gly Ser Pro Ile Ile Gln Glu Pro Glu Glu Pro Ser Glu His
            740                 745                 750

Arg Glu Glu Ser Ser Pro Arg Lys Thr Ser Leu Val Ile Val Glu Ser
        755                 760                 765

Ala Asp Asn Gln Pro Glu Thr Cys Glu Arg Leu Asp Glu Asp Ala Ala
    770                 775                 780

Phe Glu Lys Glu Leu Thr Glu Glu Leu Gly Glu Leu Glu Ala Ser Ser
785                 790                 795                 800

Asp Glu Glu Ala Met Val Thr Thr Arg Val Val Arg Arg Arg Val Ile
                805                 810                 815

Ile Gln Gly Asp Asp Met Pro Glu Ile Pro Pro Glu Thr Val Thr Glu
            820                 825                 830

Glu Glu Tyr Ile Asp Glu His Gly His Thr Val Val Lys Lys Val Thr
        835                 840                 845

Arg Lys Ile Ile Arg Arg Tyr Val Ser Ser Glu Gly Thr Glu Lys Glu
    850                 855                 860

Glu Ile Met Val Gln Gly Met Pro Gln Glu Pro Val Asn Ile Glu Glu
865                 870                 875                 880

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

```
                885                 890                 895

Thr Glu Gln Ser Glu Val Thr Leu Cys Glu Pro Ser Ile Leu Ser Ser
            900                 905                 910

Thr Ser Gln Phe Gln Ala Glu Pro Val Glu Gly Arg Arg Val Ser Lys
        915                 920                 925

Val Val Lys Thr Thr Val Val Leu Gly Glu Arg Met Glu Lys His Leu
    930                 935                 940

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

Glu Glu Asp Asn Asn Glu
                965


<210> 4868
<211> 197
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1066; "

<220>
<221> source
<223> /note="Gene Symbol: ANK2; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin 2, neuronal; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000422888"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 4868
Xaa Ser Glu Gly Thr Glu Lys Glu Glu Ile Met Val Gln Gly Met Pro
1               5                   10                  15

Gln Glu Pro Val Asn Ile Glu Glu Gly Asp Gly Tyr Ser Lys Val Ile
```

```
            20                  25                  30

Lys Arg Val Val Leu Lys Ser Asp Thr Glu Gln Ser Glu Val Thr Leu
        35                  40                  45

Cys Glu Pro Ser Ile Leu Ser Ser Thr Ser Gln Phe Gln Ala Glu Pro
    50                  55                  60

Val Glu Gly Arg Arg Val Ser Lys Val Val Lys Thr Thr Val Val Leu
65                  70                  75                  80

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

Leu Pro Ser Ala Lys Asp Asp Phe Glu Glu Ala Leu Ser Tyr Thr Gly
            100                 105                 110

Ser His Met Lys Val His Leu Pro Ser Leu Val Glu Asn Glu Ile Leu
        115                 120                 125

Lys Glu Asp Gly Ser Ile Ile Lys Arg Thr Thr Met Ser Lys Ala Ile
    130                 135                 140

Thr Gln Lys Arg Ala Val Val Lys Asp Gln His Gly Lys Arg Ile Asp
145                 150                 155                 160

Leu Glu His Leu Glu Asp Val Pro Glu Ala Leu Asp Gln Asp Asp Leu
                165                 170                 175

Gln Arg Asp Leu Gln Gln Leu Leu Arg His Phe Cys Lys Glu Asp Leu
            180                 185                 190

Lys Gln Glu Ala Lys
        195


<210> 4869
<211> 177
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1066; "

<220>
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<221> source
<223> /note="Gene Symbol: ANK2; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin 2, neuronal; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000422900"

<400> 4869

```
Met Ala His Ala Ala Ala Ser Ile Lys Lys Val Arg Glu Ala Asp Leu
1               5                  10                  15

Asp Glu Lys Glu Lys Asn Leu Glu Arg Asp Arg Lys Lys Gln Arg Lys
            20                  25                  30

Ile Pro Arg Glu Arg Met Glu Arg Lys Arg Lys Ser Asp Ser Asn Ala
        35                  40                  45

Ser Phe Leu Arg Ala Ala Arg Ala Gly Asn Leu Asp Lys Val Val Glu
    50                  55                  60

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

Asn Ala Leu His Leu Ala Ala Lys Glu Gly His Val Gly Leu Val Gln
                85                  90                  95

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

Asn Thr Ala Leu His Ile Ala Ser Leu Ala Gly Gln Ala Glu Val Val
        115                 120                 125

Lys Val Leu Val Lys Glu Gly Ala Asn Ile Asn Ala Gln Ser Gln Asn
    130                 135                 140

Gly Phe Thr Pro Leu Tyr Met Ala Ala Gln Glu Asn His Ile Asp Val
145                 150                 155                 160

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

Asp

<210> 4870
<211> 1114
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1066; "

<220>
<221> source
<223> /note="Gene Symbol: ANK2; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin 2, neuronal; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000423799"

<400> 4870
Met Thr Thr Met Leu Gln Lys Ser Asp Ser Asn Ala Ser Phe Leu Arg
1 5 10 15

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

Gly Ile Asp Ile Asn Thr Cys Asn Gln Asn Gly Leu Asn Ala Leu His
35 40 45

Leu Ala Ala Lys Glu Gly His Val Gly Leu Val Gln Glu Leu Leu Gly
50 55 60

Arg Gly Ser Ser Val Asp Ser Ala Thr Lys Lys Gly Asn Thr Ala Leu
65 70 75 80

His Ile Ala Ser Leu Ala Gly Gln Ala Glu Val Val Lys Val Leu Val
85 90 95

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

Leu Tyr Met Ala Ala Gln Glu Asn His Ile Asp Val Val Lys Tyr Leu
115 120 125

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

Pro Leu Ala Val Ala Leu Gln Gln Gly His Asn Gln Ala Val Ala Ile
145                 150                 155                 160

Leu Leu Glu Asn Asp Thr Lys Gly Lys Val Arg Leu Pro Ala Leu His
                165                 170                 175

Ile Ala Ala Arg Lys Asp Asp Thr Lys Ser Ala Ala Leu Leu Leu Gln
            180                 185                 190

Asn Asp His Asn Ala Asp Val Gln Ser Lys Met Met Val Asn Arg Thr
        195                 200                 205

Thr Glu Ser Gly Phe Thr Pro Leu His Ile Ala Ala His Tyr Gly Asn
    210                 215                 220

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

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

Asn Thr Asn Met Val Lys Leu Leu Leu Asp Arg Gly Gly Gln Ile Asp
            260                 265                 270

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

Gly His Asp Gln Val Val Glu Leu Leu Leu Glu Arg Gly Ala Pro Leu
    290                 295                 300

Leu Ala Arg Thr Lys Asn Gly Leu Ser Pro Leu His Met Ala Ala Gln
305                 310                 315                 320

Gly Asp His Val Glu Cys Val Lys His Leu Leu Gln His Lys Ala Pro
                325                 330                 335

Val Asp Asp Val Thr Leu Asp Tyr Leu Thr Ala Leu His Val Ala Ala
            340                 345                 350
```

```
His Cys Gly His Tyr Arg Val Thr Lys Leu Leu Leu Asp Lys Arg Ala
        355                 360                 365

Asn Pro Asn Ala Arg Ala Leu Asn Gly Phe Thr Pro Leu His Ile Ala
    370                 375                 380

Cys Lys Lys Asn Arg Ile Lys Val Met Glu Leu Leu Val Lys Tyr Gly
385                 390                 395                 400

Ala Ser Ile Gln Ala Ile Thr Glu Ser Gly Leu Thr Pro Ile His Val
                405                 410                 415

Ala Ala Phe Met Gly His Leu Asn Ile Val Leu Leu Leu Leu Gln Asn
            420                 425                 430

Gly Ala Ser Pro Asp Val Thr Asn Ile Arg Gly Glu Thr Ala Leu His
        435                 440                 445

Met Ala Ala Arg Ala Gly Gln Val Glu Val Val Arg Cys Leu Leu Arg
    450                 455                 460

Asn Gly Ala Leu Val Asp Ala Arg Ala Arg Glu Glu Gln Thr Pro Leu
465                 470                 475                 480

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

Gln His Met Ala His Pro Asp Ala Ala Thr Thr Asn Gly Tyr Thr Pro
            500                 505                 510

Leu His Ile Ser Ala Arg Glu Gly Gln Val Asp Val Ala Ser Val Leu
        515                 520                 525

Leu Glu Ala Gly Ala Ala His Ser Leu Ala Thr Lys Lys Gly Phe Thr
    530                 535                 540

Pro Leu His Val Ala Ala Lys Tyr Gly Ser Leu Asp Val Ala Lys Leu
545                 550                 555                 560

Leu Leu Gln Arg Arg Ala Ala Ala Asp Ser Ala Gly Lys Asn Gly Leu
                565                 570                 575
```

```
Thr Pro Leu His Val Ala Ala His Tyr Asp Asn Gln Lys Val Ala Leu
            580                 585                 590

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

Tyr Thr Pro Leu His Ile Ala Ala Lys Lys Asn Gln Met Gln Ile Ala
    610                 615                 620

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

Gly Val Thr Pro Leu His Leu Ala Ser Gln Glu Gly His Thr Asp Met
                645                 650                 655

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

Ser Gly Leu Thr Ser Leu His Leu Ala Ala Gln Glu Asp Lys Val Asn
        675                 680                 685

Val Ala Asp Ile Leu Thr Lys His Gly Ala Asp Gln Asp Ala His Thr
    690                 695                 700

Lys Leu Gly Tyr Thr Pro Leu Ile Val Ala Cys His Tyr Gly Asn Val
705                 710                 715                 720

Lys Met Val Asn Phe Leu Leu Lys Gln Gly Ala Asn Val Asn Ala Lys
                725                 730                 735

Thr Lys Asn Gly Tyr Thr Pro Leu His Gln Ala Ala Gln Gln Gly His
            740                 745                 750

Thr His Ile Ile Asn Val Leu Leu Gln His Gly Ala Lys Pro Asn Ala
        755                 760                 765

Thr Thr Ala Asn Gly Asn Thr Ala Leu Ala Ile Ala Lys Arg Leu Gly
    770                 775                 780

Tyr Ile Ser Val Val Asp Thr Leu Lys Val Val Thr Glu Glu Val Thr
785                 790                 795                 800

Thr Thr Thr Thr Thr Ile Thr Glu Lys His Lys Leu Asn Val Pro Glu
```

805 810 815

Thr Met Thr Glu Val Leu Asp Val Ser Asp Glu Glu Gly Asp Asp Thr
820 825 830

Met Thr Gly Asp Gly Gly Glu Tyr Leu Arg Pro Glu Asp Leu Lys Glu
835 840 845

Leu Gly Asp Asp Ser Leu Pro Ser Ser Gln Phe Leu Asp Gly Met Asn
850 855 860

Tyr Leu Arg Tyr Ser Leu Glu Gly Gly Arg Ser Asp Ser Leu Arg Ser
865 870 875 880

Phe Ser Ser Asp Arg Ser His Thr Leu Ser His Ala Ser Tyr Leu Arg
885 890 895

Asp Ser Ala Val Met Asp Asp Ser Val Val Ile Pro Ser His Gln Val
900 905 910

Ser Thr Leu Ala Lys Glu Ala Glu Arg Asn Ser Tyr Arg Leu Ser Trp
915 920 925

Gly Thr Glu Asn Leu Asp Asn Val Ala Leu Ser Ser Ser Pro Ile His
930 935 940

Ser Gly Phe Leu Val Ser Phe Met Val Asp Ala Arg Gly Gly Ala Met
945 950 955 960

Arg Gly Cys Arg His Asn Gly Leu Arg Ile Ile Ile Pro Pro Arg Lys
965 970 975

Cys Thr Ala Pro Thr Arg Val Thr Cys Arg Leu Val Lys Arg His Arg
980 985 990

Leu Ala Thr Met Pro Pro Met Val Glu Gly Glu Gly Leu Ala Ser
Arg
995 1000 1005

Leu Ile Glu Val Gly Pro Ser Gly Ala Gln Phe Leu Gly Lys Leu
1010 1015 1020

His Leu Pro Thr Ala Pro Pro Pro Leu Asn Glu Gly Glu Ser Leu

```
    1025                1030                1035

Val Ser  Arg Ile Leu Gln Leu  Gly Pro Pro Gly Thr  Lys Phe Leu
    1040                1045                1050

Gly Pro  Val Ile Val Glu Ile  Pro His Phe Ala Ala  Leu Arg Gly
    1055                1060                1065

Lys Glu  Arg Glu Leu Val Val  Leu Arg Ser Glu Asn  Gly Asp Ser
    1070                1075                1080

Trp Lys  Glu His Phe Cys Asp  Tyr Thr Glu Asp Glu  Leu Asn Glu
    1085                1090                1095

Ile Leu  Asn Gly Met Asp Glu  Val Leu Asp Ser Pro  Glu Asp Leu
    1100                1105                1110

Glu
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<210> 4871
<211> 1730
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1066; "

<220>
<221> source
<223> /note="Gene Symbol: ANK2; "

<220>
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<223> /note="Gene Name:
ankyrin 2, neuronal; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000424722"

<400> 4871

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Met Met Asn Glu Asp Ala Ala Gln Lys Ser Asp Ser Gly Glu Lys Phe
1               5                  10                  15

Asn Gly Ser Ser Gln Arg Arg Lys Arg Pro Lys Lys Val Thr Cys Pro
            20                  25                  30
```

```
Gln Met Lys Pro Glu Ala Ala Asn Ile Glu Lys Ser Asp Ser Asn Ala
        35                  40                  45

Ser Phe Leu Arg Ala Ala Arg Ala Gly Asn Leu Asp Lys Val Val Glu
    50                  55                  60

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

Asn Ala Leu His Leu Ala Ala Lys Glu Gly His Val Gly Leu Val Gln
                85                  90                  95

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

Asn Thr Ala Leu His Ile Ala Ser Leu Ala Gly Gln Ala Glu Val Val
        115                 120                 125

Lys Val Leu Val Lys Glu Gly Ala Asn Ile Asn Ala Gln Ser Gln Asn
    130                 135                 140

Gly Phe Thr Pro Leu Tyr Met Ala Ala Gln Glu Asn His Ile Asp Val
145                 150                 155                 160

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

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

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

Pro Ala Leu His Ile Ala Ala Arg Lys Asp Asp Thr Lys Ser Ala Ala
    210                 215                 220

Leu Leu Leu Gln Asn Asp His Asn Ala Asp Val Gln Ser Lys Met Met
225                 230                 235                 240

Val Asn Arg Thr Thr Glu Ser Gly Phe Thr Pro Leu His Ile Ala Ala
                245                 250                 255
```

```
His Tyr Gly Asn Val Asn Val Ala Thr Leu Leu Leu Asn Arg Gly Ala
            260                 265                 270

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

Ser Lys Arg Gly Asn Thr Asn Met Val Lys Leu Leu Leu Asp Arg Gly
    290                 295                 300

Gly Gln Ile Asp Ala Lys Thr Arg Asp Gly Leu Thr Pro Leu His Cys
305                 310                 315                 320

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

Gly Ala Pro Leu Leu Ala Arg Thr Lys Asn Gly Leu Ser Pro Leu His
            340                 345                 350

Met Ala Ala Gln Gly Asp His Val Glu Cys Val Lys His Leu Leu Gln
        355                 360                 365

His Lys Ala Pro Val Asp Asp Val Thr Leu Asp Tyr Leu Thr Ala Leu
    370                 375                 380

His Val Ala Ala His Cys Gly His Tyr Arg Val Thr Lys Leu Leu Leu
385                 390                 395                 400

Asp Lys Arg Ala Asn Pro Asn Ala Arg Ala Leu Asn Gly Phe Thr Pro
                405                 410                 415

Leu His Ile Ala Cys Lys Lys Asn Arg Ile Lys Val Met Glu Leu Leu
            420                 425                 430

Val Lys Tyr Gly Ala Ser Ile Gln Ala Ile Thr Glu Ser Gly Leu Thr
        435                 440                 445

Pro Ile His Val Ala Ala Phe Met Gly His Leu Asn Ile Val Leu Leu
    450                 455                 460

Leu Leu Gln Asn Gly Ala Ser Pro Asp Val Thr Asn Ile Arg Gly Glu
465                 470                 475                 480

Thr Ala Leu His Met Ala Ala Arg Ala Gly Gln Val Glu Val Val Arg
```

485 490 495

Cys Leu Leu Arg Asn Gly Ala Leu Val Asp Ala Arg Ala Arg Glu Glu
500 505 510

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

Gln Leu Leu Leu Gln His Met Ala His Pro Asp Ala Ala Thr Thr Asn
530 535 540

Gly Tyr Thr Pro Leu His Ile Ser Ala Arg Glu Gly Gln Val Asp Val
545 550 555 560

Ala Ser Val Leu Leu Glu Ala Gly Ala Ala His Ser Leu Ala Thr Lys
565 570 575

Lys Gly Phe Thr Pro Leu His Val Ala Ala Lys Tyr Gly Ser Leu Asp
580 585 590

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

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

Lys Val Ala Leu Leu Leu Leu Glu Lys Gly Ala Ser Pro His Ala Thr
625 630 635 640

Ala Lys Asn Gly Tyr Thr Pro Leu His Ile Ala Ala Lys Lys Asn Gln
645 650 655

Met Gln Ile Ala Ser Thr Leu Leu Asn Tyr Gly Ala Glu Thr Asn Ile
660 665 670

Val Thr Lys Gln Gly Val Thr Pro Leu His Leu Ala Ser Gln Glu Gly
675 680 685

His Thr Asp Met Val Thr Leu Leu Leu Asp Lys Gly Ala Asn Ile His
690 695 700

Met Ser Thr Lys Ser Gly Leu Thr Ser Leu His Leu Ala Ala Gln Glu
705 710 715 720

```
Asp Lys Val Asn Val Ala Asp Ile Leu Thr Lys His Gly Ala Asp Gln
                725                 730                 735

Asp Ala His Thr Lys Leu Gly Tyr Thr Pro Leu Ile Val Ala Cys His
            740                 745                 750

Tyr Gly Asn Val Lys Met Val Asn Phe Leu Leu Lys Gln Gly Ala Asn
        755                 760                 765

Val Asn Ala Lys Thr Lys Asn Gly Tyr Thr Pro Leu His Gln Ala Ala
    770                 775                 780

Gln Gln Gly His Thr His Ile Ile Asn Val Leu Leu Gln His Gly Ala
785                 790                 795                 800

Lys Pro Asn Ala Thr Thr Ala Asn Gly Asn Thr Ala Leu Ala Ile Ala
                805                 810                 815

Lys Arg Leu Gly Tyr Ile Ser Val Val Asp Thr Leu Lys Val Val Thr
            820                 825                 830

Glu Glu Val Thr Thr Thr Thr Thr Thr Ile Thr Glu Lys His Lys Leu
        835                 840                 845

Asn Val Pro Glu Thr Met Thr Glu Val Leu Asp Val Ser Asp Glu Glu
    850                 855                 860

Gly Asp Asp Thr Met Thr Gly Asp Gly Gly Glu Tyr Leu Arg Pro Glu
865                 870                 875                 880

Asp Leu Lys Glu Leu Gly Asp Asp Ser Leu Pro Ser Ser Gln Phe Leu
                885                 890                 895

Asp Gly Met Asn Tyr Leu Arg Tyr Ser Leu Glu Gly Gly Arg Ser Asp
            900                 905                 910

Ser Leu Arg Ser Phe Ser Ser Asp Arg Ser His Thr Leu Ser His Ala
        915                 920                 925

Ser Tyr Leu Arg Asp Ser Ala Val Met Asp Asp Ser Val Val Ile Pro
    930                 935                 940
```

```
Ser His Gln Val Ser Thr Leu Ala Lys Glu Ala Glu Arg Asn Ser Tyr
945                 950                 955                 960

Arg Leu Ser Trp Gly Thr Glu Asn Leu Asp Asn Val Ala Leu Ser Ser
                965                 970                 975

Ser Pro Ile His Ser Gly Phe Leu Val Ser Phe Met Val Asp Ala Arg
            980                 985                 990

Gly Gly Ala Met Arg Gly Cys Arg  His Asn Gly Leu Arg  Ile Ile
Ile
        995                 1000                1005

Pro Pro  Arg Lys Cys Thr Ala  Pro Thr Arg Val Thr  Cys Arg Leu
    1010                1015                1020

Val Lys  Arg His Arg Leu Ala  Thr Met Pro Pro Met  Val Glu Gly
    1025                1030                1035

Glu Gly  Leu Ala Ser Arg Leu  Ile Glu Val Gly Pro  Ser Gly Ala
    1040                1045                1050

Gln Phe  Leu Gly Lys Leu His  Leu Pro Thr Ala Pro  Pro Pro Leu
    1055                1060                1065

Asn Glu  Gly Glu Ser Leu Val  Ser Arg Ile Leu Gln  Leu Gly Pro
    1070                1075                1080

Pro Gly  Thr Lys Phe Leu Gly  Pro Val Ile Val Glu  Ile Pro His
    1085                1090                1095

Phe Ala  Ala Leu Arg Gly Lys  Glu Arg Glu Leu Val  Val Leu Arg
    1100                1105                1110

Ser Glu  Asn Gly Asp Ser Trp  Lys Glu His Phe Cys  Asp Tyr Thr
    1115                1120                1125

Glu Asp  Glu Leu Asn Glu Ile  Leu Asn Gly Met Asp  Glu Val Leu
    1130                1135                1140

Asp Ser  Pro Glu Asp Leu Glu  Lys Lys Arg Ile Cys  Arg Ile Ile
    1145                1150                1155
```

Thr Arg Asp Phe Pro Gln Tyr Phe Ala Val Val Ser Arg Ile Lys
1160 1165 1170

Gln Asp Ser Asn Leu Ile Gly Pro Glu Gly Gly Val Leu Ser Ser
1175 1180 1185

Thr Val Val Pro Gln Val Gln Ala Val Phe Pro Glu Gly Ala Leu
1190 1195 1200

Thr Lys Arg Ile Arg Val Gly Leu Gln Ala Gln Pro Met His Ser
1205 1210 1215

Glu Leu Val Lys Lys Ile Leu Gly Asn Lys Ala Thr Phe Ser Pro
1220 1225 1230

Ile Val Thr Leu Glu Pro Arg Arg Arg Lys Phe His Lys Pro Ile
1235 1240 1245

Thr Met Thr Ile Pro Val Pro Lys Ala Ser Ser Asp Val Met Leu
1250 1255 1260

Asn Gly Phe Gly Gly Asp Ala Pro Thr Leu Arg Leu Leu Cys Ser
1265 1270 1275

Ile Thr Gly Gly Thr Thr Pro Ala Gln Trp Glu Asp Ile Thr Gly
1280 1285 1290

Thr Thr Pro Leu Thr Phe Val Asn Glu Cys Val Ser Phe Thr Thr
1295 1300 1305

Asn Val Ser Ala Arg Phe Trp Leu Ile Asp Cys Arg Gln Ile Gln
1310 1315 1320

Glu Ser Val Thr Phe Ala Ser Gln Val Tyr Arg Glu Ile Ile Cys
1325 1330 1335

Val Pro Tyr Met Ala Lys Phe Val Val Phe Ala Lys Ser His Asp
1340 1345 1350

Pro Ile Glu Ala Arg Leu Arg Cys Phe Cys Met Thr Asp Asp Lys
1355 1360 1365

```
Val Asp  Lys Thr Leu Glu Gln  Gln Glu Asn Phe Ala  Glu Val Ala
    1370                1375                1380

Arg Ser  Arg Asp Val Glu Val  Leu Glu Gly Lys Pro  Ile Tyr Val
    1385                1390                1395

Asp Cys  Phe Gly Asn Leu Val  Pro Leu Thr Lys Ser  Gly Gln His
    1400                1405                1410

His Ile  Phe Ser Phe Phe Ala  Phe Lys Glu Asn Arg  Leu Pro Leu
    1415                1420                1425

Phe Val  Lys Val Arg Asp Thr  Thr Gln Glu Pro Cys  Gly Arg Leu
    1430                1435                1440

Ser Phe  Met Lys Glu Pro Lys  Ser Thr Arg Gly Leu  Val His Gln
    1445                1450                1455

Ala Ile  Cys Asn Leu Asn Ile  Thr Leu Pro Ile Tyr  Thr Lys Glu
    1460                1465                1470

Ser Glu  Ser Asp Gln Glu Gln  Glu Glu Glu Ile Asp  Met Thr Ser
    1475                1480                1485

Glu Lys  Asn Asp Glu Thr Glu  Ser Thr Glu Thr Ser  Val Leu Lys
    1490                1495                1500

Ser His  Leu Val Asn Glu Val  Pro Val Leu Ala Ser  Pro Asp Leu
    1505                1510                1515

Leu Ser  Glu Val Ser Glu Met  Lys Gln Asp Leu Ile  Lys Met Thr
    1520                1525                1530

Ala Ile  Leu Thr Thr Asp Val  Ser Asp Lys Ala Gly  Ser Ile Lys
    1535                1540                1545

Val Lys  Glu Leu Val Lys Ala  Ala Glu Glu Glu Pro  Gly Glu Pro
    1550                1555                1560

Phe Glu  Ile Val Glu Arg Val  Lys Glu Asp Leu Glu  Lys Val Asn
    1565                1570                1575

Glu Ile  Leu Arg Ser Gly Thr  Cys Thr Arg Asp Glu  Ser Ser Val
```

```
    1580                1585                1590

Gln Ser  Ser Arg Ser Glu Arg  Gly Leu Val Glu Glu  Glu Trp Val
    1595                1600                1605

Ile Val  Ser Asp Glu Glu Ile  Glu Glu Ala Arg Gln  Lys Ala Pro
    1610                1615                1620

Leu Glu  Ile Thr Glu Tyr Pro  Cys Val Glu Val Arg  Ile Asp Lys
    1625                1630                1635

Glu Ile  Lys Gly Lys Val Glu  Lys Asp Ser Thr Gly  Leu Val Asn
    1640                1645                1650

Tyr Leu  Thr Asp Asp Leu Asn  Thr Cys Val Pro Leu  Pro Lys Glu
    1655                1660                1665

Gln Leu  Gln Thr Val Gln Asp  Lys Ala Gly Lys Lys  Cys Glu Ala
    1670                1675                1680

Leu Ala  Val Gly Arg Ser Ser  Glu Lys Glu Gly Lys  Asp Ile Pro
    1685                1690                1695

Pro Asp  Glu Thr Gln Ser Thr  Gln Lys Gln His Lys  Pro Ser Leu
    1700                1705                1710

Gly Ile  Lys Lys Pro Val Arg  Arg Lys Leu Lys Glu  Lys Gln Lys
    1715                1720                1725

Gln Lys
    1730


<210> 4872
<211> 112
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ANK2; "

<220>
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<221> source
<223> /note="Gene Name:
ankyrin 2, neuronal; "

<220>
<221> source
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<400> 4872
Met Gly Asn Ala Ala Leu Cys Ser Ser Cys His Ala Asp Lys Ser Ile
1 5 10 15

Arg Ala Gln Gly Asn Met Gln Glu Leu Asp Lys Thr Pro Asp Tyr Tyr
20 25 30

Gly Cys Asn Ser Glu Asp Val Lys Glu Pro Gly Val Trp Ser Asp Ser
35 40 45

Asn Ala Ser Phe Leu Arg Ala Ala Arg Ala Gly Asn Leu Asp Lys Val
50 55 60

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

Gly Leu Asn Ala Leu His Leu Ala Ala Lys Glu Gly His Val Gly Leu
85 90 95

Val Gln Glu Leu Leu Gly Arg Gly Ser Ser Val Asp Ser Ala Thr Lys
100 105 110

<210> 4873
<211> 1048
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
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ankyrin 2, neuronal; "

<220>
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<223> /note="ENSP ID: ENSP00000426944"

<400> 4873

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

Ser Val Val Asp Thr Leu Lys Val Val Thr Glu Glu Val Thr Thr Thr
            20                  25                  30

Thr Thr Thr Ile Thr Glu Lys His Lys Leu Asn Val Pro Glu Thr Met
        35                  40                  45

Thr Glu Val Leu Asp Val Ser Asp Glu Glu Gly Asp Asp Thr Met Thr
    50                  55                  60

Gly Asp Gly Gly Glu Tyr Leu Arg Pro Glu Asp Leu Lys Glu Leu Gly
65                  70                  75                  80

Asp Asp Ser Leu Pro Ser Ser Gln Phe Leu Asp Gly Met Asn Tyr Leu
                85                  90                  95

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

Ser Asp Arg Ser His Thr Leu Ser His Ala Ser Tyr Leu Arg Asp Ser
        115                 120                 125

Ala Val Met Asp Asp Ser Val Val Ile Pro Ser His Gln Val Ser Thr
    130                 135                 140

Leu Ala Lys Glu Ala Glu Arg Asn Ser Tyr Arg Leu Ser Trp Gly Thr
145                 150                 155                 160

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

Phe Leu Val Ser Phe Met Val Asp Ala Arg Gly Gly Ala Met Arg Gly
            180                 185                 190

Cys Arg His Asn Gly Leu Arg Ile Ile Ile Pro Pro Arg Lys Cys Thr
        195                 200                 205

Ala Pro Thr Arg Val Thr Cys Arg Leu Val Lys Arg His Arg Leu Ala
    210                 215                 220
```

```
Thr Met Pro Pro Met Val Glu Gly Glu Gly Leu Ala Ser Arg Leu Ile
225                 230                 235                 240

Glu Val Gly Pro Ser Gly Ala Gln Phe Leu Gly Pro Val Ile Val Glu
                245                 250                 255

Ile Pro His Phe Ala Ala Leu Arg Gly Lys Glu Arg Glu Leu Val Val
            260                 265                 270

Leu Arg Ser Glu Asn Gly Asp Ser Trp Lys Glu His Phe Cys Asp Tyr
        275                 280                 285

Thr Glu Asp Glu Leu Asn Glu Ile Leu Asn Gly Met Asp Glu Val Leu
    290                 295                 300

Asp Ser Pro Glu Asp Leu Glu Lys Lys Arg Ile Cys Arg Ile Ile Thr
305                 310                 315                 320

Arg Asp Phe Pro Gln Tyr Phe Ala Val Val Ser Arg Ile Lys Gln Asp
                325                 330                 335

Ser Asn Leu Ile Gly Pro Glu Gly Gly Val Leu Ser Ser Thr Val Val
            340                 345                 350

Pro Gln Val Gln Ala Val Phe Pro Glu Gly Ala Leu Thr Lys Arg Ile
        355                 360                 365

Arg Val Gly Leu Gln Ala Gln Pro Met His Ser Glu Leu Val Lys Lys
    370                 375                 380

Ile Leu Gly Asn Lys Ala Thr Phe Ser Pro Ile Val Thr Leu Glu Pro
385                 390                 395                 400

Arg Arg Arg Lys Phe His Lys Pro Ile Thr Met Thr Ile Pro Val Pro
                405                 410                 415

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

Thr Leu Arg Leu Leu Cys Ser Ile Thr Gly Gly Thr Thr Pro Ala Gln
        435                 440                 445
```

```
Trp Glu Asp Ile Thr Gly Thr Thr Pro Leu Thr Phe Val Asn Glu Cys
    450                 455                 460

Val Ser Phe Thr Thr Asn Val Ser Ala Arg Phe Trp Leu Ile Asp Cys
465                 470                 475                 480

Arg Gln Ile Gln Glu Ser Val Thr Phe Ala Ser Gln Val Tyr Arg Glu
                485                 490                 495

Ile Ile Cys Val Pro Tyr Met Ala Lys Phe Val Val Phe Ala Lys Ser
            500                 505                 510

His Asp Pro Ile Glu Ala Arg Leu Arg Cys Phe Cys Met Thr Asp Asp
        515                 520                 525

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

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

Cys Phe Gly Asn Leu Val Pro Leu Thr Lys Ser Gly Gln His His Ile
                565                 570                 575

Phe Ser Phe Phe Ala Phe Lys Glu Asn Arg Leu Pro Leu Phe Val Lys
            580                 585                 590

Val Arg Asp Thr Thr Gln Glu Pro Cys Gly Arg Leu Ser Phe Met Lys
        595                 600                 605

Glu Pro Lys Ser Thr Arg Gly Leu Val His Gln Ala Ile Cys Asn Leu
    610                 615                 620

Asn Ile Thr Leu Pro Ile Tyr Thr Lys Glu Ser Glu Ser Asp Gln Glu
625                 630                 635                 640

Gln Glu Glu Glu Ile Asp Met Thr Ser Glu Lys Asn Pro Gln Asp Glu
                645                 650                 655

Gln Glu Arg Ile Glu Glu Arg Leu Ala Tyr Ile Ala Asp His Leu Gly
            660                 665                 670
```

```
Phe Ser Trp Thr Glu Leu Ala Arg Glu Leu Asp Phe Thr Glu Glu Gln
        675                 680                 685

Ile His Gln Ile Arg Ile Glu Asn Pro Asn Ser Leu Gln Asp Gln Ser
    690                 695                 700

His Ala Leu Leu Lys Tyr Trp Leu Glu Arg Asp Gly Lys His Ala Thr
705                 710                 715                 720

Asp Thr Asn Leu Val Glu Cys Leu Thr Lys Ile Asn Arg Met Asp Ile
                725                 730                 735

Val His Leu Met Glu Thr Asn Thr Glu Pro Leu Gln Glu Arg Ile Ser
            740                 745                 750

His Ser Tyr Ala Glu Ile Glu Gln Thr Ile Thr Leu Asp His Ser Glu
        755                 760                 765

Gly Phe Ser Val Leu Gln Glu Glu Leu Cys Thr Ala Gln His Lys Gln
    770                 775                 780

Lys Glu Glu Gln Ala Val Ser Lys Glu Ser Glu Thr Cys Asp His Pro
785                 790                 795                 800

Pro Ile Val Ser Glu Glu Asp Ile Ser Val Gly Tyr Ser Thr Phe Gln
                805                 810                 815

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

Pro Gln Thr His Lys Glu Gln Val Gln Gln Asp Phe Ser Gly Lys Met
        835                 840                 845

Gln Asp Leu Pro Glu Glu Ser Ser Leu Glu Tyr Gln Gln Glu Tyr Phe
    850                 855                 860

Val Thr Thr Pro Gly Thr Glu Thr Ser Glu Thr Gln Lys Ala Met Ile
865                 870                 875                 880

Val Pro Ser Ser Pro Ser Lys Thr Pro Glu Glu Val Ser Thr Pro Ala
                885                 890                 895

Glu Glu Glu Lys Leu Tyr Leu Gln Thr Pro Thr Ser Ser Glu Arg Gly
```

900 905 910

Gly Ser Pro Ile Ile Gln Glu Pro Glu Glu Pro Ser Glu His Arg Glu
915 920 925

Glu Ser Ser Pro Arg Lys Thr Ser Leu Val Ile Val Glu Ser Ala Asp
930 935 940

Asn Gln Pro Glu Thr Cys Glu Arg Leu Asp Glu Asp Ala Ala Phe Glu
945 950 955 960

Lys Gly Asp Asp Met Pro Glu Ile Pro Pro Glu Thr Val Thr Glu Glu
965 970 975

Glu Tyr Ile Asp Glu His Gly His Thr Val Val Lys Lys Val Thr Arg
980 985 990

Lys Ile Ile Arg Arg Tyr Val Ser Ser Glu Gly Thr Glu Lys Glu
Glu
995 1000 1005

Ile Met Val Gln Gly Met Pro Gln Glu Pro Val Asn Ile Glu Glu
1010 1015 1020

Gly Asp Gly Tyr Ser Lys Val Ile Lys Arg Val Val Leu Lys Ser
1025 1030 1035

Asp Thr Glu Gln Ser Glu Asp Asn Asn Glu
1040 1045

<210> 4874
<211> 187
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
ankyrin 2, neuronal; "

<220>
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<223> /note="ENSP ID: ENSP00000426994"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 4874
Xaa Ile Gln Glu Ser Val Thr Phe Ala Ser Gln Val Tyr Arg Glu Ile
1 5 10 15

Ile Cys Val Pro Tyr Met Ala Lys Phe Val Val Phe Ala Lys Ser His
20 25 30

Asp Pro Ile Glu Ala Arg Leu Arg Cys Phe Cys Met Thr Asp Asp Lys
35 40 45

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

Ser Arg Asp Val Glu Val Arg Asp Thr Thr Gln Glu Pro Cys Gly Arg
65 70 75 80

Leu Ser Phe Met Lys Glu Pro Lys Ser Thr Arg Gly Leu Val His Gln
85 90 95

Ala Ile Cys Asn Leu Asn Ile Thr Leu Pro Ile Tyr Thr Lys Glu Ser
100 105 110

Glu Ser Asp Gln Glu Gln Glu Glu Glu Ile Asp Met Thr Ser Glu Lys
115 120 125

Asn Pro Gln Asp Glu Gln Glu Arg Ile Glu Glu Arg Leu Ala Tyr Ile
130 135 140

Ala Asp His Leu Gly Phe Ser Trp Thr Glu Leu Ala Arg Glu Leu Asp
145 150 155 160

Phe Thr Glu Glu Gln Ile His Gln Ile Arg Ile Glu Asn Pro Asn Ser
165 170 175

Leu Gln Asp Gln Ser His Ala Leu Leu Lys Tyr

180 185

<210> 4875
<211> 180
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<223> /note="Gene Symbol: ANK2; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin 2, neuronal; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000482888"

<400> 4875
Met Asp Ser Asn Ser Ser Pro Glu Glu Val Gln Phe Gln Pro Val Val
1 5 10 15

Ser Lys Gln Tyr Thr Phe Lys Met Asn Glu Asp Thr Gln Glu Glu Pro
20 25 30

Gly Lys Ser Glu Glu Glu Lys Asp Ser Glu Ser His Leu Ala Glu Asp
35 40 45

Arg His Ala Val Ser Thr Glu Ala Glu Asp Arg Ser Tyr Asp Lys Leu
50 55 60

Asn Arg Asp Thr Asp Gln Pro Lys Ile Cys Asp Gly His Gly Cys Glu
65 70 75 80

Ala Met Ser Pro Ser Ser Ser Ala Ala Pro Val Ser Ser Gly Leu Gln
85 90 95

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

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

```
Leu Asp Val Ser Arg Ala Glu Ser Pro Gln Ala Asp Cys Pro Ser Glu
    130                 135                 140

Ser Phe Ser Ser Ser Ser Ser Leu Pro His Cys Leu Val Ser Glu Gly
145                 150                 155                 160

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

Gly His Lys Asn
            180


<210> 4876
<211> 1194
<212> PRT
<213> Homo sapiens

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<220>
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<223> /note="Gene Name:
      ankyrin 2, neuronal; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000489091"

<400> 4876
Ser Asp Ser Asn Ala Ser Phe Leu Arg Ala Ala Arg Ala Gly Asn Leu
1               5                   10                  15

Asp Lys Val Val Glu Tyr Leu Lys Gly Gly Ile Asp Ile Asn Thr Cys
            20                  25                  30

Asn Gln Asn Gly Leu Asn Ala Leu His Leu Ala Ala Lys Glu Gly His
        35                  40                  45

Val Gly Leu Val Gln Glu Leu Leu Gly Arg Gly Ser Ser Val Asp Ser
    50                  55                  60

Ala Thr Lys Lys Gly Asn Thr Ala Leu His Ile Ala Ser Leu Ala Gly
```

65 70 75 80

Gln Ala Glu Val Val Lys Val Leu Val Lys Glu Gly Ala Asn Ile Asn
85 90 95

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

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

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

Gln Gly His Asn Gln Ala Val Ala Ile Leu Leu Glu Asn Asp Thr Lys
145 150 155 160

Gly Lys Val Arg Leu Pro Ala Leu His Ile Ala Ala Arg Lys Asp Asp
165 170 175

Thr Lys Ser Ala Ala Leu Leu Leu Gln Asn Asp His Asn Ala Asp Val
180 185 190

Gln Ser Lys Met Met Val Asn Arg Thr Thr Glu Ser Gly Phe Thr Pro
195 200 205

Leu His Ile Ala Ala His Tyr Gly Asn Val Asn Val Ala Thr Leu Leu
210 215 220

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

Pro Leu His Val Ala Ser Lys Arg Gly Asn Thr Asn Met Val Lys Leu
245 250 255

Leu Leu Asp Arg Gly Gly Gln Ile Asp Ala Lys Thr Arg Asp Gly Leu
260 265 270

Thr Pro Leu His Cys Ala Ala Arg Ser Gly His Asp Gln Val Val Glu
275 280 285

Leu Leu Leu Glu Arg Gly Ala Pro Leu Leu Ala Arg Thr Lys Asn Gly
290 295 300

Leu Ser Pro Leu His Met Ala Ala Gln Gly Asp His Val Glu Cys Val
305 310 315 320

Lys His Leu Leu Gln His Lys Ala Pro Val Asp Asp Val Thr Leu Asp
325 330 335

Tyr Leu Thr Ala Leu His Val Ala Ala His Cys Gly His Tyr Arg Val
340 345 350

Thr Lys Leu Leu Leu Asp Lys Arg Ala Asn Pro Asn Ala Arg Ala Leu
355 360 365

Asn Gly Phe Thr Pro Leu His Ile Ala Cys Lys Lys Asn Arg Ile Lys
370 375 380

Val Met Glu Leu Leu Val Lys Tyr Gly Ala Ser Ile Gln Ala Ile Thr
385 390 395 400

Glu Ser Gly Leu Thr Pro Ile His Val Ala Ala Phe Met Gly His Leu
405 410 415

Asn Ile Val Leu Leu Leu Leu Gln Asn Gly Ala Ser Pro Asp Val Thr
420 425 430

Asn Ile Arg Gly Glu Thr Ala Leu His Met Ala Ala Arg Ala Gly Gln
435 440 445

Val Glu Val Val Arg Cys Leu Leu Arg Asn Gly Ala Leu Val Asp Ala
450 455 460

Arg Ala Arg Glu Glu Gln Thr Pro Leu His Ile Ala Ser Arg Leu Gly
465 470 475 480

Lys Thr Glu Ile Val Gln Leu Leu Leu Gln His Met Ala His Pro Asp
485 490 495

Ala Ala Thr Thr Asn Gly Tyr Thr Pro Leu His Ile Ser Ala Arg Glu
500 505 510

Gly Gln Val Asp Val Ala Ser Val Leu Leu Glu Ala Gly Ala Ala His
515 520 525

```
Ser Leu Ala Thr Lys Lys Gly Phe Thr Pro Leu His Val Ala Ala Lys
    530                 535                 540

Tyr Gly Ser Leu Asp Val Ala Lys Leu Leu Leu Gln Arg Arg Ala Ala
545                 550                 555                 560

Ala Asp Ser Ala Gly Lys Asn Gly Leu Thr Pro Leu His Val Ala Ala
                565                 570                 575

His Tyr Asp Asn Gln Lys Val Ala Leu Leu Leu Leu Glu Lys Gly Ala
            580                 585                 590

Ser Pro His Ala Thr Ala Lys Asn Gly Tyr Thr Pro Leu His Ile Ala
        595                 600                 605

Ala Lys Lys Asn Gln Met Gln Ile Ala Ser Thr Leu Leu Asn Tyr Gly
    610                 615                 620

Ala Glu Thr Asn Ile Val Thr Lys Gln Gly Val Thr Pro Leu His Leu
625                 630                 635                 640

Ala Ser Gln Glu Gly His Thr Asp Met Val Thr Leu Leu Leu Asp Lys
                645                 650                 655

Gly Ala Asn Ile His Met Ser Thr Lys Ser Gly Leu Thr Ser Leu His
            660                 665                 670

Leu Ala Ala Gln Glu Asp Lys Val Asn Val Ala Asp Ile Leu Thr Lys
        675                 680                 685

His Gly Ala Asp Gln Asp Ala His Thr Lys Leu Gly Tyr Thr Pro Leu
    690                 695                 700

Ile Val Ala Cys His Tyr Gly Asn Val Lys Met Val Asn Phe Leu Leu
705                 710                 715                 720

Lys Gln Gly Ala Asn Val Asn Ala Lys Thr Lys Asn Gly Tyr Thr Pro
                725                 730                 735

Leu His Gln Ala Ala Gln Gln Gly His Thr His Ile Ile Asn Val Leu
            740                 745                 750
```

```
Leu Gln His Gly Ala Lys Pro Asn Ala Thr Thr Ala Asn Gly Asn Thr
        755                 760                 765

Ala Leu Ala Ile Ala Lys Arg Leu Gly Tyr Ile Ser Val Val Asp Thr
    770                 775                 780

Leu Lys Val Val Thr Glu Glu Val Thr Thr Thr Thr Thr Thr Ile Thr
785                 790                 795                 800

Glu Lys His Lys Leu Asn Val Pro Glu Thr Met Thr Glu Val Leu Asp
                805                 810                 815

Val Ser Asp Glu Glu Gly Asp Asp Thr Met Thr Gly Asp Gly Gly Glu
            820                 825                 830

Tyr Leu Arg Pro Glu Asp Leu Lys Glu Leu Gly Asp Asp Ser Leu Pro
        835                 840                 845

Ser Ser Gln Phe Leu Asp Gly Met Asn Tyr Leu Arg Tyr Ser Leu Glu
    850                 855                 860

Gly Gly Arg Ser Asp Ser Thr Met Pro Ser Ser Asp Arg Ser His Thr
865                 870                 875                 880

Leu Ser His Ala Ser Tyr Leu Arg Asp Ser Ala Val Met Asp Asp Ser
                885                 890                 895

Val Val Ile Pro Ser His Gln Val Ser Thr Leu Ala Lys Glu Ala Glu
            900                 905                 910

Arg Asn Ser Tyr Arg Leu Ser Trp Gly Thr Glu Asn Leu Asp Asn Val
        915                 920                 925

Ala Leu Ser Ser Ser Pro Ile His Ser Gly Phe Leu Val Ser Phe Met
    930                 935                 940

Val Asp Ala Arg Gly Gly Ala Met Arg Gly Cys Arg His Asn Gly Leu
945                 950                 955                 960

Arg Ile Ile Ile Pro Pro Arg Lys Cys Thr Ala Pro Thr Arg Val Thr
                965                 970                 975

Cys Arg Leu Val Lys Arg His Arg Leu Ala Thr Met Pro Pro Met Val
```

980 985 990

Glu Gly Glu Gly Leu Ala Ser Arg Leu Ile Glu Val Gly Pro Ser Gly
995 1000 1005

Ala Gln Phe Leu Gly Lys Leu His Leu Pro Thr Ala Pro Pro Pro
1010 1015 1020

Leu Asn Glu Gly Glu Ser Leu Val Ser Arg Ile Leu Gln Leu Gly
1025 1030 1035

Pro Pro Gly Thr Lys Phe Leu Gly Pro Val Ile Val Glu Ile Pro
1040 1045 1050

His Phe Ala Ala Leu Arg Gly Lys Glu Arg Glu Leu Val Val Leu
1055 1060 1065

Arg Ser Glu Asn Gly Asp Ser Trp Lys Glu His Phe Cys Asp Tyr
1070 1075 1080

Thr Glu Asp Glu Leu Asn Glu Ile Leu Asn Gly Met Asp Glu Val
1085 1090 1095

Leu Asp Ser Pro Glu Asp Leu Glu Lys Lys Arg Ile Cys Arg Ile
1100 1105 1110

Ile Thr Arg Asp Phe Pro Gln Tyr Phe Ala Val Val Ser Arg Ile
1115 1120 1125

Lys Gln Asp Ser Asn Leu Ile Gly Pro Glu Gly Gly Val Leu Ser
1130 1135 1140

Ser Thr Val Val Pro Gln Val Gln Ala Val Phe Pro Glu Gly Ala
1145 1150 1155

Leu Thr Lys Arg Ile Arg Val Gly Leu Gln Ala Gln Pro Met His
1160 1165 1170

Ser Glu Leu Val Lys Lys Ile Leu Gly Asn Lys Ala Thr Phe Ser
1175 1180 1185

Pro Ile Val Thr Leu Glu

1190

<210> 4877
<211> 4377
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ANK3; "

<220>
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<223> /note="Gene Name:
ankyrin 3, node of Ranvier (ankyrin G); "

<220>
<221> source
<223> /note="Uniprot ID: Q12955; "

<220>
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<223> /note="ENSP ID: ENSP00000280772"

<400> 4877
Met Ala His Ala Ala Ser Gln Leu Lys Lys Asn Arg Asp Leu Glu Ile
1   5   10   15

Asn Ala Glu Glu Glu Pro Glu Lys Lys Arg Lys His Arg Lys Arg Ser
            20   25   30

Arg Asp Arg Lys Lys Lys Ser Asp Ala Asn Ala Ser Tyr Leu Arg Ala
        35   40   45

Ala Arg Ala Gly His Leu Glu Lys Ala Leu Asp Tyr Ile Lys Asn Gly
    50   55   60

Val Asp Ile Asn Ile Cys Asn Gln Asn Gly Leu Asn Ala Leu His Leu
65   70   75   80

Ala Ser Lys Glu Gly His Val Glu Val Val Ser Glu Leu Leu Gln Arg
                85   90   95

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

```
Ile Ala Ser Leu Ala Gly Gln Ala Glu Val Val Lys Val Leu Val Thr
        115                 120                 125

Asn Gly Ala Asn Val Asn Ala Gln Ser Gln Asn Gly Phe Thr Pro Leu
    130                 135                 140

Tyr Met Ala Ala Gln Glu Asn His Leu Glu Val Val Lys Phe Leu Leu
145                 150                 155                 160

Asp Asn Gly Ala Ser Gln Ser Leu Ala Thr Glu Asp Gly Phe Thr Pro
                165                 170                 175

Leu Ala Val Ala Leu Gln Gln Gly His Asp Gln Val Val Ser Leu Leu
            180                 185                 190

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

Ala Ala Arg Lys Asp Asp Thr Lys Ala Ala Ala Leu Leu Leu Gln Asn
    210                 215                 220

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

Ile Ala Ala His Tyr Gly Asn Ile Asn Val Ala Thr Leu Leu Leu Asn
                245                 250                 255

Arg Ala Ala Ala Val Asp Phe Thr Ala Arg Asn Asp Ile Thr Pro Leu
            260                 265                 270

His Val Ala Ser Lys Arg Gly Asn Ala Asn Met Val Lys Leu Leu Leu
        275                 280                 285

Asp Arg Gly Ala Lys Ile Asp Ala Lys Thr Arg Asp Gly Leu Thr Pro
    290                 295                 300

Leu His Cys Gly Ala Arg Ser Gly His Glu Gln Val Val Glu Met Leu
305                 310                 315                 320

Leu Asp Arg Ala Ala Pro Ile Leu Ser Lys Thr Lys Asn Gly Leu Ser
                325                 330                 335
```

```
Pro Leu His Met Ala Thr Gln Gly Asp His Leu Asn Cys Val Gln Leu
            340                 345                 350

Leu Leu Gln His Asn Val Pro Val Asp Asp Val Thr Asn Asp Tyr Leu
        355                 360                 365

Thr Ala Leu His Val Ala Ala His Cys Gly His Tyr Lys Val Ala Lys
    370                 375                 380

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

Phe Thr Pro Leu His Ile Ala Cys Lys Lys Asn Arg Ile Lys Val Met
                405                 410                 415

Glu Leu Leu Leu Lys His Gly Ala Ser Ile Gln Ala Val Thr Glu Ser
            420                 425                 430

Gly Leu Thr Pro Ile His Val Ala Ala Phe Met Gly His Val Asn Ile
        435                 440                 445

Val Ser Gln Leu Met His His Gly Ala Ser Pro Asn Thr Thr Asn Val
    450                 455                 460

Arg Gly Glu Thr Ala Leu His Met Ala Ala Arg Ser Gly Gln Ala Glu
465                 470                 475                 480

Val Val Arg Tyr Leu Val Gln Asp Gly Ala Gln Val Glu Ala Lys Ala
                485                 490                 495

Lys Asp Asp Gln Thr Pro Leu His Ile Ser Ala Arg Leu Gly Lys Ala
            500                 505                 510

Asp Ile Val Gln Gln Leu Leu Gln Gln Gly Ala Ser Pro Asn Ala Ala
        515                 520                 525

Thr Thr Ser Gly Tyr Thr Pro Leu His Leu Ser Ala Arg Glu Gly His
    530                 535                 540

Glu Asp Val Ala Ala Phe Leu Leu Asp His Gly Ala Ser Leu Ser Ile
545                 550                 555                 560

Thr Thr Lys Lys Gly Phe Thr Pro Leu His Val Ala Ala Lys Tyr Gly
```

565 570 575

Lys Leu Glu Val Ala Asn Leu Leu Leu Gln Lys Ser Ala Ser Pro Asp
580 585 590

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

Asp Asn Gln Lys Val Ala Leu Leu Leu Leu Asp Gln Gly Ala Ser Pro
610 615 620

His Ala Ala Ala Lys Asn Gly Tyr Thr Pro Leu His Ile Ala Ala Lys
625 630 635 640

Lys Asn Gln Met Asp Ile Ala Thr Thr Leu Leu Glu Tyr Gly Ala Asp
645 650 655

Ala Asn Ala Val Thr Arg Gln Gly Ile Ala Ser Val His Leu Ala Ala
660 665 670

Gln Glu Gly His Val Asp Met Val Ser Leu Leu Leu Gly Arg Asn Ala
675 680 685

Asn Val Asn Leu Ser Asn Lys Ser Gly Leu Thr Pro Leu His Leu Ala
690 695 700

Ala Gln Glu Asp Arg Val Asn Val Ala Glu Val Leu Val Asn Gln Gly
705 710 715 720

Ala His Val Asp Ala Gln Thr Lys Met Gly Tyr Thr Pro Leu His Val
725 730 735

Gly Cys His Tyr Gly Asn Ile Lys Ile Val Asn Phe Leu Leu Gln His
740 745 750

Ser Ala Lys Val Asn Ala Lys Thr Lys Asn Gly Tyr Thr Pro Leu His
755 760 765

Gln Ala Ala Gln Gln Gly His Thr His Ile Ile Asn Val Leu Leu Gln
770 775 780

Asn Asn Ala Ser Pro Asn Glu Leu Thr Val Asn Gly Asn Thr Ala Leu
785 790 795 800

```
Gly Ile Ala Arg Arg Leu Gly Tyr Ile Ser Val Val Asp Thr Leu Lys
                805                 810                 815

Ile Val Thr Glu Glu Thr Met Thr Thr Thr Thr Val Thr Glu Lys His
            820                 825                 830

Lys Met Asn Val Pro Glu Thr Met Asn Glu Val Leu Asp Met Ser Asp
        835                 840                 845

Asp Glu Val Arg Lys Ala Asn Ala Pro Glu Met Leu Ser Asp Gly Glu
    850                 855                 860

Tyr Ile Ser Asp Val Glu Glu Gly Glu Asp Ala Met Thr Gly Asp Thr
865                 870                 875                 880

Asp Lys Tyr Leu Gly Pro Gln Asp Leu Lys Glu Leu Gly Asp Asp Ser
                885                 890                 895

Leu Pro Ala Glu Gly Tyr Met Gly Phe Ser Leu Gly Ala Arg Ser Ala
            900                 905                 910

Ser Leu Arg Ser Phe Ser Ser Asp Arg Ser Tyr Thr Leu Asn Arg Ser
        915                 920                 925

Ser Tyr Ala Arg Asp Ser Met Met Ile Glu Glu Leu Leu Val Pro Ser
    930                 935                 940

Lys Glu Gln His Leu Thr Phe Thr Arg Glu Phe Asp Ser Asp Ser Leu
945                 950                 955                 960

Arg His Tyr Ser Trp Ala Ala Asp Thr Leu Asp Asn Val Asn Leu Val
                965                 970                 975

Ser Ser Pro Ile His Ser Gly Phe Leu Val Ser Phe Met Val Asp Ala
            980                 985                 990

Arg Gly Gly Ser Met Arg Gly Ser  Arg His His Gly Met  Arg Ile
Ile
        995                 1000                1005

Ile Pro  Pro Arg Lys Cys Thr  Ala Pro Thr Arg Ile  Thr Cys Arg
    1010                1015                1020
```

```
Leu Val  Lys Arg His Lys Leu  Ala Asn Pro Pro Pro  Met Val Glu
    1025                1030                1035

Gly Glu  Gly Leu Ala Ser Arg  Leu Val Glu Met Gly  Pro Ala Gly
    1040                1045                1050

Ala Gln  Phe Leu Gly Pro Val  Ile Val Glu Ile Pro  His Phe Gly
    1055                1060                1065

Ser Met  Arg Gly Lys Glu Arg  Glu Leu Ile Val Leu  Arg Ser Glu
    1070                1075                1080

Asn Gly  Glu Thr Trp Lys Glu  His Gln Phe Asp Ser  Lys Asn Glu
    1085                1090                1095

Asp Leu  Thr Glu Leu Leu Asn  Gly Met Asp Glu Glu  Leu Asp Ser
    1100                1105                1110

Pro Glu  Glu Leu Gly Lys Lys  Arg Ile Cys Arg Ile  Ile Thr Lys
    1115                1120                1125

Asp Phe  Pro Gln Tyr Phe Ala  Val Val Ser Arg Ile  Lys Gln Glu
    1130                1135                1140

Ser Asn  Gln Ile Gly Pro Glu  Gly Gly Ile Leu Ser  Ser Thr Thr
    1145                1150                1155

Val Pro  Leu Val Gln Ala Ser  Phe Pro Glu Gly Ala  Leu Thr Lys
    1160                1165                1170

Arg Ile  Arg Val Gly Leu Gln  Ala Gln Pro Val Pro  Asp Glu Ile
    1175                1180                1185

Val Lys  Lys Ile Leu Gly Asn  Lys Ala Thr Phe Ser  Pro Ile Val
    1190                1195                1200

Thr Val  Glu Pro Arg Arg Arg  Lys Phe His Lys Pro  Ile Thr Met
    1205                1210                1215

Thr Ile  Pro Val Pro Pro Pro  Ser Gly Glu Gly Val  Ser Asn Gly
    1220                1225                1230
```

```
Tyr Lys  Gly Asp Thr Thr Pro  Asn Leu Arg Leu Leu  Cys Ser Ile
    1235                1240                1245

Thr Gly  Gly Thr Ser Pro Ala  Gln Trp Glu Asp Ile  Thr Gly Thr
    1250                1255                1260

Thr Pro  Leu Thr Phe Ile Lys  Asp Cys Val Ser Phe  Thr Thr Asn
    1265                1270                1275

Val Ser  Ala Arg Phe Trp Leu  Ala Asp Cys His Gln  Val Leu Glu
    1280                1285                1290

Thr Val  Gly Leu Ala Thr Gln  Leu Tyr Arg Glu Leu  Ile Cys Val
    1295                1300                1305

Pro Tyr  Met Ala Lys Phe Val  Val Phe Ala Lys Met  Asn Asp Pro
    1310                1315                1320

Val Glu  Ser Ser Leu Arg Cys  Phe Cys Met Thr Asp  Asp Lys Val
    1325                1330                1335

Asp Lys  Thr Leu Glu Gln Gln  Glu Asn Phe Glu Glu  Val Ala Arg
    1340                1345                1350

Ser Lys  Asp Ile Glu Val Leu  Glu Gly Lys Pro Ile  Tyr Val Asp
    1355                1360                1365

Cys Tyr  Gly Asn Leu Ala Pro  Leu Thr Lys Gly Gly  Gln Gln Leu
    1370                1375                1380

Val Phe  Asn Phe Tyr Ser Phe  Lys Glu Asn Arg Leu  Pro Phe Ser
    1385                1390                1395

Ile Lys  Ile Arg Asp Thr Ser  Gln Glu Pro Cys Gly  Arg Leu Ser
    1400                1405                1410

Phe Leu  Lys Glu Pro Lys Thr  Thr Lys Gly Leu Pro  Gln Thr Ala
    1415                1420                1425

Val Cys  Asn Leu Asn Ile Thr  Leu Pro Ala His Lys  Lys Glu Thr
    1430                1435                1440
```

```
Glu Ser  Asp Gln Asp Asp Glu  Ile Glu Lys Thr Asp  Arg Arg Gln
    1445                1450                1455

Ser Phe  Ala Ser Leu Ala Leu  Arg Lys Arg Tyr Ser  Tyr Leu Thr
    1460                1465                1470

Glu Pro  Gly Met Ile Glu Arg  Ser Thr Gly Ala Thr  Arg Ser Leu
    1475                1480                1485

Pro Thr  Thr Tyr Ser Tyr Lys  Pro Phe Phe Ser Thr  Arg Pro Tyr
    1490                1495                1500

Gln Ser  Trp Thr Thr Ala Pro  Ile Thr Val Pro Gly  Pro Ala Lys
    1505                1510                1515

Ser Gly  Phe Thr Ser Leu Ser  Ser Ser Ser Ser Asn  Thr Pro Ser
    1520                1525                1530

Ala Ser  Pro Leu Lys Ser Ile  Trp Ser Val Ser Thr  Pro Ser Pro
    1535                1540                1545

Ile Lys  Ser Thr Leu Gly Ala  Ser Thr Thr Ser Ser  Val Lys Ser
    1550                1555                1560

Ile Ser  Asp Val Ala Ser Pro  Ile Arg Ser Phe Arg  Thr Met Ser
    1565                1570                1575

Ser Pro  Ile Lys Thr Val Val  Ser Gln Ser Pro Tyr  Asn Ile Gln
    1580                1585                1590

Val Ser  Ser Gly Thr Leu Ala  Arg Ala Pro Ala Val  Thr Glu Ala
    1595                1600                1605

Thr Pro  Leu Lys Gly Leu Ala  Ser Asn Ser Thr Phe  Ser Ser Arg
    1610                1615                1620

Thr Ser  Pro Val Thr Thr Ala  Gly Ser Leu Leu Glu  Arg Ser Ser
    1625                1630                1635

Ile Thr  Met Thr Pro Pro Ala  Ser Pro Lys Ser Asn  Ile Asn Met
    1640                1645                1650

Tyr Ser  Ser Ser Leu Pro Phe  Lys Ser Ile Ile Thr  Ser Ala Ala
```

1655 1660 1665

Pro Leu Ile Ser Ser Pro Leu Lys Ser Val Val Ser Pro Val Lys
1670 1675 1680

Ser Ala Val Asp Val Ile Ser Ser Ala Lys Ile Thr Met Ala Ser
1685 1690 1695

Ser Leu Ser Ser Pro Val Lys Gln Met Pro Gly His Ala Glu Val
1700 1705 1710

Ala Leu Val Asn Gly Ser Ile Ser Pro Leu Lys Tyr Pro Ser Ser
1715 1720 1725

Ser Thr Leu Ile Asn Gly Cys Lys Ala Thr Ala Thr Leu Gln Glu
1730 1735 1740

Lys Ile Ser Ser Ala Thr Asn Ser Val Ser Ser Val Val Ser Ala
1745 1750 1755

Ala Thr Asp Thr Val Glu Lys Val Phe Ser Thr Thr Thr Ala Met
1760 1765 1770

Pro Phe Ser Pro Leu Arg Ser Tyr Val Ser Ala Ala Pro Ser Ala
1775 1780 1785

Phe Gln Ser Leu Arg Thr Pro Ser Ala Ser Ala Leu Tyr Thr Ser
1790 1795 1800

Leu Gly Ser Ser Ile Ser Ala Thr Thr Ser Ser Val Thr Ser Ser
1805 1810 1815

Ile Ile Thr Val Pro Val Tyr Ser Val Val Asn Val Leu Pro Glu
1820 1825 1830

Pro Ala Leu Lys Lys Leu Pro Asp Ser Asn Ser Phe Thr Lys Ser
1835 1840 1845

Ala Ala Ala Leu Leu Ser Pro Ile Lys Thr Leu Thr Thr Glu Thr
1850 1855 1860

His Pro Gln Pro His Phe Ser Arg Thr Ser Ser Pro Val Lys Ser
1865 1870 1875

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Ser Leu  Phe Leu Ala Pro Ser  Ala Leu Lys Leu Ser  Thr Pro Ser
    1880                1885                1890

Ser Leu  Ser Ser Ser Gln Glu  Ile Leu Lys Asp Val  Ala Glu Met
    1895                1900                1905

Lys Glu  Asp Leu Met Arg Met  Thr Ala Ile Leu Gln  Thr Asp Val
    1910                1915                1920

Pro Glu  Glu Lys Pro Phe Gln  Pro Glu Leu Pro Lys  Glu Gly Arg
    1925                1930                1935

Ile Asp  Asp Glu Glu Pro Phe  Lys Ile Val Glu Lys  Val Lys Glu
    1940                1945                1950

Asp Leu  Val Lys Val Ser Glu  Ile Leu Lys Lys Asp  Val Cys Val
    1955                1960                1965

Asp Asn  Lys Gly Ser Pro Lys  Ser Pro Lys Ser Asp  Lys Gly His
    1970                1975                1980

Ser Pro  Glu Asp Asp Trp Ile  Glu Phe Ser Ser Glu  Glu Ile Arg
    1985                1990                1995

Glu Ala  Arg Gln Gln Ala Ala  Ala Ser Gln Ser Pro  Ser Leu Pro
    2000                2005                2010

Glu Arg  Val Gln Val Lys Ala  Lys Ala Ala Ser Glu  Lys Asp Tyr
    2015                2020                2025

Asn Leu  Thr Lys Val Ile Asp  Tyr Leu Thr Asn Asp  Ile Gly Ser
    2030                2035                2040

Ser Ser  Leu Thr Asn Leu Lys  Tyr Lys Phe Glu Asp  Ala Lys Lys
    2045                2050                2055

Asp Gly  Glu Glu Arg Gln Lys  Arg Val Leu Lys Pro  Ala Ile Ala
    2060                2065                2070

Leu Gln  Glu His Lys Leu Lys  Met Pro Pro Ala Ser  Met Arg Thr
    2075                2080                2085
```

Ser Thr Ser Glu Lys Glu Leu Cys Lys Met Ala Asp Ser Phe Phe
2090 2095 2100

Gly Thr Asp Thr Ile Leu Glu Ser Pro Asp Asp Phe Ser Gln His
2105 2110 2115

Asp Gln Asp Lys Ser Pro Leu Ser Asp Ser Gly Phe Glu Thr Arg
2120 2125 2130

Ser Glu Lys Thr Pro Ser Ala Pro Gln Ser Ala Glu Ser Thr Gly
2135 2140 2145

Pro Lys Pro Leu Phe His Glu Val Pro Ile Pro Pro Val Ile Thr
2150 2155 2160

Glu Thr Arg Thr Glu Val Val His Val Ile Arg Ser Tyr Asp Pro
2165 2170 2175

Ser Ala Gly Asp Val Pro Gln Thr Gln Pro Glu Glu Pro Val Ser
2180 2185 2190

Pro Lys Pro Ser Pro Thr Phe Met Glu Leu Glu Pro Lys Pro Thr
2195 2200 2205

Thr Ser Ser Ile Lys Glu Lys Val Lys Ala Phe Gln Met Lys Ala
2210 2215 2220

Ser Ser Glu Glu Asp Asp His Asn Arg Val Leu Ser Lys Gly Met
2225 2230 2235

Arg Val Lys Glu Glu Thr His Ile Thr Thr Thr Thr Arg Met Val
2240 2245 2250

Tyr His Ser Pro Pro Gly Gly Glu Gly Ala Ser Glu Arg Ile Glu
2255 2260 2265

Glu Thr Met Ser Val His Asp Ile Met Lys Ala Phe Gln Ser Gly
2270 2275 2280

Arg Asp Pro Ser Lys Glu Leu Ala Gly Leu Phe Glu His Lys Ser
2285 2290 2295

Ala Val Ser Pro Asp Val His Lys Ser Ala Ala Glu Thr Ser Ala
2300 2305 2310

Gln His Ala Glu Lys Asp Asn Gln Met Lys Pro Lys Leu Glu Arg
2315 2320 2325

Ile Ile Glu Val His Ile Glu Lys Gly Asn Gln Ala Glu Pro Thr
2330 2335 2340

Glu Val Ile Ile Arg Glu Thr Lys Lys His Pro Glu Lys Glu Met
2345 2350 2355

Tyr Val Tyr Gln Lys Asp Leu Ser Arg Gly Asp Ile Asn Leu Lys
2360 2365 2370

Asp Phe Leu Pro Glu Lys His Asp Ala Phe Pro Cys Ser Glu Glu
2375 2380 2385

Gln Gly Gln Gln Glu Glu Glu Glu Leu Thr Ala Glu Glu Ser Leu
2390 2395 2400

Pro Ser Tyr Leu Glu Ser Ser Arg Val Asn Thr Pro Val Ser Gln
2405 2410 2415

Glu Glu Asp Ser Arg Pro Ser Ser Ala Gln Leu Ile Ser Asp Asp
2420 2425 2430

Ser Tyr Lys Thr Leu Lys Leu Leu Ser Gln His Ser Ile Glu Tyr
2435 2440 2445

His Asp Asp Glu Leu Ser Glu Leu Arg Gly Glu Ser Tyr Arg Phe
2450 2455 2460

Ala Glu Lys Met Leu Leu Ser Glu Lys Leu Asp Val Ser His Ser
2465 2470 2475

Asp Thr Glu Glu Ser Val Thr Asp His Ala Gly Pro Pro Ser Ser
2480 2485 2490

Glu Leu Gln Gly Ser Asp Lys Arg Ser Arg Glu Lys Ile Ala Thr
2495 2500 2505

Ala Pro Lys Lys Glu Ile Leu Ser Lys Ile Tyr Lys Asp Val Ser

2510 2515 2520

Glu Asn Gly Val Gly Lys Val Ser Lys Asp Glu His Phe Asp Lys
2525 2530 2535

Val Thr Val Leu His Tyr Ser Gly Asn Val Ser Ser Pro Lys His
2540 2545 2550

Ala Met Trp Met Arg Phe Thr Glu Asp Arg Leu Asp Arg Gly Arg
2555 2560 2565

Glu Lys Leu Ile Tyr Glu Asp Arg Val Asp Arg Thr Val Lys Glu
2570 2575 2580

Ala Glu Glu Lys Leu Thr Glu Val Ser Gln Phe Phe Arg Asp Lys
2585 2590 2595

Thr Glu Lys Leu Asn Asp Glu Leu Gln Ser Pro Glu Lys Lys Ala
2600 2605 2610

Arg Pro Lys Asn Gly Lys Glu Tyr Ser Ser Gln Ser Pro Thr Ser
2615 2620 2625

Ser Ser Pro Glu Lys Val Leu Leu Thr Glu Leu Leu Ala Ser Asn
2630 2635 2640

Asp Glu Trp Val Lys Ala Arg Gln His Gly Pro Asp Gly Gln Gly
2645 2650 2655

Phe Pro Lys Ala Glu Glu Lys Ala Pro Ser Leu Pro Ser Ser Pro
2660 2665 2670

Glu Lys Met Val Leu Ser Gln Gln Thr Glu Asp Ser Lys Ser Thr
2675 2680 2685

Val Glu Ala Lys Gly Ser Ile Ser Gln Ser Lys Ala Pro Asp Gly
2690 2695 2700

Pro Gln Ser Gly Phe Gln Leu Lys Gln Ser Lys Leu Ser Ser Ile
2705 2710 2715

Arg Leu Lys Phe Glu Gln Gly Thr His Ala Lys Ser Lys Asp Met
2720 2725 2730

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Ser Gln  Glu Asp Arg Lys Ser  Asp Gly Gln Ser Arg  Ile Pro Val
    2735                2740                2745

Lys Lys  Ile Gln Glu Ser Lys  Leu Pro Val Tyr Gln  Val Phe Ala
    2750                2755                2760

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

Ser Val  Gln Lys Asp Phe Met  Val Leu Lys Thr Lys  Asp Glu His
    2780                2785                2790

Ala Gln  Ser Asn Glu Ile Val  Val Asn Asp Ser Gly  Ser Asp Asn
    2795                2800                2805

Val Lys  Lys Gln Arg Thr Glu  Met Ser Ser Lys Ala  Met Pro Asp
    2810                2815                2820

Ser Phe  Ser Glu Gln Gln Ala  Lys Asp Leu Ala Cys  His Ile Thr
    2825                2830                2835

Ser Asp  Leu Ala Thr Arg Gly  Pro Trp Asp Lys Lys  Val Phe Arg
    2840                2845                2850

Thr Trp  Glu Ser Ser Gly Ala  Thr Asn Asn Lys Ser  Gln Lys Glu
    2855                2860                2865

Lys Leu  Ser His Val Leu Val  His Asp Val Arg Glu  Asn His Ile
    2870                2875                2880

Gly His  Pro Glu Ser Lys Ser  Val Asp Gln Lys Asn  Glu Phe Met
    2885                2890                2895

Ser Val  Thr Glu Arg Glu Arg  Lys Leu Leu Thr Asn  Gly Ser Leu
    2900                2905                2910

Ser Glu  Ile Lys Glu Met Thr  Val Lys Ser Pro Ser  Lys Lys Val
    2915                2920                2925

Leu Tyr  Arg Glu Tyr Val Val  Lys Glu Gly Asp His  Pro Gly Gly
    2930                2935                2940
```

```
Leu Leu  Asp Gln Pro Ser Arg  Arg Ser Glu Ser Ser  Ala Val Ser
    2945                2950                2955

His Ile  Pro Val Arg Val Ala  Asp Glu Arg Arg Met  Leu Ser Ser
    2960                2965                2970

Asn Ile  Pro Asp Gly Phe Cys  Glu Gln Ser Ala Phe  Pro Lys His
    2975                2980                2985

Glu Leu  Ser Gln Lys Leu Ser  Gln Ser Ser Met Ser  Lys Glu Thr
    2990                2995                3000

Val Glu  Thr Gln His Phe Asn  Ser Ile Glu Asp Glu  Lys Val Thr
    3005                3010                3015

Tyr Ser  Glu Ile Ser Lys Val  Ser Lys His Gln Ser  Tyr Val Gly
    3020                3025                3030

Leu Cys  Pro Pro Leu Glu Glu  Thr Glu Thr Ser Pro  Thr Lys Ser
    3035                3040                3045

Pro Asp  Ser Leu Glu Phe Ser  Pro Gly Lys Glu Ser  Pro Ser Ser
    3050                3055                3060

Asp Val  Phe Asp His Ser Pro  Ile Asp Gly Leu Glu  Lys Leu Ala
    3065                3070                3075

Pro Leu  Ala Gln Thr Glu Gly  Gly Lys Glu Ile Lys  Thr Leu Pro
    3080                3085                3090

Val Tyr  Val Ser Phe Val Gln  Val Gly Lys Gln Tyr  Glu Lys Glu
    3095                3100                3105

Ile Gln  Gln Gly Gly Val Lys  Lys Ile Ile Ser Gln  Glu Cys Lys
    3110                3115                3120

Thr Val  Gln Glu Thr Arg Gly  Thr Phe Tyr Thr Thr  Arg Gln Gln
    3125                3130                3135

Lys Gln  Pro Pro Ser Pro Gln  Gly Ser Pro Glu Asp  Asp Thr Leu
    3140                3145                3150
```

```
Glu Gln  Val Ser Phe Leu Asp  Ser Ser Gly Lys Ser  Pro Leu Thr
    3155                3160                3165

Pro Glu  Thr Pro Ser Ser Glu  Glu Val Ser Tyr Glu  Phe Thr Ser
    3170                3175                3180

Lys Thr  Pro Asp Ser Leu Ile  Ala Tyr Ile Pro Gly  Lys Pro Ser
    3185                3190                3195

Pro Ile  Pro Glu Val Ser Glu  Glu Ser Glu Glu Glu  Glu Gln Ala
    3200                3205                3210

Lys Ser  Thr Ser Leu Lys Gln  Thr Thr Val Glu Glu  Thr Ala Val
    3215                3220                3225

Glu Arg  Glu Met Pro Asn Asp  Val Ser Lys Asp Ser  Asn Gln Arg
    3230                3235                3240

Pro Lys  Asn Asn Arg Val Ala  Tyr Ile Glu Phe Pro  Pro Pro Pro
    3245                3250                3255

Pro Leu  Asp Ala Asp Gln Ile  Glu Ser Asp Lys Lys  His His Tyr
    3260                3265                3270

Leu Pro  Glu Lys Glu Val Asp  Met Ile Glu Val Asn  Leu Gln Asp
    3275                3280                3285

Glu His  Asp Lys Tyr Gln Leu  Ala Glu Pro Val Ile  Arg Val Gln
    3290                3295                3300

Pro Pro  Ser Pro Val Pro Pro  Gly Ala Asp Val Ser  Asp Ser Ser
    3305                3310                3315

Asp Asp  Glu Ser Ile Tyr Gln  Pro Val Pro Val Lys  Lys Tyr Thr
    3320                3325                3330

Phe Lys  Leu Lys Glu Val Asp  Asp Glu Gln Lys Glu  Lys Pro Lys
    3335                3340                3345

Ala Ser  Ala Glu Lys Ala Ser  Asn Gln Lys Glu Leu  Glu Ser Asn
    3350                3355                3360

Gly Ser  Gly Lys Asp Asn Glu  Phe Gly Leu Gly Leu  Asp Ser Pro
```

3365 3370 3375

Gln Asn Glu Ile Ala Gln Asn Gly Asn Asn Asp Gln Ser Ile Thr
3380 3385 3390

Glu Cys Ser Ile Ala Thr Thr Ala Glu Phe Ser His Asp Thr Asp
3395 3400 3405

Ala Thr Glu Ile Asp Ser Leu Asp Gly Tyr Asp Leu Gln Asp Glu
3410 3415 3420

Asp Asp Gly Leu Thr Glu Ser Asp Ser Lys Leu Pro Ile Gln Ala
3425 3430 3435

Met Glu Ile Lys Lys Asp Ile Trp Asn Thr Glu Gly Ile Leu Lys
3440 3445 3450

Pro Ala Asp Arg Ser Phe Ser Gln Ser Lys Leu Glu Val Ile Glu
3455 3460 3465

Glu Glu Gly Lys Val Gly Pro Asp Glu Asp Lys Pro Pro Ser Lys
3470 3475 3480

Ser Ser Ser Ser Glu Lys Thr Pro Asp Lys Thr Asp Gln Lys Ser
3485 3490 3495

Gly Ala Gln Phe Phe Thr Leu Glu Gly Arg His Pro Asp Arg Ser
3500 3505 3510

Val Phe Pro Asp Thr Tyr Phe Ser Tyr Lys Val Asp Glu Glu Phe
3515 3520 3525

Ala Thr Pro Phe Lys Thr Val Ala Thr Lys Gly Leu Asp Phe Asp
3530 3535 3540

Pro Trp Ser Asn Asn Arg Gly Asp Asp Glu Val Phe Asp Ser Lys
3545 3550 3555

Ser Arg Glu Asp Glu Thr Lys Pro Phe Gly Leu Ala Val Glu Asp
3560 3565 3570

Arg Ser Pro Ala Thr Thr Pro Asp Thr Thr Pro Ala Arg Thr Pro
3575 3580 3585

```
Thr Asp  Glu Ser Thr Pro Thr  Ser Glu Pro Asn Pro  Phe Pro Phe
    3590                 3595                 3600

His Glu  Gly Lys Met Phe Glu  Met Thr Arg Ser Gly  Ala Ile Asp
    3605                 3610                 3615

Met Ser  Lys Arg Asp Phe Val  Glu Glu Arg Leu Gln  Phe Phe Gln
    3620                 3625                 3630

Ile Gly  Glu His Thr Ser Glu  Gly Lys Ser Gly Asp  Gln Gly Glu
    3635                 3640                 3645

Gly Asp  Lys Ser Met Val Thr  Ala Thr Pro Gln Pro  Gln Ser Gly
    3650                 3655                 3660

Asp Thr  Thr Val Glu Thr Asn  Leu Glu Arg Asn Val  Glu Thr Pro
    3665                 3670                 3675

Thr Val  Glu Pro Asn Pro Ser  Ile Pro Thr Ser Gly  Glu Cys Gln
    3680                 3685                 3690

Glu Gly  Thr Ser Ser Ser Gly  Ser Leu Glu Lys Ser  Ala Ala Ala
    3695                 3700                 3705

Thr Asn  Thr Ser Lys Val Asp  Pro Lys Leu Arg Thr  Pro Ile Lys
    3710                 3715                 3720

Met Gly  Ile Ser Ala Ser Thr  Met Thr Met Lys Lys  Glu Gly Pro
    3725                 3730                 3735

Gly Glu  Ile Thr Asp Lys Ile  Glu Ala Val Met Thr  Ser Cys Gln
    3740                 3745                 3750

Gly Leu  Glu Asn Glu Thr Ile  Thr Met Ile Ser Asn  Thr Ala Asn
    3755                 3760                 3765

Ser Gln  Met Gly Val Arg Pro  His Glu Lys His Asp  Phe Gln Lys
    3770                 3775                 3780

Asp Asn  Phe Asn Asn Asn Asn  Asn Leu Asp Ser Ser  Thr Ile Gln
    3785                 3790                 3795
```

Thr Asp Asn Ile Met Ser Asn Ile Val Leu Thr Glu His Ser Ala
3800 3805 3810

Pro Thr Cys Thr Thr Glu Lys Asp Asn Pro Val Lys Val Ser Ser
3815 3820 3825

Gly Lys Lys Thr Gly Val Leu Gln Gly His Cys Val Arg Asp Lys
3830 3835 3840

Gln Lys Val Leu Gly Glu Gln Gln Lys Thr Lys Glu Leu Ile Gly
3845 3850 3855

Ile Arg Gln Lys Ser Lys Leu Pro Ile Lys Ala Thr Ser Pro Lys
3860 3865 3870

Asp Thr Phe Pro Pro Asn His Met Ser Asn Thr Lys Ala Ser Lys
3875 3880 3885

Met Lys Gln Val Ser Gln Ser Glu Lys Thr Lys Ala Leu Thr Thr
3890 3895 3900

Ser Ser Cys Val Asp Val Lys Ser Arg Ile Pro Val Lys Asn Thr
3905 3910 3915

His Arg Asp Asn Ile Ile Ala Val Arg Lys Ala Cys Ala Thr Gln
3920 3925 3930

Lys Gln Gly Gln Pro Glu Lys Gly Lys Ala Lys Gln Leu Pro Ser
3935 3940 3945

Lys Leu Pro Val Lys Val Arg Ser Thr Cys Val Thr Thr Thr Thr
3950 3955 3960

Thr Thr Ala Thr Thr Thr Thr Thr Thr Thr Thr Thr Thr Thr Thr
3965 3970 3975

Ser Cys Thr Val Lys Val Arg Lys Ser Gln Leu Lys Glu Val Cys
3980 3985 3990

Lys His Ser Ile Glu Tyr Phe Lys Gly Ile Ser Gly Glu Thr Leu
3995 4000 4005

Lys Leu Val Asp Arg Leu Ser Glu Glu Glu Lys Lys Met Gln Ser
4010 4015 4020

Glu Leu Ser Asp Glu Glu Glu Ser Thr Ser Arg Asn Thr Ser Leu
4025 4030 4035

Ser Glu Thr Ser Arg Gly Gly Gln Pro Ser Val Thr Thr Lys Ser
4040 4045 4050

Ala Arg Asp Lys Lys Thr Glu Ala Ala Pro Leu Lys Ser Lys Ser
4055 4060 4065

Glu Lys Ala Gly Ser Glu Lys Arg Ser Ser Arg Arg Thr Gly Pro
4070 4075 4080

Gln Ser Pro Cys Glu Arg Thr Asp Ile Arg Met Ala Ile Val Ala
4085 4090 4095

Asp His Leu Gly Leu Ser Trp Thr Glu Leu Ala Arg Glu Leu Asn
4100 4105 4110

Phe Ser Val Asp Glu Ile Asn Gln Ile Arg Val Glu Asn Pro Asn
4115 4120 4125

Ser Leu Ile Ser Gln Ser Phe Met Leu Leu Lys Lys Trp Val Thr
4130 4135 4140

Arg Asp Gly Lys Asn Ala Thr Thr Asp Ala Leu Thr Ser Val Leu
4145 4150 4155

Thr Lys Ile Asn Arg Ile Asp Ile Val Thr Leu Leu Glu Gly Pro
4160 4165 4170

Ile Phe Asp Tyr Gly Asn Ile Ser Gly Thr Arg Ser Phe Ala Asp
4175 4180 4185

Glu Asn Asn Val Phe His Asp Pro Val Asp Gly Trp Gln Asn Glu
4190 4195 4200

Thr Ser Ser Gly Asn Leu Glu Ser Cys Ala Gln Ala Arg Arg Val
4205 4210 4215

Thr Gly Gly Leu Leu Asp Arg Leu Asp Asp Ser Pro Asp Gln Cys

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    4220                4225                4230

Arg Asp  Ser Ile Thr Ser Tyr  Leu Lys Gly Glu Ala  Gly Lys Phe
    4235                4240                4245

Glu Ala  Asn Gly Ser His Thr  Glu Ile Thr Pro Glu  Ala Lys Thr
    4250                4255                4260

Lys Ser  Tyr Phe Pro Glu Ser  Gln Asn Asp Val Gly  Lys Gln Ser
    4265                4270                4275

Thr Lys  Glu Thr Leu Lys Pro  Lys Ile His Gly Ser  Gly His Val
    4280                4285                4290

Glu Glu  Pro Ala Ser Pro Leu  Ala Ala Tyr Gln Lys  Ser Leu Glu
    4295                4300                4305

Glu Thr  Ser Lys Leu Ile Ile  Glu Glu Thr Lys Pro  Cys Val Pro
    4310                4315                4320

Val Ser  Met Lys Lys Met Ser  Arg Thr Ser Pro Ala  Asp Gly Lys
    4325                4330                4335

Pro Arg  Leu Ser Leu His Glu  Glu Glu Gly Ser Ser  Gly Ser Glu
    4340                4345                4350

Gln Lys  Gln Gly Glu Gly Phe  Lys Val Lys Thr Lys  Lys Glu Ile
    4355                4360                4365

Arg His  Val Glu Lys Lys Ser  His Ser
    4370                4375


<210> 4878
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ankyrin 3, node of Ranvier (ankyrin G); "

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<400> 4878

```
Met Ala Leu Pro Gln Ser Glu Asp Ala Met Thr Gly Asp Thr Asp Lys
1               5                  10                  15

Tyr Leu Gly Pro Gln Asp Leu Lys Glu Leu Gly Asp Asp Ser Leu Pro
            20                  25                  30

Ala Glu Gly Tyr Met Gly Phe Ser Leu Gly Ala Arg Ser Ala Ser Leu
        35                  40                  45

Arg Ser Phe Ser Ser Asp Arg Ser Tyr Thr Leu Asn Arg Ser Ser Tyr
    50                  55                  60

Ala Arg Asp Ser Met Met Ile Glu Glu Leu Leu Val Pro Ser Lys Glu
65                  70                  75                  80

Gln His Leu Thr Phe Thr Arg Glu Phe Asp Ser Asp Ser Leu Arg His
                85                  90                  95

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

Pro Ile His Ser Gly Phe Leu Val Ser Phe Met Val Asp Ala Arg Gly
        115                 120                 125

Gly Ser Met Arg Gly Ser Arg His His Gly Met Arg Ile Ile Ile Pro
    130                 135                 140

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

Arg His Lys Leu Ala Asn Pro Pro Pro Met Val Glu Gly Glu Gly Leu
                165                 170                 175
```

```
Ala Ser Arg Leu Val Glu Met Gly Pro Ala Gly Ala Gln Phe Leu Gly
            180                 185                 190

Pro Val Ile Val Glu Ile Pro His Phe Gly Ser Met Arg Gly Lys Glu
        195                 200                 205

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

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

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

Cys Arg Ile Ile Thr Lys Asp Phe Pro Gln Tyr Phe Ala Val Val Ser
            260                 265                 270

Arg Ile Lys Gln Glu Ser Asn Gln Ile Gly Pro Glu Gly Gly Ile Leu
        275                 280                 285

Ser Ser Thr Thr Val Pro Leu Val Gln Ala Ser Phe Pro Glu Gly Ala
    290                 295                 300

Leu Thr Lys Arg Ile Arg Val Gly Leu Gln Ala Gln Pro Val Pro Asp
305                 310                 315                 320

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

Val Thr Val Glu Pro Arg Arg Arg Lys Phe His Lys Pro Ile Thr Met
            340                 345                 350

Thr Ile Pro Val Pro Pro Pro Ser Gly Glu Gly Val Ser Asn Gly Tyr
        355                 360                 365

Lys Gly Asp Thr Thr Pro Asn Leu Arg Leu Leu Cys Ser Ile Thr Gly
    370                 375                 380

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

Thr Phe Ile Lys Asp Cys Val Ser Phe Thr Thr Asn Val Ser Ala Arg
```

405 410 415

Phe Trp Leu Ala Asp Cys His Gln Val Leu Glu Thr Val Gly Leu Ala
420 425 430

Thr Gln Leu Tyr Arg Glu Leu Ile Cys Val Pro Tyr Met Ala Lys Phe
435 440 445

Val Val Phe Ala Lys Met Asn Asp Pro Val Glu Ser Ser Leu Arg Cys
450 455 460

Phe Cys Met Thr Asp Asp Lys Val Asp Lys Thr Leu Glu Gln Gln Glu
465 470 475 480

Asn Phe Glu Glu Val Ala Arg Ser Lys Asp Ile Glu Val Leu Glu Gly
485 490 495

Lys Pro Ile Tyr Val Asp Cys Tyr Gly Asn Leu Ala Pro Leu Thr Lys
500 505 510

Gly Gly Gln Gln Leu Val Phe Asn Phe Tyr Ser Phe Lys Glu Asn Arg
515 520 525

Leu Pro Phe Ser Ile Lys Ile Arg Asp Thr Ser Gln Glu Pro Cys Gly
530 535 540

Arg Leu Ser Phe Leu Lys Glu Pro Lys Thr Thr Lys Gly Leu Pro Gln
545 550 555 560

Thr Ala Val Cys Asn Leu Asn Ile Thr Leu Pro Ala His Lys Lys Ile
565 570 575

Glu Lys Thr Asp Arg Arg Gln Ser Phe Ala Ser Leu Ala Leu Arg Lys
580 585 590

Arg Tyr Ser Tyr Leu Thr Glu Pro Gly Met Ser Pro Gln Ser Pro Cys
595 600 605

Glu Arg Thr Asp Ile Arg Met Ala Ile Val Ala Asp His Leu Gly Leu
610 615 620

Ser Trp Thr Glu Leu Ala Arg Glu Leu Asn Phe Ser Val Asp Glu Ile
625 630 635 640

```
Asn Gln Ile Arg Val Glu Asn Pro Asn Ser Leu Ile Ser Gln Ser Phe
                645                 650                 655

Met Leu Leu Lys Lys Trp Val Thr Arg Asp Gly Lys Asn Ala Thr Thr
            660                 665                 670

Asp Ala Leu Thr Ser Val Leu Thr Lys Ile Asn Arg Ile Asp Ile Val
        675                 680                 685

Thr Leu Leu Glu Gly Pro Ile Phe Asp Tyr Gly Asn Ile Ser Gly Thr
    690                 695                 700

Arg Ser Phe Ala Asp Glu Asn Asn Val Phe His Asp Pro Val Asp Gly
705                 710                 715                 720

Tyr Pro Ser Leu Gln Val Glu Leu Glu Thr Pro Thr Gly Leu His Tyr
                725                 730                 735

Thr Pro Pro Thr Pro Phe Gln Gln Asp Asp Tyr Phe Ser Asp Ile Ser
            740                 745                 750

Ser Ile Glu Ser Pro Leu Arg Thr Pro Ser Arg Leu Ser Asp Gly Leu
        755                 760                 765

Val Pro Ser Gln Gly Asn Ile Glu His Ser Ala Asp Gly Pro Pro Val
    770                 775                 780

Val Thr Ala Glu Asp Ala Ser Leu Glu Asp Ser Lys Leu Glu Asp Ser
785                 790                 795                 800

Val Pro Leu Thr Glu Met Pro Glu Ala Val Asp Val Asp Glu Ser Gln
                805                 810                 815

Leu Glu Asn Val Cys Leu Ser Trp Gln Asn Glu Thr Ser Ser Gly Asn
            820                 825                 830

Leu Glu Ser Cys Ala Gln Ala Arg Arg Val Thr Gly Gly Leu Leu Asp
        835                 840                 845

Arg Leu Asp Asp Ser Pro Asp Gln Cys Arg Asp Ser Ile Thr Ser Tyr
    850                 855                 860
```

```
Leu Lys Gly Glu Ala Gly Lys Phe Glu Ala Asn Gly Ser His Thr Glu
865                 870                 875                 880

Ile Thr Pro Glu Ala Lys Thr Lys Ser Tyr Phe Pro Glu Ser Gln Asn
                885                 890                 895

Asp Val Gly Lys Gln Ser Thr Lys Glu Thr Leu Lys Pro Lys Ile His
            900                 905                 910

Gly Ser Gly His Val Glu Glu Pro Ala Ser Pro Leu Ala Ala Tyr Gln
        915                 920                 925

Lys Ser Leu Glu Glu Thr Ser Lys Leu Ile Ile Glu Glu Thr Lys Pro
    930                 935                 940

Cys Val Pro Val Ser Met Lys Lys Met Ser Arg Thr Ser Pro Ala Asp
945                 950                 955                 960

Gly Lys Pro Arg Leu Ser Leu His Glu Glu Glu Gly Ser Ser Gly Ser
                965                 970                 975

Glu Gln Lys Gln Gly Glu Gly Phe Lys Val Lys Thr Lys Lys Glu Ile
            980                 985                 990

Arg His Val Glu Lys Lys Ser His  Ser
        995                 1000


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<400> 4879

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Met Thr Gly Asp Thr Asp Lys Tyr Leu Gly Pro Gln Asp Leu Lys Glu
1               5                  10                  15

Leu Gly Asp Asp Ser Leu Pro Ala Glu Gly Tyr Met Gly Phe Ser Leu
            20                  25                  30

Gly Ala Arg Ser Ala Ser Leu Arg Ser Phe Ser Ser Asp Arg Ser Tyr
        35                  40                  45

Thr Leu Asn Arg Ser Ser Tyr Ala Arg Asp Ser Met Met Ile Glu Glu
    50                  55                  60

Leu Leu Val Pro Ser Lys Glu Gln His Leu Thr Phe Thr Arg Glu Phe
65                  70                  75                  80

Asp Ser Asp Ser Leu Arg His Tyr Ser Trp Ala Ala Asp Thr Leu Asp
                85                  90                  95

Asn Val Asn Leu Val Ser Ser Pro Ile His Ser Gly Phe Leu Val Ser
            100                 105                 110

Phe Met Val Asp Ala Arg Gly Gly Ser Met Arg Gly Ser Arg His His
        115                 120                 125

Gly Met Arg Ile Ile Ile Pro Pro Arg Lys Cys Thr Ala Pro Thr Arg
    130                 135                 140

Ile Thr Cys Arg Leu Val Lys Arg His Lys Leu Ala Asn Pro Pro Pro
145                 150                 155                 160

Met Val Glu Gly Glu Gly Leu Ala Ser Arg Leu Val Glu Met Gly Pro
                165                 170                 175

Ala Gly Ala Gln Phe Leu Gly Pro Val Ile Val Glu Ile Pro His Phe
            180                 185                 190

Gly Ser Met
        195
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Pro Lys Thr Thr Lys Gly Leu Pro Gln Thr Ala Val Cys Asn Leu Asn
1 5 10 15

Ile Thr Leu Pro Ala His Lys Lys Glu Thr Glu Ser Asp Gln Asp Asp
20 25 30

Glu Ile Glu Lys Thr Asp Arg Arg Gln Ser Phe Ala Ser Leu Ala Leu
35 40 45

Arg Lys Arg Tyr Ser Tyr Leu Thr Glu Pro Gly Met Ser Pro Gln Ser
50 55 60

Pro Cys Glu Arg Thr Asp Ile Arg Met Ala Ile Val Ala Asp His Leu
65 70 75 80

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

Glu Ile Asn Gln Ile Arg Val Glu Asn Pro Asn Ser Leu Ile Ser Gln
100 105 110

Ser Phe Met Leu Leu Lys Lys Trp Val Thr Arg Asp Gly Lys Asn Ala
115 120 125

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

```
Ile Val Thr Leu Leu Glu Gly Pro Ile Phe Asp Tyr Gly Asn Ile Ser
145                 150                 155                 160

Gly Thr Arg Ser Phe Ala Asp Glu Asn Asn Val Phe His Asp Pro Val
                165                 170                 175

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

His Tyr Thr Pro Pro Thr Pro Phe Gln Gln Asp Asp Tyr Phe Ser Asp
        195                 200                 205

Ile Ser Ser Ile Glu Ser Pro Leu Arg Thr Pro Ser Arg Leu Ser Asp
    210                 215                 220

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

Pro Val Val Thr Ala Glu Asp Ala Ser Leu Glu Asp Ser Lys Leu Glu
                245                 250                 255

Asp Ser Val Pro Leu Thr Glu Met Pro Glu Ala Val Asp Val Asp Glu
            260                 265                 270

Ser Gln Leu Glu Asn Val Cys Leu Ser Trp Gln Asn Glu Thr Ser Ser
        275                 280                 285

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

Leu Asp Arg Leu Asp Asp Ser Pro Asp Gln Cys Arg Asp Ser Ile Thr
305                 310                 315                 320

Ser Tyr Leu Lys Gly Glu Ala Gly Lys Phe Glu Ala Asn Gly Ser His
                325                 330                 335

Thr Glu Ile Thr Pro Glu Ala Lys Thr Lys Ser Tyr Phe Pro Glu Ser
            340                 345                 350

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

Ile His Gly Ser Gly His Val Glu Glu Pro Ala Ser Pro Leu Ala Ala
```

```
    370                 375                 380

Tyr Gln Lys Ser Leu Glu Glu Thr Ser Lys Leu Ile Ile Glu Glu Thr
385                 390                 395                 400

Lys Pro Cys Val Pro Val Ser Met Lys Lys Met Ser Arg Thr Ser Pro
                405                 410                 415

Ala Asp Gly Lys Pro Arg Leu Ser Leu His Glu Glu Glu Gly Ser Ser
            420                 425                 430

Gly Ser Glu Gln Lys Gln Gly Glu Gly Phe Lys Val Lys Thr Lys Lys
        435                 440                 445

Glu Ile Arg His Val Glu Lys Lys Ser His Ser
    450                 455


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Met Ala Ser Ser Ala Ser Ser Ser Pro Ala Gly Thr Glu Asp Ser Ala
1               5                   10                  15

Pro Ala Gln Gly Gly Phe Gly Ser Asp Tyr Ser Arg Ser Ser Arg Lys
            20                  25                  30
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```
Ser Asp Ala Asn Ala Ser Tyr Leu Arg Ala Ala Arg Ala Gly His Leu
        35                  40                  45

Glu Lys Ala Leu Asp Tyr Ile Lys Asn Gly Val Asp Ile Asn Ile Cys
    50                  55                  60

Asn Gln Asn Gly Leu Asn Ala Leu His Leu Ala Ser Lys Glu Gly His
65                  70                  75                  80

Val Glu Val Val Ser Glu Leu Leu Gln Arg Glu Ala Asn Val Asp Ala
                85                  90                  95

Ala Thr Lys Lys Gly Asn Thr Ala Leu His Ile Ala Ser Leu Ala Gly
            100                 105                 110

Gln Ala Glu Val Val Lys Val Leu Val Thr Asn Gly Ala Asn Val Asn
        115                 120                 125

Ala Gln Ser Gln Asn Gly Phe Thr Pro Leu Tyr Met Ala Ala Gln Glu
    130                 135                 140

Asn His Leu Glu Val Val Lys Phe Leu Leu Asp Asn Gly Ala Ser Gln
145                 150                 155                 160

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

Gln Gly His Asp Gln Val Val Ser Leu Leu Leu Glu Asn Asp Thr Lys
            180                 185                 190

Gly Lys Val Arg Leu Pro Ala Leu His Ile Ala Ala Arg Lys Asp Asp
        195                 200                 205

Thr Lys Ala Ala Ala Leu Leu Leu Gln Asn Asp Asn Asn Ala Asp Val
    210                 215                 220

Glu Ser Lys Ser Gly Phe Thr Pro Leu His Ile Ala Ala His Tyr Gly
225                 230                 235                 240

Asn Ile Asn Val Ala Thr Leu Leu Leu Asn Arg Ala Ala Ala Val Asp
                245                 250                 255
```

```
Phe Thr Ala Arg Asn Asp Ile Thr Pro Leu His Val Ala Ser Lys Arg
            260                 265                 270

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

Asp Ala Lys Thr Arg Asp Gly Leu Thr Pro Leu His Cys Gly Ala Arg
    290                 295                 300

Ser Gly His Glu Gln Val Val Glu Met Leu Leu Asp Arg Ala Ala Pro
305                 310                 315                 320

Ile Leu Ser Lys Thr Lys Asn Gly Leu Ser Pro Leu His Met Ala Thr
                325                 330                 335

Gln Gly Asp His Leu Asn Cys Val Gln Leu Leu Leu Gln His Asn Val
            340                 345                 350

Pro Val Asp Asp Val Thr Asn Asp Tyr Leu Thr Ala Leu His Val Ala
        355                 360                 365

Ala His Cys Gly His Tyr Lys Val Ala Lys Val Leu Leu Asp Lys Lys
    370                 375                 380

Ala Asn Pro Asn Ala Lys Ala Leu Asn Gly Phe Thr Pro Leu His Ile
385                 390                 395                 400

Ala Cys Lys Lys Asn Arg Ile Lys Val Met Glu Leu Leu Leu Lys His
                405                 410                 415

Gly Ala Ser Ile Gln Ala Val Thr Glu Ser Gly Leu Thr Pro Ile His
            420                 425                 430

Val Ala Ala Phe Met Gly His Val Asn Ile Val Ser Gln Leu Met His
        435                 440                 445

His Gly Ala Ser Pro Asn Thr Thr Asn Val Arg Gly Glu Thr Ala Leu
    450                 455                 460

His Met Ala Ala Arg Ser Gly Gln Ala Glu Val Val Arg Tyr Leu Val
465                 470                 475                 480

Gln Asp Gly Ala Gln Val Glu Ala Lys Ala Lys Asp Asp Gln Thr Pro
```

485 490 495

Leu His Ile Ser Ala Arg Leu Gly Lys Ala Asp Ile Val Gln Gln Leu
500 505 510

Leu Gln Gln Gly Ala Ser Pro Asn Ala Ala Thr Thr Ser Gly Tyr Thr
515 520 525

Pro Leu His Leu Ser Ala Arg Glu Gly His Glu Asp Val Ala Ala Phe
530 535 540

Leu Leu Asp His Gly Ala Ser Leu Ser Ile Thr Thr Lys Lys Gly Phe
545 550 555 560

Thr Pro Leu His Val Ala Ala Lys Tyr Gly Lys Leu Glu Val Ala Asn
565 570 575

Leu Leu Leu Gln Lys Ser Ala Ser Pro Asp Ala Ala Gly Lys Ser Gly
580 585 590

Leu Thr Pro Leu His Val Ala Ala His Tyr Asp Asn Gln Lys Val Ala
595 600 605

Leu Leu Leu Leu Asp Gln Gly Ala Ser Pro His Ala Ala Ala Lys Asn
610 615 620

Gly Tyr Thr Pro Leu His Ile Ala Ala Lys Lys Asn Gln Met Asp Ile
625 630 635 640

Ala Thr Thr Leu Leu Glu Tyr Gly Ala Asp Ala Asn Ala Val Thr Arg
645 650 655

Gln Gly Ile Ala Ser Val His Leu Ala Ala Gln Glu Gly His Val Asp
660 665 670

Met Val Ser Leu Leu Leu Gly Arg Asn Ala Asn Val Asn Leu Ser Asn
675 680 685

Lys Ser Gly Leu Thr Pro Leu His Leu Ala Ala Gln Glu Asp Arg Val
690 695 700

Asn Val Ala Glu Val Leu Val Asn Gln Gly Ala His Val Asp Ala Gln
705 710 715 720

Thr Lys Met Gly Tyr Thr Pro Leu His Val Gly Cys His Tyr Gly Asn
725 730 735

Ile Lys Ile Val Asn Phe Leu Leu Gln His Ser Ala Lys Val Asn Ala
740 745 750

Lys Thr Lys Asn Gly Tyr Thr Pro Leu His Gln Ala Ala Gln Gln Gly
755 760 765

His Thr His Ile Ile Asn Val Leu Leu Gln Asn Asn Ala Ser Pro Asn
770 775 780

Glu Leu Thr Val Asn Gly Asn Thr Ala Leu Gly Ile Ala Arg Arg Leu
785 790 795 800

Gly Tyr Ile Ser Val Val Asp Thr Leu Lys Ile Val Thr Glu Glu Thr
805 810 815

Met Thr Thr Thr Thr Val Thr Glu Lys His Lys Met Asn Val Pro Glu
820 825 830

Thr Met Asn Glu Val Leu Asp Met Ser Asp Asp Glu Val Arg Lys Ala
835 840 845

Asn Ala Pro Glu Met Leu Ser Asp Gly Glu Tyr Ile Ser Asp Val Glu
850 855 860

Glu Gly Glu Asp Ala Met Thr Gly Asp Thr Asp Lys Tyr Leu Gly Pro
865 870 875 880

Gln Asp Leu Lys Glu Leu Gly Asp Asp Ser Leu Pro Ala Glu Gly Tyr
885 890 895

Met Gly Phe Ser Leu Gly Ala Arg Ser Ala Ser Leu Arg Ser Phe Ser
900 905 910

Ser Asp Arg Ser Tyr Thr Leu Asn Arg Ser Ser Tyr Ala Arg Asp Ser
915 920 925

Met Met Ile Glu Glu Leu Leu Val Pro Ser Lys Glu Gln His Leu Thr
930 935 940

```
Phe Thr Arg Glu Phe Asp Ser Asp Ser Leu Arg His Tyr Ser Trp Ala
945                 950                 955                 960

Ala Asp Thr Leu Asp Asn Val Asn Leu Val Ser Ser Pro Ile His Ser
                965                 970                 975

Gly Phe Leu Val Ser Phe Met Val Asp Ala Arg Gly Gly Ser Met Arg
            980                 985                 990

Gly Ser Arg His His Gly Met Arg  Ile Ile Ile Pro Pro  Arg Lys
Cys
        995                 1000                1005

Thr Ala  Pro Thr Arg Ile Thr  Cys Arg Leu Val Lys  Arg His Lys
    1010                1015                1020

Leu Ala  Asn Pro Pro Pro Met  Val Glu Gly Glu Gly  Leu Ala Ser
    1025                1030                1035

Arg Leu  Val Glu Met Gly Pro  Ala Gly Ala Gln Phe  Leu Gly Pro
    1040                1045                1050

Val Ile  Val Glu Ile Pro His  Phe Gly Ser Met Arg  Gly Lys Glu
    1055                1060                1065

Arg Glu  Leu Ile Val Leu Arg  Ser Glu Asn Gly Glu  Thr Trp Lys
    1070                1075                1080

Glu His  Gln Phe Asp Ser Lys  Asn Glu Asp Leu Thr  Glu Leu Leu
    1085                1090                1095

Asn Gly  Met Asp Glu Glu Leu  Asp Ser Pro Glu Glu  Leu Gly Lys
    1100                1105                1110

Lys Arg  Ile Cys Arg Ile Ile  Thr Lys Asp Phe Pro  Gln Tyr Phe
    1115                1120                1125

Ala Val  Val Ser Arg Ile Lys  Gln Glu Ser Asn Gln  Ile Gly Pro
    1130                1135                1140

Glu Gly  Gly Ile Leu Ser Ser  Thr Thr Val Pro Leu  Val Gln Ala
    1145                1150                1155
```

```
Ser Phe  Pro Glu Gly Ala Leu  Thr Lys Arg Ile Arg  Val Gly Leu
    1160                1165                1170

Gln Ala  Gln Pro Val Pro Asp  Glu Ile Val Lys Lys  Ile Leu Gly
    1175                1180                1185

Asn Lys  Ala Thr Phe Ser Pro  Ile Val Thr Val Glu  Pro Arg Arg
    1190                1195                1200

Arg Lys  Phe His Lys Pro Ile  Thr Met Thr Ile Pro  Val Pro Pro
    1205                1210                1215

Pro Ser  Gly Glu Gly Val Ser  Asn Gly Tyr Lys Gly  Asp Thr Thr
    1220                1225                1230

Pro Asn  Leu Arg Leu Leu Cys  Ser Ile Thr Gly Gly  Thr Ser Pro
    1235                1240                1245

Ala Gln  Trp Glu Asp Ile Thr  Gly Thr Thr Pro Leu  Thr Phe Ile
    1250                1255                1260

Lys Asp  Cys Val Ser Phe Thr  Thr Asn Val Ser Ala  Arg Phe Trp
    1265                1270                1275

Leu Ala  Asp Cys His Gln Val  Leu Glu Thr Val Gly  Leu Ala Thr
    1280                1285                1290

Gln Leu  Tyr Arg Glu Leu Ile  Cys Val Pro Tyr Met  Ala Lys Phe
    1295                1300                1305

Val Val  Phe Ala Lys Met Asn  Asp Pro Val Glu Ser  Ser Leu Arg
    1310                1315                1320

Cys Phe  Cys Met Thr Asp Asp  Lys Val Asp Lys Thr  Leu Glu Gln
    1325                1330                1335

Gln Glu  Asn Phe Glu Glu Val  Ala Arg Ser Lys Asp  Ile Glu Val
    1340                1345                1350

Leu Glu  Gly Lys Pro Ile Tyr  Val Asp Cys Tyr Gly  Asn Leu Ala
    1355                1360                1365
```

```
Pro Leu  Thr Lys Gly Gly Gln  Gln Leu Val Phe Asn  Phe Tyr Ser
    1370                 1375                 1380

Phe Lys  Glu Asn Arg Leu Pro  Phe Ser Ile Lys Ile  Arg Asp Thr
    1385                 1390                 1395

Ser Gln  Glu Pro Cys Gly Arg  Leu Ser Phe Leu Lys  Glu Pro Lys
    1400                 1405                 1410

Thr Thr  Lys Gly Leu Pro Gln  Thr Ala Val Cys Asn  Leu Asn Ile
    1415                 1420                 1425

Thr Leu  Pro Ala His Lys Lys  Ile Glu Lys Thr Asp  Arg Arg Gln
    1430                 1435                 1440

Ser Phe  Ala Ser Leu Ala Leu  Arg Lys Arg Tyr Ser  Tyr Leu Thr
    1445                 1450                 1455

Glu Pro  Gly Met Ser Pro Gln  Ser Pro Cys Glu Arg  Thr Asp Ile
    1460                 1465                 1470

Arg Met  Ala Ile Val Ala Asp  His Leu Gly Leu Ser  Trp Thr Glu
    1475                 1480                 1485

Leu Ala  Arg Glu Leu Asn Phe  Ser Val Asp Glu Ile  Asn Gln Ile
    1490                 1495                 1500

Arg Val  Glu Asn Pro Asn Ser  Leu Ile Ser Gln Ser  Phe Met Leu
    1505                 1510                 1515

Leu Lys  Lys Trp Val Thr Arg  Asp Gly Lys Asn Ala  Thr Thr Asp
    1520                 1525                 1530

Ala Leu  Thr Ser Val Leu Thr  Lys Ile Asn Arg Ile  Asp Ile Val
    1535                 1540                 1545

Thr Leu  Leu Glu Gly Pro Ile  Phe Asp Tyr Gly Asn  Ile Ser Gly
    1550                 1555                 1560

Thr Arg  Ser Phe Ala Asp Glu  Asn Asn Val Phe His  Asp Pro Val
    1565                 1570                 1575

Asp Gly  Tyr Pro Ser Leu Gln  Val Glu Leu Glu Thr  Pro Thr Gly
```

```
    1580                1585                1590

Leu His  Tyr Thr Pro Pro Thr  Pro Phe Gln Gln Asp  Asp Tyr Phe
    1595                1600                1605

Ser Asp  Ile Ser Ser Ile Glu  Ser Pro Leu Arg Thr  Pro Ser Arg
    1610                1615                1620

Leu Ser  Asp Gly Leu Val Pro  Ser Gln Gly Asn Ile  Glu His Ser
    1625                1630                1635

Ala Asp  Gly Pro Pro Val Val  Thr Ala Glu Asp Ala  Ser Leu Glu
    1640                1645                1650

Asp Ser  Lys Leu Glu Asp Ser  Val Pro Leu Thr Glu  Met Pro Glu
    1655                1660                1665

Ala Val  Asp Val Asp Glu Ser  Gln Leu Glu Asn Val  Cys Leu Ser
    1670                1675                1680

Trp Gln  Asn Glu Thr Ser Ser  Gly Asn Leu Glu Ser  Cys Ala Gln
    1685                1690                1695

Ala Arg  Arg Val Thr Gly Gly  Leu Leu Asp Arg Leu  Asp Asp Ser
    1700                1705                1710

Pro Asp  Gln Cys Arg Asp Ser  Ile Thr Ser Tyr Leu  Lys Gly Glu
    1715                1720                1725

Ala Gly  Lys Phe Glu Ala Asn  Gly Ser His Thr Glu  Ile Thr Pro
    1730                1735                1740

Glu Ala  Lys Thr Lys Ser Tyr  Phe Pro Glu Ser Gln  Asn Asp Val
    1745                1750                1755

Gly Lys  Gln Ser Thr Lys Glu  Thr Leu Lys Pro Lys  Ile His Gly
    1760                1765                1770

Ser Gly  His Val Glu Glu Pro  Ala Ser Pro Leu Ala  Ala Tyr Gln
    1775                1780                1785

Lys Ser  Leu Glu Glu Thr Ser  Lys Leu Ile Ile Glu  Glu Thr Lys
    1790                1795                1800
```

```
Pro Cys  Val Pro Val Ser Met  Lys Lys Met Ser Arg  Thr Ser Pro
    1805                1810                1815


Ala Asp  Gly Lys Pro Arg Leu  Ser Leu His Glu Glu  Glu Gly Ser
    1820                1825                1830


Ser Gly  Ser Glu Gln Lys Gln  Gly Glu Gly Phe Lys  Val Lys Thr
    1835                1840                1845


Lys Lys  Glu Ile Arg His Val  Glu Lys Lys Ser His  Ser
    1850                1855                1860


<210> 4882
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<223> /note="ENSP ID: ENSP00000422506"

<400> 4882
Met Thr Gly Asp Thr Asp Lys Tyr Leu Gly Pro Gln Asp Leu Lys Glu
1               5                  10                  15


Leu Gly Asp Asp Ser Leu Pro Ala Glu Gly Tyr Met Gly Phe Ser Leu
            20                  25                  30


Gly Ala Arg Ser Ala Ser Leu Arg Ser Phe Ser Ser Asp Arg Ser Tyr
        35                  40                  45


Thr Leu Asn Arg Ser Ser Tyr Ala Arg Asp Ser Met Met Ile Glu Glu
    50                  55                  60
```

Leu Leu Val Pro Ser Lys Glu Gln
65 70

<210> 4883
<211> 114
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1067; "

<220>
<221> source
<223> /note="Gene Symbol: ANK3; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin 3, node of Ranvier (ankyrin G); "

<220>
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<223> /note="ENSP ID: ENSP00000422657"

<400> 4883
Thr Val Thr Glu Lys His Lys Met Asn Val Pro Glu Thr Met Asn Glu
1 5 10 15

Val Leu Asp Met Ser Asp Asp Glu Val Arg Lys Ala Asn Ala Pro Glu
20 25 30

Met Leu Ser Asp Gly Glu Tyr Ile Ser Asp Val Glu Glu Gly Asn Arg
35 40 45

Cys Thr Trp Tyr Lys Ile Pro Lys Val Gln Glu Phe Thr Val Lys Ser
50 55 60

Glu Asp Ala Met Thr Gly Asp Thr Asp Lys Tyr Leu Gly Pro Gln Asp
65 70 75 80

Leu Lys Glu Leu Gly Asp Asp Ser Leu Pro Ala Glu Gly Tyr Met Gly
85 90 95

Phe Ser Leu Gly Ala Arg Ser Ala Arg Tyr Phe Val Val Ala Val Phe
100 105 110

His Ser

<210> 4884
<211> 166
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ANK3; "

<220>
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<223> /note="Gene Name:
ankyrin 3, node of Ranvier (ankyrin G); "

<220>
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<223> /note="ENSP ID: ENSP00000423057"

<400> 4884

```
Ser Pro Asp Gln Cys Arg Asp Ser Ile Thr Ser Tyr Leu Lys Gly Glu
1               5                  10                  15

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

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

Gln Ser Thr Lys Glu Thr Leu Lys Pro Lys Ile His Gly Ser Gly His
    50                  55                  60

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

Glu Thr Ser Lys Leu Ile Ile Glu Glu Thr Lys Pro Cys Val Pro Val
                85                  90                  95

Ser Met Lys Lys Met Ser Arg Thr Ser Pro Ala Asp Gly Lys Pro Arg
            100                 105                 110

Leu Ser Leu His Glu Glu Glu Gly Ser Ser Gly Ser Glu Gln Lys Val
        115                 120                 125
```

```
Lys Ser Pro Gly Ala Ala Pro Thr Arg Met Thr Ala Cys Cys Tyr Lys
    130                 135                 140

Gln Gly Glu Gly Phe Lys Val Lys Thr Lys Lys Glu Ile Arg His Val
145                 150                 155                 160

Glu Lys Lys Ser His Ser
                165
```

<210> 4885
<211> 196
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ANK3; "

<220>
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<223> /note="Gene Name:
ankyrin 3, node of Ranvier (ankyrin G); "

<220>
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<223> /note="ENSP ID: ENSP00000423968"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 4885

```
Xaa Ser Ser Pro Ile His Ser Gly Phe Leu Val Ser Phe Met Val Asp
1               5                   10                  15

Ala Arg Gly Gly Ser Met Arg Gly Ser Arg His His Gly Met Arg Ile
            20                  25                  30

Ile Ile Pro Pro Arg Lys Cys Thr Ala Pro Thr Arg Ile Thr Cys Arg
        35                  40                  45

Leu Val Lys Arg His Lys Leu Ala Asn Pro Pro Pro Met Val Glu Gly
    50                  55                  60
```

```
Glu Gly Leu Ala Ser Arg Leu Val Glu Met Gly Pro Ala Gly Ala Gln
65                  70                  75                  80

Phe Leu Gly Lys Leu His Leu Pro Thr Asn Pro Pro Pro Val Asn Glu
                85                  90                  95

Gly Glu Ser Leu Val Ser Arg Ile Leu Gln Leu Gly Pro Gln Gly Thr
            100                 105                 110

Lys Phe Ile Gly Pro Val Ile Val Glu Ile Pro His Phe Gly Ser Met
        115                 120                 125

Arg Gly Lys Glu Arg Glu Leu Ile Val Leu Arg Ser Glu Asn Gly Glu
    130                 135                 140

Thr Trp Lys Glu His Gln Phe Asp Ser Lys Asn Glu Asp Leu Thr Glu
145                 150                 155                 160

Leu Leu Asn Gly Met Asp Glu Glu Leu Asp Ser Pro Glu Glu Leu Gly
                165                 170                 175

Lys Lys Arg Ile Cys Arg Ile Ile Thr Lys Asp Phe Pro Gln Tyr Phe
            180                 185                 190

Ala Val Val Ser
        195


<210> 4886
<211> 1868
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ANK3; "

<220>
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<223> /note="Gene Name:
      ankyrin 3, node of Ranvier (ankyrin G); "

<220>
<221> source
<223> /note="Uniprot ID:  Q12955; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000425236"

<400> 4886
Met Ser Glu Glu Pro Lys Glu Lys Asn Ala Lys Pro Ala His Arg Lys
1   5   10   15

Arg Lys Gly Lys Lys Ser Asp Ala Asn Ala Ser Tyr Leu Arg Ala Ala
            20   25   30

Arg Ala Gly His Leu Glu Lys Ala Leu Asp Tyr Ile Lys Asn Gly Val
        35   40   45

Asp Ile Asn Ile Cys Asn Gln Asn Gly Leu Asn Ala Leu His Leu Ala
    50   55   60

Ser Lys Glu Gly His Val Glu Val Val Ser Glu Leu Leu Gln Arg Glu
65   70   75   80

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

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

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

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

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

Ala Val Ala Leu Gln Gln Gly His Asp Gln Val Val Ser Leu Leu Leu
                165   170   175

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

Ala Arg Lys Asp Asp Thr Lys Ala Ala Ala Leu Leu Leu Gln Asn Asp
        195   200   205

```
Asn Asn Ala Asp Val Glu Ser Lys Ser Gly Phe Thr Pro Leu His Ile
    210                 215                 220

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

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

Val Ala Ser Lys Arg Gly Asn Ala Asn Met Val Lys Leu Leu Leu Asp
            260                 265                 270

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

His Cys Gly Ala Arg Ser Gly His Glu Gln Val Val Glu Met Leu Leu
    290                 295                 300

Asp Arg Ala Ala Pro Ile Leu Ser Lys Thr Lys Asn Gly Leu Ser Pro
305                 310                 315                 320

Leu His Met Ala Thr Gln Gly Asp His Leu Asn Cys Val Gln Leu Leu
                325                 330                 335

Leu Gln His Asn Val Pro Val Asp Asp Val Thr Asn Asp Tyr Leu Thr
            340                 345                 350

Ala Leu His Val Ala Ala His Cys Gly His Tyr Lys Val Ala Lys Val
        355                 360                 365

Leu Leu Asp Lys Lys Ala Asn Pro Asn Ala Lys Ala Leu Asn Gly Phe
    370                 375                 380

Thr Pro Leu His Ile Ala Cys Lys Lys Asn Arg Ile Lys Val Met Glu
385                 390                 395                 400

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

Leu Thr Pro Ile His Val Ala Ala Phe Met Gly His Val Asn Ile Val
            420                 425                 430
```

```
Ser Gln Leu Met His His Gly Ala Ser Pro Asn Thr Thr Asn Val Arg
        435                 440                 445

Gly Glu Thr Ala Leu His Met Ala Ala Arg Ser Gly Gln Ala Glu Val
    450                 455                 460

Val Arg Tyr Leu Val Gln Asp Gly Ala Gln Val Glu Ala Lys Ala Lys
465                 470                 475                 480

Asp Asp Gln Thr Pro Leu His Ile Ser Ala Arg Leu Gly Lys Ala Asp
                485                 490                 495

Ile Val Gln Gln Leu Leu Gln Gln Gly Ala Ser Pro Asn Ala Ala Thr
            500                 505                 510

Thr Ser Gly Tyr Thr Pro Leu His Leu Ser Ala Arg Glu Gly His Glu
        515                 520                 525

Asp Val Ala Ala Phe Leu Leu Asp His Gly Ala Ser Leu Ser Ile Thr
    530                 535                 540

Thr Lys Lys Gly Phe Thr Pro Leu His Val Ala Ala Lys Tyr Gly Lys
545                 550                 555                 560

Leu Glu Val Ala Asn Leu Leu Leu Gln Lys Ser Ala Ser Pro Asp Ala
                565                 570                 575

Ala Gly Lys Ser Gly Leu Thr Pro Leu His Val Ala Ala His Tyr Asp
            580                 585                 590

Asn Gln Lys Val Ala Leu Leu Leu Leu Asp Gln Gly Ala Ser Pro His
        595                 600                 605

Ala Ala Ala Lys Asn Gly Tyr Thr Pro Leu His Ile Ala Ala Lys Lys
    610                 615                 620

Asn Gln Met Asp Ile Ala Thr Thr Leu Leu Glu Tyr Gly Ala Asp Ala
625                 630                 635                 640

Asn Ala Val Thr Arg Gln Gly Ile Ala Ser Val His Leu Ala Ala Gln
                645                 650                 655

Glu Gly His Val Asp Met Val Ser Leu Leu Leu Gly Arg Asn Ala Asn
```

660 665 670

Val Asn Leu Ser Asn Lys Ser Gly Leu Thr Pro Leu His Leu Ala Ala
675 680 685

Gln Glu Asp Arg Val Asn Val Ala Glu Val Leu Val Asn Gln Gly Ala
690 695 700

His Val Asp Ala Gln Thr Lys Met Gly Tyr Thr Pro Leu His Val Gly
705 710 715 720

Cys His Tyr Gly Asn Ile Lys Ile Val Asn Phe Leu Leu Gln His Ser
725 730 735

Ala Lys Val Asn Ala Lys Thr Lys Asn Gly Tyr Thr Pro Leu His Gln
740 745 750

Ala Ala Gln Gln Gly His Thr His Ile Ile Asn Val Leu Leu Gln Asn
755 760 765

Asn Ala Ser Pro Asn Glu Leu Thr Val Asn Gly Asn Thr Ala Leu Gly
770 775 780

Ile Ala Arg Arg Leu Gly Tyr Ile Ser Val Val Asp Thr Leu Lys Ile
785 790 795 800

Val Thr Glu Glu Thr Met Thr Thr Thr Thr Val Thr Glu Lys His Lys
805 810 815

Met Asn Val Pro Glu Thr Met Asn Glu Val Leu Asp Met Ser Asp Asp
820 825 830

Glu Val Arg Lys Ala Asn Ala Pro Glu Met Leu Ser Asp Gly Glu Tyr
835 840 845

Ile Ser Asp Val Glu Glu Gly Asn Arg Cys Thr Trp Tyr Lys Ile Pro
850 855 860

Lys Val Gln Glu Phe Thr Val Lys Ser Glu Asp Ala Met Thr Gly Asp
865 870 875 880

Thr Asp Lys Tyr Leu Gly Pro Gln Asp Leu Lys Glu Leu Gly Asp Asp
885 890 895

```
Ser Leu Pro Ala Glu Gly Tyr Met Gly Phe Ser Leu Gly Ala Arg Ser
            900                 905                 910

Ala Ser Leu Arg Ser Phe Ser Ser Asp Arg Ser Tyr Thr Leu Asn Arg
        915                 920                 925

Ser Ser Tyr Ala Arg Asp Ser Met Met Ile Glu Glu Leu Leu Val Pro
    930                 935                 940

Ser Lys Glu Gln His Leu Thr Phe Thr Arg Glu Phe Asp Ser Asp Ser
945                 950                 955                 960

Leu Arg His Tyr Ser Trp Ala Ala Asp Thr Leu Asp Asn Val Asn Leu
                965                 970                 975

Val Ser Ser Pro Ile His Ser Gly Phe Leu Val Ser Phe Met Val Asp
            980                 985                 990

Ala Arg Gly Gly Ser Met Arg Gly  Ser Arg His His Gly  Met Arg
Ile
        995                 1000                1005

Ile Ile  Pro Pro Arg Lys Cys  Thr Ala Pro Thr Arg  Ile Thr Cys
    1010                1015                1020

Arg Leu  Val Lys Arg His Lys  Leu Ala Asn Pro Pro  Pro Met Val
    1025                1030                1035

Glu Gly  Glu Gly Leu Ala Ser  Arg Leu Val Glu Met  Gly Pro Ala
    1040                1045                1050

Gly Ala  Gln Phe Leu Gly Pro  Val Ile Val Glu Ile  Pro His Phe
    1055                1060                1065

Gly Ser  Met Arg Gly Lys Glu  Arg Glu Leu Ile Val  Leu Arg Ser
    1070                1075                1080

Glu Asn  Gly Glu Thr Trp Lys  Glu His Gln Phe Asp  Ser Lys Asn
    1085                1090                1095

Glu Asp  Leu Thr Glu Leu Leu  Asn Gly Met Asp Glu  Glu Leu Asp
    1100                1105                1110
```

```
Ser Pro  Glu Glu Leu Gly Lys  Lys Arg Ile Cys Arg  Ile Ile Thr
    1115                1120                1125

Lys Asp  Phe Pro Gln Tyr Phe  Ala Val Val Ser Arg  Ile Lys Gln
    1130                1135                1140

Glu Ser  Asn Gln Ile Gly Pro  Glu Gly Gly Ile Leu  Ser Ser Thr
    1145                1150                1155

Thr Val  Pro Leu Val Gln Ala  Ser Phe Pro Glu Gly  Ala Leu Thr
    1160                1165                1170

Lys Arg  Ile Arg Val Gly Leu  Gln Ala Gln Pro Val  Pro Asp Glu
    1175                1180                1185

Ile Val  Lys Lys Ile Leu Gly  Asn Lys Ala Thr Phe  Ser Pro Ile
    1190                1195                1200

Val Thr  Val Glu Pro Arg Arg  Arg Lys Phe His Lys  Pro Ile Thr
    1205                1210                1215

Met Thr  Ile Pro Val Pro Pro  Pro Ser Gly Glu Gly  Val Ser Asn
    1220                1225                1230

Gly Tyr  Lys Gly Asp Thr Thr  Pro Asn Leu Arg Leu  Leu Cys Ser
    1235                1240                1245

Ile Thr  Gly Gly Thr Ser Pro  Ala Gln Trp Glu Asp  Ile Thr Gly
    1250                1255                1260

Thr Thr  Pro Leu Thr Phe Ile  Lys Asp Cys Val Ser  Phe Thr Thr
    1265                1270                1275

Asn Val  Ser Ala Arg Phe Trp  Leu Ala Asp Cys His  Gln Val Leu
    1280                1285                1290

Glu Thr  Val Gly Leu Ala Thr  Gln Leu Tyr Arg Glu  Leu Ile Cys
    1295                1300                1305

Val Pro  Tyr Met Ala Lys Phe  Val Val Phe Ala Lys  Met Asn Asp
    1310                1315                1320
```

```
Pro Val  Glu Ser Ser Leu Arg  Cys Phe Cys Met Thr  Asp Asp Lys
    1325                1330                1335

Val Asp  Lys Thr Leu Glu Gln  Gln Glu Asn Phe Glu  Glu Val Ala
    1340                1345                1350

Arg Ser  Lys Asp Ile Glu Val  Leu Glu Gly Lys Pro  Ile Tyr Val
    1355                1360                1365

Asp Cys  Tyr Gly Asn Leu Ala  Pro Leu Thr Lys Gly  Gly Gln Gln
    1370                1375                1380

Leu Val  Phe Asn Phe Tyr Ser  Phe Lys Glu Asn Arg  Leu Pro Phe
    1385                1390                1395

Ser Ile  Lys Ile Arg Asp Thr  Ser Gln Glu Pro Cys  Gly Arg Leu
    1400                1405                1410

Ser Phe  Leu Lys Glu Pro Lys  Thr Thr Lys Gly Leu  Pro Gln Thr
    1415                1420                1425

Ala Val  Cys Asn Leu Asn Ile  Thr Leu Pro Ala His  Lys Lys Ile
    1430                1435                1440

Glu Lys  Thr Asp Arg Arg Gln  Ser Phe Ala Ser Leu  Ala Leu Arg
    1445                1450                1455

Lys Arg  Tyr Ser Tyr Leu Thr  Glu Pro Gly Met Ser  Pro Gln Ser
    1460                1465                1470

Pro Cys  Glu Arg Thr Asp Ile  Arg Met Ala Ile Val  Ala Asp His
    1475                1480                1485

Leu Gly  Leu Ser Trp Thr Glu  Leu Ala Arg Glu Leu  Asn Phe Ser
    1490                1495                1500

Val Asp  Glu Ile Asn Gln Ile  Arg Val Glu Asn Pro  Asn Ser Leu
    1505                1510                1515

Ile Ser  Gln Ser Phe Met Leu  Leu Lys Lys Trp Val  Thr Arg Asp
    1520                1525                1530
```

```
Gly Lys  Asn Ala Thr Thr Asp  Ala Leu Thr Ser Val  Leu Thr Lys
    1535                1540                1545

Ile Asn  Arg Ile Asp Ile Val  Thr Leu Leu Glu Gly  Pro Ile Phe
    1550                1555                1560

Asp Tyr  Gly Asn Ile Ser Gly  Thr Arg Ser Phe Ala  Asp Glu Asn
    1565                1570                1575

Asn Val  Phe His Asp Pro Val  Asp Gly Tyr Pro Ser  Leu Gln Val
    1580                1585                1590

Glu Leu  Glu Thr Pro Thr Gly  Leu His Tyr Thr Pro  Pro Thr Pro
    1595                1600                1605

Phe Gln  Gln Asp Asp Tyr Phe  Ser Asp Ile Ser Ser  Ile Glu Ser
    1610                1615                1620

Pro Leu  Arg Thr Pro Ser Arg  Leu Ser Asp Gly Leu  Val Pro Ser
    1625                1630                1635

Gln Gly  Asn Ile Glu His Ser  Ala Asp Gly Pro Pro  Val Val Thr
    1640                1645                1650

Ala Glu  Asp Ala Ser Leu Glu  Asp Ser Lys Leu Glu  Asp Ser Val
    1655                1660                1665

Pro Leu  Thr Glu Met Pro Glu  Ala Val Asp Val Asp  Glu Ser Gln
    1670                1675                1680

Leu Glu  Asn Val Cys Leu Ser  Trp Gln Asn Glu Thr  Ser Ser Gly
    1685                1690                1695

Asn Leu  Glu Ser Cys Ala Gln  Ala Arg Arg Val Thr  Gly Gly Leu
    1700                1705                1710

Leu Asp  Arg Leu Asp Asp Ser  Pro Asp Gln Cys Arg  Asp Ser Ile
    1715                1720                1725

Thr Ser  Tyr Leu Lys Gly Glu  Ala Gly Lys Phe Glu  Ala Asn Gly
    1730                1735                1740

Ser His  Thr Glu Ile Thr Pro  Glu Ala Lys Thr Lys  Ser Tyr Phe
```

```
    1745                1750                1755

Pro Glu  Ser Gln Asn Asp Val  Gly Lys Gln Ser Thr  Lys Glu Thr
    1760                1765                1770

Leu Lys  Pro Lys Ile His Gly  Ser Gly His Val Glu  Glu Pro Ala
    1775                1780                1785

Ser Pro  Leu Ala Ala Tyr Gln  Lys Ser Leu Glu Glu  Thr Ser Lys
    1790                1795                1800

Leu Ile  Ile Glu Glu Thr Lys  Pro Cys Val Pro Val  Ser Met Lys
    1805                1810                1815

Lys Met  Ser Arg Thr Ser Pro  Ala Asp Gly Lys Pro  Arg Leu Ser
    1820                1825                1830

Leu His  Glu Glu Glu Gly Ser  Ser Gly Ser Glu Gln  Lys Gln Gly
    1835                1840                1845

Glu Gly  Phe Lys Val Lys Thr  Lys Lys Glu Ile Arg  His Val Glu
    1850                1855                1860

Lys Lys  Ser His Ser
    1865


<210> 4887
<211> 273
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1067; "

<220>
<221> source
<223> /note="Gene Symbol: ANK3; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin 3, node of Ranvier (ankyrin G); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000426011"
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<400> 4887
Met Ala Val Glu Glu Gly Glu Ser Phe Pro Glu Gln Ser Asp Ala Asn
1 5 10 15

Ala Ser Tyr Leu Arg Ala Ala Arg Ala Gly His Leu Glu Lys Ala Leu
20 25 30

Asp Tyr Ile Lys Asn Gly Val Asp Ile Asn Ile Cys Asn Gln Asn Gly
35 40 45

Leu Asn Ala Leu His Leu Ala Ser Lys Glu Gly His Val Glu Val Val
50 55 60

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

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

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

Asn Gly Phe Thr Pro Leu Tyr Met Ala Ala Gln Glu Asn His Leu Glu
115 120 125

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

Glu Asp Gly Phe Thr Pro Leu Ala Val Ala Leu Gln Gln Gly His Asp
145 150 155 160

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

Leu Pro Ala Leu His Ile Ala Ala Arg Lys Asp Asp Thr Lys Ala Ala
180 185 190

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

Gly Phe Thr Pro Leu His Ile Ala Ala His Tyr Gly Asn Ile Asn Val
210 215 220

```
Ala Thr Leu Leu Leu Asn Arg Ala Ala Ala Val Asp Phe Thr Ala Arg
225                 230                 235                 240


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


Met Val Lys Leu Leu Leu Asp Arg Gly Ala Lys Ile Asp Ala Lys Thr
            260                 265                 270


Arg
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<210> 4888
<211> 187
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1067; "

<220>
<221> source
<223> /note="Gene Symbol: ANK3; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin 3, node of Ranvier (ankyrin G); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000426258"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 4888

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Xaa Ile Glu Lys Thr Asp Arg Arg Gln Ser Phe Ala Ser Leu Ala Leu
1               5                   10                  15


Arg Lys Arg Tyr Ser Tyr Leu Thr Glu Pro Gly Met Ser Pro Gln Ser
            20                  25                  30


Pro Cys Glu Arg Thr Asp Ile Arg Met Ala Ile Val Ala Asp His Leu
        35                  40                  45
```

```
Gly Leu Ser Trp Thr Glu Leu Ala Arg Glu Leu Asn Phe Ser Val Asp
    50                  55                  60

Glu Ile Asn Gln Ile Arg Val Glu Asn Pro Asn Ser Leu Ile Ser Gln
65                  70                  75                  80

Ser Phe Met Leu Leu Lys Lys Trp Val Thr Arg Asp Gly Lys Asn Ala
                85                  90                  95

Thr Thr Asp Ala Leu Thr Ser Val Leu Thr Lys Ile Asn Arg Ile Asp
            100                 105                 110

Ile Val Thr Leu Leu Glu Gly Pro Ile Phe Asp Tyr Gly Asn Ile Ser
        115                 120                 125

Gly Thr Arg Ser Phe Ala Asp Glu Asn Asn Val Phe His Asp Pro Val
    130                 135                 140

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

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

Asp Val Asp Glu Ser Gln Leu Glu Asn Val Cys
            180                 185


<210> 4889
<211> 159
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1067; "

<220>
<221> source
<223> /note="Gene Symbol: ANK3; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin 3, node of Ranvier (ankyrin G); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000426582"
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<400> 4889
Met Thr Gly Asp Thr Asp Lys Tyr Leu Gly Pro Gln Asp Leu Lys Glu
1   5   10   15

Leu Gly Asp Asp Ser Leu Pro Ala Glu Gly Tyr Met Gly Phe Ser Leu
            20   25   30

Gly Ala Arg Ser Ala Ser Leu Arg Ser Phe Ser Ser Asp Arg Ser Tyr
        35   40   45

Thr Leu Asn Arg Ser Ser Tyr Ala Arg Asp Ser Met Met Ile Glu Glu
    50   55   60

Leu Leu Val Pro Ser Lys Glu Gln His Leu Thr Phe Thr Arg Glu Phe
65   70   75   80

Asp Ser Asp Ser Leu Arg His Tyr Ser Trp Ala Ala Asp Thr Leu Asp
                85   90   95

Asn Val Asn Leu Val Ser Ser Pro Ile His Ser Gly Phe Leu Val Ser
            100   105   110

Phe Met Val Asp Ala Arg Gly Gly Ser Met Arg Gly Ser Arg His His
        115   120   125

Gly Met Arg Ile Ile Ile Pro Pro Arg Lys Cys Thr Ala Pro Thr Arg
    130   135   140

Ile Thr Cys Arg Leu Val Lys Arg His Lys Leu Ala Asn Pro Pro
145   150   155

<210> 4890
<211> 86
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1067; "

<220>
<221> source
<223> /note="Gene Symbol: ANK3; "

<220>
<221> source

<223> /note="Gene Name:
ankyrin 3, node of Ranvier (ankyrin G); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000426690"

<400> 4890
Met Asn Val Pro Glu Thr Met Asn Glu Val Leu Asp Met Ser Asp Asp
1 5 10 15

Glu Gly Asn Arg Cys Thr Trp Tyr Lys Ile Pro Lys Val Gln Glu Phe
20 25 30

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

Gly Pro Gln Asp Leu Lys Glu Leu Gly Asp Asp Ser Leu Pro Ala Glu
50 55 60

Gly Tyr Met Gly Phe Ser Leu Gly Ala Arg Ser Ala Arg Tyr Phe Val
65 70 75 80

Val Ala Val Phe His Ser
85

<210> 4891
<211> 217
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1067; "

<220>
<221> source
<223> /note="Gene Symbol: ANK3; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin 3, node of Ranvier (ankyrin G); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000427121"

<220>
<221> MOD_RES

<222> (1)..(1)
<223> Any amino acid

<400> 4891
Xaa Leu Ala Arg Glu Leu Asn Phe Ser Val Asp Glu Ile Asn Gln Ile
1 5 10 15

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

Lys Lys Trp Val Thr Arg Asp Gly Lys Asn Ala Thr Thr Asp Ala Leu
35 40 45

Thr Ser Val Leu Thr Lys Ile Asn Arg Ile Asp Ile Val Thr Leu Leu
50 55 60

Glu Gly Pro Ile Phe Asp Tyr Gly Asn Ile Ser Gly Thr Arg Ser Phe
65 70 75 80

Ala Asp Glu Asn Asn Val Phe His Asp Pro Val Asp Val Ser Pro Asn
85 90 95

Val Leu Ser Ser Ile Gly Tyr Pro Ser Leu Gln Val Glu Leu Glu Thr
100 105 110

Pro Thr Gly Leu His Tyr Thr Pro Pro Thr Pro Phe Gln Gln Asp Asp
115 120 125

Tyr Phe Ser Asp Ile Ser Ser Ile Glu Ser Pro Leu Arg Thr Pro Ser
130 135 140

Arg Leu Ser Asp Gly Leu Val Pro Ser Gln Gly Asn Ile Glu His Ser
145 150 155 160

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

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

Asp Val Asp Glu Ser Gln Leu Glu Asn Val Cys Leu Ser Trp Gln Asn
195 200 205

Glu Thr Ser Ser Gly Asn Leu Glu Ser

210 215

<210> 4892
<211> 241
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
ankyrin 3, node of Ranvier (ankyrin G); "

<220>
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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 4892
Xaa Thr Val Ala Thr Lys Gly Leu Asp Phe Asp Pro Trp Ser Asn Asn
1 5 10 15

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

Lys Pro Phe Gly Leu Ala Val Glu Asp Arg Ser Pro Ala Thr Thr Pro
35 40 45

Asp Thr Thr Pro Ala Arg Thr Pro Thr Asp Glu Ser Thr Pro Thr Ser
50 55 60

Glu Pro Asn Pro Phe Pro Phe His Glu Gly Lys Met Phe Glu Met Thr
65 70 75 80

Arg Ser Gly Ala Ile Asp Met Ser Lys Arg Asp Phe Val Glu Glu Arg
85 90 95

Leu Gln Phe Phe Gln Ile Gly Pro Gln Ser Pro Cys Glu Arg Thr Asp

```
            100                 105                 110

Ile Arg Met Ala Ile Val Ala Asp His Leu Gly Leu Ser Trp Thr Glu
        115                 120                 125

Leu Ala Arg Glu Leu Asn Phe Ser Val Asp Glu Ile Asn Gln Ile Arg
    130                 135                 140

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

Lys Trp Val Thr Arg Asp Gly Lys Asn Ala Thr Thr Asp Ala Leu Thr
                165                 170                 175

Ser Val Leu Thr Lys Ile Asn Arg Ile Asp Ile Val Thr Leu Leu Glu
            180                 185                 190

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

Asp Glu Asn Asn Val Phe His Asp Pro Val Asp Gly Tyr Pro Ser Leu
    210                 215                 220

Gln Val Glu Leu Glu Thr Pro Thr Gly Leu His Tyr Thr Pro Pro Thr
225                 230                 235                 240

Pro
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<210> 4893
<211> 1643
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
ankyrin 3, node of Ranvier (ankyrin G); "

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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 4893
Xaa Phe Leu Val Ser Phe Met Val Asp Ala Arg Gly Gly Ser Met Arg
1 5 10 15

Gly Ser Arg His His Gly Met Arg Ile Ile Ile Pro Pro Arg Lys Cys
20 25 30

Thr Ala Pro Thr Arg Ile Thr Cys Arg Leu Val Lys Arg His Lys Leu
35 40 45

Ala Asn Pro Pro Pro Met Val Glu Gly Glu Gly Leu Ala Ser Arg Leu
50 55 60

Val Glu Met Gly Pro Ala Gly Ala Gln Phe Leu Gly Pro Val Ile Val
65 70 75 80

Glu Ile Pro His Phe Gly Ser Met Arg Gly Lys Glu Arg Glu Leu Ile
85 90 95

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

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

Leu Asp Ser Pro Glu Glu Leu Gly Lys Lys Arg Ile Cys Arg Ile Ile
130 135 140

Thr Lys Asp Phe Pro Gln Tyr Phe Ala Val Val Ser Arg Ile Lys Gln
145 150 155 160

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

Val Pro Leu Val Gln Ala Ser Phe Pro Glu Gly Ala Leu Thr Lys Arg
180 185 190

```
Ile Arg Val Gly Leu Gln Ala Gln Pro Val Pro Asp Glu Ile Val Lys
        195                 200                 205

Lys Ile Leu Gly Asn Lys Ala Thr Phe Ser Pro Ile Val Thr Val Glu
    210                 215                 220

Pro Arg Arg Arg Lys Phe His Lys Pro Ile Thr Met Thr Ile Pro Val
225                 230                 235                 240

Pro Pro Pro Ser Gly Glu Gly Val Ser Asn Gly Tyr Lys Gly Asp Thr
                245                 250                 255

Thr Pro Asn Leu Arg Leu Leu Cys Ser Ile Thr Gly Gly Thr Ser Pro
            260                 265                 270

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

Asp Cys Val Ser Phe Thr Thr Asn Val Ser Ala Arg Phe Trp Leu Ala
    290                 295                 300

Asp Cys His Gln Val Leu Glu Thr Val Gly Leu Ala Thr Gln Leu Tyr
305                 310                 315                 320

Arg Glu Leu Ile Cys Val Pro Tyr Met Ala Lys Phe Val Val Phe Ala
                325                 330                 335

Lys Met Asn Asp Pro Val Glu Ser Ser Leu Arg Cys Phe Cys Met Thr
            340                 345                 350

Asp Asp Lys Val Asp Lys Thr Leu Glu Gln Gln Glu Asn Phe Glu Glu
        355                 360                 365

Val Ala Arg Ser Lys Asp Ile Glu Val Leu Glu Gly Lys Pro Ile Tyr
    370                 375                 380

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

Leu Val Phe Asn Phe Tyr Ser Phe Lys Glu Asn Arg Leu Pro Phe Ser
                405                 410                 415
```

```
Ile Lys Ile Arg Asp Thr Ser Gln Glu Pro Cys Gly Arg Leu Ser Phe
            420                 425                 430

Leu Lys Glu Pro Lys Thr Thr Lys Gly Leu Pro Gln Thr Ala Val Cys
        435                 440                 445

Asn Leu Asn Ile Thr Leu Pro Ala His Lys Lys Ile Glu Lys Thr Asp
    450                 455                 460

Arg Arg Gln Ser Phe Ala Ser Leu Ala Leu Arg Lys Arg Tyr Ser Tyr
465                 470                 475                 480

Leu Thr Glu Pro Gly Met Lys Thr Val Glu Arg Ser Thr Gly Ala Thr
                485                 490                 495

Arg Ser Leu Pro Thr Thr Tyr Ser Tyr Lys Pro Phe Phe Ser Thr Arg
            500                 505                 510

Pro Tyr Gln Ser Trp Thr Thr Ala Pro Ile Thr Val Pro Gly Pro Ala
        515                 520                 525

Lys Ser Gly Phe Thr Ser Leu Ser Ser Ser Ser Ser Asn Thr Pro Ser
    530                 535                 540

Ala Ser Pro Leu Lys Ser Ile Trp Ser Val Ser Thr Pro Ser Pro Ile
545                 550                 555                 560

Lys Ser Thr Leu Gly Ala Ser Thr Thr Ser Ser Val Lys Ser Ile Ser
                565                 570                 575

Asp Val Ala Ser Pro Ile Arg Ser Phe Arg Thr Met Ser Ser Pro Ile
            580                 585                 590

Lys Thr Val Val Ser Gln Ser Pro Tyr Asn Ile Gln Val Ser Ser Gly
        595                 600                 605

Thr Leu Ala Arg Ala Pro Ala Val Thr Glu Ala Thr Pro Leu Lys Gly
    610                 615                 620

Leu Ala Ser Asn Ser Thr Phe Ser Ser Arg Thr Ser Pro Val Thr Thr
625                 630                 635                 640
```

```
Ala Gly Ser Leu Leu Glu Arg Ser Ser Ile Thr Met Thr Pro Pro Ala
                645                 650                 655

Ser Pro Lys Ser Asn Ile Asn Met Tyr Ser Ser Ser Leu Pro Phe Lys
            660                 665                 670

Ser Ile Ile Thr Ser Ala Ala Pro Leu Ile Ser Ser Pro Leu Lys Ser
        675                 680                 685

Val Val Ser Pro Val Lys Ser Ala Val Asp Val Ile Ser Ser Ala Lys
    690                 695                 700

Ile Thr Met Ala Ser Ser Leu Ser Ser Pro Val Lys Gln Met Pro Gly
705                 710                 715                 720

His Ala Glu Val Ala Leu Val Asn Gly Ser Ile Ser Pro Leu Lys Tyr
                725                 730                 735

Pro Ser Ser Ser Thr Leu Ile Asn Gly Cys Lys Ala Thr Ala Thr Leu
            740                 745                 750

Gln Glu Lys Ile Ser Ser Ala Thr Asn Ser Val Ser Ser Val Val Ser
        755                 760                 765

Ala Ala Thr Asp Thr Val Glu Lys Val Phe Ser Thr Thr Thr Ala Met
    770                 775                 780

Pro Phe Ser Pro Leu Arg Ser Tyr Val Ser Ala Ala Pro Ser Ala Phe
785                 790                 795                 800

Gln Ser Leu Arg Thr Pro Ser Ala Ser Ala Leu Tyr Thr Ser Leu Gly
                805                 810                 815

Ser Ser Ile Ser Ala Thr Thr Ser Ser Val Thr Ser Ser Ile Ile Thr
            820                 825                 830

Val Pro Val Tyr Ser Val Val Asn Val Leu Pro Glu Pro Ala Leu Lys
        835                 840                 845

Lys Leu Pro Asp Ser Asn Ser Phe Thr Lys Ser Ala Ala Ala Leu Leu
    850                 855                 860

Ser Pro Ile Lys Thr Leu Thr Thr Glu Thr His Pro Gln Pro His Phe
```

865 870 875 880

Ser Arg Thr Ser Ser Pro Val Lys Ser Ser Leu Phe Leu Ala Pro Ser
885 890 895

Ala Leu Lys Leu Ser Thr Pro Ser Ser Leu Ser Ser Ser Gln Glu Ile
900 905 910

Leu Lys Asp Val Ala Glu Met Lys Glu Asp Leu Met Arg Met Thr Ala
915 920 925

Ile Leu Gln Thr Asp Val Pro Glu Glu Lys Pro Phe Gln Pro Glu Leu
930 935 940

Pro Lys Glu Gly Arg Ile Asp Asp Glu Glu Pro Phe Lys Ile Val Glu
945 950 955 960

Lys Val Lys Glu Asp Leu Val Lys Val Ser Glu Ile Leu Lys Lys Asp
965 970 975

Val Cys Val Asp Asn Lys Gly Ser Pro Lys Ser Pro Lys Ser Asp Lys
980 985 990

Gly His Ser Pro Glu Asp Asp Trp Ile Glu Phe Ser Ser Glu Glu
Ile
995 1000 1005

Arg Glu Ala Arg Gln Gln Ala Ala Ala Ser Gln Ser Pro Ser Leu
1010 1015 1020

Pro Glu Arg Val Gln Val Lys Ala Lys Ala Ala Ser Glu Lys Asp
1025 1030 1035

Tyr Asn Leu Thr Lys Val Ile Asp Tyr Leu Thr Asn Asp Ile Gly
1040 1045 1050

Ser Ser Ser Leu Thr Asn Leu Lys Tyr Lys Phe Glu Asp Ala Lys
1055 1060 1065

Lys Asp Gly Glu Glu Arg Gln Lys Arg Val Leu Lys Pro Ala Ile
1070 1075 1080

Ala Leu Gln Glu His Lys Leu Lys Met Pro Pro Ala Ser Met Arg

1085 1090 1095

Thr Ser Thr Ser Glu Lys Glu Leu Cys Lys Met Ala Asp Ser Phe
1100 1105 1110

Phe Gly Thr Asp Thr Ile Leu Glu Ser Pro Asp Asp Phe Ser Gln
1115 1120 1125

His Asp Gln Asp Lys Ser Pro Leu Ser Asp Ser Gly Phe Glu Thr
1130 1135 1140

Arg Ser Glu Lys Thr Pro Ser Ala Pro Gln Ser Ala Glu Ser Thr
1145 1150 1155

Gly Pro Lys Pro Leu Phe His Glu Val Pro Ile Pro Pro Val Ile
1160 1165 1170

Thr Glu Thr Arg Thr Glu Val Val His Val Ile Arg Ser Tyr Asp
1175 1180 1185

Pro Ser Ala Gly Asp Val Pro Gln Thr Gln Pro Glu Glu Pro Val
1190 1195 1200

Ser Pro Lys Pro Ser Pro Thr Phe Met Glu Leu Glu Pro Lys Pro
1205 1210 1215

Thr Thr Ser Ser Ile Lys Glu Lys Val Lys Ala Phe Gln Met Lys
1220 1225 1230

Ala Ser Ser Glu Glu Asp Asp His Asn Arg Val Leu Ser Lys Gly
1235 1240 1245

Met Arg Val Lys Glu Glu Thr His Ile Thr Thr Thr Thr Arg Met
1250 1255 1260

Val Tyr His Ser Pro Pro Gly Gly Glu Gly Ala Ser Glu Arg Ile
1265 1270 1275

Glu Glu Thr Met Ser Val His Asp Ile Met Lys Ala Phe Gln Ser
1280 1285 1290

Gly Arg Asp Pro Ser Lys Glu Leu Ala Gly Leu Phe Glu His Lys
1295 1300 1305

```
Ser Ala  Val Ser Pro Asp Val  His Lys Ser Ala Ala  Glu Thr Ser
    1310                1315                1320

Ala Gln  His Ala Glu Lys Asp  Asn Gln Met Lys Pro  Lys Leu Glu
    1325                1330                1335

Arg Ile  Ile Glu Val His Ile  Glu Lys Gly Pro Gln  Ser Pro Cys
    1340                1345                1350

Glu Arg  Thr Asp Ile Arg Met  Ala Ile Val Ala Asp  His Leu Gly
    1355                1360                1365

Leu Ser  Trp Thr Glu Leu Ala  Arg Glu Leu Asn Phe  Ser Val Asp
    1370                1375                1380

Glu Ile  Asn Gln Ile Arg Val  Glu Asn Pro Asn Ser  Leu Ile Ser
    1385                1390                1395

Gln Ser  Phe Met Leu Leu Lys  Lys Trp Val Thr Arg  Asp Gly Lys
    1400                1405                1410

Asn Ala  Thr Thr Asp Ala Leu  Thr Ser Val Leu Thr  Lys Ile Asn
    1415                1420                1425

Arg Ile  Asp Ile Val Thr Leu  Leu Glu Gly Pro Ile  Phe Asp Tyr
    1430                1435                1440

Gly Asn  Ile Ser Gly Thr Arg  Ser Phe Ala Asp Glu  Asn Asn Val
    1445                1450                1455

Phe His  Asp Pro Val Asp Gly  Trp Gln Asn Glu Thr  Ser Ser Gly
    1460                1465                1470

Asn Leu  Glu Ser Cys Ala Gln  Ala Arg Arg Val Thr  Gly Gly Leu
    1475                1480                1485

Leu Asp  Arg Leu Asp Asp Ser  Pro Asp Gln Cys Arg  Asp Ser Ile
    1490                1495                1500

Thr Ser  Tyr Leu Lys Gly Glu  Ala Gly Lys Phe Glu  Ala Asn Gly
    1505                1510                1515
```

```
Ser His  Thr Glu Ile Thr Pro  Glu Ala Lys Thr Lys  Ser Tyr Phe
    1520                1525                1530

Pro Glu  Ser Gln Asn Asp Val  Gly Lys Gln Ser Thr  Lys Glu Thr
    1535                1540                1545

Leu Lys  Pro Lys Ile His Gly  Ser Gly His Val Glu  Glu Pro Ala
    1550                1555                1560

Ser Pro  Leu Ala Ala Tyr Gln  Lys Ser Leu Glu Glu  Thr Ser Lys
    1565                1570                1575

Leu Ile  Ile Glu Glu Thr Lys  Pro Cys Val Pro Val  Ser Met Lys
    1580                1585                1590

Lys Met  Ser Arg Thr Ser Pro  Ala Asp Gly Lys Pro  Arg Leu Ser
    1595                1600                1605

Leu His  Glu Glu Glu Gly Ser  Ser Gly Ser Glu Gln  Lys Gln Gly
    1610                1615                1620

Glu Gly  Phe Lys Val Lys Thr  Lys Lys Glu Ile Arg  His Val Glu
    1625                1630                1635

Lys Lys  Ser His Ser
    1640


<210> 4894
<211> 868
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
      ankyrin 3, node of Ranvier (ankyrin G); "

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<223> /note="ENSP ID: ENSP00000478037"

<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 4894

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Xaa Asp Leu Pro Asp Glu Ser Val Ser Val Gln Lys Asp Phe Met Val
1               5                  10                  15

Leu Lys Thr Lys Asp Glu His Ala Gln Ser Asn Glu Ile Val Val Asn
            20                  25                  30

Asp Ser Gly Ser Asp Asn Val Lys Lys Gln Arg Thr Glu Met Ser Ser
        35                  40                  45

Lys Ala Met Pro Asp Ser Phe Ser Glu Gln Gln Ala Lys Asp Leu Ala
    50                  55                  60

Cys His Ile Thr Ser Asp Leu Ala Thr Arg Gly Pro Trp Asp Lys Lys
65                  70                  75                  80

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

Lys Glu Lys Leu Ser His Val Leu Val His Asp Val Arg Glu Asn His
            100                 105                 110

Ile Gly His Pro Glu Ser Lys Ser Val Asp Gln Lys Asn Glu Phe Met
        115                 120                 125

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

Glu Ile Lys Glu Met Thr Val Lys Ser Pro Ser Lys Lys Val Leu Tyr
145                 150                 155                 160

Arg Glu Tyr Val Val Lys Glu Gly Asp His Pro Gly Gly Leu Leu Asp
                165                 170                 175

Gln Pro Ser Arg Arg Ser Glu Ser Ser Ala Val Ser His Ile Pro Val
            180                 185                 190
```

```
Arg Val Ala Asp Glu Arg Arg Met Leu Ser Ser Asn Ile Pro Asp Gly
        195                 200                 205

Phe Cys Glu Gln Ser Ala Phe Pro Lys His Glu Leu Ser Gln Lys Leu
    210                 215                 220

Ser Gln Ser Ser Met Ser Lys Glu Thr Val Glu Thr Gln His Phe Asn
225                 230                 235                 240

Ser Ile Glu Asp Glu Lys Val Thr Tyr Ser Glu Ile Ser Lys Val Ser
                245                 250                 255

Lys His Gln Ser Tyr Val Gly Leu Cys Pro Pro Leu Glu Glu Thr Glu
            260                 265                 270

Thr Ser Pro Thr Lys Ser Pro Asp Ser Leu Glu Phe Ser Pro Gly Lys
        275                 280                 285

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

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

Thr Leu Pro Val Tyr Val Ser Phe Val Gln Val Gly Lys Gln Tyr Glu
                325                 330                 335

Lys Glu Ile Gln Gln Gly Gly Val Lys Lys Ile Ile Ser Gln Glu Cys
            340                 345                 350

Lys Thr Val Gln Glu Thr Arg Gly Thr Phe Tyr Thr Thr Arg Gln Gln
        355                 360                 365

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

Gln Val Ser Phe Leu Asp Ser Ser Gly Lys Ser Pro Leu Thr Pro Glu
385                 390                 395                 400

Thr Pro Ser Ser Glu Glu Val Ser Tyr Glu Phe Thr Ser Lys Thr Pro
                405                 410                 415

Asp Ser Leu Ile Ala Tyr Ile Pro Gly Lys Pro Ser Pro Ile Pro Glu
```

```
            420                 425                 430

Val Ser Glu Glu Ser Glu Glu Glu Glu Gln Ala Lys Ser Thr Ser Leu
        435                 440                 445

Lys Gln Thr Thr Val Glu Glu Thr Ala Val Glu Arg Glu Met Pro Asn
    450                 455                 460

Asp Val Ser Lys Asp Ser Asn Gln Arg Pro Lys Asn Asn Arg Val Ala
465                 470                 475                 480

Tyr Ile Glu Phe Pro Pro Pro Pro Pro Leu Asp Ala Asp Gln Ile Glu
                485                 490                 495

Ser Asp Lys Lys His His Tyr Leu Pro Glu Lys Glu Val Asp Met Ile
            500                 505                 510

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

Val Ile Arg Val Gln Pro Pro Ser Pro Val Pro Pro Gly Ala Asp Val
    530                 535                 540

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

Lys Tyr Thr Phe Lys Leu Lys Glu Val Asp Asp Glu Gln Lys Glu Lys
                565                 570                 575

Pro Lys Ala Ser Ala Glu Lys Ala Ser Asn Gln Lys Glu Leu Glu Ser
            580                 585                 590

Asn Gly Ser Gly Lys Asp Asn Glu Phe Gly Leu Gly Leu Asp Ser Pro
        595                 600                 605

Gln Asn Glu Ile Ala Gln Asn Gly Asn Asn Asp Gln Ser Ile Thr Glu
    610                 615                 620

Cys Ser Ile Ala Thr Thr Ala Glu Phe Ser His Asp Thr Asp Ala Thr
625                 630                 635                 640

Glu Ile Asp Ser Leu Asp Gly Tyr Asp Leu Gln Asp Glu Asp Asp Gly
                645                 650                 655
```

Leu Thr Glu Ser Asp Ser Lys Leu Pro Ile Gln Ala Met Glu Ile Lys
660 665 670

Lys Asp Ile Trp Asn Thr Glu Gly Ile Leu Lys Pro Ala Asp Arg Ser
675 680 685

Phe Ser Gln Ser Lys Leu Glu Val Ile Glu Glu Glu Gly Lys Val Gly
690 695 700

Pro Asp Glu Asp Lys Pro Pro Ser Lys Ser Ser Ser Ser Glu Lys Thr
705 710 715 720

Pro Asp Lys Thr Asp Gln Lys Ser Gly Ala Gln Phe Phe Thr Leu Glu
725 730 735

Gly Arg His Pro Asp Arg Ser Val Phe Pro Asp Thr Tyr Phe Ser Tyr
740 745 750

Lys Val Asp Glu Glu Phe Ala Thr Pro Phe Lys Thr Val Ala Thr Lys
755 760 765

Gly Leu Asp Phe Asp Pro Trp Ser Asn Asn Arg Gly Asp Asp Glu Val
770 775 780

Phe Asp Ser Lys Ser Arg Glu Asp Glu Thr Lys Pro Phe Gly Leu Ala
785 790 795 800

Val Glu Asp Arg Ser Pro Ala Thr Thr Pro Asp Thr Thr Pro Ala Arg
805 810 815

Thr Pro Thr Asp Glu Ser Thr Pro Thr Ser Glu Pro Asn Pro Phe Pro
820 825 830

Phe His Glu Gly Lys Met Phe Glu Met Thr Arg Ser Gly Ala Ile Asp
835 840 845

Met Ser Lys Arg Asp Phe Val Glu Glu Arg Leu Gln Phe Phe Gln Ile
850 855 860

Val Val Arg Pro
865

<210> 4895
<211> 811
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
ankyrin 3, node of Ranvier (ankyrin G); "

<220>
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<223> /note="ENSP ID: ENSP00000479018"

<400> 4895

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Met Ala Leu Pro Gln Ser Glu Asp Ala Met Thr Gly Asp Thr Asp Lys
1               5                  10                  15


Tyr Leu Gly Pro Gln Asp Leu Lys Glu Leu Gly Asp Asp Ser Leu Pro
            20                  25                  30


Ala Glu Gly Tyr Met Gly Phe Ser Leu Gly Ala Arg Ser Ala Ser Leu
        35                  40                  45


Arg Ser Phe Ser Ser Asp Arg Ser Tyr Thr Leu Asn Arg Ser Ser Tyr
    50                  55                  60


Ala Arg Asp Ser Met Met Ile Glu Glu Leu Leu Val Pro Ser Lys Glu
65                  70                  75                  80


Gln His Leu Thr Phe Thr Arg Glu Phe Asp Ser Asp Ser Leu Arg His
                85                  90                  95


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


Pro Ile His Ser Gly Phe Leu Val Ser Phe Met Val Asp Ala Arg Gly
        115                 120                 125


Gly Ser Met Arg Gly Ser Arg His His Gly Met Arg Ile Ile Ile Pro
```

```
    130                 135                 140

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

Arg His Lys Leu Ala Asn Pro Pro Pro Met Val Glu Gly Glu Gly Leu
                165                 170                 175

Ala Ser Arg Leu Val Glu Met Gly Pro Ala Gly Ala Gln Phe Leu Gly
            180                 185                 190

Pro Val Ile Val Glu Ile Pro His Phe Gly Ser Met Arg Gly Lys Glu
        195                 200                 205

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

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

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

Cys Arg Ile Ile Thr Lys Asp Phe Pro Gln Tyr Phe Ala Val Val Ser
            260                 265                 270

Arg Ile Lys Gln Glu Ser Asn Gln Ile Gly Pro Glu Gly Gly Ile Leu
        275                 280                 285

Ser Ser Thr Thr Val Pro Leu Val Gln Ala Ser Phe Pro Glu Gly Ala
    290                 295                 300

Leu Thr Lys Arg Ile Arg Val Gly Leu Gln Ala Gln Pro Val Pro Asp
305                 310                 315                 320

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

Val Thr Val Glu Pro Arg Arg Arg Lys Phe His Lys Pro Ile Thr Met
            340                 345                 350

Thr Ile Pro Val Pro Pro Pro Ser Gly Glu Gly Val Ser Asn Gly Tyr
        355                 360                 365
```

```
Lys Gly Asp Thr Thr Pro Asn Leu Arg Leu Leu Cys Ser Ile Thr Gly
    370                 375                 380

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

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

Phe Trp Leu Ala Asp Cys His Gln Val Leu Glu Thr Val Gly Leu Ala
            420                 425                 430

Thr Gln Leu Tyr Arg Glu Leu Ile Cys Val Pro Tyr Met Ala Lys Phe
        435                 440                 445

Val Val Phe Ala Lys Met Asn Asp Pro Val Glu Ser Ser Leu Arg Cys
    450                 455                 460

Phe Cys Met Thr Asp Asp Lys Val Asp Lys Thr Leu Glu Gln Gln Glu
465                 470                 475                 480

Asn Phe Glu Glu Val Ala Arg Ser Lys Asp Ile Glu Val Leu Glu Gly
                485                 490                 495

Lys Pro Ile Tyr Val Asp Cys Tyr Gly Asn Leu Ala Pro Leu Thr Lys
            500                 505                 510

Gly Gly Gln Gln Leu Val Phe Asn Phe Tyr Ser Phe Lys Glu Asn Arg
        515                 520                 525

Leu Pro Phe Ser Ile Lys Ile Arg Asp Thr Ser Gln Glu Pro Cys Gly
    530                 535                 540

Arg Leu Ser Phe Leu Lys Glu Pro Lys Thr Thr Lys Gly Leu Pro Gln
545                 550                 555                 560

Thr Ala Val Cys Asn Leu Asn Ile Thr Leu Pro Ala His Lys Lys Ile
                565                 570                 575

Glu Lys Thr Asp Arg Arg Gln Ser Phe Ala Ser Leu Ala Leu Arg Lys
            580                 585                 590
```

```
Arg Tyr Ser Tyr Leu Thr Glu Pro Gly Met Ser Pro Gln Ser Pro Cys
        595                 600                 605

Glu Arg Thr Asp Ile Arg Met Ala Ile Val Ala Asp His Leu Gly Leu
    610                 615                 620

Ser Trp Thr Glu Leu Ala Arg Glu Leu Asn Phe Ser Val Asp Glu Ile
625                 630                 635                 640

Asn Gln Ile Arg Val Glu Asn Pro Asn Ser Leu Ile Ser Gln Ser Phe
                645                 650                 655

Met Leu Leu Lys Lys Trp Val Thr Arg Asp Gly Lys Asn Ala Thr Thr
            660                 665                 670

Asp Ala Leu Thr Ser Val Leu Thr Lys Ile Asn Arg Ile Asp Ile Val
        675                 680                 685

Thr Leu Leu Glu Gly Pro Ile Phe Asp Tyr Gly Asn Ile Ser Gly Thr
    690                 695                 700

Arg Ser Phe Ala Asp Glu Asn Asn Val Phe His Asp Pro Val Asp Gly
705                 710                 715                 720

Tyr Pro Ser Leu Gln Val Glu Leu Glu Thr Pro Thr Gly Leu His Tyr
                725                 730                 735

Thr Pro Pro Thr Pro Phe Gln Gln Asp Asp Tyr Phe Ser Asp Ile Ser
            740                 745                 750

Ser Ile Glu Ser Pro Leu Arg Thr Pro Ser Arg Leu Ser Asp Gly Leu
        755                 760                 765

Val Pro Ser Gln Gly Asn Ile Glu His Ser Ala Asp Gly Pro Pro Val
    770                 775                 780

Val Thr Ala Glu Asp Ala Ser Leu Glu Asp Ser Lys Leu Glu Asp Ser
785                 790                 795                 800

Val Pro Leu Thr Glu Met Pro Glu Ala Val Met
                805                 810
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<210> 4896
<211> 322
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ANK3; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin 3, node of Ranvier (ankyrin G); "

<220>
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<223> /note="ENSP ID: ENSP00000479337"

<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 4896
Xaa Gly Pro Asp Glu Asp Lys Pro Pro Ser Lys Ser Ser Ser Ser Glu
1 5 10 15

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

Leu Glu Gly Arg His Pro Asp Arg Ser Val Phe Pro Asp Thr Tyr Phe
35 40 45

Ser Tyr Lys Val Asp Glu Glu Phe Ala Thr Pro Phe Lys Thr Val Ala
50 55 60

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

Glu Val Phe Asp Ser Lys Ser Arg Glu Asp Glu Thr Lys Pro Phe Gly
85 90 95

Leu Ala Val Glu Asp Arg Ser Pro Ala Thr Thr Pro Asp Thr Thr Pro
100 105 110

```
Ala Arg Thr Pro Thr Asp Glu Ser Thr Pro Thr Ser Glu Pro Asn Pro
        115                 120                 125

Phe Pro Phe His Glu Gly Lys Met Phe Glu Met Thr Arg Ser Gly Ala
    130                 135                 140

Ile Asp Met Ser Lys Arg Asp Phe Val Glu Glu Arg Leu Gln Phe Phe
145                 150                 155                 160

Gln Ile Gly Pro Gln Ser Pro Cys Glu Arg Thr Asp Ile Arg Met Ala
                165                 170                 175

Ile Val Ala Asp His Leu Gly Leu Ser Trp Thr Glu Leu Ala Arg Glu
            180                 185                 190

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

Asn Ser Leu Ile Ser Gln Ser Phe Met Leu Leu Lys Lys Trp Val Thr
    210                 215                 220

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

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

Asp Tyr Gly Asn Ile Ser Gly Thr Arg Ser Phe Ala Asp Glu Asn Asn
            260                 265                 270

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

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

Asp Arg Leu Asp Asp Ser Pro Asp Gln Cys Arg Asp Ser Ile Thr Ser
305                 310                 315                 320

Tyr Leu
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<210> 4897

<211> 96
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1067; "

<220>
<221> source
<223> /note="Gene Symbol: ANK3; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin 3, node of Ranvier (ankyrin G); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000480249"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 4897
Xaa Leu Ala Arg Glu Leu Asn Phe Ser Val Asp Glu Ile Asn Gln Ile
1 5 10 15

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

Lys Lys Trp Val Thr Arg Asp Gly Lys Asn Ala Thr Thr Asp Ala Leu
35 40 45

Thr Ser Val Leu Thr Lys Ile Asn Arg Ile Asp Ile Val Thr Leu Leu
50 55 60

Glu Gly Pro Ile Phe Asp Tyr Gly Asn Ile Ser Gly Thr Arg Ser Phe
65 70 75 80

Ala Asp Glu Asn Asn Val Phe His Asp Pro Val Asp Gly Asn Arg Ile
85 90 95

<210> 4898
<211> 175
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ANK3; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin 3, node of Ranvier (ankyrin G); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000480745"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 4898
Xaa Ser Pro Leu Ala Ala Tyr Gln Lys Ser Leu Glu Glu Thr Ser Lys
1 5 10 15

Leu Ile Ile Glu Glu Thr Lys Pro Cys Val Pro Val Ser Met Lys Lys
20 25 30

Met Ser Arg Thr Ser Pro Ala Asp Gly Lys Pro Arg Leu Ser Leu His
35 40 45

Glu Glu Glu Gly Ser Ser Gly Ser Glu Gln Lys Val Lys Ser Pro Gly
50 55 60

Ala Ala Pro Thr Arg Met Thr Ala Cys Cys Tyr Lys Asp Leu Lys Asp
65 70 75 80

Ser Glu Ser Asp Ser Ser Ser Glu Glu Glu Arg Arg Val Thr Thr Arg
85 90 95

Val Ile Arg Arg Arg Leu Ile Ile Lys Gly Glu Glu Ala Lys Asn Ile
100 105 110

Pro Gly Glu Ser Val Thr Glu Glu Gln Phe Thr Asp Glu Glu Gly Asn
115 120 125

Leu Ile Thr Arg Lys Ile Thr Arg Lys Val Leu Arg Arg Ile Val Ile

```
    130                 135                 140

Pro Gln Glu Arg Lys Arg Asp Asp Val Gln Gly Glu Gly Phe Lys Val
145                 150                 155                 160

Lys Thr Lys Lys Glu Ile Arg His Val Glu Lys Lys Ser His Ser
                165                 170                 175


<210> 4899
<211> 178
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ANK3; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin 3, node of Ranvier (ankyrin G); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000481611"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 4899
Xaa Trp Gln Asn Glu Thr Ser Ser Gly Asn Leu Glu Ser Cys Ala Gln
1               5                   10                  15

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

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

Lys Phe Glu Ala Asn Gly Ser His Thr Glu Ile Thr Pro Glu Ala Lys
    50                  55                  60

Thr Lys Ser Tyr Phe Pro Glu Ser Gln Asn Asp Val Gly Lys Gln Ser
```

65 70 75 80

Thr Lys Glu Thr Leu Lys Pro Lys Ile His Gly Ser Gly His Val Glu
85 90 95

Glu Pro Ala Ser Pro Leu Ala Ala Tyr Gln Lys Ser Leu Glu Glu Thr
100 105 110

Ser Lys Leu Ile Ile Glu Glu Thr Lys Pro Cys Val Pro Val Ser Met
115 120 125

Lys Lys Met Ser Arg Thr Ser Pro Ala Asp Gly Lys Pro Arg Leu Ser
130 135 140

Leu His Glu Glu Glu Gly Ser Ser Gly Ser Glu Gln Lys Gly Glu Gly
145 150 155 160

Phe Lys Val Lys Thr Lys Lys Glu Ile Arg His Val Glu Lys Lys Ser
165 170 175

His Ser

<210> 4900
<211> 201
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ANK3; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin 3, node of Ranvier (ankyrin G); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000482307"

<220>
<221> MOD_RES
<222> (1)..(1)

<223> Any amino acid

<400> 4900
Xaa Glu Asp Ala Met Thr Gly Asp Thr Asp Lys Tyr Leu Gly Pro Gln
1 5 10 15

Asp Leu Lys Glu Leu Gly Asp Asp Ser Leu Pro Ala Glu Gly Tyr Met
20 25 30

Gly Phe Ser Leu Gly Ala Arg Ser Ala Ser Pro Lys Ile Ser Leu Arg
35 40 45

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

Arg Asp Ser Met Met Ile Glu Glu Leu Leu Val Pro Ser Lys Glu Gln
65 70 75 80

His Leu Thr Phe Thr Arg Glu Phe Asp Ser Asp Ser Leu Arg His Tyr
85 90 95

Ser Trp Ala Ala Asp Thr Leu Asp Asn Val Asn Leu Val Ser Ser Pro
100 105 110

Ile His Ser Gly Tyr Ser Ser Pro Leu Pro Gln Tyr Asp Ser Arg Phe
115 120 125

Leu Val Ser Phe Met Val Asp Ala Arg Gly Gly Ser Met Arg Gly Ser
130 135 140

Arg His His Gly Met Arg Ile Ile Ile Pro Pro Arg Lys Cys Thr Ala
145 150 155 160

Pro Thr Arg Ile Thr Cys Arg Leu Val Lys Arg His Lys Leu Ala Asn
165 170 175

Pro Pro Pro Met Val Glu Gly Glu Gly Leu Ala Ser Arg Leu Val Glu
180 185 190

Met Gly Pro Ala Gly Ala Gln Phe Leu
195 200

<210> 4901
<211> 973

<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1067; "

<220>
<221> source
<223> /note="Gene Symbol: ANK3; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin 3, node of Ranvier (ankyrin G); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000482401"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 4901
Xaa Pro Val Ile Val Glu Ile Pro His Phe Gly Ser Met Arg Gly Lys
1 5 10 15

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

Glu His Gln Phe Asp Ser Lys Asn Glu Asp Leu Thr Glu Leu Leu Asn
35 40 45

Gly Met Asp Glu Glu Leu Asp Ser Pro Glu Glu Leu Gly Lys Lys Arg
50 55 60

Ile Cys Arg Ile Ile Thr Lys Asp Phe Pro Gln Tyr Phe Ala Val Val
65 70 75 80

Ser Arg Ile Lys Gln Glu Ser Asn Gln Ile Gly Pro Glu Gly Gly Ile
85 90 95

Leu Ser Ser Thr Thr Val Pro Leu Val Gln Ala Ser Phe Pro Glu Gly
100 105 110

Ala Leu Thr Lys Arg Ile Arg Val Gly Leu Gln Ala Gln Pro Val Pro
115 120 125

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

Ile Val Thr Val Glu Pro Arg Arg Arg Lys Phe His Lys Pro Ile Thr
145                 150                 155                 160

Met Thr Ile Pro Val Pro Pro Pro Ser Gly Glu Gly Val Ser Asn Gly
                165                 170                 175

Tyr Lys Gly Asp Thr Thr Pro Asn Leu Arg Leu Leu Cys Ser Ile Thr
            180                 185                 190

Gly Gly Thr Ser Pro Ala Gln Trp Glu Asp Ile Thr Gly Thr Thr Pro
        195                 200                 205

Leu Thr Phe Ile Lys Asp Cys Val Ser Phe Thr Thr Asn Val Ser Ala
    210                 215                 220

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

Ala Thr Gln Leu Tyr Arg Glu Leu Ile Cys Val Pro Tyr Met Ala Lys
                245                 250                 255

Phe Val Val Phe Ala Lys Met Asn Asp Pro Val Glu Ser Ser Leu Arg
            260                 265                 270

Cys Phe Cys Met Thr Asp Asp Lys Val Asp Lys Thr Leu Glu Gln Gln
        275                 280                 285

Glu Asn Phe Glu Glu Val Ala Arg Ser Lys Asp Ile Glu Val Leu Glu
    290                 295                 300

Gly Lys Pro Ile Tyr Val Asp Cys Tyr Gly Asn Leu Ala Pro Leu Thr
305                 310                 315                 320

Lys Gly Gly Gln Gln Leu Val Phe Asn Phe Tyr Ser Phe Lys Glu Asn
                325                 330                 335

Arg Leu Pro Phe Ser Ile Lys Ile Arg Asp Thr Ser Gln Glu Pro Cys
            340                 345                 350
```

```
Gly Arg Leu Ser Phe Leu Lys Glu Pro Lys Thr Thr Lys Gly Leu Pro
        355                 360                 365

Gln Thr Ala Val Cys Asn Leu Asn Ile Thr Leu Pro Ala His Lys Lys
    370                 375                 380

Glu Thr Glu Ser Asp Gln Asp Asp Glu Ile Glu Lys Thr Asp Arg Arg
385                 390                 395                 400

Gln Ser Phe Ala Ser Leu Ala Leu Arg Pro Gln Ser Pro Cys Glu Arg
                405                 410                 415

Thr Asp Ile Arg Met Ala Ile Val Ala Asp His Leu Gly Leu Ser Trp
            420                 425                 430

Thr Glu Leu Ala Arg Glu Leu Asn Phe Ser Val Asp Glu Ile Asn Gln
        435                 440                 445

Ile Arg Val Glu Asn Pro Asn Ser Leu Ile Ser Gln Ser Phe Met Leu
    450                 455                 460

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

Leu Thr Ser Val Leu Thr Lys Ile Asn Arg Ile Asp Ile Val Thr Leu
                485                 490                 495

Leu Glu Gly Pro Ile Phe Asp Tyr Gly Asn Ile Ser Gly Thr Arg Ser
            500                 505                 510

Phe Ala Asp Glu Asn Asn Val Phe His Asp Pro Val Asp Gly Tyr Pro
        515                 520                 525

Ser Leu Gln Val Glu Leu Glu Thr Pro Thr Gly Leu His Tyr Thr Pro
    530                 535                 540

Pro Thr Pro Phe Gln Gln Asp Asp Tyr Phe Ser Asp Ile Ser Ser Ile
545                 550                 555                 560

Glu Ser Pro Leu Arg Thr Pro Ser Arg Leu Ser Asp Gly Leu Val Pro
                565                 570                 575
```

```
Ser Gln Gly Asn Ile Glu His Ser Ala Asp Gly Pro Pro Val Val Thr
            580                 585                 590

Ala Glu Asp Ala Ser Leu Glu Asp Ser Lys Leu Glu Asp Ser Val Pro
        595                 600                 605

Leu Thr Glu Met Pro Glu Ala Val Asp Val Asp Glu Ser Gln Leu Glu
    610                 615                 620

Asn Val Cys Leu Ser Glu Tyr Pro Gln Tyr Leu Gly Asn Leu Ala Gly
625                 630                 635                 640

Ser Pro Lys Asp Val Lys Pro Ala Glu Pro Arg Lys Leu Gly Val Ser
                645                 650                 655

Ser Glu Gln Gln Glu Lys Gly Lys Ser Gly Pro Asp Glu Glu Met Met
            660                 665                 670

Glu Glu Lys Leu Lys Ser Leu Phe Glu Asp Ile Gln Leu Glu Glu Gly
        675                 680                 685

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

Arg Val Gln Gln Ala Glu Leu Glu Met Ser Ser Ile Thr Gly Trp Gln
705                 710                 715                 720

Asn Glu Thr Ser Ser Gly Asn Leu Glu Ser Cys Ala Gln Ala Arg Arg
                725                 730                 735

Val Thr Gly Gly Leu Leu Asp Arg Leu Asp Asp Ser Pro Asp Gln Cys
            740                 745                 750

Arg Asp Ser Ile Thr Ser Tyr Leu Lys Gly Glu Ala Gly Lys Phe Glu
        755                 760                 765

Ala Asn Gly Ser His Thr Glu Ile Thr Pro Glu Ala Lys Thr Lys Ser
    770                 775                 780

Tyr Phe Pro Glu Ser Gln Asn Asp Val Gly Lys Gln Ser Thr Lys Glu
785                 790                 795                 800

Thr Leu Lys Pro Lys Ile His Gly Ser Gly His Val Glu Glu Pro Ala
```

805 810 815

Ser Pro Leu Ala Ala Tyr Gln Lys Ser Leu Glu Glu Thr Ser Lys Leu
820 825 830

Ile Ile Glu Glu Thr Lys Pro Cys Val Pro Val Ser Met Lys Lys Met
835 840 845

Ser Arg Thr Ser Pro Ala Asp Gly Lys Pro Arg Leu Ser Leu His Glu
850 855 860

Glu Glu Gly Ser Ser Gly Ser Glu Gln Lys Asp Leu Lys Asp Ser Glu
865 870 875 880

Ser Asp Ser Ser Ser Glu Glu Glu Arg Arg Val Thr Thr Arg Val Ile
885 890 895

Arg Arg Arg Leu Ile Ile Lys Gly Glu Glu Ala Lys Asn Ile Pro Gly
900 905 910

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

Thr Arg Lys Ile Thr Arg Lys Val Leu Arg Arg Ile Val Ile Pro Gln
930 935 940

Glu Arg Lys Arg Asp Asp Val Gln Gly Glu Gly Phe Lys Val Lys Thr
945 950 955 960

Lys Lys Glu Ile Arg His Val Glu Lys Lys Ser His Ser
965 970

<210> 4902
<211> 450
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1067; "

<220>
<221> source
<223> /note="Gene Symbol: ANK3; "

<220>

<221> source
<223> /note="Gene Name:
ankyrin 3, node of Ranvier (ankyrin G); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000483244"

<400> 4902
Met Ser Glu Glu Pro Lys Glu Lys Asn Ala Lys Pro Ala His Arg Lys
1 5 10 15

Arg Lys Gly Lys Lys Ser Asp Ala Asn Ala Ser Tyr Leu Arg Ala Ala
20 25 30

Arg Ala Gly His Leu Glu Lys Ala Leu Asp Tyr Ile Lys Asn Gly Val
35 40 45

Asp Ile Asn Ile Cys Asn Gln Asn Gly Leu Asn Ala Leu His Leu Ala
50 55 60

Ser Lys Glu Gly His Val Glu Val Val Ser Glu Leu Leu Gln Arg Glu
65 70 75 80

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

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

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

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

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

Ala Val Ala Leu Gln Gln Gly His Asp Gln Val Val Ser Leu Leu Leu
165 170 175

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

```
Ala Arg Lys Asp Asp Thr Lys Ala Ala Ala Leu Leu Leu Gln Asn Asp
        195                 200                 205

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

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

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

Val Ala Ser Lys Arg Gly Asn Ala Asn Met Val Lys Leu Leu Leu Asp
            260                 265                 270

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

His Cys Gly Ala Arg Ser Gly His Glu Gln Val Val Glu Met Leu Leu
    290                 295                 300

Asp Arg Ala Ala Pro Ile Leu Ser Lys Thr Lys Asn Gly Leu Ser Pro
305                 310                 315                 320

Leu His Met Ala Thr Gln Gly Asp His Leu Asn Cys Val Gln Leu Leu
                325                 330                 335

Leu Gln His Asn Val Pro Val Asp Asp Val Thr Asn Asp Tyr Leu Thr
            340                 345                 350

Ala Leu His Val Ala Ala His Cys Gly His Tyr Lys Val Ala Lys Val
        355                 360                 365

Leu Leu Asp Lys Lys Ala Asn Pro Asn Ala Lys Ala Leu Asn Gly Phe
    370                 375                 380

Thr Pro Leu His Ile Ala Cys Lys Lys Asn Arg Ile Lys Val Met Glu
385                 390                 395                 400

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

Leu Thr Pro Ile His Val Ala Ala Phe Met Gly His Val Asn Ile Val
```

420 425 430

Ser Gln Leu Met His His Gly Ala Ser Pro Asn Thr Thr Asn Val Ser
435 440 445

Cys Ser
450

<210> 4903
<211> 63
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1067; "

<220>
<221> source
<223> /note="Gene Symbol: ANK3; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin 3, node of Ranvier (ankyrin G); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000483483"

<400> 4903
Met Thr Gly Asp Thr Asp Lys Tyr Leu Gly Pro Gln Asp Leu Lys Glu
1 5 10 15

Leu Gly Asp Asp Ser Leu Pro Ala Glu Gly Tyr Met Gly Phe Ser Leu
20 25 30

Gly Ala Arg Ser Ala Ser His Ala Ala Ser Thr Val Ala Lys Glu Leu
35 40 45

Thr Asp Lys Thr Gly Arg Thr Asn Leu Ser His Ile Phe Gln Asn
50 55 60

<210> 4904
<211> 1434
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1068; "

<220>
<221> source
<223> /note="Gene Symbol: ANKAR; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin and armadillo repeat containing; "

<220>
<221> source
<223> /note="Uniprot ID: Q7Z5J8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000313513"

<400> 4904

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Met Leu Arg Leu Pro Lys Lys Gly Leu Pro Arg Phe Glu Gln Val Gln
1               5                  10                  15

Asp Glu Asp Thr Tyr Leu Glu Asn Leu Ala Ile Gln Arg Asn Ala Ser
            20                  25                  30

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

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

Val Asp Leu Pro Cys Gly Ile Met Ser Gln Met Asn Asn Val Gly Phe
65                  70                  75                  80

Ser Thr Ala Ile Leu Leu Thr Pro Val Asp Pro Thr Ala Leu Leu Asp
                85                  90                  95

Tyr Arg Glu Val His Gln Met Ile Arg Glu Leu Ala Ile Gly Ile Tyr
            100                 105                 110

Cys Leu Asn Gln Ile Pro Ser Ile Ser Leu Glu Ala Asn Tyr Asp Gln
        115                 120                 125

Ser Ser Ser Cys Gln Leu Pro Pro Ala Tyr Tyr Asp Thr Arg Ile Gly
    130                 135                 140

Gln Ile Leu Ile Asn Ile Asp Tyr Met Leu Lys Ala Leu Trp His Gly
```

145 150 155 160

Ile Tyr Met Pro Lys Glu Lys Arg Ala Arg Phe Ser Glu Leu Trp Arg
165 170 175

Ala Ile Met Asp Ile Asp Pro Asp Gly Lys Pro Gln Thr Asn Lys Asp
180 185 190

Ile Phe Ser Glu Phe Ser Ser Ala Gly Leu Thr Asp Ile Thr Lys Asp
195 200 205

Pro Asp Phe Asn Glu Ile Tyr Asp Glu Asp Val Asn Glu Asp Pro Thr
210 215 220

Tyr Asp Pro Asn Ser Pro Glu Glu Thr Ala Val Phe Met Lys Tyr Ala
225 230 235 240

Glu Asn Ile Met Leu Lys Leu Thr Phe Ser Thr Thr Gln Ile Gln Gln
245 250 255

Tyr Glu Asn Val Phe Ile Phe Glu Thr Gly Tyr Trp Leu Thr Asn Ala
260 265 270

Ile Lys Tyr Asn Gln Asp Tyr Leu Asp Ile Cys Thr Tyr Gln Arg Leu
275 280 285

Gln Gln Arg Leu Tyr Leu Gln Lys Lys Ile Ile Gln Lys His Phe Glu
290 295 300

Lys Lys Lys Asp Ile Arg Arg Gly Ile Gly Tyr Leu Lys Leu Ile Cys
305 310 315 320

Phe Leu Ile Pro Phe Leu Leu Ser Leu Lys Lys Lys Met Lys Val Pro
325 330 335

Tyr Leu Ser Ser Leu Leu Gln Pro Phe Ser Asp Asp Lys Val Lys Thr
340 345 350

Glu Arg Glu Leu Pro Pro Phe Ile Tyr Gly Arg Asp Phe Lys Cys Gln
355 360 365

Asn Phe His Tyr Lys Glu Asn Gln Tyr Phe His Val His Gly Gly Ile
370 375 380

```
Glu Phe Asp Ile Ser Thr Pro Ser Ile Glu Asn Ala Leu Glu Asp Phe
385                 390                 395                 400

Gln Lys Asn Leu Glu Lys Ile Arg Asp Cys Ala Ala Asn Thr Phe Ile
                405                 410                 415

Glu Asp Ser Gly Tyr Lys Glu Tyr Tyr Ser Ile Pro Val Met Glu Phe
            420                 425                 430

His Gly Lys Ser Tyr Tyr Val Ile Tyr Phe Glu Leu Glu Thr Phe Tyr
        435                 440                 445

Gln Gln Leu Tyr Lys Thr Gln Trp Trp Gly Ala Ile Asn Glu Ile Val
    450                 455                 460

Asn Asn Leu Arg Leu Lys Arg Leu Pro Leu Thr Asp Ala Gln Leu His
465                 470                 475                 480

Glu Gln Phe Lys Lys Lys Leu Gly Phe Lys Arg Ala Met Lys Cys Lys
                485                 490                 495

Ser Ile Pro Phe Gly Met Lys Ser Ala Val Glu Arg Gly Leu Ser Ala
            500                 505                 510

Val Phe His Thr Phe Ser Arg Lys Thr Ser Ser Ser Thr Ile Asn Val
        515                 520                 525

Ser Asp Glu Ala Gly Tyr Thr Ile Phe His His Ala Ala Leu His Asn
    530                 535                 540

Arg Val Ser Ile Ile Cys Gln Leu Cys Asn Ala Asn Phe Lys Val Asn
545                 550                 555                 560

Gln Arg Arg Phe Val Thr Phe Ser Gln Gly Pro Thr Pro Leu His Leu
                565                 570                 575

Ala Ala Gln Ala Cys Ser Leu Glu Thr Thr Val Cys Leu Leu Cys Ser
            580                 585                 590

Lys Ala Asp Tyr Thr Leu Ser Glu Lys Arg Gly Trp Met Pro Ile His
        595                 600                 605
```

```
Phe Ala Ala Phe Tyr Asp Asn Val Cys Ile Ile Ile Ala Leu Cys Arg
    610                 615                 620

Lys Asp Pro Ser Leu Leu Glu Ala Glu Ala Thr Ala Glu Asn Gln Cys
625                 630                 635                 640

Thr Pro Leu Leu Leu Ala Ala Thr Ser Gly Ala Leu Asp Thr Ile Gln
                645                 650                 655

Tyr Leu Phe Ser Ile Gly Ala Asn Trp Arg Lys Thr Asp Ile Lys Gly
            660                 665                 670

Asn Asn Ile Ile His Leu Ser Val Leu Thr Phe His Thr Glu Val Leu
        675                 680                 685

Lys Tyr Ile Ile Lys Leu Asn Ile Pro Glu Leu Pro Val Trp Lys Thr
    690                 695                 700

Leu Val Glu Met Leu Gln Cys Glu Ser Tyr Lys Arg Arg Met Met Ala
705                 710                 715                 720

Val Met Ser Leu Glu Val Ile Cys Leu Ala Asn Asp Gln Tyr Trp Arg
                725                 730                 735

Cys Ile Leu Asp Ala Gly Thr Ile Pro Ala Leu Ile Asn Leu Leu Lys
            740                 745                 750

Ser Ser Lys Ile Lys Leu Gln Cys Lys Thr Val Gly Leu Leu Ser Asn
        755                 760                 765

Ile Ser Thr His Lys Ser Ala Val His Ala Leu Val Glu Ala Gly Gly
    770                 775                 780

Ile Pro Ser Leu Ile Asn Leu Leu Val Cys Asp Glu Pro Glu Val His
785                 790                 795                 800

Ser Arg Cys Ala Val Ile Leu Tyr Asp Ile Ala Gln Cys Glu Asn Lys
                805                 810                 815

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

```
Asn Leu Asn Ile Glu Asn Val Leu Val Asn Val Met Asn Cys Ile Arg
        835                 840                 845

Val Leu Cys Ile Gly Asn Glu Asn Asn Gln Arg Ala Val Arg Glu His
    850                 855                 860

Lys Gly Leu Pro Tyr Leu Ile Arg Phe Leu Ser Ser Asp Ser Asp Val
865                 870                 875                 880

Leu Lys Ala Val Ser Ser Ala Ala Ile Ala Glu Val Gly Arg Asp Asn
                885                 890                 895

Lys Glu Ile Gln Asp Ala Ile Ala Met Glu Gly Ala Ile Pro Pro Leu
            900                 905                 910

Val Ala Leu Phe Lys Gly Lys Gln Ile Ser Val Gln Met Lys Gly Ala
        915                 920                 925

Met Ala Val Glu Ser Leu Ala Ser His Asn Ala Leu Ile Gln Lys Ala
    930                 935                 940

Phe Leu Glu Lys Ser Leu Thr Lys Tyr Leu Leu Lys Leu Leu Lys Ala
945                 950                 955                 960

Phe Gln Ile Asp Val Lys Glu Gln Gly Ala Val Ala Leu Trp Ala Leu
                965                 970                 975

Ala Gly Gln Thr Leu Lys Gln Gln Lys Tyr Met Ala Glu Gln Ile Gly
            980                 985                 990

Tyr Ser Phe Ile Ile Asn Met Leu  Leu Ser Pro Ser Ala  Lys Met
Gln
        995                 1000                1005

Tyr Val  Gly Gly Glu Ala Val  Ile Ala Leu Ser Lys  Asp Ser Arg
    1010                1015                1020

Met His  Gln Asn Gln Ile Cys  Glu Gly Asn Gly Ile  Ala Pro Leu
    1025                1030                1035

Val Arg  Leu Leu Arg Ile Ser  Thr Ile Ala Glu Gly  Thr Leu Leu
    1040                1045                1050
```

Ser Val Ile Arg Ala Val Gly Ser Ile Cys Ile Gly Val Ala His
1055 1060 1065

Thr Ser Asn Pro Val Ser Gln Gln Leu Val Val Asp Glu Asn Ala
1070 1075 1080

Phe Pro Val Leu Ile Gln Leu Leu Arg Asn His Pro Ser Pro Asn
1085 1090 1095

Ile Lys Val Glu Val Ala Phe Ser Leu Ala Cys Ile Val Leu Gly
1100 1105 1110

Asn Asp Val Leu Gln Lys Asp Leu His Glu Asn Glu Gly Phe Glu
1115 1120 1125

Tyr Ala Asp Val Leu Tyr Leu Leu His Ser Thr Glu Lys Asp Ile
1130 1135 1140

Cys Leu Arg Ala Gly Tyr Ala Leu Thr Leu Phe Ala Phe Asn Asn
1145 1150 1155

Arg Phe Gln Gln Tyr Leu Ile Leu Glu Ser Gly Ile Met Thr Ile
1160 1165 1170

Ser Ile Phe Glu Arg Phe Leu Glu Ser Thr Val Glu Thr Glu Lys
1175 1180 1185

Ala Met Ala Ala Phe Gln Ile Val Val Leu Ala Lys Val Ile Arg
1190 1195 1200

Asp Met Asp His Ile Thr Leu Ser Ala Arg Gly Val Thr Ile Leu
1205 1210 1215

Val Asp Ser Leu Tyr Ser Val Gln Thr Ser Thr Ile Val Leu Thr
1220 1225 1230

Gly Asn Leu Ile Ala Ser Leu Ala His Ser Arg Ala Gly Ile Pro
1235 1240 1245

Glu Ala Phe Thr Thr Leu Gly Thr Ile Gln Arg Leu Cys Tyr His
1250 1255 1260

Leu Tyr Ser Gly Ile Glu Glu Val Arg Ala Ala Cys Ser Ser Ala

```
    1265                1270                1275

Leu Gly  Tyr Leu Thr Tyr Asn  Ala Asn Ala Phe Arg  Ile Leu Leu
    1280                1285                1290

Lys Glu  Cys Arg Asn Lys Pro  Asn Gln Phe Ile Arg  Ile Lys Asn
    1295                1300                1305

Asn Ile  Ser Arg Asp Ala Ser  Ile Asn Pro Ala Phe  Leu Lys Glu
    1310                1315                1320

Phe Gln  Met Gln Gln Thr Leu  Val Gly Leu Pro Ser  Leu Ser Leu
    1325                1330                1335

Glu Lys  Asn Gly Gly Pro Ser  Ile Ile Pro Ile Phe  Lys Arg Gly
    1340                1345                1350

Lys Glu  His Arg Arg Lys Leu  Lys Pro Lys Ile Gln  Pro Lys Asp
    1355                1360                1365

Ser Leu  Thr Leu Leu Pro Pro  Val Thr Asn Phe Met  Gly Leu Phe
    1370                1375                1380

Lys Ala  Thr Lys Lys Thr Lys  Asp Ser His Asn Ile  Phe Ser Phe
    1385                1390                1395

Ser Ser  Thr Ile Thr Ser Asp  Ile Thr Asn Val Ser  Arg Pro Arg
    1400                1405                1410

Ile Val  Cys Leu Asn Gln Leu  Gly Lys His Val Gln  Lys Ala Asn
    1415                1420                1425

Pro Glu  Pro Ala Glu Gly
    1430


<210> 4905
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ankyrin and armadillo repeat containing; "

<220>
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<400> 4905

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Met Ser Gln Met Asn Asn Val Gly Phe Ser Thr Ala Ile Leu Leu Thr
1               5                  10                  15

Pro Val Asp Pro Thr Ala Leu Leu Asp Tyr Arg Glu Val His Gln Met
            20                  25                  30

Ile Arg Glu Leu Ala Ile Gly Ile Tyr Cys Leu Asn Gln Ile Pro Ser
        35                  40                  45

Ile Ser Leu Glu Ala Asn Tyr Asp Gln Ser Ser Ser Cys Gln Leu Pro
    50                  55                  60

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

Tyr Met Leu Lys Ala Leu Trp His Gly Ile Tyr Met Pro Lys Glu Lys
                85                  90                  95

Arg Ala Arg Phe Ser Glu Leu Trp Arg Ala Ile Met Asp Ile Asp Pro
            100                 105                 110

Asp Gly Lys Pro Gln Thr Asn Lys Asp Ile Phe Ser Glu Phe Ser Ser
        115                 120                 125

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

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

Glu Thr Ala Val Phe Met Lys Tyr Ala Glu Asn Ile Met Leu Lys Leu
                165                 170                 175
```

```
Thr Phe Ser Thr Thr Gln Ile Gln Gln Tyr Glu Asn Val Phe Ile Phe
            180                 185                 190

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

Leu Asp Ile Cys Thr Tyr Gln Arg Leu Gln Gln Arg Leu Tyr Leu Gln
    210                 215                 220

Lys Lys Ile Ile Gln Lys His Phe Glu Lys Lys Lys Asp Ile Arg Arg
225                 230                 235                 240

Gly Ile Gly Tyr Leu Lys Leu Ile Cys Phe Leu Ile Pro Phe Leu Leu
                245                 250                 255

Ser Leu Lys Lys Lys Met Lys Val Pro Tyr Leu Ser Ser Leu Leu Gln
            260                 265                 270

Pro Phe Ser Asp Asp Lys Val Lys Thr Glu Arg Glu Leu Pro Pro Phe
        275                 280                 285

Ile Tyr Gly Arg Asp Phe Lys Cys Gln Asn Phe His Tyr Lys Glu Asn
    290                 295                 300

Gln Tyr Phe His Val His Gly Gly Ile Glu Phe Asp Ile Ser Thr Pro
305                 310                 315                 320

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

Arg Asp Cys Ala Ala Asn Thr Phe Ile Glu Asp Ser Gly Tyr Lys Glu
            340                 345                 350

Tyr Tyr Ser Ile Pro Val Met Glu Phe His Gly Lys Ser Tyr Tyr Val
        355                 360                 365

Ile Tyr Phe Glu Leu Glu Thr Phe Tyr Gln Gln Leu Tyr Lys Thr Gln
    370                 375                 380

Trp Trp Gly Ala Ile Asn Glu Ile Val Asn Asn Leu Arg Leu Lys Arg
385                 390                 395                 400

Leu Pro Leu Thr Asp Ala Gln Leu His Glu Gln Phe Lys Lys Lys Leu
```

```
                405                 410                 415

Gly Phe Lys Arg Ala Met Lys Cys Lys Ser Ile Pro Phe Gly Met Lys
            420                 425                 430

Ser Ala Val Glu Arg Gly Leu Ser Ala Val Phe His Thr Phe Ser Arg
        435                 440                 445

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

Ile Phe His His Ala Ala Leu His Asn Arg Val Ser Ile Ile Cys Gln
465                 470                 475                 480

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

Ser Gln Gly Pro Thr Pro Leu His Leu Ala Ala Gln Ala Cys Ser Leu
            500                 505                 510

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

Glu Lys Arg Gly Trp Met Pro Ile His Phe Ala Ala Phe Tyr Asp Asn
    530                 535                 540

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

Ala Glu Ala Thr Ala Glu Asn Gln Cys Thr Pro Leu Leu Leu Ala Ala
                565                 570                 575

Thr Ser Gly Ala Leu Asp Thr Ile Gln Tyr Leu Phe Ser Ile Gly Ala
            580                 585                 590

Asn Trp Arg Lys Thr Asp Ile Lys Gly Asn Asn Ile Ile His Leu Ser
        595                 600                 605

Val Leu Thr Phe His Thr Glu Val Leu Lys Tyr Ile Ile Lys Leu Asn
    610                 615                 620

Ile Pro Glu Leu Pro Val Trp Lys Thr Leu Val Glu Met Leu Gln Cys
625                 630                 635                 640
```

Glu Ser Tyr Lys Arg Arg Met Met Ala Val Met Ser Leu Glu Val Ile
645 650 655

Cys Leu Ala Asn Asp Gln Tyr Trp Arg Cys Ile Leu Asp Ala Gly Thr
660 665 670

Ile Pro Ala Leu Ile Asn Leu Leu Lys Ser Ser Lys Ile Lys Leu Gln
675 680 685

Cys Lys Thr Val Gly Leu Leu Ser Asn Ile Ser Thr His Lys Ser Ala
690 695 700

Val His Ala Leu Val Glu Ala Gly Gly Ile Pro Ser Leu Ile Asn Leu
705 710 715 720

Leu Val Cys Asp Glu Pro Glu Val His Ser Arg Cys Ala Val Ile Leu
725 730 735

Tyr Asp Ile Ala Gln Cys Glu Asn Lys Asp Val Ile Ala Lys Tyr Asn
740 745 750

Gly Ile Pro Ser Leu Ile Asn Leu Leu Asn Leu Asn Ile Glu Asn Val
755 760 765

Leu Val Asn Val Met Asn Cys Ile Arg Val Leu Cys Ile Gly Asn Glu
770 775 780

Asn Asn Gln Arg Ala Val Arg Glu His Lys Gly Leu Pro Tyr Leu Ile
785 790 795 800

Arg Phe Leu Ser Ser Asp Ser Asp Val Leu Lys Ala Val Ser Ser Ala
805 810 815

Ala Ile Ala Glu Val Gly Arg Asp Asn Lys Glu Ile Gln Asp Ala Ile
820 825 830

Ala Met Glu Gly Ala Ile Pro Pro Leu Val Ala Leu Phe Lys Gly Lys
835 840 845

Gln Ile Ser Val Gln Met Lys Gly Ala Met Ala Val Glu Ser Leu Ala
850 855 860

```
Ser His Asn Ala Leu Ile Gln Lys Ala Phe Leu Glu Lys Ser Leu Thr
865                 870                 875                 880

Lys Tyr Leu Leu Lys Leu Leu Lys Ala Phe Gln Ile Asp Val Lys Glu
                885                 890                 895

Gln Gly Ala Val Ala Leu Trp Ala Leu Ala Gly Gln Thr Leu Lys Gln
            900                 905                 910

Gln Lys Tyr Met Ala Glu Gln Ile Gly Tyr Ser Phe Ile Ile Asn Met
        915                 920                 925

Leu Leu Ser Pro Ser Ala Lys Met Gln Tyr Val Gly Gly Glu Ala Val
    930                 935                 940

Ile Ala Leu Ser Lys Asp Ser Arg Met His Gln Asn Gln Ile Cys Glu
945                 950                 955                 960

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

Ala Glu Gly Thr Leu Leu Ser Val Ile Arg Ala Val Gly Ser Ile Cys
            980                 985                 990

Ile Gly Tyr Leu Leu Lys Ser Arg  Leu Cys Ile Asn Thr  Phe Cys
Leu
        995                 1000                1005

Gln
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<210> 4906
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ankyrin and armadillo repeat containing; "

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<400> 4906

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Met Lys Tyr Ala Glu Asn Ile Met Leu Lys Leu Thr Phe Ser Thr Thr
1               5                  10                  15

Gln Ile Gln Gln Tyr Glu Asn Val Phe Ile Phe Glu Thr Gly Tyr Trp
            20                  25                  30

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

Tyr Gln Arg Leu Gln Gln Arg Leu Tyr Leu Gln Lys Lys Ile Ile Gln
    50                  55                  60

Lys His Phe Glu Lys Lys Lys Asp Ile Arg Arg Gly Ile Gly Tyr Leu
65                  70                  75                  80

Lys Leu Ile Cys Phe Leu Ile Pro Phe Leu Leu Ser Leu Lys Lys Lys
                85                  90                  95

Met Lys Val Pro Tyr Leu Ser Ser Leu Leu Gln Pro Phe Ser Asp Asp
            100                 105                 110

Lys Val Lys Thr Glu Arg Glu Leu Pro Pro Phe Ile Tyr Gly Arg Asp
        115                 120                 125

Phe Lys Cys Gln Asn Phe His Tyr Lys Glu Asn Gln Tyr Phe His Val
    130                 135                 140

His Gly Gly Ile Glu Phe Asp Ile Ser Thr Pro Ser Ile Glu Asn Ala
145                 150                 155                 160

Leu Glu Asp Phe Gln Lys Asn Leu Glu Lys Ile Arg Asp Cys Ala Ala
                165                 170                 175

Asn Thr Phe Ile Glu Asp Ser Gly Tyr Lys Glu Tyr Tyr Ser Ile Pro
```

```
            180                 185                 190

Val Met Glu Phe His Gly Lys Ser Tyr Tyr Val Ile Tyr Phe Glu Leu
        195                 200                 205

Glu Thr Phe Tyr Gln Gln Leu Tyr Lys Thr Gln Trp Trp Gly Ala Ile
    210                 215                 220

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

Ala Gln Leu His Glu Gln Phe Lys Lys Lys Leu Gly Phe Lys Arg Ala
                245                 250                 255

Met Lys Cys Lys Ser Ile Pro Phe Gly Met Lys Ser Ala Val Glu Arg
            260                 265                 270

Gly Leu Ser Ala Val Phe His Thr Phe Ser Arg Lys Thr Ser Ser Ser
        275                 280                 285

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

Ala Leu His Asn Arg Val Ser Ile Ile Cys Gln Leu Cys Asn Ala Asn
305                 310                 315                 320

Phe Lys Val Asn Gln Arg Arg Phe Val Thr Phe Ser Gln Gly Pro Thr
                325                 330                 335

Pro Leu His Leu Ala Ala Gln Ala Cys Ser Leu Glu Thr Thr Val Cys
            340                 345                 350

Leu Leu Cys Ser Lys Ala Asp Tyr Thr Leu Ser Glu Lys Arg Gly Trp
        355                 360                 365

Met Pro Ile His Phe Ala Ala Phe Tyr Asp Asn Val Cys Ile Ile Ile
    370                 375                 380

Ala Leu Cys Arg Lys Asp Pro Ser Leu Leu Glu Ala Glu Ala Thr Ala
385                 390                 395                 400

Glu Asn Gln Cys Thr Pro Leu Leu Leu Ala Ala Thr Ser Gly Ala Leu
                405                 410                 415
```

```
Asp Thr Ile Gln Tyr Leu Phe Ser Ile Gly Ala Asn Trp Arg Lys Thr
            420                 425                 430

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

Thr Glu Val Leu Lys Tyr Ile Ile Lys Leu Asn Ile Pro Glu Leu Pro
    450                 455                 460

Val Trp Lys Thr Leu Val Glu Met Leu Gln Cys Glu Ser Tyr Lys Arg
465                 470                 475                 480

Arg Met Met Ala Val Met Ser Leu Glu Val Ile Cys Leu Ala Asn Asp
                485                 490                 495

Gln Tyr Trp Arg Cys Ile Leu Asp Ala Gly Thr Ile Pro Ala Leu Ile
            500                 505                 510

Asn Leu Leu Lys Ser Ser Lys Ile Lys Leu Gln Cys Lys Thr Val Gly
        515                 520                 525

Leu Leu Ser Asn Ile Ser Thr His Lys Ser Ala Val His Ala Leu Val
    530                 535                 540

Glu Ala Gly Gly Ile Pro Ser Leu Ile Asn Leu Leu Val Cys Asp Glu
545                 550                 555                 560

Pro Glu Val His Ser Arg Cys Ala Val Ile Leu Tyr Asp Ile Ala Gln
                565                 570                 575

Cys Glu Asn Lys Asp Val Ile Ala Lys Tyr Asn Gly Ile Pro Ser Leu
            580                 585                 590

Ile Asn Leu Leu Asn Leu Asn Ile Glu Asn Val Leu Val Asn Val Met
        595                 600                 605

Asn Cys Ile Arg Val Leu Cys Ile Gly Asn Glu Asn Asn Gln Arg Ala
    610                 615                 620

Val Arg Glu His Lys Gly Leu Pro Tyr Leu Ile Arg Phe Leu Ser Ser
625                 630                 635                 640
```

```
Asp Ser Gly Leu Phe Asn Leu Phe Leu Asn Ser Phe Glu Asp Val Leu
                645                 650                 655

Lys Ala Val Ser Ser Ala Ala Ile Ala Glu Val Gly Arg Asp Asn Lys
            660                 665                 670

Glu Ile Gln Asp Ala Ile Ala Met Glu Gly Ala Ile Pro Pro Leu Val
        675                 680                 685

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

Ala Val Glu Ser Leu Ala Ser His Asn Ala Leu Ile Gln Lys Ala Phe
705                 710                 715                 720

Leu Glu Lys Ser Leu Thr Lys Tyr Leu Leu Lys Leu Leu Lys Ala Phe
                725                 730                 735

Gln Ile Asp Val Lys Glu Gln Gly Ala Val Ala Leu Trp Ala Leu Ala
            740                 745                 750

Gly Gln Thr Leu Lys Gln Gln Lys Tyr Met Ala Glu Gln Ile Gly Tyr
        755                 760                 765

Ser Phe Ile Ile Asn Met Leu Leu Ser Pro Ser Ala Lys Met Gln Tyr
    770                 775                 780

Val Gly Tyr Leu Leu Lys Ser Arg Leu Cys Ile Asn Thr Phe Cys Leu
785                 790                 795                 800

Gln
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<210> 4907
<211> 1434
<212> PRT
<213> Homo sapiens

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ankyrin and armadillo repeat containing; "

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<220>
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Met Leu Arg Leu Pro Lys Lys Gly Leu Pro Arg Phe Glu Gln Val Gln
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Asp Glu Asp Thr Tyr Leu Glu Asn Leu Ala Ile Gln Arg Asn Ala Ser
            20   25   30

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

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

Val Asp Leu Pro Cys Gly Ile Met Ser Gln Met Asn Asn Val Gly Phe
65   70   75   80

Ser Thr Ala Ile Leu Leu Thr Pro Val Asp Pro Thr Ala Leu Leu Asp
                85   90   95

Tyr Arg Glu Val His Gln Met Ile Arg Glu Leu Ala Ile Gly Ile Tyr
            100   105   110

Cys Leu Asn Gln Ile Pro Ser Ile Ser Leu Glu Ala Asn Tyr Asp Gln
        115   120   125

Ser Ser Ser Cys Gln Leu Pro Pro Ala Tyr Tyr Asp Thr Arg Ile Gly
    130   135   140

Gln Ile Leu Ile Asn Ile Asp Tyr Met Leu Lys Ala Leu Trp His Gly
145   150   155   160

Ile Tyr Met Pro Lys Glu Lys Arg Ala Arg Phe Ser Glu Leu Trp Arg
                165   170   175

```
Ala Ile Met Asp Ile Asp Pro Asp Gly Lys Pro Gln Thr Asn Lys Asp
            180                 185                 190

Ile Phe Ser Glu Phe Ser Ser Ala Gly Leu Thr Asp Ile Thr Lys Asp
        195                 200                 205

Pro Asp Phe Asn Glu Ile Tyr Asp Glu Asp Val Asn Glu Asp Pro Thr
    210                 215                 220

Tyr Asp Pro Asn Ser Pro Glu Glu Thr Ala Val Phe Met Lys Tyr Ala
225                 230                 235                 240

Glu Asn Ile Met Leu Lys Leu Thr Phe Ser Thr Thr Gln Ile Gln Gln
                245                 250                 255

Tyr Glu Asn Val Phe Ile Phe Glu Thr Gly Tyr Trp Leu Thr Asn Ala
            260                 265                 270

Ile Lys Tyr Asn Gln Asp Tyr Leu Asp Ile Cys Thr Tyr Gln Arg Leu
        275                 280                 285

Gln Gln Arg Leu Tyr Leu Gln Lys Lys Ile Ile Gln Lys His Phe Glu
    290                 295                 300

Lys Lys Lys Asp Ile Arg Arg Gly Ile Gly Tyr Leu Lys Leu Ile Cys
305                 310                 315                 320

Phe Leu Ile Pro Phe Leu Leu Ser Leu Lys Lys Lys Met Lys Val Pro
                325                 330                 335

Tyr Leu Ser Ser Leu Leu Gln Pro Phe Ser Asp Asp Lys Val Lys Thr
            340                 345                 350

Glu Arg Glu Leu Pro Pro Phe Ile Tyr Gly Arg Asp Phe Lys Cys Gln
        355                 360                 365

Asn Phe His Tyr Lys Glu Asn Gln Tyr Phe His Val His Gly Gly Ile
    370                 375                 380

Glu Phe Asp Ile Ser Thr Pro Ser Ile Glu Asn Ala Leu Glu Asp Phe
385                 390                 395                 400
```

```
Gln Lys Asn Leu Glu Lys Ile Arg Asp Cys Ala Ala Asn Thr Phe Ile
                405                 410                 415

Glu Asp Ser Gly Tyr Lys Glu Tyr Tyr Ser Ile Pro Val Met Glu Phe
            420                 425                 430

His Gly Lys Ser Tyr Tyr Val Ile Tyr Phe Glu Leu Glu Thr Phe Tyr
        435                 440                 445

Gln Gln Leu Tyr Lys Thr Gln Trp Trp Gly Ala Ile Asn Glu Ile Val
    450                 455                 460

Asn Asn Leu Arg Leu Lys Arg Leu Pro Leu Thr Asp Ala Gln Leu His
465                 470                 475                 480

Glu Gln Phe Lys Lys Lys Leu Gly Phe Lys Arg Ala Met Lys Cys Lys
                485                 490                 495

Ser Ile Pro Phe Gly Met Lys Ser Ala Val Glu Arg Gly Leu Ser Ala
            500                 505                 510

Val Phe His Thr Phe Ser Arg Lys Thr Ser Ser Ser Thr Ile Asn Val
        515                 520                 525

Ser Asp Glu Ala Gly Tyr Thr Ile Phe His His Ala Ala Leu His Asn
    530                 535                 540

Arg Val Ser Ile Ile Cys Gln Leu Cys Asn Ala Asn Phe Lys Val Asn
545                 550                 555                 560

Gln Arg Arg Phe Val Thr Phe Ser Gln Gly Pro Thr Pro Leu His Leu
                565                 570                 575

Ala Ala Gln Ala Cys Ser Leu Glu Thr Thr Val Cys Leu Leu Cys Ser
            580                 585                 590

Lys Ala Asp Tyr Thr Leu Ser Glu Lys Arg Gly Trp Met Pro Ile His
        595                 600                 605

Phe Ala Ala Phe Tyr Asp Asn Val Cys Ile Ile Ile Ala Leu Cys Arg
    610                 615                 620
```

```
Lys Asp Pro Ser Leu Leu Glu Ala Glu Ala Thr Ala Glu Asn Gln Cys
625                 630                 635                 640

Thr Pro Leu Leu Leu Ala Ala Thr Ser Gly Ala Leu Asp Thr Ile Gln
                645                 650                 655

Tyr Leu Phe Ser Ile Gly Ala Asn Trp Arg Lys Thr Asp Ile Lys Gly
            660                 665                 670

Asn Asn Ile Ile His Leu Ser Val Leu Thr Phe His Thr Glu Val Leu
        675                 680                 685

Lys Tyr Ile Ile Lys Leu Asn Ile Pro Glu Leu Pro Val Trp Lys Thr
    690                 695                 700

Leu Val Glu Met Leu Gln Cys Glu Ser Tyr Lys Arg Arg Met Met Ala
705                 710                 715                 720

Val Met Ser Leu Glu Val Ile Cys Leu Ala Asn Asp Gln Tyr Trp Arg
                725                 730                 735

Cys Ile Leu Asp Ala Gly Thr Ile Pro Ala Leu Ile Asn Leu Leu Lys
            740                 745                 750

Ser Ser Lys Ile Lys Leu Gln Cys Lys Thr Val Gly Leu Leu Ser Asn
        755                 760                 765

Ile Ser Thr His Lys Ser Ala Val His Ala Leu Val Glu Ala Gly Gly
    770                 775                 780

Ile Pro Ser Leu Ile Asn Leu Leu Val Cys Asp Glu Pro Glu Val His
785                 790                 795                 800

Ser Arg Cys Ala Val Ile Leu Tyr Asp Ile Ala Gln Cys Glu Asn Lys
                805                 810                 815

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

Asn Leu Asn Ile Glu Asn Val Leu Val Asn Val Met Asn Cys Ile Arg
        835                 840                 845

Val Leu Cys Ile Gly Asn Glu Asn Asn Gln Arg Ala Val Arg Glu His
```

```
    850                 855                 860

Lys Gly Leu Pro Tyr Leu Ile Arg Phe Leu Ser Ser Asp Ser Asp Val
865                 870                 875                 880

Leu Lys Ala Val Ser Ser Ala Ala Ile Ala Glu Val Gly Arg Asp Asn
                885                 890                 895

Lys Glu Ile Gln Asp Ala Ile Ala Met Glu Gly Ala Ile Pro Pro Leu
            900                 905                 910

Val Ala Leu Phe Lys Gly Lys Gln Ile Ser Val Gln Met Lys Gly Ala
        915                 920                 925

Met Ala Val Glu Ser Leu Ala Ser His Asn Ala Leu Ile Gln Lys Ala
    930                 935                 940

Phe Leu Glu Lys Ser Leu Thr Lys Tyr Leu Leu Lys Leu Leu Lys Ala
945                 950                 955                 960

Phe Gln Ile Asp Val Lys Glu Gln Gly Ala Val Ala Leu Trp Ala Leu
                965                 970                 975

Ala Gly Gln Thr Leu Lys Gln Gln Lys Tyr Met Ala Glu Gln Ile Gly
            980                 985                 990

Tyr Ser Phe Ile Ile Asn Met Leu  Leu Ser Pro Ser Ala  Lys Met
Gln
        995                 1000                1005

Tyr Val  Gly Gly Glu Ala Val  Ile Ala Leu Ser Lys  Asp Ser Arg
    1010                1015                1020

Met His  Gln Asn Gln Ile Cys  Glu Gly Asn Gly Ile  Ala Pro Leu
    1025                1030                1035

Val Arg  Leu Leu Arg Ile Ser  Thr Ile Ala Glu Gly  Thr Leu Leu
    1040                1045                1050

Ser Val  Ile Arg Ala Val Gly  Ser Ile Cys Ile Gly  Val Ala His
    1055                1060                1065

Thr Ser  Asn Pro Val Ser Gln  Gln Leu Val Val Asp  Glu Asn Ala
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1070 1075 1080

Phe Pro Val Leu Ile Gln Leu Leu Arg Asn His Pro Ser Pro Asn
1085 1090 1095

Ile Lys Val Glu Val Ala Phe Ser Leu Ala Cys Ile Val Leu Gly
1100 1105 1110

Asn Asp Val Leu Gln Lys Asp Leu His Glu Asn Glu Gly Phe Glu
1115 1120 1125

Tyr Ala Asp Val Leu Tyr Leu Leu His Ser Thr Glu Lys Asp Ile
1130 1135 1140

Cys Leu Arg Ala Gly Tyr Ala Leu Thr Leu Phe Ala Phe Asn Asn
1145 1150 1155

Arg Phe Gln Gln Tyr Leu Ile Leu Glu Ser Gly Ile Met Thr Ile
1160 1165 1170

Ser Ile Phe Glu Arg Phe Leu Glu Ser Thr Val Glu Thr Glu Lys
1175 1180 1185

Ala Met Ala Ala Phe Gln Ile Val Val Leu Ala Lys Val Ile Arg
1190 1195 1200

Asp Met Asp His Ile Thr Leu Ser Ala Arg Gly Val Thr Ile Leu
1205 1210 1215

Val Asp Ser Leu Tyr Ser Val Gln Thr Ser Thr Ile Val Leu Thr
1220 1225 1230

Gly Asn Leu Ile Ala Ser Leu Ala His Ser Arg Ala Gly Ile Pro
1235 1240 1245

Glu Ala Phe Thr Thr Leu Gly Thr Ile Gln Arg Leu Cys Tyr His
1250 1255 1260

Leu Tyr Ser Gly Ile Glu Glu Val Arg Ala Ala Cys Ser Ser Ala
1265 1270 1275

Leu Gly Tyr Leu Thr Tyr Asn Ala Asn Ala Phe Arg Ile Leu Leu
1280 1285 1290

```
Lys Glu  Cys Arg Asn Lys Pro  Asn Gln Phe Ile Arg  Ile Lys Asn
    1295                 1300                 1305

Asn Ile  Ser Arg Asp Ala Ser  Ile Asn Pro Ala Phe  Leu Lys Glu
    1310                 1315                 1320

Phe Gln  Met Gln Gln Thr Leu  Val Gly Leu Pro Ser  Leu Ser Leu
    1325                 1330                 1335

Glu Lys  Asn Gly Gly Pro Ser  Ile Ile Pro Ile Phe  Lys Arg Gly
    1340                 1345                 1350

Lys Glu  His Arg Arg Lys Leu  Lys Pro Lys Ile Gln  Pro Lys Asp
    1355                 1360                 1365

Ser Leu  Thr Leu Leu Pro Pro  Val Thr Asn Phe Met  Gly Leu Phe
    1370                 1375                 1380

Lys Ala  Thr Lys Lys Thr Lys  Asp Ser His Asn Ile  Phe Ser Phe
    1385                 1390                 1395

Ser Ser  Thr Ile Thr Ser Asp  Ile Thr Asn Val Ser  Arg Pro Arg
    1400                 1405                 1410

Ile Val  Cys Leu Asn Gln Leu  Gly Lys His Val Gln  Lys Ala Asn
    1415                 1420                 1425

Pro Glu  Pro Ala Glu Gly
    1430


<210> 4908
<211> 478
<212> PRT
<213> Homo sapiens

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<220>
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<220>
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ankyrin repeat and BTB (POZ)
domain containing 1; "

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<220>
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<400> 4908

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Met Asp Thr Ser Asp Leu Phe Ala Ser Cys Arg Lys Gly Asp Val Gly
1               5                  10                  15

Arg Val Arg Tyr Leu Leu Glu Gln Arg Asp Val Glu Val Asn Val Arg
            20                  25                  30

Asp Lys Trp Asp Ser Thr Pro Leu Tyr Tyr Ala Cys Leu Cys Gly His
        35                  40                  45

Glu Glu Leu Val Leu Tyr Leu Leu Ala Asn Gly Ala Arg Cys Glu Ala
    50                  55                  60

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

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

Arg Arg Asp Tyr Tyr Asp Asp Phe Leu Gln Arg Leu Leu Glu Gln Gly
            100                 105                 110

Ile His Ser Asp Val Val Phe Val Val His Gly Lys Pro Phe Arg Val
        115                 120                 125

His Arg Cys Val Leu Gly Ala Arg Ser Ala Tyr Phe Ala Asn Met Leu
    130                 135                 140

Asp Thr Lys Trp Lys Gly Lys Ser Val Val Val Leu Arg His Pro Leu
145                 150                 155                 160

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

```
Arg Leu Asp Ile Gly Val Glu His Val Ser Asp Cys Glu Arg Leu Ala
            180                 185                 190

Lys Gln Cys Gln Leu Trp Asp Leu Leu Ser Asp Leu Glu Ala Lys Cys
        195                 200                 205

Glu Lys Val Ser Glu Phe Val Ala Ser Lys Pro Gly Thr Cys Val Lys
    210                 215                 220

Val Leu Thr Ile Glu Pro Pro Pro Ala Asp Pro Arg Leu Arg Glu Asp
225                 230                 235                 240

Met Ala Leu Leu Ala Asp Cys Ala Leu Pro Pro Glu Leu Arg Gly Asp
                245                 250                 255

Leu Trp Glu Leu Pro Phe Pro Cys Pro Asp Gly Phe Asn Ser Cys Pro
            260                 265                 270

Asp Ile Cys Phe Arg Val Ala Gly Cys Ser Phe Leu Cys His Lys Ala
        275                 280                 285

Phe Phe Cys Gly Arg Ser Asp Tyr Phe Arg Ala Leu Leu Asp Asp His
    290                 295                 300

Phe Arg Glu Ser Glu Glu Pro Ala Thr Ser Gly Gly Pro Pro Ala Val
305                 310                 315                 320

Thr Leu His Gly Ile Ser Pro Asp Val Phe Thr His Val Leu Tyr Tyr
                325                 330                 335

Met Tyr Ser Asp His Thr Glu Leu Ser Pro Glu Ala Ala Tyr Asp Val
            340                 345                 350

Leu Ser Val Ala Asp Met Tyr Leu Leu Pro Gly Leu Lys Arg Leu Cys
        355                 360                 365

Gly Arg Ser Leu Ala Gln Met Leu Asp Glu Asp Thr Val Val Gly Val
    370                 375                 380

Trp Arg Val Ala Lys Leu Phe Arg Leu Ala Arg Leu Glu Asp Gln Cys
385                 390                 395                 400

Thr Glu Tyr Met Ala Lys Val Ile Glu Lys Leu Val Glu Arg Glu Asp
```

405 410 415

Phe Val Glu Ala Val Lys Glu Glu Ala Ala Ala Val Ala Ala Arg Gln
420 425 430

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

Ser Thr Val Gln Thr Tyr Ser Ala Ile Glu Glu Ala Gln Gln Arg Leu
450 455 460

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

<210> 4909
<211> 336
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ABTB1; "

<220>
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<223> /note="Gene Name:
ankyrin repeat and BTB (POZ)
domain containing 1; "

<220>
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<223> /note="Uniprot ID: Q969K4; "

<220>
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<400> 4909
Met Leu Asp Thr Lys Trp Lys Gly Lys Ser Val Val Val Leu Arg His
1 5 10 15

Pro Leu Ile Asn Pro Val Ala Phe Gly Ala Leu Leu Gln Tyr Leu Tyr
20 25 30

Thr Gly Arg Leu Asp Ile Gly Val Glu His Val Ser Asp Cys Glu Arg
35 40 45

```
Leu Ala Lys Gln Cys Gln Leu Trp Asp Leu Leu Ser Asp Leu Glu Ala
    50                  55                  60

Lys Cys Glu Lys Val Ser Glu Phe Val Ala Ser Lys Pro Gly Thr Cys
65                  70                  75                  80

Val Lys Val Leu Thr Ile Glu Pro Pro Pro Ala Asp Pro Arg Leu Arg
                85                  90                  95

Glu Asp Met Ala Leu Leu Ala Asp Cys Ala Leu Pro Pro Glu Leu Arg
            100                 105                 110

Gly Asp Leu Trp Glu Leu Pro Phe Pro Cys Pro Asp Gly Phe Asn Ser
        115                 120                 125

Cys Pro Asp Ile Cys Phe Arg Val Ala Gly Cys Ser Phe Leu Cys His
    130                 135                 140

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

Asp His Phe Arg Glu Ser Glu Glu Pro Ala Thr Ser Gly Gly Pro Pro
                165                 170                 175

Ala Val Thr Leu His Gly Ile Ser Pro Asp Val Phe Thr His Val Leu
            180                 185                 190

Tyr Tyr Met Tyr Ser Asp His Thr Glu Leu Ser Pro Glu Ala Ala Tyr
        195                 200                 205

Asp Val Leu Ser Val Ala Asp Met Tyr Leu Leu Pro Gly Leu Lys Arg
    210                 215                 220

Leu Cys Gly Arg Ser Leu Ala Gln Met Leu Asp Glu Asp Thr Val Val
225                 230                 235                 240

Gly Val Trp Arg Val Ala Lys Leu Phe Arg Leu Ala Arg Leu Glu Asp
                245                 250                 255

Gln Cys Thr Glu Tyr Met Ala Lys Val Ile Glu Lys Leu Val Glu Arg
            260                 265                 270
```

```
Glu Asp Phe Val Glu Ala Val Lys Glu Glu Ala Ala Ala Val Ala Ala
        275                 280                 285

Arg Gln Glu Thr Asp Ser Ile Pro Leu Val Asp Asp Ile Arg Phe His
    290                 295                 300

Val Ala Ser Thr Val Gln Thr Tyr Ser Ala Ile Glu Glu Ala Gln Gln
305                 310                 315                 320

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


<210> 4910
<211> 336
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<400> 4910
Met Leu Asp Thr Lys Trp Lys Gly Lys Ser Val Val Val Leu Arg His
1               5                   10                  15

Pro Leu Ile Asn Pro Val Ala Phe Gly Ala Leu Leu Gln Tyr Leu Tyr
            20                  25                  30

Thr Gly Arg Leu Asp Ile Gly Val Glu His Val Ser Asp Cys Glu Arg
        35                  40                  45
```

```
Leu Ala Lys Gln Cys Gln Leu Trp Asp Leu Leu Ser Asp Leu Glu Ala
    50                  55                  60

Lys Cys Glu Lys Val Ser Glu Phe Val Ala Ser Lys Pro Gly Thr Cys
65                  70                  75                  80

Val Lys Val Leu Thr Ile Glu Pro Pro Pro Ala Asp Pro Arg Leu Arg
                85                  90                  95

Glu Asp Met Ala Leu Leu Ala Asp Cys Ala Leu Pro Pro Glu Leu Arg
            100                 105                 110

Gly Asp Leu Trp Glu Leu Pro Phe Pro Cys Pro Asp Gly Phe Asn Ser
        115                 120                 125

Cys Pro Asp Ile Cys Phe Arg Val Ala Gly Cys Ser Phe Leu Cys His
    130                 135                 140

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

Asp His Phe Arg Glu Ser Glu Glu Pro Ala Thr Ser Gly Gly Pro Pro
                165                 170                 175

Ala Val Thr Leu His Gly Ile Ser Pro Asp Val Phe Thr His Val Leu
            180                 185                 190

Tyr Tyr Met Tyr Ser Asp His Thr Glu Leu Ser Pro Glu Ala Ala Tyr
        195                 200                 205

Asp Val Leu Ser Val Ala Asp Met Tyr Leu Leu Pro Gly Leu Lys Arg
    210                 215                 220

Leu Cys Gly Arg Ser Leu Ala Gln Met Leu Asp Glu Asp Thr Val Val
225                 230                 235                 240

Gly Val Trp Arg Val Ala Lys Leu Phe Arg Leu Ala Arg Leu Glu Asp
                245                 250                 255

Gln Cys Thr Glu Tyr Met Ala Lys Val Ile Glu Lys Leu Val Glu Arg
            260                 265                 270

Glu Asp Phe Val Glu Ala Val Lys Glu Glu Ala Ala Ala Val Ala Ala
```

```
        275                 280                 285

Arg Gln Glu Thr Asp Ser Ile Pro Leu Val Asp Asp Ile Arg Phe His
    290                 295                 300

Val Ala Ser Thr Val Gln Thr Tyr Ser Ala Ile Glu Glu Ala Gln Gln
305                 310                 315                 320

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


<210> 4911
<211> 141
<212> PRT
<213> Homo sapiens

<220>
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<220>
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      domain containing 1; "

<220>
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<223> /note="ENSP ID: ENSP00000418439"


<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 4911
Xaa Pro Gly Thr Cys Val Lys Val Leu Thr Ile Glu Pro Pro Pro Ala
1               5                   10                  15

Asp Pro Arg Leu Arg Glu Asp Met Ala Leu Leu Ala Asp Cys Ala Leu
            20                  25                  30

Pro Pro Glu Leu Arg Gly Asp Leu Trp Glu Leu Pro Phe Pro Cys Pro
        35                  40                  45
```

```
Asp Gly Phe Asn Ser Cys Pro Asp Ile Cys Phe Arg Val Ala Gly Cys
    50                  55                  60

Ser Phe Leu Cys His Lys Ala Phe Phe Cys Gly Arg Ser Asp Tyr Phe
65                  70                  75                  80

Arg Ala Leu Leu Asp Asp His Phe Arg Glu Ser Glu Glu Pro Ala Thr
                85                  90                  95

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

Phe Thr His Val Leu Tyr Tyr Met Tyr Ser Asp His Thr Glu Pro Pro
        115                 120                 125

Gln Val Gly Met Val Ile Tyr Thr Ser Trp Thr Gly Asn
    130                 135                 140
```

<210> 4912
<211> 57
<212> PRT
<213> Homo sapiens

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ankyrin repeat and BTB (POZ)
domain containing 1; "

<220>
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<223> /note="ENSP ID: ENSP00000418641"

<400> 4912

```
Met Asp Thr Ser Asp Leu Phe Ala Ser Cys Arg Lys Gly Asp Val Gly
1               5                   10                  15

Arg Val Arg Tyr Leu Leu Glu Gln Arg Asp Val Glu Val Leu Cys Leu
            20                  25                  30

Leu Val Trp Ala Arg Gly Ala Gly Thr Leu Pro Ser Gly Gln Trp Ser
```

```
        35                  40                  45

Pro Leu Arg Gly Gln His Leu Arg Trp
    50                  55


<210> 4913
<211> 57
<212> PRT
<213> Homo sapiens

<220>
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      domain containing 1; "

<220>
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<400> 4913
Met Asp Thr Ser Asp Leu Phe Ala Ser Cys Arg Lys Gly Asp Val Gly
1               5                   10                  15


Arg Val Arg Tyr Leu Leu Glu Gln Arg Asp Val Glu Val Leu Cys Leu
            20                  25                  30


Leu Val Trp Ala Arg Gly Ala Gly Thr Leu Pro Ser Gly Gln Trp Ser
        35                  40                  45


Pro Leu Arg Gly Gln His Leu Arg Trp
    50                  55


<210> 4914
<211> 1025
<212> PRT
<213> Homo sapiens

<220>
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<221> source
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<220>
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domain containing 2; "

<220>
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<223> /note="Uniprot ID: Q8N961; "

<220>
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<400> 4914

```
Met Ala Gly Thr Tyr Ser Ser Thr Leu Lys Thr Leu Glu Asp Leu Thr
1               5                  10                  15

Leu Asp Ser Gly Tyr Gly Ala Gly Asp Ser Cys Arg Ser Leu Ser Leu
            20                  25                  30

Ser Ser Ser Lys Ser Asn Ser Gln Ala Leu Asn Ser Ser Ala Gln Gln
        35                  40                  45

His Arg Gly Ala Ala Trp Trp Cys Tyr Ser Gly Ser Met Asn Ser Arg
    50                  55                  60

His Asn Ser Trp Asp Thr Val Asn Thr Val Leu Pro Glu Asp Pro Glu
65                  70                  75                  80

Val Ala Asp Leu Phe Ser Arg Cys Pro Arg Leu Pro Glu Leu Glu Glu
                85                  90                  95

Phe Pro Trp Thr Glu Gly Asp Val Ala Arg Val Leu Arg Lys Gly Ala
            100                 105                 110

Gly Gly Arg Arg Leu Pro Gln Phe Ser Ala Glu Ala Val Arg Arg Leu
        115                 120                 125

Ala Gly Leu Leu Arg Arg Ala Leu Ile Arg Val Ala Arg Glu Ala Gln
    130                 135                 140

Arg Leu Ser Val Leu His Ala Lys Cys Thr Arg Phe Glu Val Gln Ser
145                 150                 155                 160
```

```
Ala Val Arg Leu Val His Ser Trp Ala Leu Ala Glu Ser Cys Ala Leu
                165                 170                 175

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

Leu Arg Arg Gly Lys Ser Ala Arg Cys Gly Leu Thr Phe Ser Val Gly
        195                 200                 205

Arg Phe Phe Arg Trp Met Val Asp Thr Arg Ile Ser Val Arg Ile His
    210                 215                 220

Glu Tyr Ala Ala Ile Ser Leu Thr Ala Cys Met Glu Asn Leu Val Glu
225                 230                 235                 240

Glu Ile Arg Ala Arg Val Met Ala Ser His Ser Pro Asp Gly Gly Gly
                245                 250                 255

Ala Gly Gly Gly Glu Val Ser Ala Glu Ala Leu Glu Met Val Ile Asn
            260                 265                 270

Asn Asp Ala Glu Leu Trp Gly Val Leu Gln Pro Tyr Glu His Leu Ile
        275                 280                 285

Cys Gly Lys Asn Ala Asn Gly Val Leu Ser Leu Pro Ala Tyr Phe Ser
    290                 295                 300

Pro Tyr Asn Gly Gly Ser Leu Gly His Asp Glu Arg Ala Asp Ala Tyr
305                 310                 315                 320

Ala Gln Leu Glu Leu Arg Thr Leu Glu Gln Ser Leu Leu Ala Thr Cys
                325                 330                 335

Val Gly Ser Ile Ser Glu Leu Ser Asp Leu Val Ser Arg Ala Met His
            340                 345                 350

His Met Gln Gly Arg His Pro Leu Cys Pro Gly Ala Ser Pro Ala Arg
        355                 360                 365

Gln Ala Arg Gln Pro Pro Gln Pro Ile Thr Trp Ser Pro Asp Ala Leu
    370                 375                 380
```

```
His Thr Leu Tyr Tyr Phe Leu Arg Cys Pro Gln Met Glu Ser Met Glu
385                 390                 395                 400

Asn Pro Asn Leu Asp Pro Pro Arg Met Thr Leu Asn Asn Glu Arg Pro
                405                 410                 415

Phe Met Leu Leu Pro Pro Leu Met Glu Trp Met Arg Val Ala Ile Thr
            420                 425                 430

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

Gln Ala Ala Arg Leu Leu Leu Pro Gly Leu Asp Cys Glu Pro Arg Gln
    450                 455                 460

Leu Lys Pro Glu His Cys Phe Ser Ser Phe Arg Arg Leu Asp Ala Arg
465                 470                 475                 480

Ala Ala Thr Glu Lys Phe Asn Gln Asp Leu Gly Phe Arg Met Leu Asn
                485                 490                 495

Cys Gly Arg Thr Asp Leu Ile Asn Gln Ala Ile Glu Ala Leu Gly Pro
            500                 505                 510

Asp Gly Val Asn Thr Met Asp Asp Gln Gly Met Thr Pro Leu Met Tyr
        515                 520                 525

Ala Cys Ala Ala Gly Asp Glu Ala Met Val Gln Met Leu Ile Asp Ala
    530                 535                 540

Gly Ala Asn Leu Asp Ile Gln Val Pro Ser Asn Ser Pro Arg His Pro
545                 550                 555                 560

Ser Ile His Pro Asp Ser Arg His Trp Thr Ser Leu Thr Phe Ala Val
                565                 570                 575

Leu His Gly His Ile Ser Val Val Gln Leu Leu Leu Asp Ala Gly Ala
            580                 585                 590

His Val Glu Gly Ser Ala Val Asn Gly Gly Glu Asp Ser Tyr Ala Glu
        595                 600                 605

Thr Pro Leu Gln Leu Ala Ser Ala Ala Gly Asn Tyr Glu Leu Val Ser
```

610 615 620

Leu Leu Leu Ser Arg Gly Ala Asp Pro Leu Leu Ser Met Leu Glu Ala
625 630 635 640

His Gly Met Gly Ser Ser Leu His Glu Asp Met Asn Cys Phe Ser His
645 650 655

Ser Ala Ala His Gly His Arg Asn Val Leu Arg Lys Leu Leu Thr Gln
660 665 670

Pro Gln Gln Ala Lys Ala Asp Val Leu Ser Leu Glu Glu Ile Leu Ala
675 680 685

Glu Gly Val Glu Glu Ser Asp Ala Ser Ser Gln Gly Ser Gly Ser Glu
690 695 700

Gly Pro Val Arg Leu Ser Arg Thr Arg Thr Lys Ala Leu Gln Glu Ala
705 710 715 720

Met Tyr Tyr Ser Ala Glu His Gly Tyr Val Asp Ile Thr Met Glu Leu
725 730 735

Arg Ala Leu Gly Val Pro Trp Lys Leu His Ile Trp Ile Glu Ser Leu
740 745 750

Arg Thr Ser Phe Ser Gln Ser Arg Tyr Ser Val Val Gln Ser Leu Leu
755 760 765

Arg Asp Phe Ser Ser Ile Arg Glu Glu Glu Tyr Asn Glu Glu Leu Val
770 775 780

Thr Glu Gly Leu Gln Leu Met Phe Asp Ile Leu Lys Thr Ser Lys Asn
785 790 795 800

Asp Ser Val Ile Gln Gln Leu Ala Thr Ile Phe Thr His Cys Tyr Gly
805 810 815

Ser Ser Pro Ile Pro Ser Ile Pro Glu Ile Arg Lys Thr Leu Pro Ala
820 825 830

Arg Leu Asp Pro His Phe Leu Asn Asn Lys Glu Met Ser Asp Val Thr
835 840 845

```
Phe Leu Val Glu Gly Lys Leu Phe Tyr Ala His Lys Val Leu Leu Val
    850                 855                 860

Thr Ala Ser Asn Arg Phe Lys Thr Leu Met Thr Asn Lys Ser Glu Gln
865                 870                 875                 880

Asp Gly Asp Ser Ser Lys Thr Ile Glu Ile Ser Asp Met Lys Tyr His
                885                 890                 895

Ile Phe Gln Met Met Met Gln Tyr Leu Tyr Tyr Gly Gly Thr Glu Ser
            900                 905                 910

Met Glu Ile Pro Thr Thr Asp Ile Leu Glu Leu Leu Ser Ala Ala Ser
        915                 920                 925

Leu Phe Gln Leu Asp Ala Leu Gln Arg His Cys Glu Ile Leu Cys Ser
    930                 935                 940

Gln Thr Leu Ser Met Glu Ser Ala Val Asn Thr Tyr Lys Tyr Ala Lys
945                 950                 955                 960

Ile His Asn Ala Pro Glu Leu Ala Leu Phe Cys Glu Gly Phe Phe Leu
                965                 970                 975

Lys His Met Lys Ala Leu Leu Glu Gln Asp Ala Phe Arg Gln Leu Ile
            980                 985                 990

Tyr Gly Arg Ser Ser Lys Val Gln  Gly Leu Asp Pro Leu  Gln Asp
Leu
        995                 1000                1005

Gln Asn  Thr Leu Ala Glu Arg  Val His Ser Val Tyr  Ile Thr Ser
    1010                1015                1020

Arg Val
    1025
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<210> 4915
<211> 522
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1071; "

<220>
<221> source
<223> /note="Gene Symbol: ANKDD1A; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and death
domain containing 1A; "

<220>
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<223> /note="Uniprot ID: Q495B1; "

<220>
<221> source
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<400> 4915

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Met Gln Glu Glu Leu Ala Trp Glu Thr Asp Gly Leu Leu Pro Leu Glu
1               5                  10                  15

Arg Gln Leu His Glu Ala Ala Arg Gln Asn Asn Val Gly Arg Met Gln
            20                  25                  30

Glu Leu Ile Gly Arg Arg Val Asn Thr Arg Ala Arg Asn His Val Gly
        35                  40                  45

Arg Val Ala Leu His Trp Ala Ala Gly Ala Gly His Glu Gln Ala Val
    50                  55                  60

Arg Leu Leu Leu Glu His Glu Ala Ala Val Asp Glu Glu Asp Ala Val
65                  70                  75                  80

Gly Ala Leu Thr Glu Ala Arg Leu Cys Phe Gly Met Asn Ala Leu Leu
                85                  90                  95

Leu Ser Ala Trp Phe Gly His Leu Arg Ile Leu Gln Ile Leu Val Asn
            100                 105                 110

Ser Gly Ala Lys Ile His Cys Glu Ser Lys Asp Gly Leu Thr Leu Leu
        115                 120                 125

His Cys Ala Ala Gln Lys Gly His Val Pro Val Leu Ala Phe Ile Met
    130                 135                 140
```

```
Glu Asp Leu Glu Asp Val Ala Leu Asp His Val Asp Lys Leu Gly Arg
145                 150                 155                 160

Thr Ala Phe His Arg Ala Ala Glu His Gly Gln Leu Asp Ala Leu Asp
                165                 170                 175

Phe Leu Val Gly Ser Gly Cys Asp His Asn Val Lys Asp Lys Glu Gly
            180                 185                 190

Asn Thr Ala Leu His Leu Ala Ala Gly Arg Gly His Met Ala Val Leu
        195                 200                 205

Gln Arg Leu Val Asp Ile Gly Leu Asp Leu Glu Glu Gln Asn Ala Glu
    210                 215                 220

Gly Leu Thr Ala Leu His Ser Ala Ala Gly Gly Ser His Pro Asp Cys
225                 230                 235                 240

Val Gln Leu Leu Leu Arg Ala Gly Ser Thr Val Asn Ala Leu Thr Gln
                245                 250                 255

Lys Asn Leu Ser Cys Leu His Tyr Ala Ala Leu Ser Gly Ser Glu Asp
            260                 265                 270

Val Ser Arg Val Leu Ile His Ala Gly Gly Cys Ala Asn Val Val Asp
        275                 280                 285

His Gln Gly Ala Ser Pro Leu His Leu Ala Val Arg His Asn Phe Pro
    290                 295                 300

Ala Leu Val Arg Leu Leu Ile Asn Ser Asp Ser Asp Val Asn Ala Val
305                 310                 315                 320

Asp Asn Arg Gln Gln Thr Pro Leu His Leu Ala Ala Glu His Ala Trp
                325                 330                 335

Gln Asp Ile Ala Asp Met Leu Leu Ile Ala Gly Val Asp Leu Asn Leu
            340                 345                 350

Arg Asp Lys Gln Gly Lys Thr Ala Leu Ala Val Ala Val Arg Ser Asn
        355                 360                 365
```

```
His Val Ser Leu Val Asp Met Ile Ile Lys Ala Asp Arg Phe Tyr Arg
    370                 375                 380

Trp Glu Lys Asp His Pro Ser Asp Pro Ser Gly Lys Ser Leu Ser Phe
385                 390                 395                 400

Lys Gln Asp His Arg Gln Glu Thr Gln Gln Leu Arg Ser Val Leu Trp
                405                 410                 415

Arg Leu Ala Ser Arg Tyr Leu Gln Pro Arg Glu Trp Lys Lys Leu Ala
            420                 425                 430

Tyr Ser Trp Glu Phe Thr Glu Ala His Val Asp Ala Ile Glu Gln Gln
        435                 440                 445

Trp Thr Gly Thr Arg Ser Tyr Gln Glu His Gly His Arg Met Leu Leu
    450                 455                 460

Ile Trp Leu His Gly Val Ala Thr Ala Gly Glu Asn Pro Ser Lys Ala
465                 470                 475                 480

Leu Phe Glu Gly Leu Val Ala Ile Gly Arg Arg Asp Leu Ala Gly Trp
                485                 490                 495

Ser Thr Met Ala Arg Ser Gln Leu Thr Ala Thr Ser Ala Ser Arg Val
            500                 505                 510

Gln Met Ile Leu Val Pro Gln Pro Pro Glu
        515                 520


<210> 4916
<211> 423
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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      ankyrin repeat and death
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domain containing 1A; "

<220>
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<223> /note="ENSP ID: ENSP00000379070"

<400> 4916

```
Met Asn Ala Leu Leu Leu Ser Ala Trp Phe Gly His Leu Arg Ile Leu
1               5                  10                  15

Gln Ile Leu Val Asn Ser Gly Ala Lys Ile His Cys Glu Ser Lys Asp
            20                  25                  30

Gly Leu Thr Leu Leu His Cys Ala Ala Gln Lys Gly His Val Pro Val
        35                  40                  45

Leu Ala Phe Ile Met Glu Asp Leu Glu Asp Val Ala Leu Asp His Val
    50                  55                  60

Asp Lys Leu Gly Arg Thr Ala Phe His Arg Ala Ala Glu His Gly Gln
65                  70                  75                  80

Leu Asp Ala Leu Asp Phe Leu Val Gly Ser Gly Cys Asp His Asn Val
                85                  90                  95

Lys Asp Lys Glu Gly Asn Thr Ala Leu His Leu Ala Ala Gly Arg Gly
            100                 105                 110

His Met Ala Val Leu Gln Arg Leu Val Asp Ile Gly Leu Asp Leu Glu
        115                 120                 125

Glu Gln Asn Ala Glu Gly Leu Thr Ala Leu His Ser Ala Ala Gly Gly
    130                 135                 140

Ser His Pro Asp Cys Val Gln Leu Leu Leu Arg Ala Gly Ser Thr Val
145                 150                 155                 160

Asn Ala Leu Thr Gln Lys Asn Leu Ser Cys Leu His Tyr Ala Ala Leu
                165                 170                 175

Ser Gly Ser Glu Asp Val Ser Arg Val Leu Ile His Ala Gly Gly Cys
            180                 185                 190

Ala Asn Val Val Asp His Gln Gly Ala Ser Pro Leu His Leu Ala Val
        195                 200                 205
```

```
Arg His Asn Phe Pro Ala Leu Val Arg Leu Leu Ile Asn Ser Asp Ser
    210                 215                 220

Asp Val Asn Ala Val Asp Asn Arg Gln Gln Thr Pro Leu His Leu Ala
225                 230                 235                 240

Ala Glu His Ala Trp Gln Asp Ile Ala Asp Met Leu Leu Ile Ala Gly
                245                 250                 255

Val Asp Leu Asn Leu Arg Asp Lys Gln Gly Lys Thr Ala Leu Ala Val
            260                 265                 270

Ala Val Arg Ser Asn His Val Ser Leu Val Asp Met Ile Ile Lys Ala
        275                 280                 285

Asp Arg Phe Tyr Arg Trp Glu Lys Asp His Pro Ser Asp Pro Ser Gly
    290                 295                 300

Lys Ser Leu Ser Phe Lys Gln Asp His Arg Gln Glu Thr Gln Gln Leu
305                 310                 315                 320

Arg Ser Val Leu Trp Arg Leu Ala Ser Arg Tyr Leu Gln Pro Arg Glu
                325                 330                 335

Trp Lys Lys Leu Ala Tyr Ser Trp Glu Phe Thr Glu Ala His Val Asp
            340                 345                 350

Ala Ile Glu Gln Gln Trp Thr Gly Thr Arg Ser Tyr Gln Glu His Gly
        355                 360                 365

His Arg Met Leu Leu Ile Trp Leu His Gly Val Ala Thr Ala Gly Glu
    370                 375                 380

Asn Pro Ser Lys Ala Leu Phe Glu Gly Leu Val Ala Ile Gly Arg Arg
385                 390                 395                 400

Asp Leu Ala Glu Asn Ile Arg Lys Lys Ala Asn Ala Ala Pro Ser Ala
                405                 410                 415

Pro Arg Arg Cys Thr Ala Met
            420
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<210> 4917
<211> 399
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and death
domain containing 1A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000379073"

<400> 4917

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Met Asn Ala Leu Leu Leu Ser Ala Trp Phe Gly His Leu Arg Ile Leu
1               5                  10                  15


Gln Ile Leu Val Asn Ser Gly Ala Lys Ile His Cys Glu Ser Lys Asp
            20                  25                  30


Gly Leu Thr Leu Leu His Cys Ala Ala Gln Lys Gly His Val Pro Val
        35                  40                  45


Leu Ala Phe Ile Met Glu Asp Leu Glu Asp Val Ala Leu Asp His Val
    50                  55                  60


Asp Lys Leu Gly Arg Thr Ala Phe His Arg Ala Ala Glu His Gly Gln
65                  70                  75                  80


Leu Asp Ala Leu Asp Phe Leu Val Gly Ser Gly Cys Asp His Asn Val
                85                  90                  95


Lys Asp Lys Glu Gly Asn Thr Ala Leu His Leu Ala Ala Gly Arg Gly
            100                 105                 110


His Met Ala Val Leu Gln Arg Leu Val Asp Ile Gly Leu Asp Leu Glu
        115                 120                 125
```

```
Glu Gln Asn Ala Glu Gly Leu Thr Ala Leu His Ser Ala Ala Gly Gly
    130                 135                 140

Ser His Pro Asp Cys Val Gln Leu Leu Leu Arg Ala Gly Ser Thr Val
145                 150                 155                 160

Asn Ala Leu Thr Gln Lys Asn Leu Ser Cys Leu His Tyr Ala Ala Leu
                165                 170                 175

Ser Gly Ser Glu Asp Val Ser Arg Val Leu Ile His Ala Gly Gly Cys
            180                 185                 190

Ala Asn Val Val Asp His Gln Gly Ala Ser Pro Leu His Leu Ala Val
        195                 200                 205

Arg His Asn Phe Pro Ala Leu Val Arg Leu Leu Ile Asn Ser Asp Ser
    210                 215                 220

Asp Val Asn Ala Val Asp Asn Arg Gln Gln Thr Pro Leu His Leu Ala
225                 230                 235                 240

Ala Glu His Ala Trp Gln Asp Ile Ala Asp Met Leu Leu Ile Ala Gly
                245                 250                 255

Val Asp Leu Asn Leu Arg Asp Lys Asp His Pro Ser Asp Pro Ser Gly
            260                 265                 270

Lys Ser Leu Ser Phe Lys Gln Asp His Arg Gln Glu Thr Gln Gln Leu
        275                 280                 285

Arg Ser Val Leu Trp Arg Leu Ala Ser Arg Tyr Leu Gln Pro Arg Glu
    290                 295                 300

Trp Lys Lys Leu Ala Tyr Ser Trp Glu Phe Thr Glu Ala His Val Asp
305                 310                 315                 320

Ala Ile Glu Gln Gln Trp Thr Gly Thr Arg Ser Tyr Gln Glu His Gly
                325                 330                 335

His Arg Met Leu Leu Ile Trp Leu His Gly Val Ala Thr Ala Gly Glu
            340                 345                 350

Asn Pro Ser Lys Ala Leu Phe Glu Gly Leu Val Ala Ile Gly Arg Arg
```

```
        355                 360                 365

Asp Leu Ala Gly Trp Ser Thr Met Ala Arg Ser Gln Leu Thr Ala Thr
    370                 375                 380

Ser Ala Ser Arg Val Gln Met Ile Leu Val Pro Gln Pro Pro Glu
385                 390                 395


<210> 4918
<211> 181
<212> PRT
<213> Homo sapiens

<220>
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<221> source
<223> /note="Gene Symbol: ANKDD1A; "

<220>
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<223> /note="Gene Name:
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      domain containing 1A; "

<220>
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<400> 4918
Met Asn Ala Leu Leu Leu Ser Ala Trp Phe Gly His Leu Arg Ile Leu
1               5                   10                  15

Gln Ile Leu Val Asn Ser Gly Ala Lys Ile His Cys Glu Ser Lys Asp
            20                  25                  30

Gly Leu Thr Leu Leu His Cys Ala Ala Gln Lys Gly His Val Pro Val
        35                  40                  45

Leu Ala Phe Ile Met Glu Asp Leu Glu Asp Val Ala Leu Asp His Val
    50                  55                  60

Asp Lys Leu Gly Arg Thr Ala Phe His Arg Ala Ala Glu His Gly Gln
65                  70                  75                  80

Leu Asp Ala Leu Asp Phe Leu Val Gly Ser Gly Cys Asp His Asn Val
                85                  90                  95
```

```
Lys Asp Lys Glu Gly Asn Thr Ala Leu His Leu Ala Ala Gly Arg Gly
            100                 105                 110

His Met Ala Val Leu Gln Arg Leu Val Asp Ile Gly Leu Asp Leu Glu
        115                 120                 125

Glu Gln Asn Ala Glu Gly Leu Thr Ala Leu His Ser Ala Ala Gly Gly
    130                 135                 140

Ser His Pro Asp Cys Val Gln Leu Leu Leu Arg Ala Gly Ser Thr Val
145                 150                 155                 160

Asn Ala Leu Thr Gln Val Ala Arg Pro Ser Gln Asp Cys Gly Arg Leu
                165                 170                 175

Leu Ala Ala Glu Pro
            180


<210> 4919
<211> 133
<212> PRT
<213> Homo sapiens

<220>
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      domain containing 1A; "

<220>
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<400> 4919
Ile Gly Arg Arg Val Asn Thr Arg Ala Arg Asn His Val Gly Arg Val
1               5                   10                  15

Ala Leu His Trp Ala Ala Gly Ala Gly His Glu Gln Ala Val Arg Leu
            20                  25                  30
```

```
Leu Leu Glu His Glu Ala Ala Val Asp Glu Glu Asp Ala Val Gly Ala
        35                  40                  45

Leu Thr Glu Glu Gly Asn Thr Ala Leu His Leu Ala Ala Gly Arg Gly
    50                  55                  60

His Met Ala Val Leu Gln Arg Leu Val Asp Ile Gly Leu Asp Leu Glu
65                  70                  75                  80

Glu Gln Asn Ala Glu Gly Leu Thr Ala Leu His Ser Ala Ala Gly Gly
                85                  90                  95

Ser His Pro Asp Cys Val Gln Leu Leu Leu Arg Ala Gly Ser Thr Val
            100                 105                 110

Asn Ala Leu Thr Gln Val Ala Arg Pro Ser Gln Asp Cys Gly Arg Leu
        115                 120                 125

Leu Ala Ala Glu Pro
    130


<210> 4920
<211> 123
<212> PRT
<213> Homo sapiens

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      domain containing 1A; "

<220>
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<400> 4920
Met Gln Glu Glu Leu Ala Trp Glu Thr Asp Gly Leu Leu Pro Leu Glu
1               5                   10                  15
```

```
Arg Gln Leu His Glu Ala Ala Arg Gln Asn Asn Val Gly Arg Met Gln
            20                  25                  30

Glu Leu Ile Gly Arg Arg Val Asn Thr Arg Ala Arg Asn His Val Gly
        35                  40                  45

Arg Val Ala Leu His Trp Ala Ala Gly Ala Gly His Glu Gln Ala Val
    50                  55                  60

Arg Leu Leu Leu Glu His Glu Ala Ala Val Asp Glu Glu Asp Ala Phe
65                  70                  75                  80

Gly Met Asn Ala Leu Leu Leu Ser Ala Trp Phe Gly His Leu Arg Ile
                85                  90                  95

Leu Gln Ile Leu Val Asn Ser Gly Ala Lys Ile His Cys Glu Ser Lys
            100                 105                 110

Pro Lys Lys Ala Met Cys Leu Cys Trp Arg Ser
        115                 120


<210> 4921
<211> 423
<212> PRT
<213> Homo sapiens

<220>
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      domain containing 1A; "

<220>
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<400> 4921
Met Asn Ala Leu Leu Leu Ser Ala Trp Phe Gly His Leu Arg Ile Leu
1               5                   10                  15

Gln Ile Leu Val Asn Ser Gly Ala Lys Ile His Cys Glu Ser Lys Asp
```

20 25 30

Gly Leu Thr Leu Leu His Cys Ala Ala Gln Lys Gly His Val Pro Val
35 40 45

Leu Ala Phe Ile Met Glu Asp Leu Glu Asp Val Ala Leu Asp His Val
50 55 60

Asp Lys Leu Gly Arg Thr Ala Phe His Arg Ala Ala Glu His Gly Gln
65 70 75 80

Leu Asp Ala Leu Asp Phe Leu Val Gly Ser Gly Cys Asp His Asn Val
85 90 95

Lys Asp Lys Glu Gly Asn Thr Ala Leu His Leu Ala Ala Gly Arg Gly
100 105 110

His Met Ala Val Leu Gln Arg Leu Val Asp Ile Gly Leu Asp Leu Glu
115 120 125

Glu Gln Asn Ala Glu Gly Leu Thr Ala Leu His Ser Ala Ala Gly Gly
130 135 140

Ser His Pro Asp Cys Val Gln Leu Leu Leu Arg Ala Gly Ser Thr Val
145 150 155 160

Asn Ala Leu Thr Gln Lys Asn Leu Ser Cys Leu His Tyr Ala Ala Leu
165 170 175

Ser Gly Ser Glu Asp Val Ser Arg Val Leu Ile His Ala Gly Gly Cys
180 185 190

Ala Asn Val Val Asp His Gln Gly Ala Ser Pro Leu His Leu Ala Val
195 200 205

Arg His Asn Phe Pro Ala Leu Val Arg Leu Leu Ile Asn Ser Asp Ser
210 215 220

Asp Val Asn Ala Val Asp Asn Arg Gln Gln Thr Pro Leu His Leu Ala
225 230 235 240

Ala Glu His Ala Trp Gln Asp Ile Ala Asp Met Leu Leu Ile Ala Gly
245 250 255

```
Val Asp Leu Asn Leu Arg Asp Lys Gln Gly Lys Thr Ala Leu Ala Val
            260                 265                 270

Ala Val Arg Ser Asn His Val Ser Leu Val Asp Met Ile Ile Lys Ala
        275                 280                 285

Asp Arg Phe Tyr Arg Trp Glu Lys Asp His Pro Ser Asp Pro Ser Gly
    290                 295                 300

Lys Ser Leu Ser Phe Lys Gln Asp His Arg Gln Glu Thr Gln Gln Leu
305                 310                 315                 320

Arg Ser Val Leu Trp Arg Leu Ala Ser Arg Tyr Leu Gln Pro Arg Glu
                325                 330                 335

Trp Lys Lys Leu Ala Tyr Ser Trp Glu Phe Thr Glu Ala His Val Asp
            340                 345                 350

Ala Ile Glu Gln Gln Trp Thr Gly Thr Arg Ser Tyr Gln Glu His Gly
        355                 360                 365

His Arg Met Leu Leu Ile Trp Leu His Gly Val Ala Thr Ala Gly Glu
    370                 375                 380

Asn Pro Ser Lys Ala Leu Phe Glu Gly Leu Val Ala Ile Gly Arg Arg
385                 390                 395                 400

Asp Leu Ala Glu Asn Ile Arg Lys Lys Ala Asn Ala Ala Pro Ser Ala
                405                 410                 415

Pro Arg Arg Cys Thr Ala Met
            420


<210> 4922
<211> 528
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<213> Homo sapiens

<220>
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domain containing 1B; "

<220>
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<223> /note="Uniprot ID: A6NHY2; "

<220>
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<223> /note="ENSP ID: ENSP00000471417"

<400> 4922

```
Met Asp Pro Ala Gly Arg Ala Arg Gly Gln Gly Ala Thr Ala Gly Gly
1               5                  10                  15

Leu Leu Leu Arg Ala Ala Ala Ala Ala Lys Gly Leu Arg Glu Asp Leu
            20                  25                  30

Trp Gly Ala Ala Ala Leu Pro Trp Arg Ser Leu Ser Arg Ile Pro Lys
        35                  40                  45

Arg Glu Gly Leu Gly Glu Glu Asp Thr Ala Val Ala Gly His Glu Leu
    50                  55                  60

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

Leu Asp Leu Met Glu Lys Leu Phe Glu Lys Lys Val Asn Ile Asn Val
                85                  90                  95

Val Asn Asn Met Asn Arg Thr Ala Leu His Phe Ala Val Gly Arg Asn
            100                 105                 110

His Leu Ser Ala Val Asp Phe Leu Leu Lys His Lys Ala Arg Val Asp
        115                 120                 125

Val Ala Asp Lys His Gly Leu Thr Val Ile His Leu Ala Ala Trp Ser
    130                 135                 140

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

```
Arg Ala Lys Asn Gln Asp Gly Met Ser Ala Leu His Phe Ala Thr Gln
                165                 170                 175

Ser Asn His Val Arg Ile Val Glu Tyr Leu Ile Gln Asp Leu His Leu
            180                 185                 190

Lys Asp Leu Asn Gln Pro Asp Glu Lys Gly Arg Lys Pro Phe Leu Leu
        195                 200                 205

Ala Ala Glu Arg Gly His Val Glu Met Ile Glu Lys Leu Thr Phe Leu
    210                 215                 220

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

Leu Ala Ala Lys His Gly His Ser Pro Ala Val Gln Val Leu Leu Ala
                245                 250                 255

Gln Trp Gln Asp Ile Asn Glu Met Asn Glu Leu Asn Ile Ser Ser Leu
            260                 265                 270

Gln Ile Ala Thr Arg Asn Gly His Ala Ser Leu Val Asn Phe Leu Leu
        275                 280                 285

Ser Glu Asn Val Asp Leu His Gln Lys Val Glu Pro Lys Glu Ser Pro
    290                 295                 300

Leu His Leu Val Val Ile Asn Asn His Ile Thr Val Val Asn Ser Leu
305                 310                 315                 320

Leu Ser Ala Gln His Asp Ile Asp Ile Leu Asn Gln Lys Gln Gln Thr
                325                 330                 335

Pro Leu His Val Ala Ala Asp Arg Gly Asn Val Glu Leu Val Glu Thr
            340                 345                 350

Leu Leu Lys Ala Gly Cys Asp Leu Lys Ala Val Asp Lys Gln Gly Lys
        355                 360                 365

Thr Ala Leu Ala Val Ala Ser Arg Ser Asn His Ser Leu Val Val Gly
    370                 375                 380

Met Leu Ile Lys Ala Glu Arg Tyr Tyr Ala Trp Arg Glu Glu His His
```

```
385                 390                 395                 400

Glu Ser Ile Arg Asp Pro Ser Thr Gly Phe Thr Leu Thr Phe Lys Gln
                405                 410                 415

Asp His Ser Leu Glu Thr Arg His Ile Arg Thr Leu Leu Trp Asp Leu
            420                 425                 430

Ala Tyr His Gln Leu Lys Ala Asn Glu Trp Gln Arg Leu Ala Arg Ser
        435                 440                 445

Trp Asn Phe Thr Asp Asp Gln Ile Arg Ala Ile Glu Glu Gln Trp Ser
    450                 455                 460

Gly Asn Glu Ser Phe Arg Glu His Gly His Arg Ala Leu Leu Ile Trp
465                 470                 475                 480

Leu His Gly Thr Leu Met Thr Gln Gly Asp Pro Ala Lys Gln Leu Tyr
                485                 490                 495

Glu Glu Leu Val His Ala Gly Phe Pro Lys Leu Ala Glu Lys Thr Arg
            500                 505                 510

His Phe Lys Ser Lys Thr Asp Ser Asn Ser Lys Lys Cys Val Val Ser
        515                 520                 525


<210> 4923
<211> 776
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1073; "

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<223> /note="Gene Symbol: ANKEF1; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat and EF-hand
      domain containing 1; "

<220>
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<223> /note="Uniprot ID:  Q9NU02; "
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<220>
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<223> /note="ENSP ID: ENSP00000367631"

<400> 4923
Met Ala Leu Ala Asp Lys Arg Leu Glu Asn Leu Gln Ile Tyr Lys Val
1   5   10   15

Leu Gln Cys Val Arg Asn Lys Asp Lys Lys Gln Ile Glu Lys Leu Thr
            20   25   30

Lys Leu Gly Tyr Pro Glu Leu Ile Asn Tyr Thr Glu Pro Ile Asn Gly
        35   40   45

Leu Ser Ala Leu His Leu Ala Ser Val Ser Asn Asp Ile Asp Met Val
    50   55   60

Ser Phe Leu Leu Asp Leu Gly Ala His Pro Asp Val Gln Asp Arg Met
65   70   75   80

Gly Cys Thr Pro Thr Met Arg Ala Ala Glu Leu Gly His Glu Leu Ser
                85   90   95

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

Glu Gly Lys Gly Val Leu Phe Tyr Cys Ile Leu Pro Thr Lys Arg His
        115   120   125

Tyr Arg Cys Ala Leu Ile Ala Leu Glu His Gly Ala Asp Val Asn Asn
    130   135   140

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

His Asp Val Lys Asp Val Cys Leu Thr Phe Leu Glu Lys Gly Ala Asn
                165   170   175

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

Ser Arg Glu Gly Val Val Glu Ile Val Arg Gly Ile Leu Glu Arg Gly
        195   200   205

```
Gly Glu Val Asn Ala Phe Asp Asn Asp Arg His His Ala Ala His Phe
    210                 215                 220

Ala Ala Lys Gly Gly Phe Phe Asp Ile Leu Lys Leu Leu Phe Ala Tyr
225                 230                 235                 240

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

Tyr Ala Ala Met Gly Gly Phe Ala Asp Cys Cys Lys Tyr Ile Ala Gln
            260                 265                 270

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

Ala Val Ala Lys Glu Gly Gly Phe Lys Ala Ala Ser Lys Glu Ile Arg
    290                 295                 300

Arg Ala Glu Arg Ile Ala Asn Lys Leu Ala Arg Pro Gly Ala Lys Asn
305                 310                 315                 320

Pro Asn Pro Leu Trp Ala Leu Arg Leu His Asp Trp Ser Val Glu Arg
                325                 330                 335

Glu Ala Phe Leu Arg Glu Ala Phe Ala Val Leu Asp Arg Gly Asp Gly
            340                 345                 350

Ser Ile Ser Lys Asn Asp Phe Val Met Val Leu Glu Glu Arg Gln Asp
        355                 360                 365

Tyr Ala Ser Ser Glu Gln Leu Ala Ala Ile Ala His Leu His Glu Lys
    370                 375                 380

Thr Arg Gly Gly Gly Val Asn Ile Asn Glu Phe Phe Lys Gly Thr Arg
385                 390                 395                 400

Tyr Leu Asn Lys Ser Phe Val Leu Gly Ser Tyr Gly Pro Lys Lys Lys
                405                 410                 415

Glu Lys Gly Met Gly Lys Lys Gly Lys Lys Gly Lys Phe Val Leu Pro
            420                 425                 430
```

```
Leu Pro Ile Cys Val Ile Pro Glu Tyr Ala Phe Pro Arg Arg Gln Asp
        435                 440                 445

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

Ser Ser Arg Phe Asn Arg Asp His Pro Pro Glu His Pro Ile Gln Asp
465                 470                 475                 480

Asp Ser Val Trp Tyr Ile Asp Asp Ser Glu Lys Val Phe Ser Asn Ile
                485                 490                 495

Asn Ile Ile Thr Lys Ala Gly Asp Leu Ala Ser Leu Lys Lys Ala Phe
            500                 505                 510

Glu Ser Gly Ile Pro Val Asp Met Lys Asp Asn Tyr Tyr Lys Thr Pro
        515                 520                 525

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

Leu Glu Lys Gly Ala Asn Val Asn Ala Thr Asp Asn Phe Leu Trp Thr
545                 550                 555                 560

Pro Leu His Phe Ala Cys His Ala Gly Gln Gln Asp Ile Val Glu Leu
                565                 570                 575

Leu Val Glu Ser Gly Ala Leu Ile Asp Ala Ala Ser Ile Asn Asn Ser
            580                 585                 590

Thr Pro Leu Asn Arg Ala Ile Glu Ser Cys Arg Leu Asp Thr Val Lys
        595                 600                 605

Tyr Leu Leu Asp Ile Gly Ala Lys Phe Gln Leu Glu Asn Arg Lys Gly
    610                 615                 620

His Ser Ala Met Asp Val Ala Lys Ala Tyr Ala Asp Tyr Arg Ile Ile
625                 630                 635                 640

Asp Leu Ile Lys Glu Lys Leu Asp Asn Leu Pro Lys Pro Ala Glu Asn
                645                 650                 655

Gln Lys Leu Lys Gly Lys Thr Pro Pro Ile Leu Lys Thr Glu Gly Pro
```

660 665 670

Glu Ile Lys Lys Glu Glu Glu Leu Leu Ser Ser Ile Tyr Gly Val Pro
675 680 685

Thr Thr Ser Glu Gly Lys Lys Val Gln Lys Gly Asn Val Val His Leu
690 695 700

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

Ile Pro Arg Arg Ile Trp Ser Pro Glu Ala Thr Thr Ala Glu Leu Ile
725 730 735

Arg Lys Arg Glu Leu Arg Arg Glu Arg Phe Thr His Glu Val Asp Phe
740 745 750

Asp Asp Phe Met Met Pro Phe Gln Lys Asn Ile Thr Glu Lys Ala Arg
755 760 765

Ala Leu Glu Ala Ala Leu Lys Thr
770 775

<210> 4924
<211> 776
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and EF-hand
domain containing 1; "

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<223> /note="Uniprot ID: Q9NU02; "

<220>
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<223> /note="ENSP ID: ENSP00000367644"

<400> 4924
Met Ala Leu Ala Asp Lys Arg Leu Glu Asn Leu Gln Ile Tyr Lys Val
1 5 10 15

Leu Gln Cys Val Arg Asn Lys Asp Lys Lys Gln Ile Glu Lys Leu Thr
20 25 30

Lys Leu Gly Tyr Pro Glu Leu Ile Asn Tyr Thr Glu Pro Ile Asn Gly
35 40 45

Leu Ser Ala Leu His Leu Ala Ser Val Ser Asn Asp Ile Asp Met Val
50 55 60

Ser Phe Leu Leu Asp Leu Gly Ala His Pro Asp Val Gln Asp Arg Met
65 70 75 80

Gly Cys Thr Pro Thr Met Arg Ala Ala Glu Leu Gly His Glu Leu Ser
85 90 95

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

Glu Gly Lys Gly Val Leu Phe Tyr Cys Ile Leu Pro Thr Lys Arg His
115 120 125

Tyr Arg Cys Ala Leu Ile Ala Leu Glu His Gly Ala Asp Val Asn Asn
130 135 140

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

His Asp Val Lys Asp Val Cys Leu Thr Phe Leu Glu Lys Gly Ala Asn
165 170 175

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

Ser Arg Glu Gly Val Val Glu Ile Val Arg Gly Ile Leu Glu Arg Gly
195 200 205

Gly Glu Val Asn Ala Phe Asp Asn Asp Arg His His Ala Ala His Phe
210 215 220

```
Ala Ala Lys Gly Gly Phe Phe Asp Ile Leu Lys Leu Leu Phe Ala Tyr
225                 230                 235                 240

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

Tyr Ala Ala Met Gly Gly Phe Ala Asp Cys Cys Lys Tyr Ile Ala Gln
            260                 265                 270

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

Ala Val Ala Lys Glu Gly Gly Phe Lys Ala Ala Ser Lys Glu Ile Arg
    290                 295                 300

Arg Ala Glu Arg Ile Ala Asn Lys Leu Ala Arg Pro Gly Ala Lys Asn
305                 310                 315                 320

Pro Asn Pro Leu Trp Ala Leu Arg Leu His Asp Trp Ser Val Glu Arg
                325                 330                 335

Glu Ala Phe Leu Arg Glu Ala Phe Ala Val Leu Asp Arg Gly Asp Gly
            340                 345                 350

Ser Ile Ser Lys Asn Asp Phe Val Met Val Leu Glu Glu Arg Gln Asp
        355                 360                 365

Tyr Ala Ser Ser Glu Gln Leu Ala Ala Ile Ala His Leu His Glu Lys
    370                 375                 380

Thr Arg Gly Gly Gly Val Asn Ile Asn Glu Phe Phe Lys Gly Thr Arg
385                 390                 395                 400

Tyr Leu Asn Lys Ser Phe Val Leu Gly Ser Tyr Gly Pro Lys Lys Lys
                405                 410                 415

Glu Lys Gly Met Gly Lys Lys Gly Lys Lys Gly Lys Phe Val Leu Pro
            420                 425                 430

Leu Pro Ile Cys Val Ile Pro Glu Tyr Ala Phe Pro Arg Arg Gln Asp
        435                 440                 445
```

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

Ser Ser Arg Phe Asn Arg Asp His Pro Pro Glu His Pro Ile Gln Asp
465                 470                 475                 480

Asp Ser Val Trp Tyr Ile Asp Asp Ser Glu Lys Val Phe Ser Asn Ile
                485                 490                 495

Asn Ile Ile Thr Lys Ala Gly Asp Leu Ala Ser Leu Lys Lys Ala Phe
            500                 505                 510

Glu Ser Gly Ile Pro Val Asp Met Lys Asp Asn Tyr Tyr Lys Thr Pro
        515                 520                 525

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

Leu Glu Lys Gly Ala Asn Val Asn Ala Thr Asp Asn Phe Leu Trp Thr
545                 550                 555                 560

Pro Leu His Phe Ala Cys His Ala Gly Gln Gln Asp Ile Val Glu Leu
                565                 570                 575

Leu Val Glu Ser Gly Ala Leu Ile Asp Ala Ala Ser Ile Asn Asn Ser
            580                 585                 590

Thr Pro Leu Asn Arg Ala Ile Glu Ser Cys Arg Leu Asp Thr Val Lys
        595                 600                 605

Tyr Leu Leu Asp Ile Gly Ala Lys Phe Gln Leu Glu Asn Arg Lys Gly
    610                 615                 620

His Ser Ala Met Asp Val Ala Lys Ala Tyr Ala Asp Tyr Arg Ile Ile
625                 630                 635                 640

Asp Leu Ile Lys Glu Lys Leu Asp Asn Leu Pro Lys Pro Ala Glu Asn
                645                 650                 655

Gln Lys Leu Lys Gly Lys Thr Pro Pro Ile Leu Lys Thr Glu Gly Pro
            660                 665                 670

Glu Ile Lys Lys Glu Glu Glu Leu Leu Ser Ser Ile Tyr Gly Val Pro
```

```
        675                 680                 685

Thr Thr Ser Glu Gly Lys Lys Val Gln Lys Gly Asn Val Val His Leu
    690                 695                 700

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

Ile Pro Arg Arg Ile Trp Ser Pro Glu Ala Thr Thr Ala Glu Leu Ile
                725                 730                 735

Arg Lys Arg Glu Leu Arg Arg Glu Arg Phe Thr His Glu Val Asp Phe
            740                 745                 750

Asp Asp Phe Met Met Pro Phe Gln Lys Asn Ile Thr Glu Lys Ala Arg
        755                 760                 765

Ala Leu Glu Ala Ala Leu Lys Thr
    770                 775


<210> 4925
<211> 1169
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1074; "

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<223> /note="Gene Symbol: ANKFY1; "

<220>
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<223> /note="Gene Name:
      ankyrin repeat and FYVE
      domain containing 1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9P2R3; "

<220>
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<223> /note="ENSP ID: ENSP00000343362"

<400> 4925
Met Ala Glu Glu Glu Val Ala Lys Leu Glu Lys His Leu Met Leu Leu
1               5                   10                  15
```

```
Arg Gln Glu Tyr Val Lys Leu Gln Lys Lys Leu Ala Glu Thr Glu Lys
            20                  25                  30

Arg Cys Ala Leu Leu Ala Ala Gln Ala Asn Lys Glu Ser Ser Ser Glu
        35                  40                  45

Ser Phe Ile Ser Arg Leu Leu Ala Ile Val Ala Asp Leu Tyr Glu Gln
    50                  55                  60

Glu Gln Tyr Ser Asp Leu Lys Ile Lys Val Gly Asp Arg His Ile Ser
65                  70                  75                  80

Ala His Lys Phe Val Leu Ala Ala Arg Ser Asp Ser Trp Ser Leu Ala
                85                  90                  95

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

Val Thr Met Thr Met Leu Arg Trp Ile Tyr Thr Asp Glu Leu Glu Phe
        115                 120                 125

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

Phe Gln Leu Gln Leu Leu Arg Glu Arg Cys Glu Lys Gly Val Met Ser
145                 150                 155                 160

Leu Val Asn Val Arg Asn Cys Ile Arg Phe Tyr Gln Thr Ala Glu Glu
                165                 170                 175

Leu Asn Ala Ser Thr Leu Met Asn Tyr Cys Ala Glu Ile Ile Ala Ser
            180                 185                 190

His Trp Asp Asp Leu Arg Lys Glu Asp Phe Ser Ser Met Ser Ala Gln
        195                 200                 205

Leu Leu Tyr Lys Met Ile Lys Ser Lys Thr Glu Tyr Pro Leu His Lys
    210                 215                 220

Ala Ile Lys Val Glu Arg Glu Asp Val Val Phe Leu Tyr Leu Ile Glu
225                 230                 235                 240
```

```
Met Asp Ser Gln Leu Pro Gly Lys Leu Asn Glu Ala Asp His Asn Gly
                245                 250                 255

Asp Leu Ala Leu Asp Leu Ala Leu Ser Arg Arg Leu Glu Ser Ile Ala
            260                 265                 270

Thr Thr Leu Val Ser His Lys Ala Asp Val Asp Met Val Asp Lys Ser
        275                 280                 285

Gly Trp Ser Leu Leu His Lys Gly Ile Gln Arg Gly Asp Leu Phe Ala
    290                 295                 300

Ala Thr Phe Leu Ile Lys Asn Gly Ala Phe Val Asn Ala Ala Thr Leu
305                 310                 315                 320

Gly Ala Gln Glu Thr Pro Leu His Leu Val Ala Leu Tyr Ser Ser Lys
                325                 330                 335

Lys His Ser Ala Asp Val Met Ser Glu Met Ala Gln Ile Ala Glu Ala
            340                 345                 350

Leu Leu Gln Ala Gly Ala Asn Pro Asn Met Gln Asp Ser Lys Gly Arg
        355                 360                 365

Thr Pro Leu His Val Ser Ile Met Ala Gly Asn Glu Tyr Val Phe Ser
    370                 375                 380

Gln Leu Leu Gln Cys Lys Gln Leu Asp Leu Glu Leu Lys Asp His Glu
385                 390                 395                 400

Gly Ser Thr Ala Leu Trp Leu Ala Val Gln His Ile Thr Val Ser Ser
                405                 410                 415

Asp Gln Ser Val Asn Pro Phe Glu Asp Val Pro Val Val Asn Gly Thr
            420                 425                 430

Ser Phe Asp Glu Asn Ser Phe Ala Ala Arg Leu Ile Gln Arg Gly Ser
        435                 440                 445

His Thr Asp Ala Pro Asp Thr Ala Thr Gly Asn Cys Leu Leu Gln Arg
    450                 455                 460
```

```
Ala Ala Gly Ala Gly Asn Glu Ala Ala Ala Leu Phe Leu Ala Thr Asn
465                 470                 475                 480

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

Thr Ala Cys Arg His Gly Leu Ala Asn Leu Thr Ala Glu Leu Leu Gln
            500                 505                 510

Gln Gly Ala Asn Pro Asn Leu Gln Thr Glu Glu Ala Leu Pro Leu Pro
        515                 520                 525

Lys Glu Ala Ala Ser Leu Thr Ser Leu Ala Asp Ser Val His Leu Gln
    530                 535                 540

Thr Pro Leu His Met Ala Ile Ala Tyr Asn His Pro Asp Val Val Ser
545                 550                 555                 560

Val Ile Leu Glu Gln Lys Ala Asn Ala Leu His Ala Thr Asn Asn Leu
                565                 570                 575

Gln Ile Ile Pro Asp Phe Ser Leu Lys Asp Ser Arg Asp Gln Thr Val
            580                 585                 590

Leu Gly Leu Ala Leu Trp Thr Gly Met His Thr Ile Ala Ala Gln Leu
        595                 600                 605

Leu Gly Ser Gly Ala Ala Ile Asn Asp Thr Met Ser Asp Gly Gln Thr
    610                 615                 620

Leu Leu His Met Ala Ile Gln Arg Gln Asp Ser Lys Ser Ala Leu Phe
625                 630                 635                 640

Leu Leu Glu His Gln Ala Asp Ile Asn Val Arg Thr Gln Asp Gly Glu
                645                 650                 655

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

Ala Ile Cys Thr Arg Gly Ala Asp Met Ser Val Pro Asp Glu Lys Gly
        675                 680                 685

Asn Pro Pro Leu Trp Leu Ala Leu Ala Asn Asn Leu Glu Asp Ile Ala
```

690 695 700

Ser Thr Leu Val Arg His Gly Cys Asp Ala Thr Cys Trp Gly Pro Gly
705 710 715 720

Pro Gly Gly Cys Leu Gln Thr Leu Leu His Arg Ala Ile Asp Glu Asn
725 730 735

Asn Glu Pro Thr Ala Cys Phe Leu Ile Arg Ser Gly Cys Asp Val Asn
740 745 750

Ser Pro Arg Gln Pro Gly Ala Asn Gly Glu Gly Glu Glu Glu Ala Arg
755 760 765

Asp Gly Gln Thr Pro Leu His Leu Ala Ala Ser Trp Gly Leu Glu Glu
770 775 780

Thr Val Gln Cys Leu Leu Glu Phe Gly Ala Asn Val Asn Ala Gln Asp
785 790 795 800

Ala Glu Gly Arg Thr Pro Ile His Val Ala Ile Ser Ser Gln His Gly
805 810 815

Val Ile Ile Gln Leu Leu Val Ser His Pro Asp Ile His Leu Asn Val
820 825 830

Arg Asp Arg Gln Gly Leu Thr Pro Phe Ala Cys Ala Met Thr Phe Lys
835 840 845

Asn Asn Lys Ser Ala Glu Ala Ile Leu Lys Arg Glu Ser Gly Ala Ala
850 855 860

Glu Gln Val Asp Asn Lys Gly Arg Asn Phe Leu His Val Ala Val Gln
865 870 875 880

Asn Ser Asp Ile Glu Ser Val Leu Phe Leu Ile Ser Val His Ala Asn
885 890 895

Val Asn Ser Arg Val Gln Asp Ala Ser Lys Leu Thr Pro Leu His Leu
900 905 910

Ala Val Gln Ala Gly Ser Glu Ile Ile Val Arg Asn Leu Leu Leu Ala
915 920 925

```
Gly Ala Lys Val Asn Glu Leu Thr Lys His Arg Gln Thr Ala Leu His
    930                 935                 940

Leu Ala Ala Gln Gln Asp Leu Pro Thr Ile Cys Ser Val Leu Leu Glu
945                 950                 955                 960

Asn Gly Val Asp Phe Ala Ala Val Asp Glu Asn Gly Asn Asn Ala Leu
               965                 970                 975

His Leu Ala Val Met His Gly Arg Leu Asn Asn Ile Arg Val Leu Leu
           980                 985                 990

Thr Glu Cys Thr Val Asp Ala Glu  Ala Phe Asn Leu Arg  Gly Gln
Ser
       995                 1000                1005

Pro Leu  His Ile Leu Gly Gln  Tyr Gly Lys Glu Asn  Ala Ala Ala
    1010                1015                1020

Ile Phe  Asp Leu Phe Leu Glu  Cys Met Pro Gly Tyr  Pro Leu Asp
    1025                1030                1035

Lys Pro  Asp Ala Asp Gly Ser  Thr Val Leu Leu Leu  Ala Tyr Met
    1040                1045                1050

Lys Gly  Asn Ala Asn Leu Cys  Arg Ala Ile Val Arg  Ser Gly Ala
    1055                1060                1065

Arg Leu  Gly Val Asn Asn Asn  Gln Gly Val Asn Ile  Phe Asn Tyr
    1070                1075                1080

Gln Val  Ala Thr Lys Gln Leu  Leu Phe Arg Leu Leu  Asp Met Leu
    1085                1090                1095

Ser Lys  Glu Pro Pro Trp Cys  Asp Gly Ser Tyr Cys  Tyr Glu Cys
    1100                1105                1110

Thr Ala  Arg Phe Gly Val Thr  Thr Arg Lys His His  Cys Arg His
    1115                1120                1125

Cys Gly  Arg Leu Leu Cys His  Lys Cys Ser Thr Lys  Glu Ile Pro
    1130                1135                1140
```

```
Ile Ile  Lys Phe Asp Leu Asn  Lys Pro Val Arg Val  Cys Asn Ile
    1145                1150                1155


Cys Phe  Asp Val Leu Thr Leu  Gly Gly Val Ser
    1160                1165


<210> 4926
<211> 60
<212> PRT
<213> Homo sapiens

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<220>
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<223> /note="Gene Symbol: ANKFY1; "

<220>
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      ankyrin repeat and FYVE
      domain containing 1; "

<220>
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<400> 4926
Met Ala Ile Ala Tyr Asn His Pro Asp Val Val Ser Val Ile Leu Glu
1               5                  10                  15


Gln Lys Ala Asn Ala Leu His Ala Thr Asn Asn Leu Gln Ile Ile Pro
            20                  25                  30


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


Leu Trp Thr Gly Met His Thr Ile Ala Ala Gln Leu
    50                  55                  60


<210> 4927
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<213> Homo sapiens

<220>
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domain containing 1; "

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<220>
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<400> 4927

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Met Ala Glu Glu Glu Val Ala Lys Leu Glu Lys His Leu Met Leu Leu
1               5                  10                  15

Arg Gln Glu Tyr Val Lys Leu Gln Lys Lys Leu Ala Glu Thr Glu Lys
            20                  25                  30

Arg Cys Ala Leu Leu Ala Ala Gln Ala Asn Lys Glu Ser Ser Ser Glu
        35                  40                  45

Ser Phe Ile Ser Arg Leu Leu Ala Ile Val Ala Asp Leu Tyr Glu Gln
    50                  55                  60

Glu Gln Tyr Ser Asp Leu Lys Ile Lys Val Gly Asp Arg His Ile Ser
65                  70                  75                  80

Ala His Lys Phe Val Leu Ala Ala Arg Ser Asp Ser Trp Ser Leu Ala
                85                  90                  95

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

Val Thr Met Thr Met Leu Arg Trp Ile Tyr Thr Asp Glu Leu Glu Phe
        115                 120                 125

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

```
Phe Gln Leu Gln Leu Leu Arg Glu Arg Cys Glu Lys Gly Val Met Ser
145                 150                 155                 160

Leu Val Asn Val Arg Asn Cys Ile Arg Phe Tyr Gln Thr Ala Glu Glu
                165                 170                 175

Leu Asn Ala Ser Thr Leu Met Asn Tyr Cys Ala Glu Ile Ile Ala Ser
            180                 185                 190

His Trp Asp Asp Leu Arg Lys Glu Asp Phe Ser Ser Met Ser Ala Gln
        195                 200                 205

Leu Leu Tyr Lys Met Ile Lys Ser Lys Thr Glu Tyr Pro Leu His Lys
    210                 215                 220

Ala Ile Lys Val Glu Arg Glu Asp Val Val Phe Leu Tyr Leu Ile Glu
225                 230                 235                 240

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

Asp Leu Ala Leu Asp Leu Ala Leu Ser Arg Arg Leu Glu Ser Ile Ala
            260                 265                 270

Thr Thr Leu Val Ser His Lys Ala Asp Val Asp Met Val Asp Lys Ser
        275                 280                 285

Gly Trp Ser Leu Leu His Lys Gly Ile Gln Arg Gly Asp Leu Phe Ala
    290                 295                 300

Ala Thr Phe Leu Ile Lys Asn Gly Ala Phe Val Asn Ala Ala Thr Leu
305                 310                 315                 320

Gly Ala Gln Glu Thr Pro Leu His Leu Val Ala Leu Tyr Ser Ser Lys
                325                 330                 335

Lys His Ser Ala Asp Val Met Ser Glu Met Ala Gln Ile Ala Glu Ala
            340                 345                 350

Leu Leu Gln Ala Gly Ala Asn Pro Asn Met Gln Asp Ser Lys Gly Arg
        355                 360                 365

Thr Pro Leu His Val Ser Ile Met Ala Gly Asn Glu Tyr Val Phe Ser
```

```
    370                 375                 380

Gln Leu Leu Gln Cys Lys Gln Leu Asp Leu Glu Leu Lys Asp His Glu
385                 390                 395                 400

Gly Ser Thr Ala Leu Trp Leu Ala Val Gln His Ile Thr Val Ser Ser
                405                 410                 415

Asp Gln Ser Val Asn Pro Phe Glu Asp Val Pro Val Val Asn Gly Thr
            420                 425                 430

Ser Phe Asp Glu Asn Ser Phe Ala Ala Arg Leu Ile Gln Arg Gly Ser
        435                 440                 445

His Thr Asp Ala Pro Asp Thr Ala Thr Gly Asn Cys Leu Leu Gln Arg
    450                 455                 460

Ala Ala Gly Ala Gly Asn Glu Ala Ala Ala Leu Phe Leu Ala Thr Asn
465                 470                 475                 480

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

Thr Ala Cys Arg His Gly Leu Ala Asn Leu Thr Ala Glu Leu Leu Gln
            500                 505                 510

Gln Gly Ala Asn Pro Asn Leu Gln Thr Glu Glu Ala Leu Pro Leu Pro
        515                 520                 525

Lys Glu Ala Ala Ser Leu Thr Ser Leu Ala Asp Ser Val His Leu Gln
    530                 535                 540

Thr Pro Leu His Met Ala Ile Ala Tyr Asn His Pro Asp Val Val Ser
545                 550                 555                 560

Val Ile Leu Glu Gln Lys Ala Asn Ala Leu His Ala Thr Asn Asn Leu
                565                 570                 575

Gln Ile Ile Pro Asp Phe Ser Leu Lys Asp Ser Arg Asp Gln Thr Val
            580                 585                 590

Leu Gly Leu Ala Leu Trp Thr Gly Met His Thr Ile Ala Ala Gln Leu
        595                 600                 605
```

Leu Gly Ser Gly Ala Ala Ile Asn Asp Thr Met Ser Asp Gly Gln Thr
610 615 620

Leu Leu His Met Ala Ile Gln Arg Gln Asp Ser Lys Ser Ala Leu Phe
625 630 635 640

Leu Leu Glu His Gln Ala Asp Ile Asn Val Ser Arg Thr Gln Asp Gly
645 650 655

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

Asp Ala Ile Cys Thr Arg Gly Ala Asp Met Ser Val Pro Asp Glu Lys
675 680 685

Gly Asn Pro Pro Leu Trp Leu Ala Leu Ala Asn Asn Leu Glu Asp Ile
690 695 700

Ala Ser Thr Leu Val Arg His Gly Cys Asp Ala Thr Cys Trp Gly Pro
705 710 715 720

Gly Pro Gly Gly Cys Leu Gln Thr Leu Leu His Arg Ala Ile Asp Glu
725 730 735

Asn Asn Glu Pro Thr Ala Cys Phe Leu Ile Arg Ser Gly Cys Asp Val
740 745 750

Asn Ser Pro Arg Gln Pro Gly Ala Asn Gly Glu Gly Glu Glu Glu Ala
755 760 765

Arg Asp Gly Gln Thr Pro Leu His Leu Ala Ala Ser Trp Gly Leu Glu
770 775 780

Glu Thr Val Gln Cys Leu Leu Glu Phe Gly Ala Asn Val Asn Ala Gln
785 790 795 800

Asp Ala Glu Gly Arg Thr Pro Ile His Val Ala Ile Ser Ser Gln His
805 810 815

Gly Val Ile Ile Gln Leu Leu Val Ser His Pro Asp Ile His Leu Asn
820 825 830

```
Val Arg Asp Arg Gln Gly Leu Thr Pro Phe Ala Cys Ala Met Thr Phe
        835                 840                 845

Lys Asn Asn Lys Ser Ala Glu Ala Ile Leu Lys Arg Glu Ser Gly Ala
    850                 855                 860

Ala Glu Gln Val Asp Asn Lys Gly Arg Asn Phe Leu His Val Ala Val
865                 870                 875                 880

Gln Asn Ser Asp Ile Glu Ser Val Leu Phe Leu Ile Ser Val His Ala
                885                 890                 895

Asn Val Asn Ser Arg Val Gln Asp Ala Ser Lys Leu Thr Pro Leu His
            900                 905                 910

Leu Ala Val Gln Ala Gly Ser Glu Ile Ile Val Arg Asn Leu Leu Leu
        915                 920                 925

Ala Gly Ala Lys Val Asn Glu Leu Thr Lys His Arg Gln Thr Ala Leu
    930                 935                 940

His Leu Ala Ala Gln Gln Asp Leu Pro Thr Ile Cys Ser Val Leu Leu
945                 950                 955                 960

Glu Asn Gly Val Asp Phe Ala Ala Val Asp Glu Asn Gly Asn Asn Ala
                965                 970                 975

Leu His Leu Ala Val Met His Gly Arg Leu Asn Asn Ile Arg Val Leu
            980                 985                 990

Leu Thr Glu Cys Thr Val Asp Ala  Glu Ala Phe Asn Leu  Arg Gly
Gln
        995                 1000                1005

Ser Pro  Leu His Ile Leu Gly  Gln Tyr Gly Lys Glu  Asn Ala Ala
    1010                1015                1020

Ala Ile  Phe Asp Leu Phe Leu  Glu Cys Met Pro Gly  Tyr Pro Leu
    1025                1030                1035

Asp Lys  Pro Asp Ala Asp Gly  Ser Thr Val Leu Leu  Leu Ala Tyr
    1040                1045                1050
```

```
Met Lys  Gly Asn Ala Asn Leu  Cys Arg Ala Ile Val  Arg Ser Gly
    1055                1060                1065

Ala Arg  Leu Gly Val Asn Asn  Asn Gln Gly Val Asn  Ile Phe Asn
    1070                1075                1080

Tyr Gln  Val Ala Thr Lys Gln  Leu Leu Phe Arg Leu  Leu Asp Met
    1085                1090                1095

Leu Ser  Lys Glu Pro Pro Trp  Cys Asp Gly Ser Tyr  Cys Tyr Glu
    1100                1105                1110

Cys Thr  Ala Arg Phe Gly Val  Thr Thr Arg Lys His  His Cys Arg
    1115                1120                1125

His Cys  Gly Arg Leu Leu Cys  His Lys Cys Ser Thr  Lys Glu Ile
    1130                1135                1140

Pro Ile  Ile Lys Phe Asp Leu  Asn Lys Pro Val Arg  Val Cys Asn
    1145                1150                1155

Ile Cys  Phe Asp Val Leu Thr  Leu Gly Gly Val Ser
    1160                1165                1170


<210> 4928
<211> 1211
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1074; "

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<223> /note="Gene Symbol: ANKFY1; "

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      ankyrin repeat and FYVE
      domain containing 1; "

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Met Pro Thr Pro Arg Asp Cys Gly Arg Leu Arg Ser Arg Ala Gly Arg
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Ser Arg Ala Gly Ala Ala Cys Ser Arg Gly Ala Pro Arg Ala Ala Arg
            20   25   30

Glu Ala Leu Asp Cys Arg Arg Cys Arg Asp Ala Gly Gly Lys Glu Val
        35   40   45

Ala Lys Leu Glu Lys His Leu Met Leu Leu Arg Gln Glu Tyr Val Lys
    50   55   60

Leu Gln Lys Lys Leu Ala Glu Thr Glu Lys Arg Cys Ala Leu Leu Ala
65   70   75   80

Ala Gln Ala Asn Lys Glu Ser Ser Ser Glu Ser Phe Ile Ser Arg Leu
                85   90   95

Leu Ala Ile Val Ala Asp Leu Tyr Glu Gln Glu Gln Tyr Ser Asp Leu
            100   105   110

Lys Ile Lys Val Gly Asp Arg His Ile Ser Ala His Lys Phe Val Leu
        115   120   125

Ala Ala Arg Ser Asp Ser Trp Ser Leu Ala Asn Leu Ser Ser Thr Lys
    130   135   140

Glu Leu Asp Leu Ser Asp Ala Asn Pro Glu Val Thr Met Thr Met Leu
145   150   155   160

Arg Trp Ile Tyr Thr Asp Glu Leu Glu Phe Arg Glu Asp Asp Val Phe
                165   170   175

Leu Thr Glu Leu Met Lys Leu Ala Asn Arg Phe Gln Leu Gln Leu Leu
            180   185   190

Arg Glu Arg Cys Glu Lys Gly Val Met Ser Leu Val Asn Val Arg Asn
        195   200   205

Cys Ile Arg Phe Tyr Gln Thr Ala Glu Glu Leu Asn Ala Ser Thr Leu

```
    210                 215                 220

Met Asn Tyr Cys Ala Glu Ile Ile Ala Ser His Trp Asp Asp Leu Arg
225                 230                 235                 240

Lys Glu Asp Phe Ser Ser Met Ser Ala Gln Leu Leu Tyr Lys Met Ile
                245                 250                 255

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

Glu Asp Val Val Phe Leu Tyr Leu Ile Glu Met Asp Ser Gln Leu Pro
        275                 280                 285

Gly Lys Leu Asn Glu Ala Asp His Asn Gly Asp Leu Ala Leu Asp Leu
    290                 295                 300

Ala Leu Ser Arg Arg Leu Glu Ser Ile Ala Thr Thr Leu Val Ser His
305                 310                 315                 320

Lys Ala Asp Val Asp Met Val Asp Lys Ser Gly Trp Ser Leu Leu His
                325                 330                 335

Lys Gly Ile Gln Arg Gly Asp Leu Phe Ala Ala Thr Phe Leu Ile Lys
            340                 345                 350

Asn Gly Ala Phe Val Asn Ala Ala Thr Leu Gly Ala Gln Glu Thr Pro
        355                 360                 365

Leu His Leu Val Ala Leu Tyr Ser Ser Lys Lys His Ser Ala Asp Val
    370                 375                 380

Met Ser Glu Met Ala Gln Ile Ala Glu Ala Leu Leu Gln Ala Gly Ala
385                 390                 395                 400

Asn Pro Asn Met Gln Asp Ser Lys Gly Arg Thr Pro Leu His Val Ser
                405                 410                 415

Ile Met Ala Gly Asn Glu Tyr Val Phe Ser Gln Leu Leu Gln Cys Lys
            420                 425                 430

Gln Leu Asp Leu Glu Leu Lys Asp His Glu Gly Ser Thr Ala Leu Trp
        435                 440                 445
```

```
Leu Ala Val Gln His Ile Thr Val Ser Ser Asp Gln Ser Val Asn Pro
    450                 455                 460

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

Phe Ala Ala Arg Leu Ile Gln Arg Gly Ser His Thr Asp Ala Pro Asp
                485                 490                 495

Thr Ala Thr Gly Asn Cys Leu Leu Gln Arg Ala Ala Gly Ala Gly Asn
            500                 505                 510

Glu Ala Ala Ala Leu Phe Leu Ala Thr Asn Gly Ala His Val Asn His
        515                 520                 525

Arg Asn Lys Trp Gly Glu Thr Pro Leu His Thr Ala Cys Arg His Gly
    530                 535                 540

Leu Ala Asn Leu Thr Ala Glu Leu Leu Gln Gln Gly Ala Asn Pro Asn
545                 550                 555                 560

Leu Gln Thr Glu Glu Ala Leu Pro Leu Pro Lys Glu Ala Ala Ser Leu
                565                 570                 575

Thr Ser Leu Ala Asp Ser Val His Leu Gln Thr Pro Leu His Met Ala
            580                 585                 590

Ile Ala Tyr Asn His Pro Asp Val Val Ser Val Ile Leu Glu Gln Lys
        595                 600                 605

Ala Asn Ala Leu His Ala Thr Asn Asn Leu Gln Ile Ile Pro Asp Phe
    610                 615                 620

Ser Leu Lys Asp Ser Arg Asp Gln Thr Val Leu Gly Leu Ala Leu Trp
625                 630                 635                 640

Thr Gly Met His Thr Ile Ala Ala Gln Leu Leu Gly Ser Gly Ala Ala
                645                 650                 655

Ile Asn Asp Thr Met Ser Asp Gly Gln Thr Leu Leu His Met Ala Ile
            660                 665                 670
```

```
Gln Arg Gln Asp Ser Lys Ser Ala Leu Phe Leu Leu Glu His Gln Ala
        675                 680                 685

Asp Ile Asn Val Arg Thr Gln Asp Gly Glu Thr Ala Leu Gln Leu Ala
    690                 695                 700

Ile Arg Asn Gln Leu Pro Leu Val Val Asp Ala Ile Cys Thr Arg Gly
705                 710                 715                 720

Ala Asp Met Ser Val Pro Asp Glu Lys Gly Asn Pro Pro Leu Trp Leu
                725                 730                 735

Ala Leu Ala Asn Asn Leu Glu Asp Ile Ala Ser Thr Leu Val Arg His
            740                 745                 750

Gly Cys Asp Ala Thr Cys Trp Gly Pro Gly Pro Gly Gly Cys Leu Gln
        755                 760                 765

Thr Leu Leu His Arg Ala Ile Asp Glu Asn Asn Glu Pro Thr Ala Cys
    770                 775                 780

Phe Leu Ile Arg Ser Gly Cys Asp Val Asn Ser Pro Arg Gln Pro Gly
785                 790                 795                 800

Ala Asn Gly Glu Gly Glu Glu Glu Ala Arg Asp Gly Gln Thr Pro Leu
                805                 810                 815

His Leu Ala Ala Ser Trp Gly Leu Glu Glu Thr Val Gln Cys Leu Leu
            820                 825                 830

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

Ile His Val Ala Ile Ser Ser Gln His Gly Val Ile Ile Gln Leu Leu
    850                 855                 860

Val Ser His Pro Asp Ile His Leu Asn Val Arg Asp Arg Gln Gly Leu
865                 870                 875                 880

Thr Pro Phe Ala Cys Ala Met Thr Phe Lys Asn Asn Lys Ser Ala Glu
                885                 890                 895
```

```
Ala Ile Leu Lys Arg Glu Ser Gly Ala Ala Glu Gln Val Asp Asn Lys
            900                 905                 910

Gly Arg Asn Phe Leu His Val Ala Val Gln Asn Ser Asp Ile Glu Ser
        915                 920                 925

Val Leu Phe Leu Ile Ser Val His Ala Asn Val Asn Ser Arg Val Gln
    930                 935                 940

Asp Ala Ser Lys Leu Thr Pro Leu His Leu Ala Val Gln Ala Gly Ser
945                 950                 955                 960

Glu Ile Ile Val Arg Asn Leu Leu Leu Ala Gly Ala Lys Val Asn Glu
                965                 970                 975

Leu Thr Lys His Arg Gln Thr Ala Leu His Leu Ala Ala Gln Gln Asp
            980                 985                 990

Leu Pro Thr Ile Cys Ser Val Leu  Leu Glu Asn Gly Val  Asp Phe
Ala
        995                 1000                1005

Ala Val  Asp Glu Asn Gly Asn  Asn Ala Leu His Leu  Ala Val Met
    1010                1015                1020

His Gly  Arg Leu Asn Asn Ile  Arg Val Leu Leu Thr  Glu Cys Thr
    1025                1030                1035

Val Asp  Ala Glu Ala Phe Asn  Leu Arg Gly Gln Ser  Pro Leu His
    1040                1045                1050

Ile Leu  Gly Gln Tyr Gly Lys  Glu Asn Ala Ala Ala  Ile Phe Asp
    1055                1060                1065

Leu Phe  Leu Glu Cys Met Pro  Gly Tyr Pro Leu Asp  Lys Pro Asp
    1070                1075                1080

Ala Asp  Gly Ser Thr Val Leu  Leu Leu Ala Tyr Met  Lys Gly Asn
    1085                1090                1095

Ala Asn  Leu Cys Arg Ala Ile  Val Arg Ser Gly Ala  Arg Leu Gly
    1100                1105                1110
```

```
Val Asn  Asn Asn Gln Gly Val  Asn Ile Phe Asn Tyr  Gln Val Ala
    1115                1120                1125

Thr Lys  Gln Leu Leu Phe Arg  Leu Leu Asp Met Leu  Ser Lys Glu
    1130                1135                1140

Pro Pro  Trp Cys Asp Gly Ser  Tyr Cys Tyr Glu Cys  Thr Ala Arg
    1145                1150                1155

Phe Gly  Val Thr Thr Arg Lys  His His Cys Arg His  Cys Gly Arg
    1160                1165                1170

Leu Leu  Cys His Lys Cys Ser  Thr Lys Glu Ile Pro  Ile Ile Lys
    1175                1180                1185

Phe Asp  Leu Asn Lys Pro Val  Arg Val Cys Asn Ile  Cys Phe Asp
    1190                1195                1200

Val Leu  Thr Leu Gly Gly Val  Ser
    1205                1210


<210> 4929
<211> 69
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ANKFY1; "

<220>
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      ankyrin repeat and FYVE
      domain containing 1; "

<220>
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Met Ala Glu Glu Glu Val Ala Lys Leu Glu Lys His Leu Met Leu Leu
1               5                  10                  15

Arg Gln Glu Tyr Val Lys Leu Gln Lys Lys Leu Ala Glu Thr Glu Lys
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```
            20                  25                  30

Arg Cys Ala Leu Leu Ala Ala Gln Ala Asn Lys Glu Ser Ser Ser Glu
        35                  40                  45

Ser Phe Ile Ser Arg Leu Leu Ala Ile Val Ala Asp Leu Tyr Glu Gln
    50                  55                  60

Glu Gln Tyr Arg Cys
65


<210> 4930
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<212> PRT
<213> Homo sapiens

<220>
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<220>
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      domain containing 1; "

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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 4930
Xaa Leu Leu Leu Ala Tyr Met Lys Gly Asn Ala Asn Leu Cys Arg Ala
1               5                   10                  15

Ile Val Arg Ser Gly Ala Arg Leu Gly Val Asn Asn Asn Gln Gly Val
            20                  25                  30

Asn Ile Phe Asn Tyr Gln Val Ala Thr Lys Gln Leu Leu Phe Arg Leu
        35                  40                  45
```

```
Leu Asp Met Leu Ser Lys Glu Pro Pro Trp Cys Asp Gly Ser Tyr Cys
    50                  55                  60

Tyr Glu Cys Thr Ala Arg Phe Gly Val Thr Thr Arg Lys His His Trp
65                  70                  75                  80

<210> 4931
<211> 1089
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1075; "

<220>
<221> source
<223> /note="Gene Symbol: ANKIB1; "

<220>
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<223> /note="Gene Name:
      ankyrin repeat and IBR
      domain containing 1; "

<220>
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<223> /note="Uniprot ID:  Q9P2G1; "

<220>
<221> source
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<400> 4931
Met Gly Asn Thr Thr Thr Lys Phe Arg Lys Ala Leu Ile Asn Gly Asp
1               5                   10                  15

Glu Asn Leu Ala Cys Gln Ile Tyr Glu Asn Asn Pro Gln Leu Lys Glu
            20                  25                  30

Ser Leu Asp Pro Asn Thr Ser Tyr Gly Glu Pro Tyr Gln His Asn Thr
        35                  40                  45

Pro Leu His Tyr Ala Ala Arg His Gly Met Asn Lys Ile Leu Gly Thr
    50                  55                  60

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

Thr Ser Met His Leu Leu Cys Met Gly Pro Gln Ile Met Ile Ser Glu
```

```
                85                  90                  95

Gly Ala Leu His Pro Arg Leu Ala Arg Pro Thr Glu Asp Asp Phe Arg
            100                 105                 110

Arg Ala Asp Cys Leu Gln Met Ile Leu Lys Trp Lys Gly Ala Lys Leu
        115                 120                 125

Asp Gln Gly Glu Tyr Glu Arg Ala Ala Ile Asp Ala Val Asp Asn Lys
    130                 135                 140

Lys Asn Thr Pro Leu His Tyr Ala Ala Ala Ser Gly Met Lys Ala Cys
145                 150                 155                 160

Val Glu Leu Leu Val Lys His Gly Gly Asp Leu Phe Ala Glu Asn Glu
                165                 170                 175

Asn Lys Asp Thr Pro Cys Asp Cys Ala Glu Lys Gln His His Lys Asp
            180                 185                 190

Leu Ala Leu Asn Leu Glu Ser Gln Met Val Phe Ser Arg Asp Pro Glu
        195                 200                 205

Ala Glu Glu Ile Glu Ala Glu Tyr Ala Ala Leu Asp Lys Arg Glu Pro
    210                 215                 220

Tyr Glu Gly Leu Arg Pro Gln Asp Leu Arg Arg Leu Lys Asp Met Leu
225                 230                 235                 240

Ile Val Glu Thr Ala Asp Met Leu Gln Ala Pro Leu Phe Thr Ala Glu
                245                 250                 255

Ala Leu Leu Arg Ala His Asp Trp Asp Arg Glu Lys Leu Leu Glu Ala
            260                 265                 270

Trp Met Ser Asn Pro Glu Asn Cys Cys Gln Arg Ser Gly Val Gln Met
        275                 280                 285

Pro Thr Pro Pro Pro Ser Gly Tyr Asn Ala Trp Asp Thr Leu Pro Ser
    290                 295                 300

Pro Arg Thr Pro Arg Thr Thr Arg Ser Ser Val Thr Ser Pro Asp Glu
305                 310                 315                 320
```

```
Ile Ser Leu Ser Pro Gly Asp Leu Asp Thr Ser Leu Cys Asp Ile Cys
                325                 330                 335

Met Cys Ser Ile Ser Val Phe Glu Asp Pro Val Asp Met Pro Cys Gly
            340                 345                 350

His Asp Phe Cys Arg Gly Cys Trp Glu Ser Phe Leu Asn Leu Lys Ile
        355                 360                 365

Gln Glu Gly Glu Ala His Asn Ile Phe Cys Pro Ala Tyr Asp Cys Phe
    370                 375                 380

Gln Leu Val Pro Val Asp Ile Ile Glu Ser Val Val Ser Lys Glu Met
385                 390                 395                 400

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

Pro Ala Ile Lys Trp Cys Pro Thr Pro Gly Cys Asp Arg Ala Val Arg
            420                 425                 430

Leu Thr Lys Gln Gly Ser Asn Thr Ser Gly Ser Asp Thr Leu Ser Phe
        435                 440                 445

Pro Leu Leu Arg Ala Pro Ala Val Asp Cys Gly Lys Gly His Leu Phe
    450                 455                 460

Cys Trp Glu Cys Leu Gly Glu Ala His Glu Pro Cys Asp Cys Gln Thr
465                 470                 475                 480

Trp Lys Asn Trp Leu Gln Lys Ile Thr Glu Met Lys Pro Glu Glu Leu
                485                 490                 495

Val Gly Val Ser Glu Ala Tyr Glu Asp Ala Ala Asn Cys Leu Trp Leu
            500                 505                 510

Leu Thr Asn Ser Lys Pro Cys Ala Asn Cys Lys Ser Pro Ile Gln Lys
        515                 520                 525

Asn Glu Gly Cys Asn His Met Gln Cys Ala Lys Cys Lys Tyr Asp Phe
    530                 535                 540
```

```
Cys Trp Ile Cys Leu Glu Glu Trp Lys Lys His Ser Ser Ser Thr Gly
545                 550                 555                 560

Gly Tyr Tyr Arg Cys Thr Arg Tyr Glu Val Ile Gln His Val Glu Glu
                565                 570                 575

Gln Ser Lys Glu Met Thr Val Glu Ala Glu Lys Lys His Lys Arg Phe
            580                 585                 590

Gln Glu Leu Asp Arg Phe Met His Tyr Tyr Thr Arg Phe Lys Asn His
        595                 600                 605

Glu His Ser Tyr Gln Leu Glu Gln Arg Leu Leu Lys Thr Ala Lys Glu
    610                 615                 620

Lys Met Glu Gln Leu Ser Arg Ala Leu Lys Glu Thr Glu Gly Gly Cys
625                 630                 635                 640

Pro Asp Thr Thr Phe Ile Glu Asp Ala Val His Val Leu Leu Lys Thr
                645                 650                 655

Arg Arg Ile Leu Lys Cys Ser Tyr Pro Tyr Gly Phe Phe Leu Glu Pro
            660                 665                 670

Lys Ser Thr Lys Lys Glu Ile Phe Glu Leu Met Gln Thr Asp Leu Glu
        675                 680                 685

Met Val Thr Glu Asp Leu Ala Gln Lys Val Asn Arg Pro Tyr Leu Arg
    690                 695                 700

Thr Pro Arg His Lys Ile Ile Lys Ala Ala Cys Leu Val Gln Gln Lys
705                 710                 715                 720

Arg Gln Glu Phe Leu Ala Ser Val Ala Arg Gly Val Ala Pro Ala Asp
                725                 730                 735

Ser Pro Glu Ala Pro Arg Arg Ser Phe Ala Gly Gly Thr Trp Asp Trp
            740                 745                 750

Glu Tyr Leu Gly Phe Ala Ser Pro Glu Glu Tyr Ala Glu Phe Gln Tyr
        755                 760                 765
```

```
Arg Arg Arg His Arg Gln Arg Arg Arg Gly Asp Val His Ser Leu Leu
    770                 775                 780

Ser Asn Pro Pro Asp Pro Asp Glu Pro Ser Glu Ser Thr Leu Asp Ile
785                 790                 795                 800

Pro Glu Gly Gly Ser Ser Ser Arg Arg Pro Gly Thr Ser Val Val Ser
                805                 810                 815

Ser Ala Ser Met Ser Val Leu His Ser Ser Ser Leu Arg Asp Tyr Thr
            820                 825                 830

Pro Ala Ser Arg Ser Glu Asn Gln Asp Ser Leu Gln Ala Leu Ser Ser
        835                 840                 845

Leu Asp Glu Asp Asp Pro Asn Ile Leu Leu Ala Ile Gln Leu Ser Leu
    850                 855                 860

Gln Glu Ser Gly Leu Ala Leu Asp Glu Glu Thr Arg Asp Phe Leu Ser
865                 870                 875                 880

Asn Glu Ala Ser Leu Gly Ala Ile Gly Thr Ser Leu Pro Ser Arg Leu
                885                 890                 895

Asp Ser Val Pro Arg Asn Thr Asp Ser Pro Arg Ala Ala Leu Ser Ser
            900                 905                 910

Ser Glu Leu Leu Glu Leu Gly Asp Ser Leu Met Arg Leu Gly Ala Glu
        915                 920                 925

Asn Asp Pro Phe Ser Thr Asp Thr Leu Ser Ser His Pro Leu Ser Glu
    930                 935                 940

Ala Arg Ser Asp Phe Cys Pro Ser Ser Ser Asp Pro Asp Ser Ala Gly
945                 950                 955                 960

Gln Asp Pro Asn Ile Asn Asp Asn Leu Leu Gly Asn Ile Met Ala Trp
                965                 970                 975

Phe His Asp Met Asn Pro Gln Ser Ile Ala Leu Ile Pro Pro Ala Thr
            980                 985                 990

Thr Glu Ile Ser Ala Asp Ser Gln  Leu Pro Cys Ile Lys  Asp Gly
```

Ser
995 1000 1005

Glu Gly Val Lys Asp Val Glu Leu Val Leu Pro Glu Asp Ser Met
1010 1015 1020

Phe Glu Asp Ala Ser Val Ser Glu Gly Arg Gly Thr Gln Ile Glu
1025 1030 1035

Glu Asn Pro Leu Glu Glu Asn Ile Leu Ala Gly Glu Ala Ala Ser
1040 1045 1050

Gln Ala Gly Asp Ser Gly Asn Glu Ala Ala Asn Arg Gly Asp Gly
1055 1060 1065

Ser Asp Val Ser Ser Gln Thr Pro Gln Thr Ser Ser Asp Trp Leu
1070 1075 1080

Glu Gln Val His Leu Val
1085

<210> 4932
<211> 54
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1075; "

<220>
<221> source
<223> /note="Gene Symbol: ANKIB1; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and IBR
domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000396406"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 4932
Xaa Arg Met Lys Ala Ala Ile Thr Cys Ser Val Leu Ser Ala Ser Met
1   5   10   15

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

Leu Glu Val Ile Thr Asp Val Leu Ala Met Lys Ser Phe Asn Thr Trp
        35   40   45

Arg Ser Asn Pro Arg Lys
    50

<210> 4933
<211> 84
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ANKIB1; "

<220>
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<223> /note="Gene Name:
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      domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406644"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 4933
Xaa Leu Pro Ser Pro Arg Thr Pro Arg Thr Thr Arg Ser Ser Val Thr
1   5   10   15

Ser Pro Asp Glu Ile Ser Leu Ser Pro Gly Asp Leu Asp Thr Ser Leu
            20   25   30

Cys Asp Ile Cys Met Cys Ser Ile Ser Val Phe Glu Asp Pro Val Asp
        35   40   45

```
Met Pro Cys Gly His Asp Phe Cys Arg Gly Cys Trp Glu Ser Ile Val
    50                  55                  60

Ile Ser Arg Glu Ser Leu Pro Met Ile Ser Ser Val Asn Phe Thr Cys
65                  70                  75                  80

Lys Ile Lys Ile
```

<210> 4934
<211> 134
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1075; "

<220>
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<223> /note="Gene Symbol: ANKIB1; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and IBR
domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000407002"

<400> 4934

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

Glu Asn Leu Ala Cys Gln Ile Tyr Glu Asn Asn Pro Gln Leu Lys Glu
            20                  25                  30

Ser Leu Asp Pro Asn Thr Ser Tyr Gly Glu Pro Tyr Gln His Asn Thr
        35                  40                  45

Pro Leu His Tyr Ala Ala Arg His Gly Met Asn Lys Ile Leu Gly Thr
    50                  55                  60

Phe Leu Gly Arg Asp Gly Asn Pro Asn Lys Arg Asn Val His Asn Glu
65                  70                  75                  80
```

```
Thr Ser Met His Leu Leu Cys Met Gly Pro Gln Ile Met Ile Ser Glu
                85                  90                  95


Gly Ala Leu His Pro Arg Leu Ala Arg Pro Thr Glu Asp Asp Phe Arg
            100                 105                 110


Arg Ala Asp Cys Leu Gln Met Ile Leu Lys Trp Lys Gly Ala Lys Leu
        115                 120                 125


Asp Gln Gly Glu Tyr Glu
    130


<210> 4935
<211> 162
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1075; "

<220>
<221> source
<223> /note="Gene Symbol: ANKIB1; "

<220>
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<223> /note="Gene Name:
      ankyrin repeat and IBR
      domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000407913"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 4935
Xaa Thr Phe Leu Gly Arg Asp Gly Asn Pro Asn Lys Arg Asn Val His
1               5                   10                  15


Asn Glu Thr Ser Met His Leu Leu Cys Met Gly Pro Gln Ile Met Ile
            20                  25                  30


Ser Glu Gly Ala Leu His Pro Arg Leu Ala Arg Pro Thr Glu Asp Asp
        35                  40                  45
```

```
Phe Arg Arg Ala Asp Cys Leu Gln Met Ile Leu Lys Trp Lys Gly Ala
    50                  55                  60

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

Asn Lys Lys Asn Thr Pro Leu His Tyr Ala Ala Ala Ser Gly Met Lys
                85                  90                  95

Ala Cys Val Glu Leu Leu Val Lys His Gly Gly Asp Leu Phe Ala Glu
            100                 105                 110

Asn Glu Asn Lys Asp Thr Pro Cys Asp Cys Ala Glu Lys Gln His His
        115                 120                 125

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

Pro Glu Ala Glu Glu Ile Glu Ala Glu Tyr Ala Ala Leu Asp Lys Arg
145                 150                 155                 160

Glu Tyr
```

<210> 4936
<211> 687
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1076; "

<220>
<221> source
<223> /note="Gene Symbol: ANKHD1; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and KH
domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000246149"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 4936
Xaa Lys Ala Gly Ala Asp Ile Glu Leu Gly Cys Ser Thr Pro Leu Met
1 5 10 15

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

Ser Gly Ala Asn Val His Ala Thr Thr Ala Thr Gly Asp Thr Ala Leu
35 40 45

Thr Tyr Ala Cys Glu Asn Gly His Thr Asp Val Ala Asp Val Leu Leu
50 55 60

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

Glu Gly Ile Asp Pro Ala Lys His Gln Glu His Glu Ser Glu Gly Gly
85 90 95

Arg Thr Pro Leu Met Lys Ala Ala Arg Ala Gly His Leu Cys Thr Val
100 105 110

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

Asn Asp His Thr Val Val Ser Leu Ala Cys Ala Gly Gly His Leu Ala
130 135 140

Val Val Glu Leu Leu Leu Ala His Gly Ala Asp Pro Thr His Arg Leu
145 150 155 160

Lys Asp Gly Ser Thr Met Leu Ile Glu Ala Ala Lys Gly Gly His Thr
165 170 175

Asn Val Val Ser Tyr Leu Leu Asp Tyr Pro Asn Asn Val Leu Ser Val
180 185 190

Pro Thr Thr Asp Val Ser Gln Leu Pro Pro Pro Ser Gln Asp Gln Ser
195 200 205

```
Gln Glu Pro Asp Arg Thr Ser Gln Glu Asn Ser Pro Ala Leu Leu Gly
    210                 215                 220

Val Gln Lys Ala Val Ser Thr Arg Val Pro Thr Gly Ser Asn Ser Ser
225                 230                 235                 240

Ser Gln Thr Thr Glu Cys Leu Thr Pro Glu Ser Cys Ser Gln Thr Thr
                245                 250                 255

Ser Asn Val Ala Ser Gln Ser Met Pro Pro Val Tyr Pro Ser Val Asp
            260                 265                 270

Ile Asp Ala His Thr Glu Ser Asn His Asp Thr Ala Leu Thr Leu Ala
        275                 280                 285

Cys Ala Gly Gly His Glu Glu Leu Val Ser Val Leu Ile Ala Arg Asp
    290                 295                 300

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

Ala Ala Thr Ala Gly His Val Gly Val Val Glu Ile Leu Leu Asp Lys
                325                 330                 335

Gly Gly Asp Ile Glu Ala Gln Ser Glu Arg Thr Lys Asp Thr Pro Leu
            340                 345                 350

Ser Leu Ala Cys Ser Gly Gly Arg Gln Glu Val Val Asp Leu Leu Leu
        355                 360                 365

Ala Arg Gly Ala Asn Lys Glu His Arg Asn Val Ser Asp Tyr Thr Pro
    370                 375                 380

Leu Ser Leu Ala Ala Ser Gly Gly Tyr Val Asn Ile Ile Lys Ile Leu
385                 390                 395                 400

Leu Asn Ala Gly Ala Glu Ile Asn Ser Arg Thr Gly Ser Lys Leu Gly
                405                 410                 415

Ile Ser Pro Leu Met Leu Ala Ala Met Asn Gly His Val Pro Ala Val
            420                 425                 430
```

```
Lys Leu Leu Leu Asp Met Gly Ser Asp Ile Asn Ala Gln Ile Glu Thr
        435                 440                 445

Asn Arg Asn Thr Ala Leu Thr Leu Ala Cys Phe Gln Gly Arg Ala Glu
    450                 455                 460

Val Val Ser Leu Leu Leu Asp Arg Lys Ala Asn Val Glu His Arg Ala
465                 470                 475                 480

Lys Thr Gly Leu Thr Pro Leu Met Glu Ala Ala Ser Gly Gly Tyr Ala
                485                 490                 495

Glu Val Gly Arg Val Leu Leu Asp Lys Gly Ala Asp Val Asn Ala Pro
            500                 505                 510

Pro Val Pro Ser Ser Arg Asp Thr Ala Leu Thr Ile Ala Ala Asp Lys
        515                 520                 525

Gly His Tyr Lys Phe Cys Glu Leu Leu Ile His Arg Gly Ala His Ile
    530                 535                 540

Asp Val Arg Asn Lys Lys Gly Asn Thr Pro Leu Trp Leu Ala Ser Asn
545                 550                 555                 560

Gly Gly His Phe Asp Val Val Gln Leu Leu Val Gln Ala Gly Ala Asp
                565                 570                 575

Val Asp Ala Ala Asp Asn Arg Lys Ile Thr Pro Leu Met Ser Ala Phe
            580                 585                 590

Arg Lys Gly His Val Lys Val Val Gln Tyr Leu Val Lys Glu Val Asn
        595                 600                 605

Gln Phe Pro Ser Asp Ile Glu Cys Met Arg Tyr Ile Ala Thr Ile Thr
    610                 615                 620

Asp Lys Glu Leu Leu Lys Lys Cys His Gln Cys Val Glu Thr Ile Val
625                 630                 635                 640

Lys Ala Lys Asp Gln Gln Ala Ala Glu Ala Asn Lys Asn Ala Ser Ile
                645                 650                 655
```

```
Leu Leu Lys Glu Leu Asp Leu Glu Lys Ser Arg Glu Glu Ser Arg Lys
            660                 665                 670

Gln Ala Leu Ala Ala Lys Arg Glu Lys Arg Lys Glu Lys Arg Lys
        675                 680                 685


<210> 4937
<211> 866
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1076; "

<220>
<221> source
<223> /note="Gene Symbol: ANKHD1; "

<220>
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<223> /note="Gene Name:
      ankyrin repeat and KH
      domain containing 1; "

<220>
<221> source
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<400> 4937
Met Asp Val Asn Ser Ser Lys Tyr Pro Ser Leu Leu Leu His Ser Gln
1               5                   10                  15

Glu Glu Lys Thr Ser Thr Ala Thr Ser Lys Thr Gln Thr Arg Leu Glu
            20                  25                  30

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

Leu Pro Leu Ser Ser Pro Asn Ile Lys Leu Asn Leu Thr Ser Pro Lys
    50                  55                  60

Arg Gly Gln Lys Arg Glu Glu Gly Trp Lys Glu Val Val Arg Arg Ser
65                  70                  75                  80

Lys Lys Leu Ser Val Pro Ala Ser Val Val Ser Arg Ile Met Gly Arg
                85                  90                  95

Gly Gly Cys Asn Ile Thr Ala Ile Gln Asp Val Thr Gly Ala His Ile
```

```
            100                 105                 110

Asp Val Asp Lys Gln Lys Asp Lys Asn Gly Glu Arg Met Ile Thr Ile
        115                 120                 125

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

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

His Ile Arg Thr Pro Ala Ser Thr Lys Ser Ile His Ala Asn Phe Ser
                165                 170                 175

Ser Gly Val Gly Thr Thr Ala Ala Ser Ser Lys Asn Ala Phe Pro Leu
            180                 185                 190

Gly Ala Pro Thr Leu Val Thr Ser Gln Ala Thr Thr Leu Ser Thr Phe
        195                 200                 205

Gln Pro Ala Asn Lys Leu Asn Lys Asn Val Pro Thr Asn Val Arg Ser
    210                 215                 220

Ser Phe Pro Val Ser Leu Pro Leu Ala Tyr Pro His Pro His Phe Ala
225                 230                 235                 240

Leu Leu Ala Ala Gln Thr Met Gln Gln Ile Arg His Pro Arg Leu Pro
                245                 250                 255

Met Ala Gln Phe Gly Gly Thr Phe Ser Pro Ser Pro Asn Thr Trp Gly
            260                 265                 270

Pro Phe Pro Val Arg Pro Val Asn Pro Gly Asn Thr Asn Ser Ser Pro
        275                 280                 285

Lys His Asn Asn Thr Ser Arg Leu Pro Asn Gln Asn Gly Thr Val Leu
    290                 295                 300

Pro Ser Glu Ser Ala Gly Leu Ala Thr Ala Ser Cys Pro Ile Thr Val
305                 310                 315                 320

Ser Ser Val Val Ala Ala Ser Gln Gln Leu Cys Val Thr Asn Thr Arg
                325                 330                 335
```

```
Thr Pro Ser Ser Val Arg Lys Gln Leu Phe Ala Cys Val Pro Lys Thr
            340                 345                 350

Ser Pro Pro Ala Thr Val Ile Ser Ser Val Thr Ser Thr Cys Ser Ser
        355                 360                 365

Leu Pro Ser Val Ser Ser Ala Pro Ile Thr Ser Gly Gln Ala Pro Thr
    370                 375                 380

Thr Phe Leu Pro Ala Ser Thr Ser Gln Ala Gln Leu Ser Ser Gln Lys
385                 390                 395                 400

Met Glu Ser Phe Ser Ala Val Pro Pro Thr Lys Glu Lys Val Ser Thr
                405                 410                 415

Gln Asp Gln Pro Met Ala Asn Leu Cys Thr Pro Ser Ser Thr Ala Asn
            420                 425                 430

Ser Cys Ser Ser Ser Ala Ser Asn Thr Pro Gly Ala Pro Glu Thr His
        435                 440                 445

Pro Ser Ser Ser Pro Thr Pro Thr Ser Ser Asn Thr Gln Glu Glu Ala
    450                 455                 460

Gln Pro Ser Ser Val Ser Asp Leu Ser Pro Met Ser Met Pro Phe Ala
465                 470                 475                 480

Ser Asn Ser Glu Pro Ala Pro Leu Thr Leu Thr Ser Pro Arg Met Val
                485                 490                 495

Ala Ala Asp Asn Gln Asp Thr Ser Asn Leu Pro Gln Leu Ala Val Pro
            500                 505                 510

Ala Pro Arg Val Ser His Arg Met Gln Pro Arg Gly Ser Phe Tyr Ser
        515                 520                 525

Met Val Pro Asn Ala Thr Ile His Gln Asp Pro Gln Ser Ile Phe Val
    530                 535                 540

Thr Asn Pro Val Thr Leu Thr Pro Pro Gln Gly Pro Pro Ala Ala Val
545                 550                 555                 560
```

```
Gln Leu Ser Ser Ala Val Asn Ile Met Asn Gly Ser Gln Met His Ile
                565                 570                 575

Asn Pro Ala Asn Lys Ser Leu Pro Pro Thr Phe Gly Pro Ala Thr Leu
            580                 585                 590

Phe Asn His Phe Ser Ser Leu Phe Asp Ser Ser Gln Val Pro Ala Asn
        595                 600                 605

Gln Gly Trp Gly Asp Gly Pro Leu Ser Ser Arg Val Ala Thr Asp Ala
    610                 615                 620

Ser Phe Thr Val Gln Ser Ala Phe Leu Gly Asn Ser Val Leu Gly His
625                 630                 635                 640

Leu Glu Asn Met His Pro Asp Asn Ser Lys Ala Pro Gly Phe Arg Pro
                645                 650                 655

Pro Ser Gln Arg Val Ser Thr Ser Pro Val Ala Thr Ser Ala Pro Pro
            660                 665                 670

Thr Leu Gly Gln Pro Lys Gly Val Ser Ala Ser Gln Asp Arg Lys Ile
        675                 680                 685

Pro Pro Pro Ile Gly Thr Glu Arg Leu Ala Arg Ile Arg Gln Gly Gly
    690                 695                 700

Ser Val Ala Gln Ala Pro Ala Gly Thr Ser Phe Val Ala Pro Val Gly
705                 710                 715                 720

His Ser Gly Ile Trp Ser Phe Gly Val Asn Ala Val Ser Glu Gly Leu
                725                 730                 735

Ser Gly Trp Ser Gln Ser Val Met Gly Asn His Pro Met His Gln Gln
            740                 745                 750

Leu Ser Asp Pro Ser Thr Phe Ser Gln His Gln Pro Met Glu Arg Asp
        755                 760                 765

Asp Ser Gly Met Val Ala Pro Ser Asn Ile Phe His Gln Pro Met Ala
    770                 775                 780
```

```
Ser Gly Phe Val Asp Phe Ser Lys Gly Leu Pro Ile Ser Met Tyr Gly
785                 790                 795                 800


Gly Thr Ile Ile Pro Ser His Pro Gln Leu Ala Asp Val Pro Gly Gly
                805                 810                 815


Pro Leu Phe Asn Gly Leu His Asn Pro Asp Pro Ala Trp Asn Pro Met
            820                 825                 830


Ile Lys Val Ile Gln Asn Ser Thr Glu Cys Thr Asp Ala Gln Gln Ile
        835                 840                 845


Trp Pro Gly Thr Trp Ala Pro His Ile Gly Asn Met His Leu Lys Tyr
    850                 855                 860


Val Asn
865


<210> 4938
<211> 2542
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1076; "

<220>
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<223> /note="Gene Symbol: ANKHD1; "

<220>
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      ankyrin repeat and KH
      domain containing 1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8IWZ3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000354085"

<400> 4938
Met Leu Thr Asp Ser Gly Gly Gly Gly Thr Ser Phe Glu Glu Asp Leu
1               5                   10                  15


Asp Ser Val Ala Pro Arg Ser Ala Pro Ala Gly Ala Ser Glu Pro Pro
```

```
            20                  25                  30

Pro Pro Gly Gly Val Gly Leu Gly Ile Arg Thr Val Arg Leu Phe Gly
        35                  40                  45

Glu Ala Gly Pro Ala Ser Gly Val Gly Ser Ser Gly Gly Gly Gly Ser
    50                  55                  60

Gly Ser Gly Thr Gly Gly Gly Asp Ala Ala Leu Asp Phe Lys Leu Ala
65                  70                  75                  80

Ala Ala Val Leu Arg Thr Gly Gly Gly Gly Gly Ala Ser Gly Ser Asp
                85                  90                  95

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

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

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

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

Ala Asp Gly Lys Ala Phe Ala Asp Pro Glu Val Leu Arg Arg Leu Thr
                165                 170                 175

Ser Ser Val Ser Cys Ala Leu Asp Glu Ala Ala Ala Ala Leu Thr Arg
            180                 185                 190

Met Lys Ala Glu Asn Ser His Asn Ala Gly Gln Val Asp Thr Arg Ser
        195                 200                 205

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

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

Leu Leu Cys Leu Ala Cys Ser Ala Gly Tyr Tyr Glu Leu Ala Gln Val
                245                 250                 255
```

```
Leu Leu Ala Met His Ala Asn Val Glu Asp Arg Gly Asn Lys Gly Asp
            260                 265                 270

Ile Thr Pro Leu Met Ala Ala Ser Ser Gly Gly Tyr Leu Asp Ile Val
        275                 280                 285

Lys Leu Leu Leu Leu His Asp Ala Asp Val Asn Ser Gln Ser Ala Thr
    290                 295                 300

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

Val Lys Val Leu Leu Asn Glu Gly Ala Asn Ile Glu Asp His Asn Glu
                325                 330                 335

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

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

Asn Glu Phe Lys Glu Ser Ala Leu Thr Leu Ala Cys Tyr Lys Gly His
    370                 375                 380

Leu Asp Met Val Arg Phe Leu Leu Glu Ala Gly Ala Asp Gln Glu His
385                 390                 395                 400

Lys Thr Asp Glu Met His Thr Ala Leu Met Glu Ala Cys Met Asp Gly
                405                 410                 415

His Val Glu Val Ala Arg Leu Leu Leu Asp Ser Gly Ala Gln Val Asn
            420                 425                 430

Met Pro Ala Asp Ser Phe Glu Ser Pro Leu Thr Leu Ala Ala Cys Gly
        435                 440                 445

Gly His Val Glu Leu Ala Ala Leu Leu Ile Glu Arg Gly Ala Asn Leu
    450                 455                 460

Glu Glu Val Asn Asp Glu Gly Tyr Thr Pro Leu Met Glu Ala Ala Arg
465                 470                 475                 480
```

```
Glu Gly His Glu Glu Met Val Ala Leu Leu Leu Ala Gln Gly Ala Asn
                485                 490                 495

Ile Asn Ala Gln Thr Glu Glu Thr Gln Glu Thr Ala Leu Thr Leu Ala
            500                 505                 510

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

Ala Asp Ile Glu Leu Gly Cys Ser Thr Pro Leu Met Glu Ala Ser Gln
    530                 535                 540

Glu Gly His Leu Glu Leu Val Lys Tyr Leu Leu Ala Ser Gly Ala Asn
545                 550                 555                 560

Val His Ala Thr Thr Ala Thr Gly Asp Thr Ala Leu Thr Tyr Ala Cys
                565                 570                 575

Glu Asn Gly His Thr Asp Val Ala Asp Val Leu Leu Gln Ala Gly Ala
            580                 585                 590

Asp Leu Glu His Glu Ser Glu Gly Gly Arg Thr Pro Leu Met Lys Ala
        595                 600                 605

Ala Arg Ala Gly His Leu Cys Thr Val Gln Phe Leu Ile Ser Lys Gly
    610                 615                 620

Ala Asn Val Asn Arg Ala Thr Ala Asn Asn Asp His Thr Val Val Ser
625                 630                 635                 640

Leu Ala Cys Ala Gly Gly His Leu Ala Val Val Glu Leu Leu Leu Ala
                645                 650                 655

His Gly Ala Asp Pro Thr His Arg Leu Lys Asp Gly Ser Thr Met Leu
            660                 665                 670

Ile Glu Ala Ala Lys Gly Gly His Thr Asn Val Val Ser Tyr Leu Leu
        675                 680                 685

Asp Tyr Pro Asn Asn Val Leu Ser Val Pro Thr Thr Asp Val Ser Gln
    690                 695                 700
```

```
Leu Pro Pro Pro Ser Gln Asp Gln Ser Gln Val Pro Arg Val Pro Thr
705                 710                 715                 720

His Thr Leu Ala Met Val Val Pro Pro Gln Glu Pro Asp Arg Thr Ser
                725                 730                 735

Gln Glu Asn Ser Pro Ala Leu Leu Gly Val Gln Lys Gly Thr Ser Lys
            740                 745                 750

Gln Lys Ser Ser Ser Leu Gln Val Ala Asp Gln Asp Leu Leu Pro Ser
        755                 760                 765

Phe His Pro Tyr Gln Pro Leu Glu Cys Ile Val Glu Glu Thr Glu Gly
    770                 775                 780

Lys Leu Asn Glu Leu Gly Gln Arg Ile Ser Ala Ile Glu Lys Ala Gln
785                 790                 795                 800

Leu Lys Ser Leu Glu Leu Ile Gln Gly Glu Pro Leu Asn Lys Asp Lys
                805                 810                 815

Ile Glu Glu Leu Lys Lys Asn Arg Glu Glu Gln Val Gln Lys Lys Lys
            820                 825                 830

Lys Ile Leu Lys Glu Leu Gln Lys Val Glu Arg Gln Leu Gln Met Lys
        835                 840                 845

Thr Gln Gln Gln Phe Thr Lys Glu Tyr Leu Glu Thr Lys Gly Gln Lys
    850                 855                 860

Asp Thr Val Ser Leu His Gln Gln Cys Ser His Arg Gly Val Phe Pro
865                 870                 875                 880

Glu Gly Glu Gly Asp Gly Ser Leu Pro Glu Asp His Phe Ser Glu Leu
                885                 890                 895

Pro Gln Val Asp Thr Ile Leu Phe Lys Asp Asn Asp Val Asp Asp Glu
            900                 905                 910

Gln Gln Ser Pro Pro Ser Ala Glu Gln Ile Asp Phe Val Pro Val Gln
        915                 920                 925

Pro Leu Ser Ser Pro Gln Cys Asn Phe Ser Ser Asp Leu Gly Ser Asn
```

930 935 940

Gly Thr Asn Ser Leu Glu Leu Gln Lys Val Ser Gly Asn Gln Gln Ile
945 950 955 960

Val Gly Gln Pro Gln Ile Ala Ile Thr Gly His Asp Gln Gly Leu Leu
965 970 975

Val Gln Glu Pro Asp Gly Leu Met Val Ala Thr Pro Ala Gln Thr Leu
980 985 990

Thr Asp Thr Leu Asp Asp Leu Ile Ala Ala Val Ser Thr Arg Val
Pro
995 1000 1005

Thr Gly Ser Asn Ser Ser Ser Gln Thr Thr Glu Cys Leu Thr Pro
1010 1015 1020

Glu Ser Cys Ser Gln Thr Thr Ser Asn Val Ala Ser Gln Ser Met
1025 1030 1035

Pro Pro Val Tyr Pro Ser Val Asp Ile Asp Ala His Thr Glu Ser
1040 1045 1050

Asn His Asp Thr Ala Leu Thr Leu Ala Cys Ala Gly Gly His Glu
1055 1060 1065

Glu Leu Val Ser Val Leu Ile Ala Arg Asp Ala Lys Ile Glu His
1070 1075 1080

Arg Asp Lys Lys Gly Phe Thr Pro Leu Ile Leu Ala Ala Thr Ala
1085 1090 1095

Gly His Val Gly Val Val Glu Ile Leu Leu Asp Lys Gly Gly Asp
1100 1105 1110

Ile Glu Ala Gln Ser Glu Arg Thr Lys Asp Thr Pro Leu Ser Leu
1115 1120 1125

Ala Cys Ser Gly Gly Arg Gln Glu Val Val Asp Leu Leu Leu Ala
1130 1135 1140

Arg Gly Ala Asn Lys Glu His Arg Asn Val Ser Asp Tyr Thr Pro

1145 1150 1155

Leu Ser Leu Ala Ala Ser Gly Gly Tyr Val Asn Ile Ile Lys Ile
1160 1165 1170

Leu Leu Asn Ala Gly Ala Glu Ile Asn Ser Arg Thr Gly Ser Lys
1175 1180 1185

Leu Gly Ile Ser Pro Leu Met Leu Ala Ala Met Asn Gly His Val
1190 1195 1200

Pro Ala Val Lys Leu Leu Leu Asp Met Gly Ser Asp Ile Asn Ala
1205 1210 1215

Gln Ile Glu Thr Asn Arg Asn Thr Ala Leu Thr Leu Ala Cys Phe
1220 1225 1230

Gln Gly Arg Ala Glu Val Val Ser Leu Leu Leu Asp Arg Lys Ala
1235 1240 1245

Asn Val Glu His Arg Ala Lys Thr Gly Leu Thr Pro Leu Met Glu
1250 1255 1260

Ala Ala Ser Gly Gly Tyr Ala Glu Val Gly Arg Val Leu Leu Asp
1265 1270 1275

Lys Gly Ala Asp Val Asn Ala Pro Pro Val Pro Ser Ser Arg Asp
1280 1285 1290

Thr Ala Leu Thr Ile Ala Ala Asp Lys Gly His Tyr Lys Phe Cys
1295 1300 1305

Glu Leu Leu Ile His Arg Gly Ala His Ile Asp Val Arg Asn Lys
1310 1315 1320

Lys Gly Asn Thr Pro Leu Trp Leu Ala Ser Asn Gly Gly His Phe
1325 1330 1335

Asp Val Val Gln Leu Leu Val Gln Ala Gly Ala Asp Val Asp Ala
1340 1345 1350

Ala Asp Asn Arg Lys Ile Thr Pro Leu Met Ser Ala Phe Arg Lys
1355 1360 1365

```
Gly His  Val Lys Val Val Gln  Tyr Leu Val Lys Glu  Val Asn Gln
    1370                1375                1380

Phe Pro  Ser Asp Ile Glu Cys  Met Arg Tyr Ile Ala  Thr Ile Thr
    1385                1390                1395

Asp Lys  Glu Leu Leu Lys Lys  Cys His Gln Cys Val  Glu Thr Ile
    1400                1405                1410

Val Lys  Ala Lys Asp Gln Gln  Ala Ala Glu Ala Asn  Lys Asn Ala
    1415                1420                1425

Ser Ile  Leu Leu Lys Glu Leu  Asp Leu Glu Lys Ser  Arg Glu Glu
    1430                1435                1440

Ser Arg  Lys Gln Ala Leu Ala  Ala Lys Arg Glu Lys  Arg Lys Glu
    1445                1450                1455

Lys Arg  Lys Lys Lys Lys Glu  Glu Gln Lys Arg Lys  Gln Glu Glu
    1460                1465                1470

Asp Glu  Glu Asn Lys Pro Lys  Glu Asn Ser Glu Leu  Pro Glu Asp
    1475                1480                1485

Glu Asp  Glu Glu Glu Asn Asp  Glu Asp Val Glu Gln  Glu Val Pro
    1490                1495                1500

Ile Glu  Pro Pro Ser Ala Thr  Thr Thr Thr Thr Ile  Gly Ile Ser
    1505                1510                1515

Ala Thr  Ser Ala Thr Phe Thr  Asn Val Phe Gly Lys  Lys Arg Ala
    1520                1525                1530

Asn Val  Val Thr Thr Pro Ser  Thr Asn Arg Lys Asn  Lys Lys Asn
    1535                1540                1545

Lys Thr  Lys Glu Thr Pro Pro  Thr Ala His Leu Ile  Leu Pro Glu
    1550                1555                1560

Gln His  Met Ser Leu Ala Gln  Gln Lys Ala Asp Lys  Asn Lys Ile
    1565                1570                1575
```

```
Asn Gly  Glu Pro Arg Gly Gly  Gly Ala Gly Gly Asn  Ser Asp Ser
    1580                1585                1590

Asp Asn  Leu Asp Ser Thr Asp  Cys Asn Ser Glu Ser  Ser Ser Gly
    1595                1600                1605

Gly Lys  Ser Gln Glu Leu Asn  Phe Val Met Asp Val  Asn Ser Ser
    1610                1615                1620

Lys Tyr  Pro Ser Leu Leu Leu  His Ser Gln Glu Glu  Lys Thr Ser
    1625                1630                1635

Thr Ala  Thr Ser Lys Thr Gln  Thr Arg Leu Glu Gly  Glu Val Thr
    1640                1645                1650

Pro Asn  Ser Leu Ser Thr Ser  Tyr Lys Thr Val Ser  Leu Pro Leu
    1655                1660                1665

Ser Ser  Pro Asn Ile Lys Leu  Asn Leu Thr Ser Pro  Lys Arg Gly
    1670                1675                1680

Gln Lys  Arg Glu Glu Gly Trp  Lys Glu Val Val Arg  Arg Ser Lys
    1685                1690                1695

Lys Leu  Ser Val Pro Ala Ser  Val Val Ser Arg Ile  Met Gly Arg
    1700                1705                1710

Gly Gly  Cys Asn Ile Thr Ala  Ile Gln Asp Val Thr  Gly Ala His
    1715                1720                1725

Ile Asp  Val Asp Lys Gln Lys  Asp Lys Asn Gly Glu  Arg Met Ile
    1730                1735                1740

Thr Ile  Arg Gly Gly Thr Glu  Ser Thr Arg Tyr Ala  Val Gln Leu
    1745                1750                1755

Ile Asn  Ala Leu Ile Gln Asp  Pro Ala Lys Glu Leu  Glu Asp Leu
    1760                1765                1770

Ile Pro  Lys Asn His Ile Arg  Thr Pro Ala Ser Thr  Lys Ser Ile
    1775                1780                1785
```

```
His Ala  Asn Phe Ser Ser Gly  Val Gly Thr Thr Ala  Ala Ser Ser
    1790                 1795                 1800

Lys Asn  Ala Phe Pro Leu Gly  Ala Pro Thr Leu Val  Thr Ser Gln
    1805                 1810                 1815

Ala Thr  Thr Leu Ser Thr Phe  Gln Pro Ala Asn Lys  Leu Asn Lys
    1820                 1825                 1830

Asn Val  Pro Thr Asn Val Arg  Ser Ser Phe Pro Val  Ser Leu Pro
    1835                 1840                 1845

Leu Ala  Tyr Pro His Pro His  Phe Ala Leu Leu Ala  Ala Gln Thr
    1850                 1855                 1860

Met Gln  Gln Ile Arg His Pro  Arg Leu Pro Met Ala  Gln Phe Gly
    1865                 1870                 1875

Gly Thr  Phe Ser Pro Ser Pro  Asn Thr Trp Gly Pro  Phe Pro Val
    1880                 1885                 1890

Arg Pro  Val Asn Pro Gly Asn  Thr Asn Ser Ser Pro  Lys His Asn
    1895                 1900                 1905

Asn Thr  Ser Arg Leu Pro Asn  Gln Asn Gly Thr Val  Leu Pro Ser
    1910                 1915                 1920

Glu Ser  Ala Gly Leu Ala Thr  Ala Ser Cys Pro Ile  Thr Val Ser
    1925                 1930                 1935

Ser Val  Val Ala Ala Ser Gln  Gln Leu Cys Val Thr  Asn Thr Arg
    1940                 1945                 1950

Thr Pro  Ser Ser Val Arg Lys  Gln Leu Phe Ala Cys  Val Pro Lys
    1955                 1960                 1965

Thr Ser  Pro Pro Ala Thr Val  Ile Ser Ser Val Thr  Ser Thr Cys
    1970                 1975                 1980

Ser Ser  Leu Pro Ser Val Ser  Ser Ala Pro Ile Thr  Ser Gly Gln
    1985                 1990                 1995

Ala Pro  Thr Thr Phe Leu Pro  Ala Ser Thr Ser Gln  Ala Gln Leu
```

2000 2005 2010

Ser Ser Gln Lys Met Glu Ser Phe Ser Ala Val Pro Pro Thr Lys
2015 2020 2025

Glu Lys Val Ser Thr Gln Asp Gln Pro Met Ala Asn Leu Cys Thr
2030 2035 2040

Pro Ser Ser Thr Ala Asn Ser Cys Ser Ser Ser Ala Ser Asn Thr
2045 2050 2055

Pro Gly Ala Pro Glu Thr His Pro Ser Ser Ser Pro Thr Pro Thr
2060 2065 2070

Ser Ser Asn Thr Gln Glu Glu Ala Gln Pro Ser Ser Val Ser Asp
2075 2080 2085

Leu Ser Pro Met Ser Met Pro Phe Ala Ser Asn Ser Glu Pro Ala
2090 2095 2100

Pro Leu Thr Leu Thr Ser Pro Arg Met Val Ala Ala Asp Asn Gln
2105 2110 2115

Asp Thr Ser Asn Leu Pro Gln Leu Ala Val Pro Ala Pro Arg Val
2120 2125 2130

Ser His Arg Met Gln Pro Arg Gly Ser Phe Tyr Ser Met Val Pro
2135 2140 2145

Asn Ala Thr Ile His Gln Asp Pro Gln Ser Ile Phe Val Thr Asn
2150 2155 2160

Pro Val Thr Leu Thr Pro Pro Gln Gly Pro Pro Ala Ala Val Gln
2165 2170 2175

Leu Ser Ser Ala Val Asn Ile Met Asn Gly Ser Gln Met His Ile
2180 2185 2190

Asn Pro Ala Asn Lys Ser Leu Pro Pro Thr Phe Gly Pro Ala Thr
2195 2200 2205

Leu Phe Asn His Phe Ser Ser Leu Phe Asp Ser Ser Gln Val Pro
2210 2215 2220

```
Ala Asn  Gln Gly Trp Gly Asp  Gly Pro Leu Ser Ser  Arg Val Ala
    2225                2230                2235

Thr Asp  Ala Ser Phe Thr Val  Gln Ser Ala Phe Leu  Gly Asn Ser
    2240                2245                2250

Val Leu  Gly His Leu Glu Asn  Met His Pro Asp Asn  Ser Lys Ala
    2255                2260                2265

Pro Gly  Phe Arg Pro Pro Ser  Gln Arg Val Ser Thr  Ser Pro Val
    2270                2275                2280

Gly Leu  Pro Ser Ile Asp Pro  Ser Gly Ser Ser Pro  Ser Ser Ser
    2285                2290                2295

Ser Ala  Pro Leu Ala Ser Phe  Ser Gly Ile Pro Gly  Thr Arg Val
    2300                2305                2310

Phe Leu  Gln Gly Pro Ala Pro  Val Gly Thr Pro Ser  Phe Asn Arg
    2315                2320                2325

Gln His  Phe Ser Pro His Pro  Trp Thr Ser Ala Ser  Asn Ser Ser
    2330                2335                2340

Thr Ser  Ala Pro Pro Thr Leu  Gly Gln Pro Lys Gly  Val Ser Ala
    2345                2350                2355

Ser Gln  Asp Arg Lys Ile Pro  Pro Pro Ile Gly Thr  Glu Arg Leu
    2360                2365                2370

Ala Arg  Ile Arg Gln Gly Gly  Ser Val Ala Gln Ala  Pro Ala Gly
    2375                2380                2385

Thr Ser  Phe Val Ala Pro Val  Gly His Ser Gly Ile  Trp Ser Phe
    2390                2395                2400

Gly Val  Asn Ala Val Ser Glu  Gly Leu Ser Gly Trp  Ser Gln Ser
    2405                2410                2415

Val Met  Gly Asn His Pro Met  His Gln Gln Leu Ser  Asp Pro Ser
    2420                2425                2430
```

```
Thr Phe  Ser Gln His Gln Pro  Met Glu Arg Asp Asp  Ser Gly Met
    2435                2440                2445

Val Ala  Pro Ser Asn Ile Phe  His Gln Pro Met Ala  Ser Gly Phe
    2450                2455                2460

Val Asp  Phe Ser Lys Gly Leu  Pro Ile Ser Met Tyr  Gly Gly Thr
    2465                2470                2475

Ile Ile  Pro Ser His Pro Gln  Leu Ala Asp Val Pro  Gly Gly Pro
    2480                2485                2490

Leu Phe  Asn Gly Leu His Asn  Pro Asp Pro Ala Trp  Asn Pro Met
    2495                2500                2505

Ile Lys  Val Ile Gln Asn Ser  Thr Glu Cys Thr Asp  Ala Gln Gln
    2510                2515                2520

Ile Trp  Pro Gly Thr Trp Ala  Pro His Ile Gly Asn  Met His Leu
    2525                2530                2535

Lys Tyr  Val Asn
    2540
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<210> 4939
<211> 616
<212> PRT
<213> Homo sapiens

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<223> /note="Gene Symbol: ANKHD1; "

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<223> /note="Gene Name:
ankyrin repeat and KH
domain containing 1; "

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<223> /note="Uniprot ID: Q8IWZ3; "

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<223> /note="ENSP ID: ENSP00000378211"

<400> 4939
Met Leu Thr Asp Ser Gly Gly Gly Gly Thr Ser Phe Glu Glu Asp Leu
1 5 10 15

Asp Ser Val Ala Pro Arg Ser Ala Pro Ala Gly Ala Ser Glu Pro Pro
20 25 30

Pro Pro Gly Gly Val Gly Leu Gly Ile Arg Thr Val Arg Leu Phe Gly
35 40 45

Glu Ala Gly Pro Ala Ser Gly Val Gly Ser Ser Gly Gly Gly Gly Ser
50 55 60

Gly Ser Gly Thr Gly Gly Gly Asp Ala Ala Leu Asp Phe Lys Leu Ala
65 70 75 80

Ala Ala Val Leu Arg Thr Gly Gly Gly Gly Gly Ala Ser Gly Ser Asp
85 90 95

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

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

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

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

Leu Arg Arg Leu Thr Ser Ser Val Ser Cys Ala Leu Asp Glu Ala Ala
165 170 175

Ala Ala Leu Thr Arg Met Lys Ala Glu Asn Ser His Asn Ala Gly Gln
180 185 190

Val Asp Thr Arg Ser Leu Ala Glu Ala Cys Ser Asp Gly Asp Val Asn
195 200 205

Ala Val Arg Lys Leu Leu Asp Glu Gly Arg Ser Val Asn Glu His Thr

```
    210                 215                 220

Glu Glu Gly Glu Ser Leu Leu Cys Leu Ala Cys Ser Ala Gly Tyr Tyr
225                 230                 235                 240

Glu Leu Ala Gln Val Leu Leu Ala Met His Ala Asn Val Glu Asp Arg
                245                 250                 255

Gly Asn Lys Gly Asp Ile Thr Pro Leu Met Ala Ala Ser Ser Gly Gly
            260                 265                 270

Tyr Leu Asp Ile Val Lys Leu Leu Leu Leu His Asp Ala Asp Val Asn
        275                 280                 285

Ser Gln Ser Ala Thr Gly Asn Thr Ala Leu Thr Tyr Ala Cys Ala Gly
    290                 295                 300

Gly Phe Val Asp Ile Val Lys Val Leu Leu Asn Glu Gly Ala Asn Ile
305                 310                 315                 320

Glu Asp His Asn Glu Asn Gly His Thr Pro Leu Met Glu Ala Ala Ser
                325                 330                 335

Ala Gly His Val Glu Val Ala Arg Val Leu Leu Asp His Gly Ala Gly
            340                 345                 350

Ile Asn Thr His Ser Asn Glu Phe Lys Glu Ser Ala Leu Thr Leu Ala
        355                 360                 365

Cys Tyr Lys Gly His Leu Asp Met Val Arg Phe Leu Leu Glu Ala Gly
    370                 375                 380

Ala Asp Gln Glu His Lys Thr Asp Glu Met His Thr Ala Leu Met Glu
385                 390                 395                 400

Ala Cys Met Asp Gly His Val Glu Val Ala Arg Leu Leu Leu Asp Ser
                405                 410                 415

Gly Ala Gln Val Asn Met Pro Ala Asp Ser Phe Glu Ser Pro Leu Thr
            420                 425                 430

Leu Ala Ala Cys Gly Gly His Val Glu Leu Ala Ala Leu Leu Ile Glu
        435                 440                 445
```

```
Arg Gly Ala Asn Leu Glu Glu Val Asn Asp Glu Gly Tyr Thr Pro Leu
    450                 455                 460

Met Glu Ala Ala Arg Glu Gly His Glu Glu Met Val Ala Leu Leu Leu
465                 470                 475                 480

Ala Gln Gly Ala Asn Ile Asn Ala Gln Thr Glu Glu Thr Gln Glu Thr
                485                 490                 495

Ala Leu Thr Leu Ala Cys Cys Gly Gly Phe Ser Glu Val Ala Asp Phe
            500                 505                 510

Leu Ile Lys Ala Gly Ala Asp Ile Glu Leu Gly Cys Ser Thr Pro Leu
        515                 520                 525

Met Glu Ala Ser Gln Glu Gly His Leu Glu Leu Val Lys Tyr Leu Leu
    530                 535                 540

Ala Ser Gly Ala Asn Val His Ala Thr Thr Ala Thr Gly Asp Thr Ala
545                 550                 555                 560

Leu Thr Tyr Ala Cys Glu Asn Gly His Thr Asp Val Ala Asp Val Leu
                565                 570                 575

Leu Gln Ala Gly Ala Asp Leu Asp Lys Gln Glu Asp Met Lys Thr Ile
            580                 585                 590

Leu Glu Gly Ile Asp Pro Ala Lys His Gln Val Arg Val Ala Phe Asp
        595                 600                 605

Ala Cys Lys Leu Leu Arg Lys Glu
    610                 615


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<212> PRT
<213> Homo sapiens

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ankyrin repeat and KH
domain containing 1; "

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Met Leu Thr Asp Ser Gly Gly Gly Gly Thr Ser Phe Glu Glu Asp Leu
1               5                  10                  15


Asp Ser Val Ala Pro Arg Ser Ala Pro Ala Gly Ala Ser Glu Pro Pro
            20                  25                  30


Pro Pro Gly Gly Val Gly Leu Gly Ile Arg Thr Val Arg Leu Phe Gly
        35                  40                  45


Glu Ala Gly Pro Ala Ser Gly Val Gly Ser Ser Gly Gly Gly Gly Ser
    50                  55                  60


Gly Ser Gly Thr Gly Gly Gly Asp Ala Ala Leu Asp Phe Lys Leu Ala
65                  70                  75                  80


Ala Ala Val Leu Arg Thr Gly Gly Gly Gly Gly Ala Ser Gly Ser Asp
                85                  90                  95


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


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


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


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

```
Ala Asp Gly Lys Ala Phe Ala Asp Pro Glu Val Leu Arg Arg Leu Thr
                165                 170                 175

Ser Ser Val Ser Cys Ala Leu Asp Glu Ala Ala Ala Ala Leu Thr Arg
            180                 185                 190

Met Lys Ala Glu Asn Ser His Asn Ala Gly Gln Val Asp Thr Arg Ser
        195                 200                 205

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

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

Leu Leu Cys Leu Ala Cys Ser Ala Gly Tyr Tyr Glu Leu Ala Gln Val
                245                 250                 255

Leu Leu Ala Met His Ala Asn Val Glu Asp Arg Gly Asn Lys Gly Asp
            260                 265                 270

Ile Thr Pro Leu Met Ala Ala Ser Ser Gly Gly Tyr Leu Asp Ile Val
        275                 280                 285

Lys Leu Leu Leu Leu His Asp Ala Asp Val Asn Ser Gln Ser Ala Thr
    290                 295                 300

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

Val Lys Val Leu Leu Asn Glu Gly Ala Asn Ile Glu Asp His Asn Glu
                325                 330                 335

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

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

Asn Glu Phe Lys Glu Ser Ala Leu Thr Leu Ala Cys Tyr Lys Gly His
    370                 375                 380

Leu Asp Met Val Arg Phe Leu Leu Glu Ala Gly Ala Asp Gln Glu His
```

385 390 395 400

Lys Thr Asp Glu Met His Thr Ala Leu Met Glu Ala Cys Met Asp Gly
405 410 415

His Val Glu Val Ala Arg Leu Leu Leu Asp Ser Gly Ala Gln Val Asn
420 425 430

Met Pro Ala Asp Ser Phe Glu Ser Pro Leu Thr Leu Ala Ala Cys Gly
435 440 445

Gly His Val Glu Leu Ala Ala Leu Leu Ile Glu Arg Gly Ala Asn Leu
450 455 460

Glu Glu Val Asn Asp Glu Gly Tyr Thr Pro Leu Met Glu Ala Ala Arg
465 470 475 480

Glu Gly His Glu Glu Met Val Ala Leu Leu Leu Ala Gln Gly Ala Asn
485 490 495

Ile Asn Ala Gln Thr Glu Glu Thr Gln Glu Thr Ala Leu Thr Leu Ala
500 505 510

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

Ala Asp Ile Glu Leu Gly Cys Ser Thr Pro Leu Met Glu Ala Ser Gln
530 535 540

Glu Gly His Leu Glu Leu Val Lys Tyr Leu Leu Ala Ser Gly Ala Asn
545 550 555 560

Val His Ala Thr Thr Ala Thr Gly Asp Thr Ala Leu Thr Tyr Ala Cys
565 570 575

Glu Asn Gly His Thr Asp Val Ala Asp Val Leu Leu Gln Ala Gly Ala
580 585 590

Asp Leu Asp Lys Gln Glu Asp Met Lys Thr Ile Leu Glu Gly Ile Asp
595 600 605

Pro Ala Lys His Gln Val Arg Val Ala Phe Asp Ala Cys Lys Leu Leu
610 615 620

Arg Lys Glu
625

<210> 4941
<211> 1072
<212> PRT
<213> Homo sapiens

<220>
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ankyrin repeat and KH
domain containing 1; "

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Pro Lys Glu Asn Ser Glu Leu Pro Glu Asp Glu Asp Glu Glu Glu Asn
1 5 10 15

Asp Glu Asp Val Glu Gln Glu Val Pro Ile Glu Pro Pro Ser Ala Thr
20 25 30

Thr Thr Thr Thr Ile Gly Ile Ser Ala Thr Ser Ala Thr Phe Thr Asn
35 40 45

Val Phe Gly Lys Lys Arg Ala Asn Val Val Thr Thr Pro Ser Thr Asn
50 55 60

Arg Lys Asn Lys Lys Asn Lys Thr Lys Glu Thr Pro Pro Thr Ala His
65 70 75 80

Leu Ile Leu Pro Glu Gln His Met Ser Leu Ala Gln Gln Lys Ala Asp
85 90 95

Lys Asn Lys Ile Asn Gly Glu Pro Arg Gly Gly Gly Ala Gly Gly Asn
100 105 110

```
Ser Asp Ser Asp Asn Leu Asp Ser Thr Asp Cys Asn Ser Glu Ser Ser
        115                 120                 125

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

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

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

Asn Ser Leu Ser Thr Ser Tyr Lys Thr Val Ser Leu Pro Leu Ser Ser
            180                 185                 190

Pro Asn Ile Lys Leu Asn Leu Thr Ser Pro Lys Arg Gly Gln Lys Arg
        195                 200                 205

Glu Glu Gly Trp Lys Glu Val Val Arg Arg Ser Lys Lys Leu Ser Val
    210                 215                 220

Pro Ala Ser Val Val Ser Arg Ile Met Gly Arg Gly Gly Cys Asn Ile
225                 230                 235                 240

Thr Ala Ile Gln Asp Val Thr Gly Ala His Ile Asp Val Asp Lys Gln
                245                 250                 255

Lys Asp Lys Asn Gly Glu Arg Met Ile Thr Ile Arg Gly Gly Thr Glu
            260                 265                 270

Ser Thr Arg Tyr Ala Val Gln Leu Ile Asn Ala Leu Ile Gln Asp Pro
        275                 280                 285

Ala Lys Glu Leu Glu Asp Leu Ile Pro Lys Asn His Ile Arg Thr Pro
    290                 295                 300

Ala Ser Thr Lys Ser Ile His Ala Asn Phe Ser Ser Gly Val Gly Thr
305                 310                 315                 320

Thr Ala Ala Ser Ser Lys Asn Ala Phe Pro Leu Gly Ala Pro Thr Leu
                325                 330                 335
```

```
Val Thr Ser Gln Ala Thr Thr Leu Ser Thr Phe Gln Pro Ala Asn Lys
            340                 345                 350

Leu Asn Lys Asn Val Pro Thr Asn Val Arg Ser Ser Phe Pro Val Ser
        355                 360                 365

Leu Pro Leu Ala Tyr Pro His Pro His Phe Ala Leu Leu Ala Ala Gln
    370                 375                 380

Thr Met Gln Gln Ile Arg His Pro Arg Leu Pro Met Ala Gln Phe Gly
385                 390                 395                 400

Gly Thr Phe Ser Pro Ser Pro Asn Thr Trp Gly Pro Phe Pro Val Arg
                405                 410                 415

Pro Val Asn Pro Gly Asn Thr Asn Ser Ser Pro Lys His Asn Asn Thr
            420                 425                 430

Ser Arg Leu Pro Asn Gln Asn Gly Thr Val Leu Pro Ser Glu Ser Ala
        435                 440                 445

Gly Leu Ala Thr Ala Ser Cys Pro Ile Thr Val Ser Ser Val Val Ala
    450                 455                 460

Ala Ser Gln Gln Leu Cys Val Thr Asn Thr Arg Thr Pro Ser Ser Val
465                 470                 475                 480

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

Val Ile Ser Ser Val Thr Ser Thr Cys Ser Ser Leu Pro Ser Val Ser
            500                 505                 510

Ser Ala Pro Ile Thr Ser Gly Gln Ala Pro Thr Thr Phe Leu Pro Ala
        515                 520                 525

Ser Thr Ser Gln Ala Gln Leu Ser Ser Gln Lys Met Glu Ser Phe Ser
    530                 535                 540

Ala Val Pro Pro Thr Lys Glu Lys Val Ser Thr Gln Asp Gln Pro Met
545                 550                 555                 560

Ala Asn Leu Cys Thr Pro Ser Ser Thr Ala Asn Ser Cys Ser Ser Ser
```

565 570 575

Ala Ser Asn Thr Pro Gly Ala Pro Glu Thr His Pro Ser Ser Ser Pro
580 585 590

Thr Pro Thr Ser Ser Asn Thr Gln Glu Glu Ala Gln Pro Ser Ser Val
595 600 605

Ser Asp Leu Ser Pro Met Ser Met Pro Phe Ala Ser Asn Ser Glu Pro
610 615 620

Ala Pro Leu Thr Leu Thr Ser Pro Arg Met Val Ala Ala Asp Asn Gln
625 630 635 640

Asp Thr Ser Asn Leu Pro Gln Leu Ala Val Pro Ala Pro Arg Val Ser
645 650 655

His Arg Met Gln Pro Arg Gly Ser Phe Tyr Ser Met Val Pro Asn Ala
660 665 670

Thr Ile His Gln Asp Pro Gln Ser Ile Phe Val Thr Asn Pro Val Thr
675 680 685

Leu Thr Pro Pro Gln Gly Pro Pro Ala Ala Val Gln Leu Ser Ser Ala
690 695 700

Val Asn Ile Met Asn Gly Ser Gln Met His Ile Asn Pro Ala Asn Lys
705 710 715 720

Ser Leu Pro Pro Thr Phe Gly Pro Ala Thr Leu Phe Asn His Phe Ser
725 730 735

Ser Leu Phe Asp Ser Ser Gln Val Pro Ala Asn Gln Gly Trp Gly Asp
740 745 750

Gly Pro Leu Ser Ser Arg Val Ala Thr Asp Ala Ser Phe Thr Val Gln
755 760 765

Ser Ala Phe Leu Gly Asn Ser Val Leu Gly His Leu Glu Asn Met His
770 775 780

Pro Asp Asn Ser Lys Ala Pro Gly Phe Arg Pro Pro Ser Gln Arg Val
785 790 795 800

```
Ser Thr Ser Pro Val Gly Leu Pro Ser Ile Asp Pro Ser Gly Ser Ser
                805                 810                 815

Pro Ser Ser Ser Ser Ala Pro Leu Ala Ser Phe Ser Gly Ile Pro Gly
            820                 825                 830

Thr Arg Val Phe Leu Gln Gly Pro Ala Pro Val Gly Thr Pro Ser Phe
        835                 840                 845

Asn Arg Gln His Phe Ser Pro His Pro Trp Thr Ser Ala Ser Asn Ser
    850                 855                 860

Cys Asp Ser Pro Ile Pro Ser Val Ser Ser Gly Ser Ser Ser Pro Leu
865                 870                 875                 880

Ser Ala Thr Ser Ala Pro Pro Thr Leu Gly Gln Pro Lys Gly Val Ser
                885                 890                 895

Ala Ser Gln Asp Arg Lys Ile Pro Pro Pro Ile Gly Thr Glu Arg Leu
            900                 905                 910

Ala Arg Ile Arg Gln Gly Gly Ser Val Ala Gln Ala Pro Ala Gly Thr
        915                 920                 925

Ser Phe Val Ala Pro Val Gly His Ser Gly Ile Trp Ser Phe Gly Val
    930                 935                 940

Asn Ala Val Ser Glu Gly Leu Ser Gly Trp Ser Gln Ser Val Met Gly
945                 950                 955                 960

Asn His Pro Met His Gln Gln Leu Ser Asp Pro Ser Thr Phe Ser Gln
                965                 970                 975

His Gln Pro Met Glu Arg Asp Asp Ser Gly Met Val Ala Pro Ser Asn
            980                 985                 990

Ile Phe His Gln Pro Met Gly Leu  Pro Ile Ser Met Tyr  Gly Gly
Thr
        995                 1000                1005

Ile Ile  Pro Ser His Pro Gln  Leu Ala Asp Val Pro  Gly Gly Pro
    1010                1015                1020
```

```
Leu Phe  Asn Gly Leu His Asn  Pro Asp Pro Ala Trp  Asn Pro Met
    1025                1030                1035


Ile Lys  Val Ile Gln Asn Ser  Thr Glu Cys Thr Asp  Ala Gln Gln
    1040                1045                1050


Ile Trp  Pro Gly Thr Trp Ala  Pro His Ile Gly Asn  Met His Leu
    1055                1060                1065


Lys Tyr  Val Asn
    1070


<210> 4942
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<213> Homo sapiens

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


Pro Leu Met Ser Ala Phe Arg Lys Gly His Val Lys Val Val Gln Tyr
            20                  25                  30


Leu Val Lys Glu Val Asn Gln Phe Pro Ser Asp Ile Glu Cys Met Arg
        35                  40                  45


Tyr Ile Ala Thr Ile Thr Asp Lys Glu Leu Leu Lys Lys Cys His Gln
    50                  55                  60
```

```
Cys Val Glu Thr Ile Val Lys Ala Lys Asp Gln Gln Ala Ala Glu Ala
65                  70                  75                  80

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

Arg Glu Glu Ser Arg Lys Gln Ala Leu Ala Ala Lys Arg Glu Lys Arg
            100                 105                 110

Lys Glu Lys Arg Lys Lys Lys Lys Glu Glu Gln Lys Arg Lys Gln Glu
        115                 120                 125

Glu Asp Glu Glu Asn Lys Pro Lys Glu Asn Ser Glu Leu Pro Glu Asp
    130                 135                 140

Glu Asp Glu Glu Glu Asn Asp Glu Asp Val Glu Gln Glu Val Pro Ile
145                 150                 155                 160

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

Ser Ala Thr Phe Thr Asn Val Phe Gly Lys Lys Arg Ala Asn Val Val
            180                 185                 190

Thr Thr Pro Ser Thr Asn Arg Lys Asn Lys Lys Asn Lys Thr Lys Glu
        195                 200                 205

Thr Pro Pro Thr Ala His Leu Ile Leu Pro Glu Gln His Met Ser Leu
    210                 215                 220

Ala Gln Gln Lys Ala Asp Lys Asn Lys Ile Asn Gly Glu Pro Arg Gly
225                 230                 235                 240

Gly Gly Ala Gly Gly Asn Ser Asp Ser Asp Asn Leu Asp Ser Thr Asp
                245                 250                 255

Cys Asn Ser Glu Ser Ser Ser Gly Gly Lys Ser Gln Glu Leu Asn Phe
            260                 265                 270

Val Met Asp Val Asn Ser Ser Lys Tyr Pro Ser Leu Leu Leu His Ser
        275                 280                 285
```

```
Gln Glu Glu Lys Thr Ser Thr Ala Thr Ser Lys Thr Gln Thr Arg Leu
    290                 295                 300

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

Ser Leu Pro Leu Ser Ser Pro Asn Ile Lys Leu Asn Leu Thr Ser Pro
                325                 330                 335

Lys Arg Gly Gln Lys Arg Glu Glu Gly Trp Lys Glu Val Val Arg Arg
            340                 345                 350

Ser Lys Lys Leu Ser Val Pro Ala Ser Val Val Ser Arg Ile Met Gly
        355                 360                 365

Arg Gly Gly Cys Asn Ile Thr Ala Ile Gln Asp Val Thr Gly Ala His
    370                 375                 380

Ile Asp Val Asp Lys Gln Lys Asp Lys Asn Gly Glu Arg Met Ile Thr
385                 390                 395                 400

Ile Arg Gly Gly Thr Glu Ser Thr Arg Tyr Ala Val Gln Leu Ile Asn
                405                 410                 415

Ala Leu Ile Gln Asp Pro Ala Lys Glu Leu Glu Asp Leu Ile Pro Lys
            420                 425                 430

Asn His Ile Arg Thr Pro Ala Ser Thr Lys Ser Ile His Ala Asn Phe
        435                 440                 445

Ser Ser Gly Val Gly Thr Thr Ala Ala Ser Ser Lys Asn Ala Phe Pro
    450                 455                 460

Leu Gly Ala Pro Thr Leu Val Thr Ser Gln Ala Thr Thr Leu Ser Thr
465                 470                 475                 480

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

Ser Ser Phe Pro Val Ser Leu Pro Leu Ala Tyr Pro His Pro His Phe
            500                 505                 510

Ala Leu Leu Ala Ala Gln Thr Met Gln Gln Ile Arg His Pro Arg Leu
```

```
        515                 520                 525

Pro Met Ala Gln Phe Gly Gly Thr Phe Ser Pro Ser Pro Asn Thr Trp
    530                 535                 540

Gly Pro Phe Pro Val Arg Pro Val Asn Pro Gly Asn Thr Asn Ser Ser
545                 550                 555                 560

Pro Lys His Asn Asn Thr Ser Arg Leu Pro Asn Gln Asn Gly Thr Val
                565                 570                 575

Leu Pro Ser Glu Ser Ala Gly Leu Ala Thr Ala Ser Cys Pro Ile Thr
            580                 585                 590

Val Ser Ser Val Val Ala Ala Ser Gln Gln Leu Cys Val Thr Asn Thr
        595                 600                 605

Arg Thr Pro Ser Ser Val Arg Lys Gln Leu Phe Ala Cys Val Pro Lys
    610                 615                 620

Thr Ser Pro Pro Ala Thr Val Ile Ser Ser Val Thr Ser Thr Cys Ser
625                 630                 635                 640

Ser Leu Pro Ser Val Ser Ser Ala Pro Ile Thr Ser Gly Gln Ala Pro
                645                 650                 655

Thr Thr Phe Leu Pro Ala Ser Thr Ser Gln Ala Gln Leu Ser Ser Gln
            660                 665                 670

Lys Met Glu Ser Phe Ser Ala Val Pro Pro Thr Lys Glu Lys Val Ser
        675                 680                 685

Thr Gln Asp Gln Pro Met Ala Asn Leu Cys Thr Pro Ser Ser Thr Ala
    690                 695                 700

Asn Ser Cys Ser Ser Ser Ala Ser Asn Thr Pro Gly Ala Pro Glu Thr
705                 710                 715                 720

His Pro Ser Ser Ser Pro Thr Pro Thr Ser Ser Asn Thr Gln Glu Glu
                725                 730                 735

Ala Gln Pro Ser Ser Val Ser Asp Leu Ser Pro Met Ser Met Pro Phe
            740                 745                 750
```

```
Ala Ser Asn Ser Glu Pro Ala Pro Leu Thr Leu Thr Ser Pro Arg Met
        755                 760                 765

Val Ala Ala Asp Asn Gln Asp Thr Ser Asn Leu Pro Gln Leu Ala Val
    770                 775                 780

Pro Ala Pro Arg Val Ser His Arg Met Gln Pro Arg Gly Ser Phe Tyr
785                 790                 795                 800

Ser Met Val Pro Asn Ala Thr Ile His Gln Asp Pro Gln Ser Ile Phe
                805                 810                 815

Val Thr Asn Pro Val Thr Leu Thr Pro Pro Gln Gly Pro Pro Ala Ala
            820                 825                 830

Val Gln Leu Ser Ser Ala Val Asn Ile Met Asn Gly Ser Gln Met His
        835                 840                 845

Ile Asn Pro Ala Asn Lys Ser Leu Pro Pro Thr Phe Gly Pro Ala Thr
    850                 855                 860

Leu Phe Asn His Phe Ser Ser Leu Phe Asp Ser Ser Gln Val Pro Ala
865                 870                 875                 880

Asn Gln Gly Trp Gly Asp Gly Pro Leu Ser Ser Arg Val Ala Thr Asp
                885                 890                 895

Ala Ser Phe Thr Val Gln Ser Ala Phe Leu Gly Asn Ser Val Leu Gly
            900                 905                 910

His Leu Glu Asn Met His Pro Asp Asn Ser Lys Ala Pro Gly Phe Arg
        915                 920                 925

Pro Pro Ser Gln Arg Val Ser Thr Ser Pro Val Gly Leu Pro Ser Ile
    930                 935                 940

Asp Pro Ser Gly Ser Ser Pro Ser Ser Ser Ser Ala Pro Leu Ala Ser
945                 950                 955                 960

Phe Ser Gly Ile Pro Gly Thr Arg Val Phe Leu Gln Gly Pro Ala Pro
                965                 970                 975
```

```
Val Gly Thr Pro Ser Phe Asn Arg Gln His Phe Ser Pro His Pro Trp
            980                 985                 990

Thr Ser Ala Ser Asn Ser Cys Asp  Ser Pro Ile Pro Ser  Val Ser
Ser
        995                 1000                1005

Gly Ser  Ser Ser Pro Leu Ser  Ala Thr Ser Ala Pro  Pro Thr Leu
    1010                1015                1020

Gly Gln  Pro Lys Gly Val Ser  Ala Ser Gln Asp Arg  Lys Ile Pro
    1025                1030                1035

Pro Pro  Ile Gly Thr Glu Arg  Leu Ala Arg Ile Arg  Gln Gly Gly
    1040                1045                1050

Ser Val  Ala Gln Ala Pro Ala  Gly Thr Ser Phe Val  Ala Pro Val
    1055                1060                1065

Gly His  Ser Gly Ile Trp Ser  Phe Gly Val Asn Ala  Val Ser Glu
    1070                1075                1080

Gly Leu  Ser Gly Trp Ser Gln  Ser Val Met Gly Asn  His Pro Met
    1085                1090                1095

His Gln  Gln Leu Ser Asp Pro  Ser Thr Phe Ser Gln  His Gln Pro
    1100                1105                1110

Met Glu  Arg Asp Asp Ser Gly  Met Val Ala Pro Ser  Asn Ile Phe
    1115                1120                1125

His Gln  Pro Met Ala Ser Gly  Phe Val Asp Phe Ser  Lys Gly Leu
    1130                1135                1140

Pro Ile  Ser Met Tyr Gly Gly  Thr Ile Ile Pro Ser  His Pro Gln
    1145                1150                1155

Leu Ala  Asp Val Pro Gly Gly  Pro Leu Phe Asn Gly  Leu His Asn
    1160                1165                1170

Pro Asp  Pro Ala Trp Asn Pro  Met Ile Lys Val Ile  Gln Asn Ser
    1175                1180                1185
```

Thr Glu Cys Thr Asp Ala Gln Gln Ile Trp Pro Gly Thr Trp Ala
1190 1195 1200

Pro His Ile Gly Asn Met His Leu Lys Tyr Val Asn
1205 1210 1215

<210> 4943
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<223> /note="Gene Symbol: ANKHD1; "

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ankyrin repeat and KH
domain containing 1; "

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Met Leu Thr Asp Ser Gly Gly Gly Gly Thr Ser Phe Glu Glu Asp Leu
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Asp Ser Val Ala Pro Arg Ser Ala Pro Ala Gly Ala Ser Glu Pro Pro
20 25 30

Pro Pro Gly Gly Val Gly Leu Gly Ile Arg Thr Val Arg Leu Phe Gly
35 40 45

Glu Ala Gly Pro Ala Ser Gly Val Gly Ser Ser Gly Gly Gly Gly Ser
50 55 60

Gly Ser Gly Thr Gly Gly Gly Asp Ala Ala Leu Asp Phe Lys Leu Ala
65 70 75 80

Ala Ala Val Leu Arg Thr Gly Gly Gly Gly Gly Ala Ser Gly Ser Asp
85 90 95

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

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

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

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

Ala Asp Gly Lys Ala Phe Ala Asp Pro Glu Val Leu Arg Arg Leu Thr
                165                 170                 175

Ser Ser Val Ser Cys Ala Leu Asp Glu Ala Ala Ala Ala Leu Thr Arg
            180                 185                 190

Met Lys Ala Glu Asn Ser His Asn Ala Gly Gln Val Asp Thr Arg Ser
        195                 200                 205

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

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

Leu Leu Cys Leu Ala Cys Ser Ala Gly Tyr Tyr Glu Leu Ala Gln Val
                245                 250                 255

Leu Leu Ala Met His Ala Asn Val Glu Asp Arg Gly Asn Lys Gly Asp
            260                 265                 270

Ile Thr Pro Leu Met Ala Ala Ser Ser Gly Gly Tyr Leu Asp Ile Val
        275                 280                 285

Lys Leu Leu Leu Leu His Asp Ala Asp Val Asn Ser Gln Ser Ala Thr
    290                 295                 300

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

Val Lys Val Leu Leu Asn Glu Gly Ala Asn Ile Glu Asp His Asn Glu
```

```
                325                 330                 335

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

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

Asn Glu Phe Lys Glu Ser Ala Leu Thr Leu Ala Cys Tyr Lys Gly His
    370                 375                 380

Leu Asp Met Val Arg Phe Leu Leu Glu Ala Gly Ala Asp Gln Glu His
385                 390                 395                 400

Lys Thr Asp Glu Met His Thr Ala Leu Met Glu Ala Cys Met Asp Gly
                405                 410                 415

His Val Glu Val Ala Arg Leu Leu Leu Asp Ser Gly Ala Gln Val Asn
            420                 425                 430

Met Pro Ala Asp Ser Phe Glu Ser Pro Leu Thr Leu Ala Ala Cys Gly
        435                 440                 445

Gly His Val Glu Leu Ala Ala Leu Leu Ile Glu Arg Gly Ala Asn Leu
    450                 455                 460

Glu Glu Val Asn Asp Glu Gly Tyr Thr Pro Leu Met Glu Ala Ala Arg
465                 470                 475                 480

Glu Gly His Glu Glu Met Val Ala Leu Leu Leu Ala Gln Gly Ala Asn
                485                 490                 495

Ile Asn Ala Gln Thr Glu Glu Thr Gln Glu Thr Ala Leu Thr Leu Ala
            500                 505                 510

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

Ala Asp Ile Glu Leu Gly Cys Ser Thr Pro Leu Met Glu Ala Ser Gln
    530                 535                 540

Glu Gly His Leu Glu Leu Val Lys Tyr Leu Leu Ala Ser Gly Ala Asn
545                 550                 555                 560
```

```
Val His Ala Thr Thr Ala Thr Gly Asp Thr Ala Leu Thr Tyr Ala Cys
                565                 570                 575

Glu Asn Gly His Thr Asp Val Ala Asp Val Leu Leu Gln Ala Gly Ala
            580                 585                 590

Asp Leu Asp Lys Gln Glu Asp Met Lys Thr Ile Leu Glu Gly Ile Asp
        595                 600                 605

Pro Ala Lys His Gln Glu His Glu Ser Glu Gly Gly Arg Thr Pro Leu
    610                 615                 620

Met Lys Ala Ala Arg Ala Gly His Leu Cys Thr Val Gln Phe Leu Ile
625                 630                 635                 640

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

Val Val Ser Leu Ala Cys Ala Gly Gly His Leu Ala Val Val Glu Leu
            660                 665                 670

Leu Leu Ala His Gly Ala Asp Pro Thr His Arg Leu Lys Asp Gly Ser
        675                 680                 685

Thr Met Leu Ile Glu Ala Ala Lys Gly Gly His Thr Asn Val Val Ser
    690                 695                 700

Tyr Leu Leu Asp Tyr Pro Asn Asn Val Leu Ser Val Pro Thr Thr Asp
705                 710                 715                 720

Val Ser Gln Leu Pro Pro Pro Ser Gln Asp Gln Ser Gln Val Pro Arg
                725                 730                 735

Val Pro Thr His Thr Leu Ala Met Val Val Pro Pro Gln Glu Pro Asp
            740                 745                 750

Arg Thr Ser Gln Glu Asn Ser Pro Ala Leu Leu Gly Val Gln Lys Gly
        755                 760                 765

Thr Ser Lys Gln Lys Ser Ser Ser Leu Gln Val Ala Asp Gln Asp Leu
    770                 775                 780
```

```
Leu Pro Ser Phe His Pro Tyr Gln Pro Leu Glu Cys Ile Val Glu Glu
785                 790                 795                 800

Thr Glu Gly Lys Leu Asn Glu Leu Gly Gln Arg Ile Ser Ala Ile Glu
                805                 810                 815

Lys Ala Gln Leu Lys Ser Leu Glu Leu Ile Gln Gly Glu Pro Leu Asn
            820                 825                 830

Lys Asp Lys Ile Glu Glu Leu Lys Lys Asn Arg Glu Glu Gln Val Gln
        835                 840                 845

Lys Lys Lys Lys Ile Leu Lys Glu Leu Gln Lys Val Glu Arg Gln Leu
    850                 855                 860

Gln Met Lys Thr Gln Gln Gln Phe Thr Lys Glu Tyr Leu Glu Thr Lys
865                 870                 875                 880

Gly Gln Lys Asp Thr Val Ser Leu His Gln Gln Cys Ser His Arg Gly
                885                 890                 895

Val Phe Pro Glu Gly Glu Gly Asp Gly Ser Leu Pro Glu Asp His Phe
            900                 905                 910

Ser Glu Leu Pro Gln Val Asp Thr Ile Leu Phe Lys Asp Asn Asp Val
        915                 920                 925

Asp Asp Glu Gln Gln Ser Pro Pro Ser Ala Glu Gln Ile Asp Phe Val
    930                 935                 940

Pro Val Gln Pro Leu Ser Ser Pro Gln Cys Asn Phe Ser Ser Asp Leu
945                 950                 955                 960

Gly Ser Asn Gly Thr Asn Ser Leu Glu Leu Gln Lys Val Ser Gly Asn
                965                 970                 975

Gln Gln Ile Val Gly Gln Pro Gln Ile Ala Ile Thr Gly His Asp Gln
            980                 985                 990

Gly Leu Leu Val Gln Glu Pro Asp  Gly Leu Met Val Ala  Thr Pro
Ala
        995                 1000                1005
```

```
Gln Thr  Leu Thr Asp Thr Leu  Asp Asp Leu Ile Ala  Ala Val Ser
    1010                1015                1020

Thr Arg  Val Pro Thr Gly Ser  Asn Ser Ser Ser Gln  Thr Thr Glu
    1025                1030                1035

Cys Leu  Thr Pro Glu Ser Cys  Ser Gln Thr Thr Ser  Asn Val Ala
    1040                1045                1050

Ser Gln  Ser Met Pro Pro Val  Tyr Pro Ser Val Asp  Ile Asp Ala
    1055                1060                1065

His Thr  Glu Ser Asn His Asp  Thr Ala Leu Thr Leu  Ala Cys Ala
    1070                1075                1080

Gly Gly  His Glu Glu Leu Val  Ser Val Leu Ile Ala  Arg Asp Ala
    1085                1090                1095

Lys Ile  Glu His Arg Asp Lys  Lys Gly Phe Thr Pro  Leu Ile Leu
    1100                1105                1110

Ala Ala  Thr Ala Gly His Val  Gly Val Val Glu Ile  Leu Leu Asp
    1115                1120                1125

Lys Gly  Gly Asp Ile Glu Ala  Gln Ser Glu Arg Thr  Lys Asp Thr
    1130                1135                1140

Pro Leu  Ser Leu Ala Cys Ser  Gly Gly Arg Gln Glu  Val Val Asp
    1145                1150                1155

Leu Leu  Leu Ala Arg Gly Ala  Asn Lys Glu His Arg  Asn Val Ser
    1160                1165                1170

Asp Tyr  Thr Pro Leu Ser Leu  Ala Ala Ser Gly Gly  Tyr Val Asn
    1175                1180                1185

Ile Ile  Lys Ile Leu Leu Asn  Ala Gly Ala Glu Ile  Asn Ser Arg
    1190                1195                1200

Thr Gly  Ser Lys Leu Gly Ile  Ser Pro Leu Met Leu  Ala Ala Met
    1205                1210                1215
```

```
Asn Gly  His Val Pro Ala Val  Lys Leu Leu Leu Asp  Met Gly Ser
    1220                1225                1230

Asp Ile  Asn Ala Gln Ile Glu  Thr Asn Arg Asn Thr  Ala Leu Thr
    1235                1240                1245

Leu Ala  Cys Phe Gln Gly Arg  Ala Glu Val Val Ser  Leu Leu Leu
    1250                1255                1260

Asp Arg  Lys Ala Asn Val Glu  His Arg Ala Lys Thr  Gly Leu Thr
    1265                1270                1275

Pro Leu  Met Glu Ala Ala Ser  Gly Gly Tyr Ala Glu  Val Gly Arg
    1280                1285                1290

Val Leu  Leu Asp Lys Gly Ala  Asp Val Asn Ala Pro  Pro Val Pro
    1295                1300                1305

Ser Ser  Arg Asp Thr Ala Leu  Thr Ile Ala Ala Asp  Lys Gly His
    1310                1315                1320

Tyr Lys  Phe Cys Glu Leu Leu  Ile His Arg Gly Ala  His Ile Asp
    1325                1330                1335

Val Arg  Asn Lys Lys Gly Asn  Thr Pro Leu Trp Leu  Ala Ser Asn
    1340                1345                1350

Gly Gly  His Phe Asp Val Val  Gln Leu Leu Val Gln  Ala Gly Ala
    1355                1360                1365

Asp Val  Asp Ala Ala Asp Asn  Arg Lys Ile Thr Pro  Leu Met Ser
    1370                1375                1380

Ala Phe  Arg Lys Gly His Val  Lys Val Val Gln Tyr  Leu Val Lys
    1385                1390                1395

Glu Val  Asn Gln Phe Pro Ser  Asp Ile Glu Cys Met  Arg Tyr Ile
    1400                1405                1410

Ala Thr  Ile Thr Asp Lys Glu  Leu Leu Lys Lys Cys  His Gln Cys
    1415                1420                1425

Val Glu  Thr Ile Val Lys Ala  Lys Asp Gln Gln Ala  Ala Glu Ala
```

```
    1430                1435                1440

Asn Lys  Asn Ala Ser Ile Leu  Leu Lys Glu Leu Asp  Leu Glu Lys
    1445                1450                1455

Ser Arg  Glu Glu Ser Arg Lys  Gln Ala Leu Ala Ala  Lys Arg Glu
    1460                1465                1470

Lys Arg  Lys Glu Lys Arg Lys  Lys Lys Lys Glu Glu  Gln Lys Arg
    1475                1480                1485

Lys Gln  Glu Glu Asp Glu Glu  Asn Lys Pro Lys Glu  Asn Ser Glu
    1490                1495                1500

Leu Pro  Glu Asp Glu Asp Glu  Glu Glu Asn Asp Glu  Asp Val Glu
    1505                1510                1515

Gln Glu  Val Pro Ile Glu Pro  Pro Ser Ala Thr Thr  Thr Thr Thr
    1520                1525                1530

Ile Gly  Ile Ser Ala Thr Ser  Ala Thr Phe Thr Asn  Val Phe Gly
    1535                1540                1545

Lys Lys  Arg Ala Asn Val Val  Thr Thr Pro Ser Thr  Asn Arg Lys
    1550                1555                1560

Asn Lys
    1565


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Xaa Thr Ser Ala Pro Pro Thr Leu Gly Gln Pro Lys Gly Val Ser Ala
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Ser Gln Asp Arg Lys Ile Pro Pro Pro Ile Gly Thr Glu Arg Leu Ala
20 25 30

Arg Ile Arg Gln Gly Gly Ser Val Ala Gln Ala Pro Ala Gly Thr Ser
35 40 45

Phe Val Ala Pro Val Gly His Ser Gly Ile Trp Ser Phe Gly Val Asn
50 55 60

Ala Val Ser Glu Gly Leu Ser Gly Trp Ser Gln Ser Val Met Gly Asn
65 70 75 80

His Pro Met His Gln Gln Leu Ser Asp Pro Ser Thr Phe Ser Gln His
85 90 95

Gln Pro Met Glu Arg Asp Asp Ser Gly Met Val Ala Pro Ser Asn Ile
100 105 110

Phe His Gln Pro Met Ala Ser Gly Phe Val Asp Phe Ser Lys Gly Leu
115 120 125

Pro Ile Ser Met Tyr Gly Gly Thr Ile Ile Pro Ser His Pro Gln Leu
130 135 140

Ala Asp Val Pro Gly Gly Pro Leu Phe Asn Gly Leu His Asn Pro Asp
145 150 155 160

Pro Ala Trp Asn Pro Met Ile Lys Val Ile Gln Asn Ser Thr Glu Cys
165 170 175

Thr Asp Ala Gln Gln Val Lys Trp Ala

180 185

<210> 4945
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ankyrin repeat and KH
domain containing 1; "

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<223> /note="ENSP ID: ENSP00000405602"

<400> 4945
Glu His Glu Ser Glu Gly Gly Arg Thr Pro Leu Met Lys Ala Ala Arg
1 5 10 15

Ala Gly His Leu Cys Thr Val Gln Phe Leu Ile Ser Lys Gly Ala Asn
20 25 30

Val Asn Arg Ala Thr Ala Asn Asn Asp His Thr Val Val Ser Leu Ala
35 40 45

Cys Ala Gly Gly His Leu Ala Val Val Glu Leu Leu Leu Ala His Gly
50 55 60

Ala Asp Pro Thr His Arg Leu Lys Asp Gly Ser Thr Met Leu Ile Glu
65 70 75 80

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

Pro Asn Asn Val Leu Ser Val Pro Thr Thr Asp Val Ser Gln Leu Pro
100 105 110

Pro Pro Ser Gln Asp Gln Ser Gln Val Pro Arg Val Pro Thr His Thr
115 120 125

```
Leu Ala Met Val Val Pro Pro Gln Glu Pro Asp Arg Thr Ser Gln Glu
    130                 135                 140

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

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

Glu Ser Cys Ser Gln Thr Thr Ser Asn Val Ala Ser Gln Ser Met Pro
            180                 185                 190

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

Asp Thr Ala Leu Thr Leu Ala Cys Ala Gly Gly His Glu Glu Leu Val
    210                 215                 220

Ser Val Leu Ile Ala Arg Asp Ala Lys Ile Glu His Arg Asp Lys Lys
225                 230                 235                 240

Gly Phe Thr Pro Leu Ile Leu Ala Ala Thr Ala Gly His Val Gly Val
                245                 250                 255

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

Arg Thr Lys Asp Thr Pro Leu Ser Leu Ala Cys Ser Gly Gly Arg Gln
        275                 280                 285

Glu Val Val Asp Leu Leu Leu Ala Arg Gly Ala Asn Lys Glu His Arg
    290                 295                 300

Asn Val Ser Asp Tyr Thr Pro Leu Ser Leu Ala Ala Ser Gly Gly Tyr
305                 310                 315                 320

Val Asn Ile Ile Lys Ile Leu Leu Asn Ala Gly Ala Glu Ile Asn Ser
                325                 330                 335

Arg Thr Gly Ser Lys Leu Gly Ile Ser Pro Leu Met Leu Ala Ala Met
            340                 345                 350
```

```
Asn Gly His Val Pro Ala Val Lys Leu Leu Leu Asp Met Gly Ser Asp
        355                 360                 365

Ile Asn Ala Gln Ile Glu Thr Asn Arg Asn Thr Ala Leu Thr Leu Ala
    370                 375                 380

Cys Phe Gln Gly Arg Ala Glu Val Val Ser Leu Leu Leu Asp Arg Lys
385                 390                 395                 400

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

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

Gly Ala Asp Val Asn Ala Pro Pro Val Pro Ser Ser Arg Asp Thr Ala
        435                 440                 445

Leu Thr Ile Ala Ala Asp Lys Gly His Tyr Lys Phe Cys Glu Leu Leu
    450                 455                 460

Ile His Arg Gly Ala His Ile Asp Val Arg Asn Lys Lys Gly Asn Thr
465                 470                 475                 480

Pro Leu Trp Leu Ala Ser Asn Gly Gly His Phe Asp Val Val Gln Leu
                485                 490                 495

Leu Val Gln Ala Gly Ala Asp Val Asp Ala Ala Asp Asn Arg Lys Ile
            500                 505                 510

Thr Pro Leu Met Ser Ala Phe Arg Lys Gly His Val Lys Val Val Gln
        515                 520                 525

Tyr Leu Val Lys Glu Val Asn Gln Phe Pro Ser Asp Ile Glu Cys Met
    530                 535                 540

Arg Tyr Ile Ala Thr Ile Thr Asp Lys Glu Leu Leu Lys Lys Cys His
545                 550                 555                 560

Gln Cys Val Glu Thr Ile Val Lys Ala Lys Asp Gln Gln Ala Ala Glu
                565                 570                 575
```

```
Ala Asn Lys Asn Ala Ser Ile Leu Leu Lys Glu Leu Asp Leu Glu Lys
            580                 585                 590

Ser Arg Glu Glu Ser Arg Lys Gln Ala Leu Ala Ala Lys Arg Glu Lys
        595                 600                 605


<210> 4946
<211> 1024
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1076; "

<220>
<221> source
<223> /note="Gene Symbol: ANKHD1; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat and KH
      domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000410959"


<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 4946
Xaa Thr Thr Thr Thr Ile Gly Ile Ser Ala Thr Ser Ala Thr Phe Thr
1               5                   10                  15

Asn Val Phe Gly Lys Lys Arg Ala Asn Val Val Thr Thr Pro Ser Thr
            20                  25                  30

Asn Arg Lys Asn Lys Lys Asn Lys Thr Lys Glu Thr Pro Pro Thr Ala
        35                  40                  45

His Leu Ile Leu Pro Glu Gln His Met Ser Leu Ala Gln Gln Lys Ala
    50                  55                  60

Asp Lys Asn Lys Ile Asn Gly Glu Pro Arg Gly Gly Gly Ala Gly Gly
65                  70                  75                  80
```

```
Asn Ser Asp Ser Asp Asn Leu Asp Ser Thr Asp Cys Asn Ser Glu Ser
                85                  90                  95

Ser Ser Gly Gly Lys Ser Gln Glu Leu Asn Phe Val Met Asp Val Asn
            100                 105                 110

Ser Ser Lys Tyr Pro Ser Leu Leu Leu His Ser Gln Glu Glu Lys Thr
        115                 120                 125

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

Pro Asn Ser Leu Ser Thr Ser Tyr Lys Thr Val Ser Leu Pro Leu Ser
145                 150                 155                 160

Ser Pro Asn Ile Lys Leu Asn Leu Thr Ser Pro Lys Arg Gly Gln Lys
                165                 170                 175

Arg Glu Glu Gly Trp Lys Glu Val Val Arg Arg Ser Lys Lys Leu Ser
            180                 185                 190

Val Pro Ala Ser Val Val Ser Arg Ile Met Gly Arg Gly Gly Cys Asn
        195                 200                 205

Ile Thr Ala Ile Gln Asp Val Thr Gly Ala His Ile Asp Val Asp Lys
    210                 215                 220

Gln Lys Asp Lys Asn Gly Glu Arg Met Ile Thr Ile Arg Gly Gly Thr
225                 230                 235                 240

Glu Ser Thr Arg Tyr Ala Val Gln Leu Ile Asn Ala Leu Ile Gln Asp
                245                 250                 255

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

Pro Ala Ser Thr Lys Ser Ile His Ala Asn Phe Ser Ser Gly Val Gly
        275                 280                 285

Thr Thr Ala Ala Ser Ser Lys Asn Ala Phe Pro Leu Gly Ala Pro Thr
    290                 295                 300
```

```
Leu Val Thr Ser Gln Ala Thr Thr Leu Ser Thr Phe Gln Pro Ala Asn
305                 310                 315                 320

Lys Leu Asn Lys Asn Val Pro Thr Asn Val Arg Ser Ser Phe Pro Val
                325                 330                 335

Ser Leu Pro Leu Ala Tyr Pro His Pro His Phe Ala Leu Leu Ala Ala
            340                 345                 350

Gln Thr Met Gln Gln Ile Arg His Pro Arg Leu Pro Met Ala Gln Phe
        355                 360                 365

Gly Gly Thr Phe Ser Pro Ser Pro Asn Thr Trp Gly Pro Phe Pro Val
    370                 375                 380

Arg Pro Val Asn Pro Gly Asn Thr Asn Ser Ser Pro Lys His Asn Asn
385                 390                 395                 400

Thr Ser Arg Leu Pro Asn Gln Asn Gly Thr Val Leu Pro Ser Glu Ser
                405                 410                 415

Ala Gly Leu Ala Thr Ala Ser Cys Pro Ile Thr Val Ser Ser Val Val
            420                 425                 430

Ala Ala Ser Gln Gln Leu Cys Val Thr Asn Thr Arg Thr Pro Ser Ser
        435                 440                 445

Val Arg Lys Gln Leu Phe Ala Cys Val Pro Lys Thr Ser Pro Pro Ala
    450                 455                 460

Thr Val Ile Ser Ser Val Thr Ser Thr Cys Ser Ser Leu Pro Ser Val
465                 470                 475                 480

Ser Ser Ala Pro Ile Thr Ser Gly Gln Ala Pro Thr Thr Phe Leu Pro
                485                 490                 495

Ala Ser Thr Ser Gln Ala Gln Leu Ser Ser Gln Lys Met Glu Ser Phe
            500                 505                 510

Ser Ala Val Pro Pro Thr Lys Glu Lys Val Ser Thr Gln Asp Gln Pro
        515                 520                 525

Met Ala Asn Leu Cys Thr Pro Ser Ser Thr Ala Asn Ser Cys Ser Ser
```

530 535 540

Ser Ala Ser Asn Thr Pro Gly Ala Pro Glu Thr His Pro Ser Ser Ser
545 550 555 560

Pro Thr Pro Thr Ser Ser Asn Thr Gln Glu Glu Ala Gln Pro Ser Ser
565 570 575

Val Ser Asp Leu Ser Pro Met Ser Met Pro Phe Ala Ser Asn Ser Glu
580 585 590

Pro Ala Pro Leu Thr Leu Thr Ser Pro Arg Met Val Ala Ala Asp Asn
595 600 605

Gln Asp Thr Ser Asn Leu Pro Gln Leu Ala Val Pro Ala Pro Arg Val
610 615 620

Ser His Arg Met Gln Pro Arg Gly Ser Phe Tyr Ser Met Val Pro Asn
625 630 635 640

Ala Thr Ile His Gln Asp Pro Gln Ser Ile Phe Val Thr Asn Pro Val
645 650 655

Thr Leu Thr Pro Pro Gln Gly Pro Pro Ala Ala Val Gln Leu Ser Ser
660 665 670

Ala Val Asn Ile Met Asn Gly Ser Gln Met His Ile Asn Pro Ala Asn
675 680 685

Lys Ser Leu Pro Pro Thr Phe Gly Pro Ala Thr Leu Phe Asn His Phe
690 695 700

Ser Ser Leu Phe Asp Ser Ser Gln Val Pro Ala Asn Gln Gly Trp Gly
705 710 715 720

Asp Gly Pro Leu Ser Ser Arg Val Ala Thr Asp Ala Ser Phe Thr Val
725 730 735

Gln Ser Ala Phe Leu Gly Asn Ser Val Leu Gly His Leu Glu Asn Met
740 745 750

His Pro Asp Asn Ser Lys Ala Pro Gly Phe Arg Pro Pro Ser Gln Arg
755 760 765

```
Val Ser Thr Ser Pro Val Gly Leu Pro Ser Ile Asp Pro Ser Gly Ser
    770                 775                 780

Ser Pro Ser Ser Ser Ser Ala Pro Leu Ala Ser Phe Ser Gly Ile Pro
785                 790                 795                 800

Gly Thr Arg Val Phe Leu Gln Gly Pro Ala Pro Val Gly Thr Pro Ser
                805                 810                 815

Phe Asn Arg Gln His Phe Ser Pro His Pro Trp Thr Ser Ala Ser Asn
            820                 825                 830

Ser Ser Thr Ser Ala Pro Pro Thr Leu Gly Gln Pro Lys Gly Val Ser
        835                 840                 845

Ala Ser Gln Asp Arg Lys Ile Pro Pro Pro Ile Gly Thr Glu Arg Leu
    850                 855                 860

Ala Arg Ile Arg Gln Gly Gly Ser Val Ala Gln Ala Pro Ala Gly Thr
865                 870                 875                 880

Ser Phe Val Ala Pro Val Gly His Ser Gly Ile Trp Ser Phe Gly Val
                885                 890                 895

Asn Ala Val Ser Glu Gly Leu Ser Gly Trp Ser Gln Ser Val Met Gly
            900                 905                 910

Asn His Pro Met His Gln Gln Leu Ser Asp Pro Ser Thr Phe Ser Gln
        915                 920                 925

His Gln Pro Met Glu Arg Asp Asp Ser Gly Met Val Ala Pro Ser Asn
    930                 935                 940

Ile Phe His Gln Pro Met Gly Leu Pro Ile Ser Met Tyr Gly Gly Thr
945                 950                 955                 960

Ile Ile Pro Ser His Pro Gln Leu Ala Asp Val Pro Gly Gly Pro Leu
                965                 970                 975

Phe Asn Gly Leu His Asn Pro Asp Pro Ala Trp Asn Pro Met Ile Lys
            980                 985                 990
```

Val Ile Gln Asn Ser Thr Glu Cys Thr Asp Ala Gln Gln Ile Trp
Pro
995 1000 1005

Gly Thr Trp Ala Pro His Ile Gly Asn Met His Leu Lys Tyr Val
1010 1015 1020

Asn

<210> 4947
<211> 934
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1076; "

<220>
<221> source
<223> /note="Gene Symbol: ANKHD1; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and KH
domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000415887"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 4947
Xaa Lys Glu Thr Pro Pro Thr Ala His Leu Ile Leu Pro Glu Gln His
1 5 10 15

Met Ser Leu Ala Gln Gln Lys Ala Asp Lys Asn Lys Ile Asn Gly Glu
20 25 30

Pro Arg Gly Gly Gly Ala Gly Gly Asn Ser Asp Ser Asp Asn Leu Asp
35 40 45

Ser Thr Asp Cys Asn Ser Glu Ser Ser Ser Gly Gly Lys Ser Gln Glu

50 55 60

Leu Asn Phe Val Met Asp Val Asn Ser Ser Lys Tyr Pro Ser Leu Leu
65 70 75 80

Leu His Ser Gln Glu Glu Lys Thr Ser Thr Ala Thr Ser Lys Thr Gln
85 90 95

Thr Arg Leu Glu Gly Glu Val Thr Pro Asn Ser Leu Ser Thr Ser Tyr
100 105 110

Lys Thr Val Ser Leu Pro Leu Ser Ser Pro Asn Ile Lys Leu Asn Leu
115 120 125

Thr Ser Pro Lys Arg Gly Gln Lys Arg Glu Glu Gly Trp Lys Glu Val
130 135 140

Val Arg Arg Ser Lys Lys Leu Ser Val Pro Ala Ser Val Val Ser Arg
145 150 155 160

Ile Met Gly Arg Gly Gly Cys Asn Ile Thr Ala Ile Gln Asp Val Thr
165 170 175

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

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

Leu Ile Asn Ala Leu Ile Gln Asp Pro Ala Lys Glu Leu Glu Asp Leu
210 215 220

Ile Pro Lys Asn His Ile Arg Thr Pro Ala Ser Thr Lys Ser Ile His
225 230 235 240

Ala Asn Phe Ser Ser Gly Val Gly Thr Thr Ala Ala Ser Ser Lys Asn
245 250 255

Ala Phe Pro Leu Gly Ala Pro Thr Leu Val Thr Ser Gln Ala Thr Thr
260 265 270

Leu Ser Thr Phe Gln Pro Ala Asn Lys Leu Asn Lys Asn Val Pro Thr
275 280 285

```
Asn Val Arg Ser Ser Phe Pro Val Ser Leu Pro Leu Ala Tyr Pro His
    290                 295                 300

Pro His Phe Ala Leu Leu Ala Ala Gln Thr Met Gln Gln Ile Arg His
305                 310                 315                 320

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

Asn Thr Trp Gly Pro Phe Pro Val Arg Pro Val Asn Pro Gly Asn Thr
            340                 345                 350

Asn Ser Ser Pro Lys His Asn Asn Thr Ser Arg Leu Pro Asn Gln Asn
        355                 360                 365

Gly Thr Val Leu Pro Ser Glu Ser Ala Gly Leu Ala Thr Ala Ser Cys
    370                 375                 380

Pro Ile Thr Val Ser Ser Val Val Ala Ala Ser Gln Gln Leu Cys Val
385                 390                 395                 400

Thr Asn Thr Arg Thr Pro Ser Ser Val Arg Lys Gln Leu Phe Ala Cys
                405                 410                 415

Val Pro Lys Thr Ser Pro Pro Ala Thr Val Ile Ser Ser Val Thr Ser
            420                 425                 430

Thr Cys Ser Ser Leu Pro Ser Val Ser Ser Ala Pro Ile Thr Ser Gly
        435                 440                 445

Gln Ala Pro Thr Thr Phe Leu Pro Ala Ser Thr Ser Gln Ala Gln Leu
    450                 455                 460

Ser Ser Gln Lys Met Glu Ser Phe Ser Ala Val Pro Pro Thr Lys Glu
465                 470                 475                 480

Lys Val Ser Thr Gln Asp Gln Pro Met Ala Asn Leu Cys Thr Pro Ser
                485                 490                 495

Ser Thr Ala Asn Ser Cys Ser Ser Ser Ala Ser Asn Thr Pro Gly Ala
            500                 505                 510
```

```
Pro Glu Thr His Pro Ser Ser Ser Pro Thr Pro Thr Ser Ser Asn Thr
        515                 520                 525

Gln Glu Glu Ala Gln Pro Ser Ser Val Ser Asp Leu Ser Pro Met Ser
    530                 535                 540

Met Pro Phe Ala Ser Asn Ser Glu Pro Ala Pro Leu Thr Leu Thr Ser
545                 550                 555                 560

Pro Arg Met Val Ala Ala Asp Asn Gln Asp Thr Ser Asn Leu Pro Gln
                565                 570                 575

Leu Ala Val Pro Ala Pro Arg Val Ser His Arg Met Gln Pro Arg Gly
            580                 585                 590

Ser Phe Tyr Ser Met Val Pro Asn Ala Thr Ile His Gln Asp Pro Gln
        595                 600                 605

Ser Ile Phe Val Thr Asn Pro Val Thr Leu Thr Pro Pro Gln Gly Pro
    610                 615                 620

Pro Ala Ala Val Gln Leu Ser Ser Ala Val Asn Ile Met Asn Gly Ser
625                 630                 635                 640

Gln Met His Ile Asn Pro Ala Asn Lys Ser Leu Pro Pro Thr Phe Gly
                645                 650                 655

Pro Ala Thr Leu Phe Asn His Phe Ser Ser Leu Phe Asp Ser Ser Gln
            660                 665                 670

Val Pro Ala Asn Gln Gly Trp Gly Asp Gly Pro Leu Ser Ser Arg Val
        675                 680                 685

Ala Thr Asp Ala Ser Phe Thr Val Gln Ser Ala Phe Leu Gly Asn Ser
    690                 695                 700

Val Leu Gly His Leu Glu Asn Met His Pro Asp Asn Ser Lys Ala Pro
705                 710                 715                 720

Gly Phe Arg Pro Pro Ser Gln Arg Val Ser Thr Ser Pro Val Ala Thr
                725                 730                 735
```

```
Ser Ala Pro Pro Thr Leu Gly Gln Pro Lys Gly Val Ser Ala Ser Gln
            740                 745                 750

Asp Arg Lys Ile Pro Pro Pro Ile Gly Thr Glu Arg Leu Ala Arg Ile
        755                 760                 765

Arg Gln Gly Gly Ser Val Ala Gln Ala Pro Ala Gly Thr Ser Phe Val
    770                 775                 780

Ala Pro Val Gly His Ser Gly Ile Trp Ser Phe Gly Val Asn Ala Val
785                 790                 795                 800

Ser Glu Gly Leu Ser Gly Trp Ser Gln Ser Val Met Gly Asn His Pro
                805                 810                 815

Met His Gln Gln Leu Ser Asp Pro Ser Thr Phe Ser Gln His Gln Pro
            820                 825                 830

Met Glu Arg Asp Asp Ser Gly Met Val Ala Pro Ser Asn Ile Phe His
        835                 840                 845

Gln Pro Met Ala Ser Gly Phe Val Asp Phe Ser Lys Gly Leu Pro Ile
    850                 855                 860

Ser Met Tyr Gly Gly Thr Ile Ile Pro Ser His Pro Gln Leu Ala Asp
865                 870                 875                 880

Val Pro Gly Gly Pro Leu Phe Asn Gly Leu His Asn Pro Asp Pro Ala
                885                 890                 895

Trp Asn Pro Met Ile Lys Val Ile Gln Asn Ser Thr Glu Cys Thr Asp
            900                 905                 910

Ala Gln Gln Ile Trp Pro Gly Thr Trp Ala Pro His Ile Gly Asn Met
        915                 920                 925

His Leu Lys Tyr Val Asn
    930
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<210> 4948
<211> 368
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1076; "

<220>
<221> source
<223> /note="Gene Symbol: ANKHD1; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and KH
domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000421069"

<400> 4948
Met Leu Thr Asp Ser Gly Gly Gly Gly Thr Ser Phe Glu Glu Asp Leu
1 5 10 15

Asp Ser Val Ala Pro Arg Ser Ala Pro Ala Gly Ala Ser Glu Pro Pro
20 25 30

Pro Pro Gly Gly Val Gly Leu Gly Ile Arg Thr Val Arg Leu Phe Gly
35 40 45

Glu Ala Gly Pro Ala Ser Gly Val Gly Ser Ser Gly Gly Gly Gly Ser
50 55 60

Gly Ser Gly Thr Gly Gly Gly Asp Ala Ala Leu Asp Phe Lys Leu Ala
65 70 75 80

Ala Ala Val Leu Arg Thr Gly Gly Gly Gly Gly Ala Ser Gly Ser Asp
85 90 95

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

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

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

Arg Leu Glu Ala Leu Leu Glu Ala Ala Asp Pro Glu Val Leu Arg Arg
145 150 155 160

```
Leu Thr Ser Ser Val Ser Cys Ala Leu Asp Glu Ala Ala Ala Ala Leu
                165                 170                 175

Thr Arg Met Lys Ala Glu Asn Ser His Asn Ala Gly Gln Val Asp Thr
            180                 185                 190

Arg Ser Leu Ala Glu Ala Cys Ser Asp Gly Asp Val Asn Ala Val Arg
        195                 200                 205

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

Glu Ser Leu Leu Cys Leu Ala Cys Ser Ala Gly Tyr Tyr Glu Leu Ala
225                 230                 235                 240

Gln Val Leu Leu Ala Met His Ala Asn Val Glu Asp Arg Gly Asn Lys
                245                 250                 255

Gly Asp Ile Thr Pro Leu Met Ala Ala Ser Ser Gly Gly Tyr Leu Asp
            260                 265                 270

Ile Val Lys Leu Leu Leu Leu His Asp Ala Asp Val Asn Ser Gln Ser
        275                 280                 285

Ala Thr Gly Asn Thr Ala Leu Thr Tyr Ala Cys Ala Gly Gly Phe Val
    290                 295                 300

Asp Ile Val Lys Val Leu Leu Asn Glu Gly Ala Asn Ile Glu Asp His
305                 310                 315                 320

Asn Glu Asn Gly His Thr Pro Leu Met Glu Ala Ala Ser Ala Gly His
                325                 330                 335

Val Glu Val Ala Arg Val Leu Leu Asp His Gly Ala Gly Ile Asn Thr
            340                 345                 350

His Ser Asn Glu Phe Lys Glu Ser Ala Leu Thr Leu Ala Cys Tyr Lys
        355                 360                 365
```

<210> 4949
<211> 581
<212> PRT

<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ANKHD1; "

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ankyrin repeat and KH
domain containing 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q8IWZ3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000478529"

<400> 4949

Met	Leu	Thr	Asp	Ser	Gly	Gly	Gly	Gly	Thr	Ser	Phe	Glu	Glu	Asp	Leu
1				5					10					15	

Asp	Ser	Val	Ala	Pro	Arg	Ser	Ala	Pro	Ala	Gly	Ala	Ser	Glu	Pro	Pro
			20					25					30		

Pro	Pro	Gly	Gly	Val	Gly	Leu	Gly	Ile	Arg	Thr	Val	Arg	Leu	Phe	Gly
		35					40					45			

Glu	Ala	Gly	Pro	Ala	Ser	Gly	Val	Gly	Ser	Ser	Gly	Gly	Gly	Gly	Ser
	50					55					60				

Gly	Ser	Gly	Thr	Gly	Gly	Gly	Asp	Ala	Ala	Leu	Asp	Phe	Lys	Leu	Ala
65				70					75					80	

Ala	Ala	Val	Leu	Arg	Thr	Gly	Gly	Gly	Gly	Gly	Ala	Ser	Gly	Ser	Asp
				85					90					95	

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

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

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

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

Ala Asp Gly Lys Ala Phe Ala Asp Pro Glu Val Leu Arg Arg Leu Thr
                165                 170                 175

Ser Ser Val Ser Cys Ala Leu Asp Glu Ala Ala Ala Ala Leu Thr Arg
            180                 185                 190

Met Lys Ala Glu Asn Ser His Asn Ala Gly Gln Val Asp Thr Arg Ser
        195                 200                 205

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

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

Leu Leu Cys Leu Ala Cys Ser Ala Gly Tyr Tyr Glu Leu Ala Gln Val
                245                 250                 255

Leu Leu Ala Met His Ala Asn Val Glu Asp Arg Gly Asn Lys Gly Asp
            260                 265                 270

Ile Thr Pro Leu Met Ala Ala Ser Ser Gly Gly Tyr Leu Asp Ile Val
        275                 280                 285

Lys Leu Leu Leu Leu His Asp Ala Asp Val Asn Ser Gln Ser Ala Thr
    290                 295                 300

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

Val Lys Val Leu Leu Asn Glu Gly Ala Asn Ile Glu Asp His Asn Glu
                325                 330                 335

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

Val Ala Arg Val Leu Leu Asp His Gly Ala Gly Ile Asn Thr His Ser
```

```
        355                 360                 365

Asn Glu Phe Lys Glu Ser Ala Leu Thr Leu Ala Cys Tyr Lys Gly His
    370                 375                 380

Leu Asp Met Val Arg Phe Leu Leu Glu Ala Gly Ala Asp Gln Glu His
385                 390                 395                 400

Lys Thr Asp Glu Met His Thr Ala Leu Met Glu Ala Cys Met Asp Gly
                405                 410                 415

His Val Glu Val Ala Arg Leu Leu Leu Asp Ser Gly Ala Gln Val Asn
            420                 425                 430

Met Pro Ala Asp Ser Phe Glu Ser Pro Leu Thr Leu Ala Ala Cys Gly
        435                 440                 445

Gly His Val Glu Leu Ala Ala Leu Leu Ile Glu Arg Gly Ala Asn Leu
    450                 455                 460

Glu Glu Val Asn Asp Glu Gly Tyr Thr Pro Leu Met Glu Ala Ala Arg
465                 470                 475                 480

Glu Gly His Glu Glu Met Val Ala Leu Leu Leu Ala Gln Gly Ala Asn
                485                 490                 495

Ile Asn Ala Gln Thr Glu Glu Thr Gln Glu Thr Ala Leu Thr Leu Ala
            500                 505                 510

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

Ala Asp Ile Glu Leu Gly Cys Ser Thr Pro Leu Met Glu Ala Ser Gln
    530                 535                 540

Glu Gly His Leu Glu Leu Val Lys Tyr Leu Leu Ala Ser Gly Gln Ala
545                 550                 555                 560

Gly Gly His Glu Asp Tyr Phe Gly Gly His Arg Ser Gly Gln Ala Ser
                565                 570                 575

Gly Glu Gly Gly Leu
            580
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<210> 4950
<211> 765
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1077; "

<220>
<221> source
<223> /note="Gene Symbol: ANKK1; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and kinase
domain containing 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q8NFD2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000306678"

<400> 4950
Met Ala Ala Asp Pro Thr Glu Leu Arg Leu Gly Ser Leu Pro Val Phe
1   5   10   15

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

Phe Ser Gln Val Phe Gln Ala Arg His Arg Arg Trp Arg Thr Glu Tyr
        35   40   45

Ala Ile Lys Cys Ala Pro Cys Leu Pro Pro Asp Ala Ala Ser Ser Asp
    50   55   60

Val Asn Tyr Leu Ile Glu Glu Ala Ala Lys Met Lys Lys Ile Lys Phe
65   70   75   80

Gln His Ile Val Ser Ile Tyr Gly Val Cys Lys Gln Pro Leu Gly Ile
                85   90   95

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

```
His Ser Leu Cys Trp Lys Leu Arg Phe Arg Ile Ile His Glu Thr Ser
        115                 120                 125

Leu Ala Met Asn Phe Leu His Ser Ile Lys Pro Pro Leu Leu His Leu
    130                 135                 140

Asp Leu Lys Pro Gly Asn Ile Leu Leu Asp Ser Asn Met His Val Lys
145                 150                 155                 160

Ile Ser Asp Phe Gly Leu Ser Lys Trp Met Glu Gln Ser Thr Arg Met
                165                 170                 175

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

Pro Glu Met Phe Leu Glu Ser Asn Lys Ala Pro Gly Pro Lys Tyr Asp
        195                 200                 205

Val Tyr Ser Phe Ala Ile Val Ile Trp Glu Leu Leu Thr Gln Lys Lys
    210                 215                 220

Pro Tyr Ser Gly Phe Asn Met Met Met Ile Ile Ile Arg Val Ala Ala
225                 230                 235                 240

Gly Met Arg Pro Ser Leu Gln Pro Val Ser Asp Gln Trp Pro Ser Glu
                245                 250                 255

Ala Gln Gln Met Val Asp Leu Met Lys Arg Cys Trp Asp Gln Asp Pro
            260                 265                 270

Lys Lys Arg Pro Cys Phe Leu Asp Ile Thr Ile Glu Thr Asp Ile Leu
        275                 280                 285

Leu Ser Leu Leu Gln Ser Arg Val Ala Val Pro Glu Ser Lys Ala Leu
    290                 295                 300

Ala Arg Lys Val Ser Cys Lys Leu Ser Leu Arg Gln Pro Gly Glu Val
305                 310                 315                 320

Asn Glu Asp Ile Ser Gln Glu Leu Met Asp Ser Asp Ser Gly Asn Tyr
                325                 330                 335
```

```
Leu Lys Arg Ala Leu Gln Leu Ser Asp Arg Lys Asn Leu Val Pro Arg
            340                 345                 350

Asp Glu Glu Leu Cys Ile Tyr Glu Asn Lys Val Thr Pro Leu His Phe
        355                 360                 365

Leu Val Ala Gln Gly Ser Val Glu Gln Val Arg Leu Leu Leu Ala His
    370                 375                 380

Glu Val Asp Val Asp Cys Gln Thr Ala Ser Gly Tyr Thr Pro Leu Leu
385                 390                 395                 400

Ile Ala Ala Gln Asp Gln Gln Pro Asp Leu Cys Ala Leu Leu Leu Ala
                405                 410                 415

His Gly Ala Asp Ala Asn Arg Val Asp Glu Asp Gly Trp Ala Pro Leu
            420                 425                 430

His Phe Ala Ala Gln Asn Gly Asp Asp Gly Thr Ala Arg Leu Leu Leu
        435                 440                 445

Asp His Gly Ala Cys Val Asp Ala Gln Glu Arg Glu Gly Trp Thr Pro
    450                 455                 460

Leu His Leu Ala Ala Gln Asn Asn Phe Glu Asn Val Ala Arg Leu Leu
465                 470                 475                 480

Val Ser Arg Gln Ala Asp Pro Asn Leu His Glu Ala Glu Gly Lys Thr
                485                 490                 495

Pro Leu His Val Ala Ala Tyr Phe Gly His Val Ser Leu Val Lys Leu
            500                 505                 510

Leu Thr Ser Gln Gly Ala Glu Leu Asp Ala Gln Gln Arg Asn Leu Arg
        515                 520                 525

Thr Pro Leu His Leu Ala Val Glu Arg Gly Lys Val Arg Ala Ile Gln
    530                 535                 540

His Leu Leu Lys Ser Gly Ala Val Pro Asp Ala Leu Asp Gln Ser Gly
545                 550                 555                 560

Tyr Gly Pro Leu His Thr Ala Ala Ala Arg Gly Lys Tyr Leu Ile Cys
```

565 570 575

Lys Met Leu Leu Arg Tyr Gly Ala Ser Leu Glu Leu Pro Thr His Gln
580 585 590

Gly Trp Thr Pro Leu His Leu Ala Ala Tyr Lys Gly His Leu Glu Ile
595 600 605

Ile His Leu Leu Ala Glu Ser His Ala Asn Met Gly Ala Leu Gly Ala
610 615 620

Val Asn Trp Thr Pro Leu His Leu Ala Ala Arg His Gly Glu Glu Ala
625 630 635 640

Val Val Ser Ala Leu Leu Gln Cys Gly Ala Asp Pro Asn Ala Ala Glu
645 650 655

Gln Ser Gly Trp Thr Pro Leu His Leu Ala Val Gln Arg Ser Thr Phe
660 665 670

Leu Ser Val Ile Asn Leu Leu Glu His His Ala Asn Val His Ala Arg
675 680 685

Asn Lys Val Gly Trp Thr Pro Ala His Leu Ala Ala Leu Lys Gly Asn
690 695 700

Thr Ala Ile Leu Lys Val Leu Val Glu Ala Gly Ala Gln Leu Asp Val
705 710 715 720

Gln Asp Gly Val Ser Cys Thr Pro Leu Gln Leu Ala Leu Arg Ser Arg
725 730 735

Lys Gln Gly Ile Met Ser Phe Leu Glu Gly Lys Glu Pro Ser Val Ala
740 745 750

Thr Leu Gly Gly Ser Lys Pro Gly Ala Glu Met Glu Ile
755 760 765

<210> 4951
<211> 54
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1077; "

<220>
<221> source
<223> /note="Gene Symbol: ANKK1; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and kinase
domain containing 1; "

<220>
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<223> /note="ENSP ID: ENSP00000445810"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 4951
Xaa Ser Leu Cys Trp Lys Leu Arg Phe Arg Ile Ile His Glu Thr Ser
1 5 10 15

Leu Ala Met Asn Phe Leu His Ser Ile Lys Pro Pro Leu Leu His Leu
20 25 30

Asp Leu Lys Pro Gly Asn Ile Leu Leu Asp Ser Asn Met His Val Lys
35 40 45

Val Lys Lys Leu Arg Leu
50

<210> 4952
<211> 669
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1078; "

<220>
<221> source
<223> /note="Gene Symbol: ANKLE1; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and LEM

domain containing 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q8NAG6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000377971"

<400> 4952
Met Trp Thr Pro Val Arg Arg Gly Ala Ala Trp Leu Gly Thr Leu Leu
1   5   10   15

Gly Pro Gly Glu Gly Pro Pro Glu Pro Arg Gly Gly Ala Ala His Ala
            20   25   30

His Lys Pro Pro Ala Gly Ser Arg Lys Ser Thr Asp Gln Ala Val Arg
        35   40   45

Phe Gly Pro Ser Gln Gly Met Cys Ser Glu Ala Arg Leu Ala Arg Arg
    50   55   60

Leu Arg Asp Ala Leu Arg Glu Glu Glu Pro Trp Ala Val Glu Glu Leu
65   70   75   80

Leu Arg Cys Gly Ala Asp Pro Asn Leu Val Leu Glu Asp Gly Ala Ala
                85   90   95

Ala Val His Leu Ala Ala Gly Ala Arg His Pro Arg Gly Leu Arg Cys
            100   105   110

Leu Gly Ala Leu Leu Arg Gln Gly Gly Asp Pro Asn Ala Arg Ser Val
        115   120   125

Glu Ala Leu Thr Pro Leu His Val Ala Ala Ala Trp Gly Cys Arg Arg
    130   135   140

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

Gln Asp Gly Leu Arg Pro Leu Asp Leu Ala Leu Gln Gln Gly His Leu
                165   170   175

Glu Cys Ala Arg Val Leu Gln Asp Leu Asp Thr Arg Thr Arg Thr Arg
            180   185   190

```
Thr Arg Ile Gly Ala Glu Thr Gln Glu Pro Glu Pro Ala Pro Gly Thr
        195                 200                 205

Pro Gly Leu Ser Gly Pro Thr Asp Glu Thr Leu Asp Ser Ile Ala Leu
    210                 215                 220

Gln Lys Gln Pro Cys Arg Gly Asp Asn Arg Asp Ile Gly Leu Glu Ala
225                 230                 235                 240

Asp Pro Gly Pro Pro Ser Leu Pro Val Pro Leu Glu Thr Val Asp Lys
                245                 250                 255

His Gly Ser Ser Ala Ser Pro Pro Gly His Trp Asp Tyr Ser Ser Asp
            260                 265                 270

Ala Ser Phe Val Thr Ala Val Glu Val Ser Gly Ala Glu Asp Pro Ala
        275                 280                 285

Ser Asp Thr Pro Pro Trp Ala Gly Ser Leu Pro Pro Thr Arg Gln Gly
    290                 295                 300

Leu Leu His Val Val His Ala Asn Gln Arg Val Pro Arg Ser Gln Gly
305                 310                 315                 320

Thr Glu Ala Glu Leu Asn Ala Arg Leu Gln Ala Leu Thr Leu Thr Pro
                325                 330                 335

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

Asp Arg Ser Pro Ala His Ser Pro Pro Arg Thr Pro Thr Pro Gly Ala
        355                 360                 365

Ser Asp Cys His Cys Leu Trp Glu His Gln Thr Ser Ile Asp Ser Asp
    370                 375                 380

Met Ala Thr Leu Trp Leu Thr Glu Asp Glu Ala Ser Ser Thr Gly Gly
385                 390                 395                 400

Arg Glu Pro Val Gly Pro Cys Arg His Leu Pro Val Ser Thr Val Ser
                405                 410                 415
```

```
Asp Leu Glu Leu Leu Lys Gly Leu Arg Ala Leu Gly Glu Asn Pro His
            420                 425                 430

Pro Ile Thr Pro Phe Thr Arg Gln Leu Tyr His Gln Gln Leu Glu Glu
        435                 440                 445

Ala Gln Ile Ala Pro Gly Pro Glu Phe Ser Gly His Ser Leu Glu Leu
    450                 455                 460

Ala Ala Ala Leu Arg Thr Gly Cys Ile Pro Asp Val Gln Ala Asp Glu
465                 470                 475                 480

Asp Ala Leu Ala Gln Gln Phe Glu Gln Pro Asp Pro Ala Arg Arg Trp
                485                 490                 495

Arg Glu Gly Val Val Lys Ser Ser Phe Thr Tyr Leu Leu Leu Asp Pro
            500                 505                 510

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

Glu Arg Leu Gln Thr Phe Ile Arg Ala Ile Phe Tyr Val Gly Lys Gly
    530                 535                 540

Thr Arg Ala Arg Pro Tyr Val His Leu Trp Glu Ala Leu Gly His His
545                 550                 555                 560

Gly Arg Ser Arg Lys Gln Pro His Gln Ala Cys Pro Lys Val Arg Gln
                565                 570                 575

Ile Leu Asp Ile Trp Ala Ser Gly Cys Gly Val Val Ser Leu His Cys
            580                 585                 590

Phe Gln His Val Val Ala Val Glu Ala Tyr Thr Arg Glu Ala Cys Ile
        595                 600                 605

Val Glu Ala Leu Gly Ile Gln Thr Leu Thr Asn Gln Lys Gln Gly His
    610                 615                 620

Cys Tyr Gly Val Val Ala Gly Trp Pro Pro Ala Arg Arg Arg Arg Leu
625                 630                 635                 640
```

Gly Val His Leu Leu His Arg Ala Leu Leu Val Phe Leu Ala Glu Gly
645 650 655

Glu Arg Gln Leu His Pro Gln Asp Ile Gln Ala Arg Gly
660 665

<210> 4953
<211> 85
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1078; "

<220>
<221> source
<223> /note="Gene Symbol: ANKLE1; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and LEM
domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000384008"

<400> 4953
Met Trp Thr Pro Val Arg Arg Gly Ala Ala Trp Leu Gly Thr Leu Leu
1 5 10 15

Gly Pro Gly Glu Gly Pro Pro Glu Pro Arg Gly Gly Ala Ala His Ala
20 25 30

His Lys Pro Pro Ala Gly Ser Arg Lys Ser Thr Asp Gln Ala Val Arg
35 40 45

Phe Gly Pro Ser Gln Gly Met Cys Ser Glu Ala Arg Leu Ala Arg Arg
50 55 60

Leu Arg Asp Ala Leu Arg Glu Glu Glu Pro Cys Arg Gly Ala Ala Ala
65 70 75 80

Leu Arg Arg Gly Pro
85

<210> 4954

<211> 439
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1078; "

<220>
<221> source
<223> /note="Gene Symbol: ANKLE1; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and LEM
domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000384753"

<400> 4954

```
Met Trp Thr Pro Val Arg Arg Gly Ala Ala Trp Leu Gly Thr Leu Leu
1               5                  10                  15

Gly Pro Gly Glu Gly Pro Pro Glu Pro Arg Gly Gly Ala Ala His Ala
            20                  25                  30

His Lys Pro Pro Ala Gly Ser Arg Lys Ser Thr Asp Gln Ala Val Arg
        35                  40                  45

Phe Gly Pro Ser Gln Gly Met Cys Ser Glu Ala Arg Leu Ala Arg Arg
    50                  55                  60

Leu Arg Asp Ala Leu Arg Glu Glu Glu Pro Trp Ala Val Glu Glu Leu
65                  70                  75                  80

Leu Arg Cys Gly Ala Asp Pro Asn Leu Val Leu Glu Asp Gly Ala Ala
                85                  90                  95

Ala Val His Leu Ala Ala Gly Ala Arg His Pro Arg Gly Leu Arg Cys
            100                 105                 110

Leu Gly Ala Leu Leu Arg Gln Gly Gly Asp Pro Asn Ala Arg Ser Val
        115                 120                 125

Glu Ala Leu Thr Pro Leu His Val Ala Ala Ala Trp Gly Cys Arg Arg
    130                 135                 140
```

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

Gln Asp Gly Leu Arg Pro Leu Asp Leu Ala Leu Gln Gln Gly His Leu
                165                 170                 175

Glu Cys Ala Arg Val Leu Gln Asp Leu Asp Thr Arg Thr Arg Thr Arg
            180                 185                 190

Thr Arg Ile Gly Ala Glu Thr Gln Glu Pro Glu Pro Ala Pro Gly Thr
        195                 200                 205

Pro Gly Leu Ser Gly Pro Thr Asp Glu Thr Leu Asp Ser Ile Ala Leu
    210                 215                 220

Gln Lys Gln Pro Cys Arg Gly Asp Asn Arg Asp Ile Gly Leu Glu Ala
225                 230                 235                 240

Asp Pro Gly Pro Pro Ser Leu Pro Val Pro Leu Glu Thr Val Asp Lys
                245                 250                 255

His Gly Ser Ser Ala Ser Pro Pro Gly His Trp Asp Tyr Ser Ser Asp
            260                 265                 270

Ala Ser Phe Val Thr Ala Val Glu Val Ser Gly Ala Glu Asp Pro Ala
        275                 280                 285

Ser Asp Thr Pro Pro Trp Ala Gly Ser Leu Pro Pro Thr Arg Gln Gly
    290                 295                 300

Leu Leu His Val Val His Ala Asn Gln Arg Val Pro Arg Ser Gln Gly
305                 310                 315                 320

Thr Glu Ala Glu Leu Asn Ala Arg Leu Gln Ala Leu Thr Leu Thr Pro
                325                 330                 335

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

Asp Arg Ser Pro Ala His Ser Pro Pro Arg Thr Pro Thr Pro Gly Ala
        355                 360                 365
```

```
Ser Asp Cys His Cys Leu Trp Glu His Gln Thr Ser Ile Asp Ser Asp
    370                 375                 380

Met Ala Thr Leu Trp Leu Thr Glu Asp Glu Ala Ser Ser Thr Gly Gly
385                 390                 395                 400

Arg Glu Pro Val Gly Pro Cys Arg His Leu Pro Val Ser Thr Val Ser
                405                 410                 415

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

Cys Gln Pro Glu Pro Ser His
        435
```

<210> 4955
<211> 643
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1078; "

<220>
<221> source
<223> /note="Gene Symbol: ANKLE1; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and LEM
domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000468845"

<400> 4955

```
Met Trp Thr Pro Val Arg Arg Gly Ala Ala Trp Leu Gly Thr Leu Leu
1               5                   10                  15

Gly Pro Gly Glu Gly Pro Pro Glu Pro Arg Gly Gly Ala Ala His Ala
            20                  25                  30

His Lys Pro Pro Ala Gly Ser Arg Lys Ser Thr Asp Gln Ala Val Arg
        35                  40                  45
```

```
Phe Gly Pro Ser Gln Gly Met Cys Ser Glu Ala Arg Leu Ala Arg Arg
    50                  55                  60

Leu Arg Asp Ala Leu Arg Glu Glu Glu Pro Trp Ala Val Glu Glu Leu
65                  70                  75                  80

Leu Arg Cys Gly Ala Asp Pro Asn Leu Val Leu Glu Asp Gly Ala Ala
                85                  90                  95

Ala Val His Leu Ala Ala Gly Ala Arg His Pro Arg Gly Leu Arg Cys
            100                 105                 110

Leu Gly Ala Leu Leu Arg Gln Gly Gly Asp Pro Asn Ala Arg Ser Val
        115                 120                 125

Glu Ala Leu Thr Pro Leu His Val Ala Ala Ala Trp Gly Cys Arg Arg
    130                 135                 140

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

Gln Asp Gly Leu Arg Pro Leu Asp Leu Ala Leu Gln Gln Gly His Leu
                165                 170                 175

Glu Cys Ala Arg Val Leu Gln Asp Leu Asp Thr Arg Thr Arg Thr Arg
            180                 185                 190

Thr Arg Ile Gly Ala Glu Thr Gln Glu Pro Glu Pro Ala Pro Gly Thr
        195                 200                 205

Pro Gly Leu Ser Gly Pro Thr Asp Glu Thr Leu Asp Ser Ile Ala Leu
    210                 215                 220

Gln Lys Gln Pro Cys Arg Gly Asp Asn Arg Asp Ile Gly Leu Glu Ala
225                 230                 235                 240

Asp Pro Gly Pro Pro Ser Leu Pro Val Pro Leu Glu Thr Val Asp Lys
                245                 250                 255

His Gly Ser Ser Ala Ser Pro Pro Gly His Trp Asp Tyr Ser Ser Asp
            260                 265                 270

Ala Ser Phe Val Thr Ala Val Glu Val Ser Gly Ala Glu Asp Pro Ala
```

```
        275                 280                 285

Ser Asp Thr Pro Pro Trp Ala Gly Ser Leu Pro Pro Thr Arg Gln Gly
    290                 295                 300

Leu Leu His Val Val His Ala Asn Gln Arg Val Pro Arg Ser Gln Gly
305                 310                 315                 320

Thr Glu Ala Glu Leu Asn Ala Arg Leu Gln Ala Leu Thr Leu Thr Pro
                325                 330                 335

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

Asp Arg Ser Pro Ala His Ser Pro Pro Arg Thr Pro Thr Pro Gly Ala
        355                 360                 365

Ser Asp Cys His Cys Leu Trp Glu His Gln Thr Ser Ile Asp Ser Asp
    370                 375                 380

Met Ala Thr Leu Trp Leu Thr Glu Asp Glu Ala Ser Ser Thr Gly Gly
385                 390                 395                 400

Arg Glu Pro Val Gly Pro Cys Arg His Leu Pro Val Ser Thr Val Ser
                405                 410                 415

Asp Leu Glu Leu Leu Lys Gly Leu Arg Ala Leu Gly Pro Glu Phe Ser
            420                 425                 430

Gly His Ser Leu Glu Leu Ala Ala Ala Leu Arg Thr Gly Cys Ile Pro
        435                 440                 445

Asp Val Gln Ala Asp Glu Asp Ala Leu Ala Gln Gln Phe Glu Gln Pro
    450                 455                 460

Asp Pro Ala Arg Arg Trp Arg Glu Gly Val Val Lys Ser Ser Phe Thr
465                 470                 475                 480

Tyr Leu Leu Leu Asp Pro Arg Glu Thr Gln Asp Leu Pro Ala Arg Ala
                485                 490                 495

Phe Ser Leu Thr Pro Ala Glu Arg Leu Gln Thr Phe Ile Arg Ala Ile
            500                 505                 510
```

```
Phe Tyr Val Gly Lys Gly Thr Arg Ala Arg Pro Tyr Val His Leu Trp
        515                 520                 525

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

Cys Pro Lys Val Arg Gln Ile Leu Asp Ile Trp Ala Ser Gly Cys Gly
545                 550                 555                 560

Val Val Ser Leu His Cys Phe Gln His Val Val Ala Val Glu Ala Tyr
                565                 570                 575

Thr Arg Glu Ala Cys Ile Val Glu Ala Leu Gly Ile Gln Thr Leu Thr
            580                 585                 590

Asn Gln Lys Gln Gly His Cys Tyr Gly Val Val Ala Gly Trp Pro Pro
        595                 600                 605

Ala Arg Arg Arg Arg Leu Gly Val His Leu Leu His Arg Ala Leu Leu
    610                 615                 620

Val Phe Leu Ala Glu Gly Glu Arg Gln Leu His Pro Gln Asp Ile Gln
625                 630                 635                 640

Ala Arg Gly
```

<210> 4956
<211> 598
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1078; "

<220>
<221> source
<223> /note="Gene Symbol: ANKLE1; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and LEM
domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000470895"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 4956
Xaa Met Cys Ser Glu Ala Arg Leu Ala Arg Arg Leu Arg Asp Ala Leu
1 5 10 15

Arg Glu Glu Glu Pro Trp Ala Val Glu Glu Leu Leu Arg Cys Gly Ala
20 25 30

Asp Pro Asn Leu Val Leu Glu Asp Gly Ala Ala Ala Val His Leu Ala
35 40 45

Ala Gly Ala Arg His Pro Arg Gly Leu Arg Cys Leu Gly Ala Leu Leu
50 55 60

Arg Gln Gly Gly Asp Pro Asn Ala Arg Ser Val Glu Ala Leu Thr Pro
65 70 75 80

Leu His Val Ala Ala Ala Trp Gly Cys Arg Arg Gly Leu Glu Leu Leu
85 90 95

Leu Ser Gln Gly Ala Asp Pro Ala Leu Arg Asp Gln Asp Gly Leu Arg
100 105 110

Pro Leu Asp Leu Ala Leu Gln Gln Gly His Leu Glu Cys Ala Arg Val
115 120 125

Leu Gln Asp Leu Asp Thr Arg Thr Arg Thr Arg Thr Arg Ile Gly Ala
130 135 140

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

Pro Thr Asp Glu Thr Leu Asp Ser Ile Ala Leu Gln Lys Gln Pro Cys
165 170 175

Arg Gly Asp Asn Arg Asp Ile Gly Leu Glu Ala Asp Pro Gly Pro Pro
180 185 190

```
Ser Leu Pro Val Pro Leu Glu Thr Val Asp Lys His Gly Ser Ser Ala
        195                 200                 205

Ser Pro Pro Gly His Trp Asp Tyr Ser Ser Asp Ala Ser Phe Val Thr
    210                 215                 220

Ala Val Glu Val Ser Gly Ala Glu Asp Pro Ala Ser Asp Thr Pro Pro
225                 230                 235                 240

Trp Ala Gly Ser Leu Pro Pro Thr Arg Gln Gly Leu Leu His Val Val
                245                 250                 255

His Ala Asn Gln Arg Val Pro Arg Ser Gln Gly Thr Glu Ala Glu Leu
            260                 265                 270

Asn Ala Arg Leu Gln Ala Leu Thr Leu Thr Pro Pro Asn Ala Ala Gly
        275                 280                 285

Phe Gln Ser Ser Pro Ser Ser Met Pro Leu Leu Asp Arg Ser Pro Ala
    290                 295                 300

His Ser Pro Pro Arg Thr Pro Thr Pro Gly Ala Ser Asp Cys His Cys
305                 310                 315                 320

Leu Trp Glu His Gln Thr Ser Ile Asp Ser Asp Met Ala Thr Leu Trp
                325                 330                 335

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

Pro Cys Arg His Leu Pro Val Ser Thr Val Ser Asp Leu Glu Leu Leu
        355                 360                 365

Lys Gly Leu Arg Ala Leu Gly Pro Glu Phe Ser Gly His Ser Leu Glu
    370                 375                 380

Leu Ala Ala Ala Leu Arg Thr Gly Cys Ile Pro Asp Val Gln Ala Asp
385                 390                 395                 400

Glu Asp Ala Leu Ala Gln Gln Phe Glu Gln Pro Asp Pro Ala Arg Arg
                405                 410                 415
```

```
Trp Arg Glu Gly Val Val Lys Ser Ser Phe Thr Tyr Leu Leu Leu Asp
            420                 425                 430

Pro Arg Glu Thr Gln Asp Leu Pro Ala Arg Ala Phe Ser Leu Thr Pro
        435                 440                 445

Ala Glu Arg Leu Gln Thr Phe Ile Arg Ala Ile Phe Tyr Val Gly Lys
    450                 455                 460

Gly Thr Arg Ala Arg Pro Tyr Val His Leu Trp Glu Ala Leu Gly His
465                 470                 475                 480

His Gly Arg Ser Arg Lys Gln Gly Ser Arg Arg Ser Pro Thr Arg Ser
                485                 490                 495

Lys Gly Thr Ala Met Glu Trp Trp Gln Ala Gly His Leu Leu Val Ala
            500                 505                 510

Gly Ala Trp Gly Cys Thr Cys Cys Thr Val Pro Ser Leu Ser Ser Trp
        515                 520                 525

Leu Lys Ala Ser Asp Ser Phe Ile Pro Arg Thr Ser Arg Pro Gly Ala
    530                 535                 540

Glu Cys Trp Gly Val Gly His Pro Ala Trp Gly Glu Met Phe Glu Cys
545                 550                 555                 560

Ser Ser Cys Pro Met Leu Thr Ala Ala Pro Ile Ser Gly Phe Arg Arg
                565                 570                 575

Gly Val Cys Val Cys Val Cys Val Cys Val Cys Val Cys Val Cys Leu
            580                 585                 590

Cys Val Cys Val Cys Val
        595


<210> 4957
<211> 938
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1079; "
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<220>
<221> source
<223> /note="Gene Symbol: ANKLE2; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and LEM
domain containing 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q86XL3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000350686"

<400> 4957
Met Leu Trp Pro Arg Leu Ala Ala Ala Glu Trp Ala Ala Leu Ala Trp
1   5   10   15

Glu Leu Leu Gly Ala Ser Val Leu Leu Ile Ala Val Arg Trp Leu Val
            20   25   30

Arg Arg Leu Gly Pro Arg Pro Gly Gly Leu Gly Arg Ser Gly Thr Pro
        35   40   45

Val Pro Pro Pro Ser Ala Ala Ala Ala Pro Ala Ser Gly Glu Met Thr
    50   55   60

Met Asp Ala Leu Leu Ala Arg Leu Lys Leu Leu Asn Pro Asp Asp Leu
65   70   75   80

Arg Glu Glu Ile Val Lys Ala Gly Leu Lys Cys Gly Pro Ile Thr Ser
                85   90   95

Thr Thr Arg Phe Ile Phe Glu Lys Lys Leu Ala Gln Ala Leu Leu Glu
            100   105   110

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

Ala Leu Ser Gln Asp Pro Gln Arg Ile Leu Lys Pro Ala Glu Gly Asn
    130   135   140

Pro Thr Asp Gln Ala Gly Phe Ser Glu Asp Arg Asp Phe Gly Tyr Ser

145 150 155 160

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

Ser Val Pro Pro Ser Asp Thr Asp Thr Tyr Arg Ala Gly Ala Thr Ala
180 185 190

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

Val Pro Ala Arg Asn Glu Arg Ile Tyr Val Tyr Glu Asn Lys Lys Glu
210 215 220

Ala Leu Gln Ala Val Lys Met Ile Lys Gly Ser Arg Phe Lys Ala Phe
225 230 235 240

Ser Thr Arg Glu Asp Ala Glu Lys Phe Ala Arg Gly Ile Cys Asp Tyr
245 250 255

Phe Pro Ser Pro Ser Lys Thr Ser Leu Pro Leu Ser Pro Val Lys Thr
260 265 270

Ala Pro Leu Phe Ser Asn Asp Arg Leu Lys Asp Gly Leu Cys Leu Ser
275 280 285

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

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

Glu Glu Asp Thr Phe Ser Asp Leu Ile Trp Ser Asn Pro Arg Tyr Leu
325 330 335

Ile Gly Ser Gly Asp Asn Pro Thr Ile Val Gln Glu Gly Cys Arg Tyr
340 345 350

Asn Val Met His Val Ala Ala Lys Glu Asn Gln Ala Ser Ile Cys Gln
355 360 365

Leu Thr Leu Asp Val Leu Glu Asn Pro Asp Phe Met Arg Leu Met Tyr
370 375 380

```
Pro Asp Asp Asp Glu Ala Met Leu Gln Lys Arg Ile Arg Tyr Val Val
385                 390                 395                 400

Asp Leu Tyr Leu Asn Thr Pro Asp Lys Met Gly Tyr Asp Thr Pro Leu
                405                 410                 415

His Phe Ala Cys Lys Phe Gly Asn Ala Asp Val Val Asn Val Leu Ser
            420                 425                 430

Ser His His Leu Ile Val Lys Asn Ser Arg Asn Lys Tyr Asp Lys Thr
        435                 440                 445

Pro Glu Asp Val Ile Cys Glu Arg Ser Lys Asn Lys Ser Val Glu Leu
    450                 455                 460

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

Leu Arg Ala Glu Glu Thr Ser Ser Pro Val Ile Gly Glu Leu Trp Ser
                485                 490                 495

Pro Asp Gln Thr Ala Glu Ala Ser His Val Ser Arg Tyr Gly Gly Ser
            500                 505                 510

Pro Arg Asp Pro Val Leu Thr Leu Arg Ala Phe Ala Gly Pro Leu Ser
        515                 520                 525

Pro Ala Lys Ala Glu Asp Phe Arg Lys Leu Trp Lys Thr Pro Pro Arg
    530                 535                 540

Glu Lys Ala Gly Phe Leu His His Val Lys Lys Ser Asp Pro Glu Arg
545                 550                 555                 560

Gly Phe Glu Arg Val Gly Arg Glu Leu Ala His Glu Leu Gly Tyr Pro
                565                 570                 575

Trp Val Glu Tyr Trp Glu Phe Leu Gly Cys Phe Val Asp Leu Ser Ser
            580                 585                 590

Gln Glu Gly Leu Gln Arg Leu Glu Glu Tyr Leu Thr Gln Gln Glu Ile
        595                 600                 605
```

```
Gly Lys Lys Ala Gln Gln Glu Thr Gly Glu Arg Glu Ala Ser Cys Arg
    610                 615                 620

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

Leu Asp Glu Asp Asp Met Ser Leu Glu Glu Ile Lys Asn Arg Gln Asn
                645                 650                 655

Ala Ala Arg Asn Asn Ser Pro Pro Thr Val Gly Ala Phe Gly His Thr
            660                 665                 670

Arg Cys Ser Ala Phe Pro Leu Glu Gln Glu Ala Asp Leu Ile Glu Ala
        675                 680                 685

Ala Glu Pro Gly Gly Pro His Ser Ser Arg Asn Gly Leu Cys His Pro
    690                 695                 700

Leu Asn His Ser Arg Thr Leu Ala Gly Lys Arg Pro Lys Ala Pro Arg
705                 710                 715                 720

Gly Glu Glu Ala His Leu Pro Pro Val Ser Asp Leu Thr Val Glu Phe
                725                 730                 735

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

Asp Glu Ser Thr Lys Thr Lys Asp Gln Ile Leu Thr Ser Arg Ile Asn
        755                 760                 765

Ala Val Glu Arg Asp Leu Leu Glu Pro Ser Pro Ala Asp Gln Leu Gly
    770                 775                 780

Asn Gly His Arg Arg Thr Glu Ser Glu Met Ser Ala Arg Ile Ala Lys
785                 790                 795                 800

Met Ser Leu Ser Pro Ser Ser Pro Arg His Glu Asp Gln Leu Glu Val
                805                 810                 815

Thr Arg Glu Pro Ala Arg Arg Leu Phe Leu Phe Gly Glu Glu Pro Ser
            820                 825                 830
```

Lys Leu Asp Gln Asp Val Leu Ala Ala Leu Glu Cys Ala Asp Val Asp
835 840 845

Pro His Gln Phe Pro Ala Val His Arg Trp Lys Ser Ala Val Leu Cys
850 855 860

Tyr Ser Pro Ser Asp Arg Gln Ser Trp Pro Ser Pro Ala Val Lys Gly
865 870 875 880

Arg Phe Lys Ser Gln Leu Pro Asp Leu Ser Gly Pro His Ser Tyr Ser
885 890 895

Pro Gly Arg Asn Ser Val Ala Gly Ser Asn Pro Ala Lys Pro Gly Leu
900 905 910

Gly Ser Pro Gly Arg Tyr Ser Pro Val His Gly Ser Gln Leu Arg Arg
915 920 925

Met Ala Arg Leu Ala Glu Leu Ala Ala Leu
930 935

<210> 4958
<211> 118
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1079; "

<220>
<221> source
<223> /note="Gene Symbol: ANKLE2; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and LEM
domain containing 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000437585"

<400> 4958
Glu Gly Cys Arg Tyr Asn Val Met His Val Ala Ala Lys Glu Asn Gln
1 5 10 15

Ala Ser Ile Cys Gln Leu Thr Leu Asp Val Leu Glu Asn Pro Asp Phe

```
            20                  25                  30

Met Arg Leu Met Tyr Pro Asp Asp Asp Glu Ala Met Leu Gln Lys Arg
        35                  40                  45

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

Tyr Asp Thr Pro Leu His Phe Ala Cys Lys Phe Gly Asn Ala Asp Val
65                  70                  75                  80

Val Asn Val Leu Ser Ser His His Leu Ile Val Lys Asn Ser Arg Asn
                85                  90                  95

Lys Tyr Asp Lys Thr Pro Glu Asp Glu Leu His Leu Asp Pro Ala Ser
            100                 105                 110

Gln Gln Lys Val Cys Val
        115


<210> 4959
<211> 293
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1079; "

<220>
<221> source
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<220>
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      ankyrin repeat and LEM
      domain containing 2; "

<220>
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<223> /note="Uniprot ID:  Q86XL3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000437807"

<400> 4959
Met Ser Leu Glu Glu Ile Lys Asn Arg Gln Asn Ala Ala Arg Asn Asn
1               5                   10                  15
```

```
Ser Pro Pro Thr Val Gly Ala Phe Gly His Thr Arg Cys Ser Ala Phe
            20                  25                  30

Pro Leu Glu Gln Glu Ala Asp Leu Ile Glu Ala Ala Glu Pro Gly Gly
        35                  40                  45

Pro His Ser Ser Arg Asn Gly Leu Cys His Pro Leu Asn His Ser Arg
    50                  55                  60

Thr Leu Ala Gly Lys Arg Pro Lys Ala Pro Arg Gly Glu Glu Ala His
65                  70                  75                  80

Leu Pro Pro Val Ser Asp Leu Thr Val Glu Phe Asp Lys Leu Asn Leu
                85                  90                  95

Gln Asn Ile Gly Arg Ser Val Ser Lys Thr Pro Asp Glu Ser Thr Lys
            100                 105                 110

Thr Lys Asp Gln Ile Leu Thr Ser Arg Ile Asn Ala Val Glu Arg Asp
        115                 120                 125

Leu Leu Glu Pro Ser Pro Ala Asp Gln Leu Gly Asn Gly His Arg Arg
    130                 135                 140

Thr Glu Ser Glu Met Ser Ala Arg Ile Ala Lys Met Ser Leu Ser Pro
145                 150                 155                 160

Ser Ser Pro Arg His Glu Asp Gln Leu Glu Val Thr Arg Glu Pro Ala
                165                 170                 175

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

Val Leu Ala Ala Leu Glu Cys Ala Asp Val Asp Pro His Gln Phe Pro
        195                 200                 205

Ala Val His Arg Trp Lys Ser Ala Val Leu Cys Tyr Ser Pro Ser Asp
    210                 215                 220

Arg Gln Ser Trp Pro Ser Pro Ala Val Lys Gly Arg Phe Lys Ser Gln
225                 230                 235                 240
```

```
Leu Pro Asp Leu Ser Gly Pro His Ser Tyr Ser Pro Gly Arg Asn Ser
                245                 250                 255

Val Ala Gly Ser Asn Pro Ala Lys Pro Gly Leu Gly Ser Pro Gly Arg
            260                 265                 270

Tyr Ser Pro Val His Gly Ser Gln Leu Arg Arg Met Ala Arg Leu Ala
        275                 280                 285

Glu Leu Ala Ala Leu
    290
```

<210> 4960
<211> 293
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1079; "

<220>
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<220>
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<223> /note="Gene Name:
ankyrin repeat and LEM
domain containing 2; "

<220>
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<223> /note="Uniprot ID: Q86XL3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000438551"

<400> 4960

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

Ser Pro Pro Thr Val Gly Ala Phe Gly His Thr Arg Cys Ser Ala Phe
            20                  25                  30

Pro Leu Glu Gln Glu Ala Asp Leu Ile Glu Ala Ala Glu Pro Gly Gly
        35                  40                  45
```

```
Pro His Ser Ser Arg Asn Gly Leu Cys His Pro Leu Asn His Ser Arg
    50                  55                  60

Thr Leu Ala Gly Lys Arg Pro Lys Ala Pro Arg Gly Glu Glu Ala His
65                  70                  75                  80

Leu Pro Pro Val Ser Asp Leu Thr Val Glu Phe Asp Lys Leu Asn Leu
                85                  90                  95

Gln Asn Ile Gly Arg Ser Val Ser Lys Thr Pro Asp Glu Ser Thr Lys
            100                 105                 110

Thr Lys Asp Gln Ile Leu Thr Ser Arg Ile Asn Ala Val Glu Arg Asp
        115                 120                 125

Leu Leu Glu Pro Ser Pro Ala Asp Gln Leu Gly Asn Gly His Arg Arg
    130                 135                 140

Thr Glu Ser Glu Met Ser Ala Arg Ile Ala Lys Met Ser Leu Ser Pro
145                 150                 155                 160

Ser Ser Pro Arg His Glu Asp Gln Leu Glu Val Thr Arg Glu Pro Ala
                165                 170                 175

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

Val Leu Ala Ala Leu Glu Cys Ala Asp Val Asp Pro His Gln Phe Pro
        195                 200                 205

Ala Val His Arg Trp Lys Ser Ala Val Leu Cys Tyr Ser Pro Ser Asp
    210                 215                 220

Arg Gln Ser Trp Pro Ser Pro Ala Val Lys Gly Arg Phe Lys Ser Gln
225                 230                 235                 240

Leu Pro Asp Leu Ser Gly Pro His Ser Tyr Ser Pro Gly Arg Asn Ser
                245                 250                 255

Val Ala Gly Ser Asn Pro Ala Lys Pro Gly Leu Gly Ser Pro Gly Arg
            260                 265                 270

Tyr Ser Pro Val His Gly Ser Gln Leu Arg Arg Met Ala Arg Leu Ala
```

275 280 285

Glu Leu Ala Ala Leu
290

<210> 4961
<211> 258
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1079; "

<220>
<221> source
<223> /note="Gene Symbol: ANKLE2; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and LEM
domain containing 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000445760"

<400> 4961
Met Ser Leu Glu Glu Ile Lys Asn Arg Gln Asn Ala Ala Arg Asn Asn
1 5 10 15

Ser Pro Pro Thr Val Gly Ala Phe Gly His Thr Arg Cys Ser Ala Phe
20 25 30

Pro Leu Glu Gln Glu Ala Asp Leu Ile Glu Ala Ala Glu Pro Gly Gly
35 40 45

Pro His Ser Ser Arg Asn Gly Leu Cys His Pro Leu Asn His Ser Arg
50 55 60

Thr Leu Ala Gly Lys Arg Pro Lys Ala Pro Arg Gly Glu Glu Ala His
65 70 75 80

Leu Pro Pro Val Ser Asp Leu Thr Val Glu Phe Asp Lys Leu Asn Leu
85 90 95

Gln Asn Ile Gly Arg Ser Val Ser Lys Thr Pro Asp Glu Ser Thr Lys
100 105 110

```
Thr Lys Asp Gln Ile Leu Thr Ser Arg Ile Asn Ala Val Glu Arg Asp
        115                 120                 125

Leu Leu Glu Pro Ser Pro Ala Asp Gln Leu Gly Asn Gly His Arg Arg
    130                 135                 140

Thr Glu Ser Glu Met Ser Ala Arg Ile Ala Lys Met Ser Leu Ser Pro
145                 150                 155                 160

Ser Ser Pro Arg His Glu Asp Gln Leu Glu Val Thr Arg Glu Pro Ala
                165                 170                 175

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

Val Leu Ala Ala Leu Glu Cys Ala Asp Val Asp Pro His Gln Phe Pro
        195                 200                 205

Ala Val His Arg Trp Lys Ser Ala Val Leu Cys Tyr Ser Pro Ser Asp
    210                 215                 220

Arg Gln Ser Trp Pro Ser Pro Ala Val Lys Gly Arg Phe Lys Ser Gln
225                 230                 235                 240

Leu Pro Asp Leu Ser Gly Pro His Ser Tyr Ser Pro Gly Arg Asn Ser
                245                 250                 255

Val Ala
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<210> 4962
<211> 941
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1080; "

<220>
<221> source
<223> /note="Gene Symbol: ANKMY1; "

<220>
<221> source

<223> /note="Gene Name:
ankyrin repeat and MYND
domain containing 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q9P2S6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000272972"

<400> 4962

```
Met Tyr Gln Gly Glu Phe Gly Leu Asn Met Lys Leu Gly Tyr Gly Lys
1               5                  10                  15

Phe Ser Trp Pro Thr Gly Glu Ser Tyr His Gly Gln Phe Tyr Arg Asp
            20                  25                  30

His Cys His Gly Leu Gly Thr Tyr Met Trp Pro Asp Gly Ser Ser Phe
        35                  40                  45

Thr Gly Thr Phe Tyr Leu Ser His Arg Glu Gly Tyr Gly Thr Met Tyr
    50                  55                  60

Met Lys Thr Arg Leu Phe Gln Gly Leu Tyr Lys Ala Asp Gln Arg Phe
65                  70                  75                  80

Gly Pro Gly Val Glu Thr Tyr Pro Asp Gly Ser Gln Asp Val Gly Leu
                85                  90                  95

Trp Phe Arg Glu Gln Leu Ile Lys Leu Cys Thr Gln Ile Pro Ser Gly
            100                 105                 110

Phe Ser Leu Leu Arg Tyr Pro Glu Phe Ser Ser Phe Ile Thr His Ser
        115                 120                 125

Pro Ala Arg Ile Ser Leu Ser Glu Glu Glu Lys Thr Glu Trp Gly Leu
    130                 135                 140

Gln Glu Gly Gln Asp Pro Phe Phe Tyr Asp Tyr Lys Arg Phe Leu Leu
145                 150                 155                 160

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

```
Ser Asp His Leu Pro Met Thr Ser Ser Phe Arg Lys Glu Leu Asp Ala
            180                 185                 190

Arg Ile Phe Leu Asn Glu Ile Pro Pro Phe Val Glu Asp Gly Glu Pro
        195                 200                 205

Trp Phe Ile Ile Asn Glu Thr Pro Leu Leu Val Lys Ile Gln Lys Gln
    210                 215                 220

Thr Tyr Lys Phe Arg Asn Lys Pro Ala His Thr Ser Trp Asn Met Gly
225                 230                 235                 240

Ala Ile Leu Glu Gly Lys Arg Ser Gly Phe Ala Pro Cys Gly Pro Lys
                245                 250                 255

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

Glu Trp Ile Cys Arg Ile Leu Lys Asp Asn Phe Ala Ser Ala Asp Val
        275                 280                 285

Ala Asp Ala Lys Gly Tyr Thr Val Leu Ala Ala Ala Ala Thr His Cys
    290                 295                 300

His Asn Asp Ile Val Asn Leu Leu Leu Asp Cys Gly Ala Asp Val Asn
305                 310                 315                 320

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

His Tyr Pro Ala Gln Ser Phe Lys Pro Asn Val Ala Glu Arg Thr Ile
            340                 345                 350

Pro Glu Pro Gln Glu Pro Pro Lys Phe Pro Val Val Pro Ile Leu Ser
        355                 360                 365

Ser Ser Phe Met Asp Thr Asn Leu Glu Ser Leu Tyr Tyr Glu Val Asn
    370                 375                 380

Val Pro Ser Gln Gly Ser Tyr Glu Leu Arg Pro Pro Pro Ala Pro Leu
385                 390                 395                 400

Leu Leu Pro Arg Val Ser Gly Ser His Glu Gly Gly His Phe Gln Asp
```

```
                405                 410                 415

Thr Gly Gln Cys Gly Gly Ser Ile Asp His Arg Ser Ser Ser Leu Lys
            420                 425                 430

Gly Asp Ser Pro Leu Val Lys Gly Ser Leu Gly His Val Glu Ser Gly
        435                 440                 445

Leu Glu Asp Val Leu Gly Asn Thr Asp Arg Gly Ser Leu Cys Ser Ala
    450                 455                 460

Glu Thr Lys Phe Glu Ser Asn Val Cys Val Cys Asp Phe Ser Ile Glu
465                 470                 475                 480

Leu Ser Gln Ala Met Leu Glu Arg Ser Ala Gln Ser His Ser Leu Leu
                485                 490                 495

Lys Met Ala Ser Pro Ser Pro Cys Thr Ser Ser Phe Asp Lys Gly Thr
            500                 505                 510

Met Arg Arg Met Ala Leu Ser Met Ile Glu Arg Arg Lys Arg Trp Arg
        515                 520                 525

Thr Ile Lys Leu Leu Leu Arg Arg Gly Ala Asp Pro Asn Leu Cys Cys
    530                 535                 540

Val Pro Met Gln Val Leu Phe Leu Ala Val Lys Ala Gly Asp Val Asp
545                 550                 555                 560

Gly Val Arg Leu Leu Leu Glu His Gly Ala Arg Thr Asp Ile Cys Phe
                565                 570                 575

Pro Pro Gln Leu Ser Thr Leu Thr Pro Leu His Ile Ala Ala Ala Leu
            580                 585                 590

Pro Gly Glu Glu Gly Val Gln Ile Val Glu Leu Leu Leu His Ala Ile
        595                 600                 605

Thr Asp Val Asp Ala Lys Ala Ser Asp Glu Asp Asp Thr Tyr Lys Pro
    610                 615                 620

Gly Lys Leu Asp Leu Leu Pro Ser Ser Leu Lys Leu Ser Asn Glu Pro
625                 630                 635                 640
```

```
Gly Pro Pro Gln Ala Tyr Tyr Ser Thr Asp Thr Ala Leu Pro Glu Glu
                645                 650                 655

Gly Gly Arg Thr Ala Leu His Met Ala Cys Glu Arg Glu Asp Asp Asn
            660                 665                 670

Lys Cys Ala Arg Asp Ile Val Arg Leu Leu Leu Ser His Gly Ala Asn
        675                 680                 685

Pro Asn Leu Leu Trp Ser Gly His Ser Pro Leu Ser Leu Ser Ile Ala
    690                 695                 700

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

Pro Asn Leu Pro Leu Thr Lys Gly Leu Gly Ser Ala Leu Cys Val Ala
                725                 730                 735

Cys Asp Leu Thr Tyr Glu His Gln Arg Asn Met Asp Ser Lys Leu Ala
            740                 745                 750

Leu Ile Asp Arg Leu Ile Ser His Gly Ala Asp Ile Leu Lys Pro Val
        755                 760                 765

Met Leu Arg Gln Gly Glu Lys Glu Ala Val Gly Thr Ala Val Asp Tyr
    770                 775                 780

Gly Tyr Phe Arg Phe Phe Gln Asp Arg Arg Ile Ala Arg Cys Pro Phe
785                 790                 795                 800

His Thr Leu Met Pro Ala Glu Arg Glu Thr Phe Leu Ala Arg Lys Arg
                805                 810                 815

Leu Leu Glu Tyr Met Gly Leu Gln Leu Arg Gln Ala Val Phe Ala Lys
            820                 825                 830

Glu Ser Gln Trp Asp Pro Thr Trp Leu Tyr Leu Cys Lys Arg Ala Glu
        835                 840                 845

Leu Ile Pro Ser His Arg Met Lys Lys Lys Gly Pro Ser Leu Pro Arg
    850                 855                 860
```

```
Gly Leu Asp Val Lys Glu Gln Gly Gln Ile Pro Phe Phe Lys Phe Cys
865                 870                 875                 880

Tyr Gln Cys Gly Arg Ser Ile Gly Val Arg Leu Leu Pro Cys Pro Arg
                885                 890                 895

Cys Tyr Gly Ile Leu Thr Cys Ser Lys Tyr Cys Lys Thr Lys Ala Trp
            900                 905                 910

Thr Glu Phe His Lys Lys Asp Cys Gly Asp Leu Val Ala Ile Val Thr
        915                 920                 925

Gln Leu Glu Gln Val Ser Arg Arg Arg Glu Glu Phe Gln
    930                 935                 940


<210> 4963
<211> 717
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1080; "

<220>
<221> source
<223> /note="Gene Symbol: ANKMY1; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat and MYND
      domain containing 1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9P2S6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000355097"

<400> 4963
Met Glu Gly Ala His Ala Ser Leu Ser Leu Glu Asp Glu Val Ser Gly
1               5                   10                  15

Ala Gly Ser Arg Gln Arg Pro Leu Glu Gly Lys Gly Gly Glu Thr Pro
            20                  25                  30
```

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

Arg Asp Val Ser Ala Ala Pro Glu Lys Glu Glu Glu Glu Ala Glu Gly
    50                  55                  60

Pro Leu Arg Ala Gln Asp Leu Arg Glu Ser Tyr Ile Gln Leu Val Gln
65                  70                  75                  80

Gly Val Gln Glu Trp Gln Asp Gly Cys Met Tyr Gln Gly Glu Phe Gly
                85                  90                  95

Leu Asn Met Lys Leu Gly Tyr Gly Lys Phe Ser Trp Pro Thr Gly Glu
            100                 105                 110

Ser Tyr His Gly Gln Phe Tyr Arg Asp His Cys His Gly Leu Gly Thr
        115                 120                 125

Tyr Met Trp Pro Asp Gly Ser Ser Phe Thr Gly Thr Phe Tyr Leu Ser
    130                 135                 140

His Arg Glu Gly Tyr Gly Thr Met Tyr Met Lys Thr Arg Leu Phe Gln
145                 150                 155                 160

Thr His Cys His Asn Asp Ile Val Asn Leu Leu Leu Asp Cys Gly Ala
                165                 170                 175

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

Phe Leu Leu His Tyr Pro Ala Gln Ser Phe Lys Pro Asn Val Ala Glu
        195                 200                 205

Arg Thr Ile Pro Glu Pro Gln Glu Pro Pro Lys Phe Pro Val Val Pro
    210                 215                 220

Ile Leu Ser Ser Ser Phe Met Asp Thr Asn Leu Glu Ser Leu Tyr Tyr
225                 230                 235                 240

Glu Val Asn Val Pro Ser Gln Gly Ser Tyr Glu Leu Arg Pro Pro Pro
                245                 250                 255

Ala Pro Leu Leu Leu Pro Arg Val Ser Gly Ser His Glu Gly Gly His
```

260 265 270

Phe Gln Asp Thr Gly Gln Cys Gly Gly Ser Ile Asp His Arg Ser Ser
275 280 285

Ser Leu Lys Gly Asp Ser Pro Leu Val Lys Gly Ser Leu Gly His Val
290 295 300

Glu Ser Gly Leu Glu Asp Val Leu Gly Asn Thr Asp Arg Gly Ser Leu
305 310 315 320

Cys Ser Ala Glu Thr Lys Phe Glu Ser Asn Val Cys Val Cys Asp Phe
325 330 335

Ser Ile Glu Leu Ser Gln Ala Met Leu Glu Arg Ser Ala Gln Ser His
340 345 350

Ser Leu Leu Lys Met Ala Ser Pro Ser Pro Cys Thr Ser Ser Phe Asp
355 360 365

Lys Gly Thr Met Arg Arg Met Ala Leu Ser Met Ile Glu Arg Arg Lys
370 375 380

Arg Trp Arg Thr Ile Lys Leu Leu Leu Arg Arg Gly Ala Asp Pro Asn
385 390 395 400

Leu Cys Cys Val Pro Met Gln Val Leu Phe Leu Ala Val Lys Ala Gly
405 410 415

Asp Val Asp Gly Val Arg Leu Leu Leu Glu His Gly Ala Arg Thr Asp
420 425 430

Ile Cys Phe Pro Pro Gln Leu Ser Thr Leu Thr Pro Leu His Ile Ala
435 440 445

Ala Ala Leu Pro Gly Glu Glu Gly Val Gln Ile Val Glu Leu Leu Leu
450 455 460

His Ala Ile Thr Asp Val Asp Ala Lys Ala Ser Asp Glu Asp Asp Thr
465 470 475 480

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

```
Pro Asn Leu Pro Leu Thr Lys Gly Leu Gly Ser Ala Leu Cys Val Ala
            500                 505                 510

Cys Asp Leu Thr Tyr Glu His Gln Arg Asn Met Asp Ser Lys Leu Ala
        515                 520                 525

Leu Ile Asp Arg Leu Ile Ser His Gly Ala Asp Ile Leu Lys Pro Val
    530                 535                 540

Met Leu Arg Gln Gly Glu Lys Glu Ala Val Gly Thr Ala Val Asp Tyr
545                 550                 555                 560

Gly Tyr Phe Arg Phe Phe Gln Asp Arg Arg Ile Ala Arg Cys Pro Phe
                565                 570                 575

His Thr Leu Met Pro Ala Glu Arg Glu Thr Phe Leu Ala Arg Lys Arg
            580                 585                 590

Leu Leu Glu Tyr Met Gly Leu Gln Leu Arg Gln Ala Val Phe Ala Lys
        595                 600                 605

Glu Ser Gln Trp Asp Pro Thr Trp Leu Tyr Leu Cys Lys Arg Ala Glu
    610                 615                 620

Leu Ile Pro Ser His Arg Met Lys Lys Lys Gly Pro Ser Leu Pro Arg
625                 630                 635                 640

Gly Leu Asp Val Lys Glu Gln Gly Gln Ile Pro Phe Phe Lys Phe Cys
                645                 650                 655

Tyr Gln Cys Gly Arg Ser Ile Gly Val Arg Leu Leu Pro Cys Pro Arg
            660                 665                 670

Cys Tyr Gly Ile Leu Thr Cys Ser Lys Tyr Cys Lys Thr Lys Ala Trp
        675                 680                 685

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

Gln Leu Glu Gln Val Ser Arg Arg Arg Glu Glu Phe Gln
705                 710                 715
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<210> 4964
<211> 720
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1080; "

<220>
<221> source
<223> /note="Gene Symbol: ANKMY1; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and MYND
domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000362415"

<400> 4964

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Met Glu Gly Ala His Ala Ser Leu Ser Leu Glu Asp Glu Val Ser Gly
1               5                  10                  15


Ala Gly Ser Arg Gln Arg Pro Leu Glu Gly Lys Gly Gly Glu Thr Pro
            20                  25                  30


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


Arg Asp Val Ser Ala Ala Pro Glu Lys Glu Glu Glu Glu Ala Glu Gly
    50                  55                  60


Pro Leu Arg Ala Gln Asp Leu Arg Glu Ser Tyr Ile Gln Leu Val Gln
65                  70                  75                  80


Gly Val Gln Glu Trp Gln Asp Gly Cys Met Tyr Gln Gly Glu Phe Gly
                85                  90                  95


Leu Asn Met Lys Leu Gly Tyr Gly Lys Phe Ser Trp Pro Thr Gly Glu
            100                 105                 110


Ser Tyr His Gly Gln Phe Tyr Arg Asp His Cys His Gly Leu Gly Thr
        115                 120                 125
```

```
Tyr Met Trp Pro Asp Gly Ser Ser Phe Thr Gly Thr Phe Tyr Leu Ser
    130                 135                 140

His Arg Glu Gly Tyr Gly Thr Met Tyr Met Lys Thr Arg Leu Phe Gln
145                 150                 155                 160

Thr His Cys His Asn Asp Ile Val Asn Leu Leu Leu Asp Cys Gly Ala
                165                 170                 175

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

Phe Leu Leu His Tyr Pro Ala Gln Ser Phe Lys Pro Asn Val Ala Glu
        195                 200                 205

Arg Thr Ile Pro Glu Pro Gln Glu Pro Pro Lys Phe Pro Val Val Pro
    210                 215                 220

Ile Leu Ser Ser Ser Phe Met Asp Thr Asn Leu Glu Ser Leu Tyr Tyr
225                 230                 235                 240

Glu Val Asn Val Pro Ser Gln Gly Ser Tyr Glu Leu Arg Pro Pro Pro
                245                 250                 255

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

Phe Gln Asp Thr Gly Gln Cys Gly Gly Ser Ile Asp His Arg Ser Ser
        275                 280                 285

Ser Leu Lys Gly Asp Ser Pro Leu Val Lys Gly Ser Leu Gly His Val
    290                 295                 300

Glu Ser Gly Leu Glu Asp Val Leu Gly Asn Thr Asp Arg Gly Ser Leu
305                 310                 315                 320

Cys Ser Ala Glu Thr Lys Phe Glu Ser Asn Val Cys Val Cys Asp Phe
                325                 330                 335

Ser Ile Glu Leu Ser Gln Ala Met Leu Glu Arg Ser Ala Gln Ser His
            340                 345                 350

Ser Leu Leu Lys Met Ala Ser Pro Ser Pro Cys Thr Ser Ser Phe Asp
```

```
        355                 360                 365

Lys Gly Thr Met Arg Arg Met Ala Leu Ser Met Ile Glu Arg Arg Lys
    370                 375                 380

Arg Trp Arg Thr Ile Lys Leu Leu Leu Arg Arg Gly Ala Asp Pro Asn
385                 390                 395                 400

Leu Cys Cys Val Pro Met Gln Val Leu Phe Leu Ala Val Lys Ala Gly
                405                 410                 415

Asp Val Asp Gly Val Arg Leu Leu Leu Glu His Gly Ala Arg Thr Asp
            420                 425                 430

Ile Cys Phe Pro Pro Gln Leu Ser Thr Leu Thr Pro Leu His Ile Ala
        435                 440                 445

Ala Ala Leu Pro Gly Glu Glu Gly Val Gln Ile Val Glu Leu Leu Leu
    450                 455                 460

His Ala Ile Thr Asp Val Asp Ala Lys Ala Ser Asp Glu Asp Asp Thr
465                 470                 475                 480

Tyr Lys Pro Gly Lys Leu Asp Leu Leu Pro Ser Ser Leu Lys Leu Ser
                485                 490                 495

Asn Glu Pro Gly Pro Pro Gln Ala Tyr Tyr Ser Thr Asp Thr Ala Leu
            500                 505                 510

Pro Glu Glu Gly Gly Arg Thr Ala Leu His Met Ala Cys Glu Arg Glu
        515                 520                 525

Asp Asp Asn Lys Ile Asp Arg Leu Ile Ser His Gly Ala Asp Ile Leu
    530                 535                 540

Lys Pro Val Met Leu Arg Gln Gly Glu Lys Glu Ala Val Gly Thr Ala
545                 550                 555                 560

Val Asp Tyr Gly Tyr Phe Arg Phe Phe Gln Asp Arg Arg Ile Ala Arg
                565                 570                 575

Cys Pro Phe His Thr Leu Met Pro Ala Glu Arg Glu Thr Phe Leu Ala
            580                 585                 590
```

```
Arg Lys Arg Leu Leu Glu Tyr Met Gly Leu Gln Leu Arg Gln Ala Val
        595                 600                 605

Phe Ala Lys Glu Ser Gln Trp Asp Pro Thr Trp Leu Tyr Leu Cys Lys
    610                 615                 620

Arg Ala Glu Leu Ile Pro Ser His Arg Met Lys Lys Lys Gly Pro Ser
625                 630                 635                 640

Leu Pro Arg Gly Leu Asp Val Lys Glu Gln Gly Gln Ile Pro Phe Phe
                645                 650                 655

Lys Phe Cys Tyr Gln Cys Gly Arg Ser Ile Gly Val Arg Leu Leu Pro
            660                 665                 670

Cys Pro Arg Cys Tyr Gly Ile Leu Thr Cys Ser Lys Tyr Cys Lys Thr
        675                 680                 685

Lys Ala Trp Thr Glu Phe His Lys Lys Asp Cys Gly Asp Leu Val Ala
    690                 695                 700

Ile Val Thr Gln Leu Glu Gln Val Ser Arg Arg Arg Glu Glu Phe Gln
705                 710                 715                 720


<210> 4965
<211> 246
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1080; "

<220>
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<223> /note="Gene Symbol: ANKMY1; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat and MYND
      domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000375847"
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<400> 4965
Met Tyr Gln Gly Glu Phe Gly Leu Asn Met Lys Leu Gly Tyr Gly Lys
1 5 10 15

Phe Ser Trp Pro Thr Gly Glu Ser Tyr His Gly Gln Phe Tyr Arg Asp
20 25 30

His Cys His Gly Leu Gly Thr Tyr Met Trp Pro Asp Gly Ser Ser Phe
35 40 45

Thr Gly Thr Phe Tyr Leu Ser His Arg Glu Gly Tyr Gly Thr Met Tyr
50 55 60

Met Lys Thr Arg Leu Phe Gln Gly Leu Tyr Lys Ala Asp Gln Arg Phe
65 70 75 80

Gly Pro Gly Val Glu Thr Tyr Pro Asp Gly Ser Gln Asp Val Gly Leu
85 90 95

Trp Phe Arg Glu Gln Leu Ile Lys Leu Cys Thr Gln Ile Pro Ser Gly
100 105 110

Phe Ser Leu Leu Arg Tyr Pro Glu Phe Ser Ser Phe Ile Thr His Ser
115 120 125

Pro Ala Arg Ile Ser Leu Ser Glu Glu Glu Lys Thr Glu Trp Gly Leu
130 135 140

Gln Glu Gly Gln Asp Pro Phe Phe Tyr Asp Tyr Lys Arg Phe Leu Leu
145 150 155 160

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

Ser Asp His Leu Pro Met Thr Ser Ser Phe Arg Lys Glu Leu Asp Ala
180 185 190

Arg Ile Phe Leu Asn Glu Ile Pro Pro Phe Val Glu Asp Gly Glu Pro
195 200 205

Trp Phe Ile Ile Asn Glu Thr Pro Leu Leu Val Lys Ile Gln Lys Gln
210 215 220

```
Thr Tyr Lys Phe Arg Leu Thr Ala Thr Thr Thr Leu Ser Thr Phe Ser
225                 230                 235                 240


Trp Thr Val Gly Pro Thr
                245


<210> 4966
<211> 190
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<220>
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      ankyrin repeat and MYND
      domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000375848"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 4966
Xaa Lys Arg Trp Arg Thr Ile Lys Leu Leu Leu Arg Arg Gly Ala Asp
1               5                   10                  15


Pro Asn Leu Cys Cys Val Pro Met Gln Val Leu Phe Leu Ala Val Lys
            20                  25                  30


Ala Gly Asp Val Asp Gly Val Arg Leu Leu Leu Glu His Gly Ala Arg
        35                  40                  45


Thr Asp Ile Cys Phe Pro Pro Gln Leu Ser Thr Leu Thr Pro Leu His
    50                  55                  60


Ile Ala Ala Ala Leu Pro Gly Glu Glu Gly Val Gln Ile Val Glu Leu
65                  70                  75                  80
```

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

Asp Thr Tyr Lys Pro Gly Lys Cys Ala Arg Asp Ile Val Arg Leu Leu
            100                 105                 110

Leu Ser His Gly Ala Asn Pro Asn Leu Leu Trp Ser Gly His Ser Pro
        115                 120                 125

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

Leu Thr Gln Gly Ala Asp Pro Asn Leu Pro Leu Thr Lys Gly Leu Gly
145                 150                 155                 160

Ser Ala Leu Cys Val Ala Cys Asp Leu Thr Tyr Glu His Gln Arg Asn
                165                 170                 175

Met Asp Ser Lys Leu Ala Leu Ile Asp Arg Leu Ile Ser His
            180                 185                 190


<210> 4967
<211> 843
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1080; "

<220>
<221> source
<223> /note="Gene Symbol: ANKMY1; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat and MYND
      domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000383968"

<400> 4967
Met Ala Ala His Val Gly Ser Arg Cys Ala Ser Arg Ser Ser Ala Gly
1               5                   10                  15
```

```
Ser Ser Asn Thr Gly Thr Arg Ser Ser Ala Thr Pro Gly Ala Arg Gly
            20                  25                  30

Pro Gly Cys Trp Arg Glu Thr Leu Thr His Ser Val Thr Pro Ala Arg
        35                  40                  45

Ala Ser Cys Ser Ser Ala Pro Ala Ala Arg Ala Leu Pro Arg Lys Ser
    50                  55                  60

Glu Gly Ala Thr Arg Thr Asn Gly Gly Gly Trp Lys Thr Thr Asp Met
65                  70                  75                  80

Glu Gly Ala His Ala Ser Leu Ser Leu Glu Asp Glu Val Ser Gly Ala
                85                  90                  95

Gly Ser Arg Gln Arg Pro Leu Glu Gly Lys Gly Gly Glu Thr Pro Ala
            100                 105                 110

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

Asp Val Ser Ala Ala Pro Glu Lys Glu Glu Glu Glu Ala Glu Gly Pro
    130                 135                 140

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

Val Gln Glu Trp Gln Asp Gly Cys Met Tyr Gln Gly Glu Phe Gly Leu
                165                 170                 175

Asn Met Lys Leu Gly Tyr Gly Lys Phe Ser Trp Pro Thr Gly Glu Ser
            180                 185                 190

Tyr His Gly Gln Phe Tyr Arg Asp His Cys His Gly Leu Gly Thr Tyr
        195                 200                 205

Met Trp Pro Asp Gly Ser Ser Phe Thr Gly Thr Phe Tyr Leu Ser His
    210                 215                 220

Arg Glu Gly Tyr Gly Thr Met Tyr Met Lys Thr Arg Leu Phe Gln Thr
225                 230                 235                 240

His Cys His Asn Asp Ile Val Asn Leu Leu Leu Asp Cys Gly Ala Asp
```

```
                245                 250                 255

Val Asn Lys Cys Ser Asp Glu Gly Leu Thr Ala Leu Ser Met Cys Phe
            260                 265                 270

Leu Leu His Tyr Pro Ala Gln Ser Phe Lys Pro Asn Val Ala Glu Arg
        275                 280                 285

Thr Ile Pro Glu Pro Gln Glu Pro Pro Lys Phe Pro Val Val Pro Ile
    290                 295                 300

Leu Ser Ser Ser Phe Met Asp Thr Asn Leu Glu Ser Leu Tyr Tyr Glu
305                 310                 315                 320

Val Asn Val Pro Ser Gln Gly Ser Tyr Glu Leu Arg Pro Pro Pro Ala
                325                 330                 335

Pro Leu Leu Leu Pro Arg Val Ser Gly Ser His Glu Gly Gly His Phe
            340                 345                 350

Gln Asp Thr Gly Gln Cys Gly Gly Ser Ile Asp His Arg Ser Ser Ser
        355                 360                 365

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

Ser Gly Leu Glu Asp Val Leu Gly Asn Thr Asp Arg Gly Ser Leu Cys
385                 390                 395                 400

Ser Ala Glu Thr Lys Phe Glu Ser Asn Val Cys Val Cys Asp Phe Ser
                405                 410                 415

Ile Glu Leu Ser Gln Ala Met Leu Glu Arg Ser Ala Gln Ser His Ser
            420                 425                 430

Leu Leu Lys Met Ala Ser Pro Ser Pro Cys Thr Ser Ser Phe Asp Lys
        435                 440                 445

Gly Thr Met Arg Arg Met Ala Leu Ser Met Ile Glu Arg Arg Lys Arg
    450                 455                 460

Trp Arg Thr Ile Lys Leu Leu Leu Arg Arg Gly Ala Asp Pro Asn Leu
465                 470                 475                 480
```

```
Cys Cys Val Pro Met Gln Val Leu Phe Leu Ala Val Lys Ala Gly Asp
                485                 490                 495

Val Asp Gly Val Arg Leu Leu Leu Glu His Gly Ala Arg Thr Asp Ile
            500                 505                 510

Cys Phe Pro Pro Gln Leu Ser Thr Leu Thr Pro Leu His Ile Ala Ala
        515                 520                 525

Ala Leu Pro Gly Glu Glu Gly Val Gln Ile Val Glu Leu Leu Leu His
    530                 535                 540

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

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

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

Glu Glu Gly Gly Arg Thr Ala Leu His Met Ala Cys Glu Arg Glu Asp
        595                 600                 605

Asp Asn Lys Val Val Lys Glu Leu Leu Thr Gln Gly Ala Asp Pro Asn
    610                 615                 620

Leu Pro Leu Thr Lys Gly Leu Gly Ser Ala Leu Cys Val Ala Cys Asp
625                 630                 635                 640

Leu Thr Tyr Glu His Gln Arg Asn Met Asp Ser Lys Leu Ala Leu Ile
                645                 650                 655

Asp Arg Leu Ile Ser His Gly Ala Asp Ile Leu Lys Pro Val Met Leu
            660                 665                 670

Arg Gln Gly Glu Lys Glu Ala Val Gly Thr Ala Val Asp Tyr Gly Tyr
        675                 680                 685

Phe Arg Phe Phe Gln Asp Arg Arg Ile Ala Arg Cys Pro Phe His Thr
    690                 695                 700
```

```
Leu Met Pro Ala Glu Arg Glu Thr Phe Leu Ala Arg Lys Arg Leu Leu
705                 710                 715                 720

Glu Tyr Met Gly Leu Gln Leu Arg Gln Ala Val Phe Ala Lys Glu Ser
                725                 730                 735

Gln Trp Asp Pro Thr Trp Leu Tyr Leu Cys Lys Arg Ala Glu Leu Ile
            740                 745                 750

Pro Ser His Arg Met Lys Lys Lys Gly Pro Ser Leu Pro Arg Gly Leu
        755                 760                 765

Asp Val Lys Glu Gln Gly Gln Ile Pro Phe Phe Lys Phe Cys Tyr Gln
    770                 775                 780

Cys Gly Arg Ser Ile Gly Val Arg Leu Leu Pro Cys Pro Arg Cys Tyr
785                 790                 795                 800

Gly Ile Leu Thr Cys Ser Lys Tyr Cys Lys Thr Lys Ala Trp Thr Glu
                805                 810                 815

Phe His Lys Lys Asp Cys Gly Asp Leu Val Ala Ile Val Thr Gln Leu
            820                 825                 830

Glu Gln Val Ser Arg Arg Arg Glu Glu Phe Gln
        835                 840


<210> 4968
<211> 702
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1080; "

<220>
<221> source
<223> /note="Gene Symbol: ANKMY1; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat and MYND
      domain containing 1; "

<220>
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<221> source
<223> /note="ENSP ID: ENSP00000384555"

<400> 4968

```
Met Glu Gly Ala His Ala Ser Leu Ser Leu Glu Asp Glu Val Ser Gly
1               5                  10                  15

Ala Gly Ser Arg Gln Arg Pro Leu Glu Gly Lys Gly Gly Glu Thr Pro
            20                  25                  30

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

Arg Asp Val Ser Ala Ala Pro Glu Lys Glu Glu Glu Glu Ala Glu Gly
    50                  55                  60

Pro Leu Arg Ala Gln Asp Leu Arg Glu Ser Tyr Ile Gln Leu Val Gln
65                  70                  75                  80

Gly Val Gln Glu Trp Gln Asp Gly Cys Met Tyr Gln Gly Glu Phe Gly
                85                  90                  95

Leu Asn Met Lys Leu Gly Tyr Gly Lys Phe Ser Trp Pro Thr Gly Glu
            100                 105                 110

Ser Tyr His Gly Gln Phe Tyr Arg Asp His Cys His Gly Leu Gly Thr
        115                 120                 125

Tyr Met Trp Pro Asp Gly Ser Ser Phe Thr Gly Thr Phe Tyr Leu Ser
    130                 135                 140

His Arg Glu Gly Tyr Gly Thr Met Tyr Met Lys Thr Arg Leu Phe Gln
145                 150                 155                 160

Thr His Cys His Asn Asp Ile Val Asn Leu Leu Leu Asp Cys Gly Ala
                165                 170                 175

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

Phe Leu Leu His Tyr Pro Ala Gln Ser Phe Lys Pro Asn Val Ala Glu
        195                 200                 205

Arg Thr Ile Pro Glu Pro Gln Glu Pro Pro Lys Phe Pro Val Val Pro
```

```
    210                 215                 220

Ile Leu Ser Ser Ser Phe Met Asp Thr Asn Leu Glu Ser Leu Tyr Tyr
225                 230                 235                 240

Glu Leu Ser Gln Ala Met Leu Glu Arg Ser Ala Gln Ser His Ser Leu
                245                 250                 255

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

Thr Met Arg Arg Met Ala Leu Ser Met Ile Glu Arg Arg Lys Arg Trp
        275                 280                 285

Arg Thr Ile Lys Leu Leu Leu Arg Arg Gly Ala Asp Pro Asn Leu Cys
    290                 295                 300

Cys Val Pro Met Gln Val Leu Phe Leu Ala Val Lys Ala Gly Asp Val
305                 310                 315                 320

Asp Gly Val Arg Leu Leu Leu Glu His Gly Ala Arg Thr Asp Ile Cys
                325                 330                 335

Phe Pro Pro Gln Leu Ser Thr Leu Thr Pro Leu His Ile Ala Ala Ala
            340                 345                 350

Leu Pro Gly Glu Glu Gly Val Gln Ile Val Glu Leu Leu Leu His Ala
        355                 360                 365

Ile Thr Asp Val Asp Ala Lys Ala Ser Asp Glu Asp Asp Thr Tyr Lys
    370                 375                 380

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

Pro Gly Pro Pro Gln Ala Tyr Tyr Ser Thr Asp Thr Ala Leu Pro Glu
                405                 410                 415

Glu Gly Gly Arg Thr Ala Leu His Met Ala Cys Glu Arg Glu Asp Asp
            420                 425                 430

Asn Lys Cys Ala Arg Asp Ile Val Arg Leu Leu Leu Ser His Gly Ala
        435                 440                 445
```

```
Asn Pro Asn Leu Leu Trp Ser Gly His Ser Pro Leu Ser Leu Ser Ile
    450                 455                 460

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

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

Ala Cys Asp Leu Thr Tyr Glu His Gln Arg Asn Met Asp Ser Lys Leu
            500                 505                 510

Ala Leu Ile Asp Arg Leu Ile Ser His Gly Ala Asp Ile Leu Lys Pro
        515                 520                 525

Val Met Leu Arg Gln Gly Glu Lys Glu Ala Val Gly Thr Ala Val Asp
    530                 535                 540

Tyr Gly Tyr Phe Arg Phe Phe Gln Asp Arg Arg Ile Ala Arg Cys Pro
545                 550                 555                 560

Phe His Thr Leu Met Pro Ala Glu Arg Glu Thr Phe Leu Ala Arg Lys
                565                 570                 575

Arg Leu Leu Glu Tyr Met Gly Leu Gln Leu Arg Gln Ala Val Phe Ala
            580                 585                 590

Lys Glu Ser Gln Trp Asp Pro Thr Trp Leu Tyr Leu Cys Lys Arg Ala
        595                 600                 605

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

Arg Gly Leu Asp Val Lys Glu Gln Gly Gln Ile Pro Phe Phe Lys Phe
625                 630                 635                 640

Cys Tyr Gln Cys Gly Arg Ser Ile Gly Val Arg Leu Leu Pro Cys Pro
                645                 650                 655

Arg Cys Tyr Gly Ile Leu Thr Cys Ser Lys Tyr Cys Lys Thr Lys Ala
            660                 665                 670
```

Trp Thr Glu Phe His Lys Lys Asp Cys Gly Asp Leu Val Ala Ile Val
675 680 685

Thr Gln Leu Glu Gln Val Ser Arg Arg Arg Glu Glu Phe Gln
690 695 700

<210> 4969
<211> 292
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1080; "

<220>
<221> source
<223> /note="Gene Symbol: ANKMY1; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and MYND
domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000385145"

<400> 4969
Met Tyr Gln Gly Glu Phe Gly Leu Asn Met Lys Leu Gly Tyr Gly Lys
1 5 10 15

Phe Ser Trp Pro Thr Gly Glu Ser Tyr His Gly Gln Phe Tyr Arg Asp
20 25 30

His Cys His Gly Leu Gly Thr Tyr Met Trp Pro Asp Gly Ser Ser Phe
35 40 45

Thr Gly Thr Phe Tyr Leu Ser His Arg Glu Gly Tyr Gly Thr Met Tyr
50 55 60

Met Lys Thr Arg Leu Phe Gln Thr His Cys His Asn Asp Ile Val Asn
65 70 75 80

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

```
Leu Thr Ala Leu Ser Met Cys Phe Leu Leu His Tyr Pro Ala Gln Ser
            100                 105                 110

Phe Lys Pro Asn Val Ala Glu Arg Thr Ile Pro Glu Pro Gln Glu Pro
        115                 120                 125

Pro Lys Phe Pro Val Val Pro Ile Leu Ser Ser Ser Phe Met Asp Thr
    130                 135                 140

Asn Leu Glu Ser Leu Tyr Tyr Glu Val Asn Val Pro Ser Gln Gly Ser
145                 150                 155                 160

Tyr Glu Leu Arg Pro Pro Pro Ala Pro Leu Leu Leu Pro Arg Val Ser
                165                 170                 175

Gly Ser His Glu Gly Gly His Phe Gln Asp Thr Gly Gln Cys Gly Gly
            180                 185                 190

Ser Ile Asp His Arg Ser Ser Ser Leu Lys Gly Asp Ser Pro Leu Val
        195                 200                 205

Lys Gly Ser Leu Gly His Val Glu Ser Gly Leu Glu Asp Val Leu Gly
    210                 215                 220

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

Asn Val Cys Val Cys Asp Phe Ser Ile Glu Leu Ser Gln Ala Met Leu
                245                 250                 255

Glu Arg Ser Ala Gln Ser His Ser Leu Leu Lys Met Ala Ser Pro Ser
            260                 265                 270

Pro Cys Thr Ser Ser Phe Asp Lys Gly Thr Met Arg Arg Met Ala Leu
        275                 280                 285

Ser Met Ile Glu
    290
```

<210> 4970
<211> 84
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1080; "

<220>
<221> source
<223> /note="Gene Symbol: ANKMY1; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and MYND
domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000385267"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 4970
Xaa Pro Leu Pro His Ala Asp Ala Ser Arg Ala Arg Asp Val Pro Gly
1 5 10 15

Ala Glu Ala Ala Pro Gly Val His Gly Leu Ala Ala Thr Ala Gly Cys
20 25 30

Leu Cys Gln Gly Glu Pro Val Gly Pro His Val Ala Val Pro Val Gln
35 40 45

Glu Arg Ile Pro Phe Phe Lys Phe Cys Tyr Gln Cys Gly Arg Ser Ile
50 55 60

Gly Val Arg Leu Leu Pro Cys Pro Arg Cys Tyr Gly Ile Leu Thr Cys
65 70 75 80

Ser Lys Tyr Cys

<210> 4971
<211> 439
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1080; "

<220>
<221> source
<223> /note="Gene Symbol: ANKMY1; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and MYND
domain containing 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q9P2S6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000385635"

<400> 4971
Met Glu Gly Ala His Ala Ser Leu Ser Leu Glu Asp Glu Val Ser Gly
1   5   10   15

Ala Gly Ser Arg Gln Arg Pro Leu Glu Gly Lys Gly Gly Glu Thr Pro
            20   25   30

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

Arg Asp Val Ser Ala Ala Pro Glu Lys Glu Glu Glu Glu Ala Glu Gly
    50   55   60

Pro Leu Arg Ala Gln Asp Leu Arg Glu Ser Tyr Ile Gln Leu Val Gln
65   70   75   80

Gly Val Gln Glu Trp Gln Asp Gly Cys Met Tyr Gln Gly Glu Phe Gly
                85   90   95

Leu Asn Met Lys Leu Gly Tyr Gly Lys Phe Ser Trp Pro Thr Gly Glu
            100   105   110

Ser Tyr His Gly Gln Phe Tyr Arg Asp His Cys His Gly Leu Gly Thr
        115   120   125

Tyr Met Trp Pro Asp Gly Ser Ser Phe Thr Gly Thr Phe Tyr Leu Ser
    130   135   140

His Arg Glu Gly Tyr Gly Thr Met Tyr Met Lys Thr Arg Leu Phe Gln

```
145                 150                 155                 160

Thr His Cys His Asn Asp Ile Val Asn Leu Leu Leu Asp Cys Gly Ala
                165                 170                 175

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

Phe Leu Leu His Tyr Pro Ala Gln Ser Phe Lys Pro Asn Val Ala Glu
        195                 200                 205

Arg Thr Ile Pro Glu Pro Gln Glu Pro Pro Lys Phe Pro Val Val Pro
    210                 215                 220

Ile Leu Ser Ser Ser Phe Met Asp Thr Asn Leu Glu Ser Leu Tyr Tyr
225                 230                 235                 240

Glu Val Asn Val Pro Ser Gln Gly Ser Tyr Glu Leu Arg Pro Pro Pro
                245                 250                 255

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

Phe Gln Asp Thr Gly Gln Cys Gly Gly Ser Ile Asp His Arg Ser Ser
        275                 280                 285

Ser Leu Lys Gly Asp Ser Pro Leu Val Lys Gly Ser Leu Gly His Val
    290                 295                 300

Glu Ser Gly Leu Glu Asp Val Leu Gly Asn Thr Asp Arg Gly Ser Leu
305                 310                 315                 320

Cys Ser Ala Glu Thr Lys Phe Glu Ser Asn Val Cys Val Cys Asp Phe
                325                 330                 335

Ser Ile Glu Leu Ser Gln Ala Met Leu Glu Arg Ser Ala Gln Ser His
            340                 345                 350

Ser Leu Leu Lys Met Ala Ser Pro Ser Pro Cys Thr Ser Ser Phe Asp
        355                 360                 365

Lys Gly Thr Met Arg Arg Met Ala Leu Ser Met Ile Glu Arg Arg Lys
    370                 375                 380
```

```
Arg Trp Arg Thr Ile Lys Leu Leu Leu Arg Arg Gly Ala Asp Pro Asn
385                 390                 395                 400


Leu Cys Cys Val Pro Met Gln Val Leu Phe Leu Ala Val Lys Ala Gly
                405                 410                 415


Asp Val Asp Gly Val Arg Leu Leu Leu Glu His Gly Ala Arg Thr Asp
            420                 425                 430


Ile Cys Phe Pro Pro Gln Cys
        435


<210> 4972
<211> 1030
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1080; "

<220>
<221> source
<223> /note="Gene Symbol: ANKMY1; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat and MYND
      domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000385887"

<400> 4972
Met Glu Gly Ala His Ala Ser Leu Ser Leu Glu Asp Glu Val Ser Gly
1               5                   10                  15


Ala Gly Ser Arg Gln Arg Pro Leu Glu Gly Lys Gly Gly Glu Thr Pro
            20                  25                  30


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


Arg Asp Val Ser Ala Ala Pro Glu Lys Glu Glu Glu Glu Ala Glu Gly
    50                  55                  60
```

```
Pro Leu Arg Ala Gln Asp Leu Arg Glu Ser Tyr Ile Gln Leu Val Gln
65                  70                  75                  80

Gly Val Gln Glu Trp Gln Asp Gly Cys Met Tyr Gln Gly Glu Phe Gly
                85                  90                  95

Leu Asn Met Lys Leu Gly Tyr Gly Lys Phe Ser Trp Pro Thr Gly Glu
            100                 105                 110

Ser Tyr His Gly Gln Phe Tyr Arg Asp His Cys His Gly Leu Gly Thr
        115                 120                 125

Tyr Met Trp Pro Asp Gly Ser Ser Phe Thr Gly Thr Phe Tyr Leu Ser
    130                 135                 140

His Arg Glu Gly Tyr Gly Thr Met Tyr Met Lys Thr Arg Leu Phe Gln
145                 150                 155                 160

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

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

Lys Leu Cys Thr Gln Ile Pro Ser Gly Phe Ser Leu Leu Arg Tyr Pro
        195                 200                 205

Glu Phe Ser Ser Phe Ile Thr His Ser Pro Ala Arg Ile Ser Leu Ser
    210                 215                 220

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

Phe Tyr Asp Tyr Lys Arg Phe Leu Leu Asn Asp Asn Leu Thr Leu Pro
                245                 250                 255

Pro Glu Met Tyr Val Tyr Ser Thr Asn Ser Asp His Leu Pro Met Thr
            260                 265                 270

Ser Ser Phe Arg Lys Glu Leu Asp Ala Arg Ile Phe Leu Asn Glu Ile
        275                 280                 285
```

```
Pro Pro Phe Val Glu Asp Gly Glu Pro Trp Phe Ile Ile Asn Glu Thr
    290                 295                 300

Pro Leu Leu Val Lys Ile Gln Lys Gln Thr Tyr Lys Phe Arg Asn Lys
305                 310                 315                 320

Pro Ala His Thr Ser Trp Asn Met Gly Ala Ile Leu Glu Gly Lys Arg
                325                 330                 335

Ser Gly Phe Ala Pro Cys Gly Pro Lys Glu Gln Leu Ser Met Glu Met
            340                 345                 350

Ile Leu Lys Ala Glu Glu Gly Asn His Glu Trp Ile Cys Arg Ile Leu
        355                 360                 365

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

Val Leu Ala Ala Ala Ala Thr His Cys His Asn Asp Ile Val Asn Leu
385                 390                 395                 400

Leu Leu Asp Cys Gly Ala Asp Val Asn Lys Cys Ser Asp Glu Gly Leu
                405                 410                 415

Thr Ala Leu Ser Met Cys Phe Leu Leu His Tyr Pro Ala Gln Ser Phe
            420                 425                 430

Lys Pro Asn Val Ala Glu Arg Thr Ile Pro Glu Pro Gln Glu Pro Pro
        435                 440                 445

Lys Phe Pro Val Val Pro Ile Leu Ser Ser Ser Phe Met Asp Thr Asn
    450                 455                 460

Leu Glu Ser Leu Tyr Tyr Glu Val Asn Val Pro Ser Gln Gly Ser Tyr
465                 470                 475                 480

Glu Leu Arg Pro Pro Pro Ala Pro Leu Leu Leu Pro Arg Val Ser Gly
                485                 490                 495

Ser His Glu Gly Gly His Phe Gln Asp Thr Gly Gln Cys Gly Gly Ser
            500                 505                 510

Ile Asp His Arg Ser Ser Ser Leu Lys Gly Asp Ser Pro Leu Val Lys
```

```
        515                 520                 525

Gly Ser Leu Gly His Val Glu Ser Gly Leu Glu Asp Val Leu Gly Asn
    530                 535                 540

Thr Asp Arg Gly Ser Leu Cys Ser Ala Glu Thr Lys Phe Glu Ser Asn
545                 550                 555                 560

Val Cys Val Cys Asp Phe Ser Ile Glu Leu Ser Gln Ala Met Leu Glu
                565                 570                 575

Arg Ser Ala Gln Ser His Ser Leu Leu Lys Met Ala Ser Pro Ser Pro
            580                 585                 590

Cys Thr Ser Ser Phe Asp Lys Gly Thr Met Arg Arg Met Ala Leu Ser
        595                 600                 605

Met Ile Glu Arg Arg Lys Arg Trp Arg Thr Ile Lys Leu Leu Leu Arg
    610                 615                 620

Arg Gly Ala Asp Pro Asn Leu Cys Cys Val Pro Met Gln Val Leu Phe
625                 630                 635                 640

Leu Ala Val Lys Ala Gly Asp Val Asp Gly Val Arg Leu Leu Leu Glu
                645                 650                 655

His Gly Ala Arg Thr Asp Ile Cys Phe Pro Pro Gln Leu Ser Thr Leu
            660                 665                 670

Thr Pro Leu His Ile Ala Ala Ala Leu Pro Gly Glu Glu Gly Val Gln
        675                 680                 685

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

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

Ser Ser Leu Lys Leu Ser Asn Glu Pro Gly Pro Pro Gln Ala Tyr Tyr
                725                 730                 735

Ser Thr Asp Thr Ala Leu Pro Glu Glu Gly Gly Arg Thr Ala Leu His
            740                 745                 750
```

```
Met Ala Cys Glu Arg Glu Asp Asp Asn Lys Cys Ala Arg Asp Ile Val
        755                 760                 765

Arg Leu Leu Leu Ser His Gly Ala Asn Pro Asn Leu Leu Trp Ser Gly
    770                 775                 780

His Ser Pro Leu Ser Leu Ser Ile Ala Ser Gly Asn Glu Leu Val Val
785                 790                 795                 800

Lys Glu Leu Leu Thr Gln Gly Ala Asp Pro Asn Leu Pro Leu Thr Lys
                805                 810                 815

Gly Leu Gly Ser Ala Leu Cys Val Ala Cys Asp Leu Thr Tyr Glu His
            820                 825                 830

Gln Arg Asn Met Asp Ser Lys Leu Ala Leu Ile Asp Arg Leu Ile Ser
        835                 840                 845

His Gly Ala Asp Ile Leu Lys Pro Val Met Leu Arg Gln Gly Glu Lys
    850                 855                 860

Glu Ala Val Gly Thr Ala Val Asp Tyr Gly Tyr Phe Arg Phe Phe Gln
865                 870                 875                 880

Asp Arg Arg Ile Ala Arg Cys Pro Phe His Thr Leu Met Pro Ala Glu
                885                 890                 895

Arg Glu Thr Phe Leu Ala Arg Lys Arg Leu Leu Glu Tyr Met Gly Leu
            900                 905                 910

Gln Leu Arg Gln Ala Val Phe Ala Lys Glu Ser Gln Trp Asp Pro Thr
        915                 920                 925

Trp Leu Tyr Leu Cys Lys Arg Ala Glu Leu Ile Pro Ser His Arg Met
    930                 935                 940

Lys Lys Lys Gly Pro Ser Leu Pro Arg Gly Leu Asp Val Lys Glu Gln
945                 950                 955                 960

Gly Gln Ile Pro Phe Phe Lys Phe Cys Tyr Gln Cys Gly Arg Ser Ile
                965                 970                 975
```

Gly Val Arg Leu Leu Pro Cys Pro Arg Cys Tyr Gly Ile Leu Thr Cys
980 985 990

Ser Lys Tyr Cys Lys Thr Lys Ala Trp Thr Glu Phe His Lys Lys
Asp
995 1000 1005

Cys Gly Asp Leu Val Ala Ile Val Thr Gln Leu Glu Gln Val Ser
1010 1015 1020

Arg Arg Arg Glu Glu Phe Gln
1025 1030

<210> 4973
<211> 189
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1080; "

<220>
<221> source
<223> /note="Gene Symbol: ANKMY1; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and MYND
domain containing 1; "

<220>
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<223> /note="ENSP ID: ENSP00000404095"

<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 4973
Xaa Arg Ser Arg Gly Arg Val Arg Ala Arg Arg Ala Pro Thr Val Glu
1 5 10 15

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

Pro Asp Gly Ser Gln Asp Val Gly Leu Trp Phe Arg Glu Gln Leu Ile

```
        35                  40                  45

Lys Leu Cys Thr Gln Ile Pro Ser Gly Phe Ser Leu Leu Arg Tyr Pro
    50                  55                  60

Glu Phe Ser Ser Phe Ile Thr His Ser Pro Ala Arg Ile Ser Leu Ser
65                  70                  75                  80

Glu Glu Glu Lys Thr Glu Trp Gly Leu Gln Glu Gly Gln Asp Pro Phe
                85                  90                  95

Phe Tyr Asp Tyr Lys Arg Phe Leu Leu Asn Asp Asn Leu Thr Leu Pro
            100                 105                 110

Pro Glu Met Tyr Val Tyr Ser Thr Asn Ser Asp His Leu Pro Met Thr
        115                 120                 125

Ser Ser Phe Arg Lys Glu Leu Asp Ala Arg Ile Phe Leu Asn Glu Ile
    130                 135                 140

Pro Pro Phe Val Glu Asp Gly Glu Pro Trp Phe Ile Ile Asn Glu Thr
145                 150                 155                 160

Pro Leu Leu Val Lys Ile Gln Lys Gln Thr Tyr Lys Phe Arg Leu Thr
                165                 170                 175

Ala Thr Thr Thr Leu Ser Thr Phe Ser Trp Thr Val Gly
            180                 185


<210> 4974
<211> 74
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1080; "

<220>
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<223> /note="Gene Symbol: ANKMY1; "

<220>
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<223> /note="Gene Name:
      ankyrin repeat and MYND
      domain containing 1; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000404337"

<400> 4974
Met Glu Gly Ala His Ala Ser Leu Ser Leu Glu Asp Glu Val Ser Gly
1   5   10   15

Ala Gly Ser Arg Gln Arg Pro Leu Glu Gly Lys Gly Gly Glu Thr Pro
            20   25   30

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

Arg Asp Val Ser Ala Ala Pro Glu Lys Glu Glu Glu Glu Ala Glu Gly
    50   55   60

Pro Leu Arg Ala Gln Asp Leu Arg Glu Ser
65   70

<210> 4975
<211> 168
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1080; "

<220>
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<220>
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<223> /note="Gene Name:
      ankyrin repeat and MYND
      domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000405938"

<400> 4975
Met Arg Asp Val Ser Ala Ala Pro Glu Lys Glu Glu Glu Glu Ala Glu
1   5   10   15

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

```
Gln Gly Val Gln Glu Trp Gln Asp Gly Cys Met Tyr Gln Gly Glu Phe
        35                  40                  45

Gly Leu Asn Met Lys Leu Gly Tyr Gly Lys Phe Ser Trp Pro Thr Gly
    50                  55                  60

Glu Ser Tyr His Gly Gln Phe Tyr Arg Asp His Cys His Gly Leu Gly
65                  70                  75                  80

Thr Tyr Met Trp Pro Asp Gly Ser Ser Phe Thr Gly Thr Phe Tyr Leu
                85                  90                  95

Ser His Arg Glu Gly Tyr Gly Thr Met Tyr Met Lys Thr Arg Leu Phe
            100                 105                 110

Gln Thr His Cys His Asn Asp Ile Val Asn Leu Leu Leu Asp Cys Gly
        115                 120                 125

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

Cys Phe Leu Leu His Tyr Pro Ala Gln Ser Phe Lys Pro Asn Val Ala
145                 150                 155                 160

Glu Arg Thr Ile Pro Glu Pro Gln
                165
```

<210> 4976
<211> 227
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1080; "

<220>
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<223> /note="Gene Symbol: ANKMY1; "

<220>
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<223> /note="Gene Name:
ankyrin repeat and MYND
domain containing 1; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000407015"

<400> 4976

```
Met Tyr Gln Gly Glu Phe Gly Leu Asn Met Lys Leu Gly Tyr Gly Lys
1               5                  10                  15

Phe Ser Trp Pro Thr Gly Glu Ser Tyr His Gly Gln Phe Tyr Arg Asp
            20                  25                  30

His Cys His Gly Leu Gly Thr Tyr Met Trp Pro Asp Gly Ser Ser Phe
        35                  40                  45

Thr Gly Thr Phe Tyr Leu Ser His Arg Glu Gly Tyr Gly Thr Met Tyr
    50                  55                  60

Met Lys Thr Arg Leu Phe Gln Gly Leu Tyr Lys Ala Asp Gln Arg Phe
65                  70                  75                  80

Gly Pro Gly Val Glu Thr Tyr Pro Asp Gly Ser Gln Asp Val Gly Leu
                85                  90                  95

Trp Phe Arg Glu Gln Leu Ile Lys Leu Cys Thr Gln Ile Pro Ser Gly
            100                 105                 110

Phe Ser Leu Leu Arg Tyr Pro Glu Phe Ser Ser Phe Ile Thr His Ser
        115                 120                 125

Pro Ala Arg Ile Ser Leu Ser Glu Glu Glu Lys Thr Glu Trp Gly Leu
    130                 135                 140

Gln Glu Gly Gln Asp Pro Phe Phe Tyr Asp Tyr Lys Arg Phe Leu Leu
145                 150                 155                 160

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

Ser Asp His Leu Pro Met Thr Ser Ser Phe Arg Lys Glu Leu Asp Ala
            180                 185                 190

Arg Ile Phe Leu Asn Glu Ile Pro Pro Phe Val Glu Asp Gly Glu Pro
        195                 200                 205

Trp Phe Ile Ile Asn Glu Thr Pro Leu Leu Val Lys Ile Gln Lys Gln
```

210 215 220

Thr Tyr Lys
225

<210> 4977
<211> 441
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1081; "

<220>
<221> source
<223> /note="Gene Symbol: ANKMY2; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and MYND
domain containing 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q8IV38; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000303570"

<400> 4977
Met Val His Ile Lys Lys Gly Glu Leu Thr Gln Glu Glu Lys Glu Leu
1 5 10 15

Leu Glu Val Ile Gly Lys Gly Thr Val Gln Glu Ala Gly Thr Leu Leu
20 25 30

Ser Ser Lys Asn Val Arg Val Asn Cys Leu Asp Glu Asn Gly Met Thr
35 40 45

Pro Leu Met His Ala Ala Tyr Lys Gly Lys Leu Asp Met Cys Lys Leu
50 55 60

Leu Leu Arg His Gly Ala Asp Val Asn Cys His Gln His Glu His Gly
65 70 75 80

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

```
Trp Val Met Leu Glu Ala Gly Ala Glu Thr Asp Val Val Asn Ser Val
            100                 105                 110

Gly Arg Thr Ala Ala Gln Met Ala Ala Phe Val Gly Gln His Asp Cys
        115                 120                 125

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

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

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

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

Ala Leu Asn Lys Cys Tyr Arg Val Met Asp Leu Ile Cys Glu Lys Cys
        195                 200                 205

Met Lys Gln Arg Asp Met Asn Glu Val Leu Ala Met Lys Met His Tyr
    210                 215                 220

Ile Ser Cys Ile Phe Gln Lys Cys Ile Asn Phe Leu Lys Asp Gly Glu
225                 230                 235                 240

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

Asp Gly Phe Pro Val Tyr Gln Glu Lys Ile Ile Arg Glu Ser Ile Arg
            260                 265                 270

Lys Phe Pro Tyr Cys Glu Ala Thr Leu Leu Gln Gln Leu Val Arg Ser
        275                 280                 285

Ile Ala Pro Val Glu Ile Gly Ser Asp Pro Thr Ala Phe Ser Val Leu
    290                 295                 300

Thr Gln Ala Ile Thr Gly Gln Val Gly Phe Val Asp Val Glu Phe Cys
305                 310                 315                 320
```

```
Thr Thr Cys Gly Glu Lys Gly Ala Ser Lys Arg Cys Ser Val Cys Lys
                325                 330                 335

Met Val Ile Tyr Cys Asp Gln Thr Cys Gln Lys Thr His Trp Phe Thr
            340                 345                 350

His Lys Lys Ile Cys Lys Asn Leu Lys Asp Ile Tyr Glu Lys Gln Gln
        355                 360                 365

Leu Glu Ala Ala Lys Glu Lys Arg Gln Glu Glu Asn His Gly Lys Leu
    370                 375                 380

Asp Val Asn Ser Asn Cys Val Asn Glu Glu Gln Pro Glu Ala Glu Val
385                 390                 395                 400

Gly Ile Ser Gln Lys Asp Ser Asn Pro Glu Asp Ser Gly Glu Gly Lys
                405                 410                 415

Lys Glu Ser Leu Glu Ser Glu Ala Glu Leu Glu Gly Leu Gln Asp Ala
            420                 425                 430

Pro Ala Gly Pro Gln Val Ser Glu Glu
        435                 440


<210> 4978
<211> 341
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1081; "

<220>
<221> source
<223> /note="Gene Symbol: ANKMY2; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat and MYND
      domain containing 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000392259"

<400> 4978
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```
Met Val His Ile Lys Lys Gly Glu Leu Thr Gln Glu Glu Lys Glu Leu
1               5                  10                  15

Leu Glu Val Ile Gly Lys Gly Thr Val Gln Glu Ala Gly Thr Leu Leu
            20                  25                  30

Ser Ser Lys Asn Val Arg Val Asn Cys Leu Asp Glu Asn Gly Met Thr
        35                  40                  45

Pro Leu Met His Ala Ala Tyr Lys Gly Lys Leu Asp Met Cys Lys Leu
    50                  55                  60

Leu Leu Arg His Gly Ala Asp Val Asn Cys His Gln His Glu His Gly
65                  70                  75                  80

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

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

Gly Arg Thr Ala Ala Gln Met Ala Ala Phe Val Gly Gln His Asp Cys
        115                 120                 125

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

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

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

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

Ala Leu Asn Lys Cys Tyr Arg Val Met Asp Leu Ile Cys Glu Lys Cys
        195                 200                 205

Met Lys Gln Arg Asp Met Asn Glu Val Leu Ala Met Lys Met His Tyr
    210                 215                 220

Ile Ser Cys Ile Phe Gln Lys Cys Ile Asn Phe Leu Lys Asp Gly Glu
```

```
225                 230                 235                 240

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

Asp Gly Phe Pro Val Tyr Gln Glu Lys Ile Ile Arg Glu Ser Ile Arg
            260                 265                 270

Lys Phe Pro Tyr Cys Glu Ala Thr Leu Leu Gln Gln Leu Val Arg Ser
        275                 280                 285

Ile Ala Pro Val Glu Ile Gly Ser Asp Pro Thr Ala Phe Ser Val Leu
    290                 295                 300

Thr Gln Ala Ile Thr Gly Gln Val Gly Phe Val Asp Val Glu Phe Cys
305                 310                 315                 320

Thr Thr Cys Gly Glu Lys Gly Ala Ser Lys Arg Cys Ser Val Cys Lys
                325                 330                 335

Met Cys Arg Glu Leu
            340


<210> 4979
<211> 69
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1081; "

<220>
<221> source
<223> /note="Gene Symbol: ANKMY2; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat and MYND
      domain containing 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000410075"

<400> 4979
Met Val His Ile Lys Lys Gly Glu Leu Thr Gln Glu Glu Lys Glu Leu
1               5                   10                  15
```

Leu Glu Val Ile Gly Lys Gly Val Pro His Phe Arg Ser Ala Glu Ser
            20   25   30

Gln Arg Gly Ala Pro Arg Thr Ser Gln Lys Pro Tyr Phe Pro Gly Val
        35   40   45

Pro Glu Trp Thr Ser Gln Arg Ser Ser Leu Pro Ser Pro Val Thr Trp
    50   55   60

Gln Val Thr Ser Ala
65

<210> 4980
<211> 341
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1081; "

<220>
<221> source
<223> /note="Gene Symbol: ANKMY2; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and MYND
domain containing 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000485738"

<400> 4980
Met Val His Ile Lys Lys Gly Glu Leu Thr Gln Glu Glu Lys Glu Leu
1   5   10   15

Leu Glu Val Ile Gly Lys Gly Thr Val Gln Glu Ala Gly Thr Leu Leu
            20   25   30

Ser Ser Lys Asn Val Arg Val Asn Cys Leu Asp Glu Asn Gly Met Thr
        35   40   45

Pro Leu Met His Ala Ala Tyr Lys Gly Lys Leu Asp Met Cys Lys Leu
    50   55   60

```
Leu Leu Arg His Gly Ala Asp Val Asn Cys His Gln His Glu His Gly
65                  70                  75                  80

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

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

Gly Arg Thr Ala Ala Gln Met Ala Ala Phe Val Gly Gln His Asp Cys
        115                 120                 125

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

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

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

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

Ala Leu Asn Lys Cys Tyr Arg Val Met Asp Leu Ile Cys Glu Lys Cys
        195                 200                 205

Met Lys Gln Arg Asp Met Asn Glu Val Leu Ala Met Lys Met His Tyr
    210                 215                 220

Ile Ser Cys Ile Phe Gln Lys Cys Ile Asn Phe Leu Lys Asp Gly Glu
225                 230                 235                 240

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

Asp Gly Phe Pro Val Tyr Gln Glu Lys Ile Ile Arg Glu Ser Ile Arg
            260                 265                 270

Lys Phe Pro Tyr Cys Glu Ala Thr Leu Leu Gln Gln Leu Val Arg Ser
        275                 280                 285
```

```
Ile Ala Pro Val Glu Ile Gly Ser Asp Pro Thr Ala Phe Ser Val Leu
    290                 295                 300

Thr Gln Ala Ile Thr Gly Gln Val Gly Phe Val Asp Val Glu Phe Cys
305                 310                 315                 320

Thr Thr Cys Gly Glu Lys Gly Ala Ser Lys Arg Cys Ser Val Cys Lys
                325                 330                 335

Met Cys Arg Glu Leu
            340
```

<210> 4981
<211> 69
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1081; "

<220>
<221> source
<223> /note="Gene Symbol: ANKMY2; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and MYND
domain containing 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000486844"

<400> 4981

```
Met Val His Ile Lys Lys Gly Glu Leu Thr Gln Glu Glu Lys Glu Leu
1               5                   10                  15

Leu Glu Val Ile Gly Lys Gly Val Pro His Phe Arg Ser Ala Glu Ser
            20                  25                  30

Gln Arg Gly Ala Pro Arg Thr Ser Gln Lys Pro Tyr Phe Pro Gly Val
        35                  40                  45

Pro Glu Trp Thr Ser Gln Arg Ser Ser Leu Pro Ser Pro Val Thr Trp
    50                  55                  60

Gln Val Thr Ser Ala
```

65

<210> 4982
<211> 335
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1082; "

<220>
<221> source
<223> /note="Gene Symbol: ASB1; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q9Y576; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000264607"

<400> 4982
Met Ala Glu Gly Gly Ser Pro Asp Gly Arg Ala Gly Pro Gly Ser Ala
1   5   10   15

Gly Arg Asn Leu Lys Glu Trp Leu Arg Glu Gln Phe Cys Asp His Pro
            20   25   30

Leu Glu His Cys Glu Asp Thr Arg Leu His Asp Ala Ala Tyr Val Gly
        35   40   45

Asp Leu Gln Thr Leu Arg Ser Leu Leu Gln Glu Glu Ser Tyr Arg Ser
    50   55   60

Arg Ile Asn Glu Lys Ser Val Trp Cys Cys Gly Trp Leu Pro Cys Thr
65   70   75   80

Pro Leu Arg Ile Ala Ala Thr Ala Gly His Gly Ser Cys Val Asp Phe
                85   90   95

Leu Ile Arg Lys Gly Ala Glu Val Asp Leu Val Asp Val Lys Gly Gln
            100   105   110

```
Thr Ala Leu Tyr Val Ala Val Val Asn Gly His Leu Glu Ser Thr Gln
        115                 120                 125

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

Ser Thr Pro Val Tyr His Ala Ser Arg Val Gly Arg Ala Asp Ile Leu
145                 150                 155                 160

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

Thr Pro Asp Val Gln Pro Arg Phe Ser Arg Arg Leu Thr Ser Leu Val
            180                 185                 190

Val Cys Pro Leu Tyr Ile Ser Ala Ala Tyr His Asn Leu Gln Cys Phe
        195                 200                 205

Arg Leu Leu Leu Leu Ala Gly Ala Asn Pro Asp Phe Asn Cys Asn Gly
    210                 215                 220

Pro Val Asn Thr Gln Gly Phe Tyr Arg Gly Ser Pro Gly Cys Val Met
225                 230                 235                 240

Asp Ala Val Leu Arg His Gly Cys Glu Ala Ala Phe Val Ser Leu Leu
                245                 250                 255

Val Glu Phe Gly Ala Asn Leu Asn Leu Val Lys Trp Glu Ser Leu Gly
            260                 265                 270

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

Phe Lys Glu Ala Arg Ser Val Pro Arg Thr Leu Leu Cys Leu Cys Arg
    290                 295                 300

Val Ala Val Arg Arg Ala Leu Gly Lys His Arg Leu His Leu Ile Pro
305                 310                 315                 320

Ser Leu Pro Leu Pro Asp Pro Ile Lys Lys Phe Leu Leu His Glu
                325                 330                 335
```

<210> 4983
<211> 234
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1082; "

<220>
<221> source
<223> /note="Gene Symbol: ASB1; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000387025"

<400> 4983
Met Ala Glu Gly Gly Ser Pro Asp Gly Arg Ala Gly Pro Gly Ser Ala
1 5 10 15

Gly Arg Asn Leu Lys Glu Trp Leu Arg Glu Gln Phe Cys Asp His Pro
20 25 30

Leu Glu His Cys Glu Asp Thr Arg Leu His Asp Ala Ala Tyr Val Gly
35 40 45

Asp Leu Gln Thr Leu Arg Ser Leu Leu Gln Glu Glu Ser Tyr Arg Arg
50 55 60

Tyr Gly Ala Asp Val Asp Val Asn His His Leu Thr Pro Asp Val Gln
65 70 75 80

Pro Arg Phe Ser Arg Arg Leu Thr Ser Leu Val Val Cys Pro Leu Tyr
85 90 95

Ile Ser Ala Ala Tyr His Asn Leu Gln Cys Phe Arg Leu Leu Leu Leu
100 105 110

Ala Gly Ala Asn Pro Asp Phe Asn Cys Asn Gly Pro Val Asn Thr Gln
115 120 125

Gly Phe Tyr Arg Gly Ser Pro Gly Cys Val Met Asp Ala Val Leu Arg
130 135 140

```
His Gly Cys Glu Ala Ala Phe Val Ser Leu Leu Val Glu Phe Gly Ala
145                 150                 155                 160


Asn Leu Asn Leu Val Lys Trp Glu Ser Leu Gly Pro Glu Ser Arg Gly
                165                 170                 175


Arg Arg Lys Val Asp Pro Glu Ala Leu Gln Val Phe Lys Glu Ala Arg
            180                 185                 190


Ser Val Pro Arg Thr Leu Leu Cys Leu Cys Arg Val Ala Val Arg Arg
        195                 200                 205


Ala Leu Gly Lys His Arg Leu His Leu Ile Pro Ser Leu Pro Leu Pro
    210                 215                 220


Asp Pro Ile Lys Lys Phe Leu Leu His Glu
225                 230


<210> 4984
<211> 61
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1082; "

<220>
<221> source
<223> /note="Gene Symbol: ASB1; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat and SOCS box containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000411773"

<400> 4984
Met Ala Glu Gly Gly Ser Pro Asp Gly Arg Ala Gly Pro Gly Ser Ala
1               5                   10                  15


Ala Ala Ser Thr Arg Ser Leu Ser Gly Ala Val Ala Gly Ser Pro Ala
            20                  25                  30
```

```
His Arg Cys Glu Ser Arg Pro Leu Gln Ala Met Gly Ala Val Trp Thr
        35                  40                  45


Ser Ser Ser Gly Arg Gly Pro Arg Trp Ile Trp Trp Thr
    50                  55                  60


<210> 4985
<211> 429
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1083; "

<220>
<221> source
<223> /note="Gene Symbol: ASB10; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat and SOCS box containing 10; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8WXI3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000275838"

<400> 4985
Met Leu Met Ser Trp Ser Pro Glu Glu Cys Lys Gly Gln Gly Glu Pro
1               5                  10                  15


Leu Asp Asp Arg His Pro Leu Cys Ala Arg Leu Val Glu Lys Pro Ser
            20                  25                  30


Arg Gly Ser Glu Glu His Leu Lys Ser Gly Pro Gly Pro Ile Val Thr
        35                  40                  45


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


Gly Asp Val Gly Cys Val Ser Arg Ile Leu Ala Asp Ser Ser Thr Gly
65                  70                  75                  80


Leu Ala Pro Asp Ser Val Phe Asp Thr Ser Asp Pro Glu Arg Trp Arg
                85                  90                  95
```

```
Asp Phe Arg Phe Asn Ile Arg Ala Leu Arg Leu Trp Ser Leu Thr Tyr
            100                 105                 110

Glu Glu Glu Leu Thr Thr Pro Leu His Val Ala Ala Ser Arg Gly His
        115                 120                 125

Thr Glu Val Leu Arg Leu Leu Leu Arg Arg Arg Ala Arg Pro Asp Ser
    130                 135                 140

Ala Pro Gly Gly Arg Thr Ala Leu His Glu Ala Cys Ala Ala Gly His
145                 150                 155                 160

Thr Ala Cys Val His Val Leu Leu Val Ala Gly Ala Asp Pro Asn Ile
                165                 170                 175

Ala Asp Gln Asp Gly Lys Arg Pro Leu His Leu Cys Arg Gly Pro Gly
            180                 185                 190

Thr Leu Glu Cys Ala Glu Leu Leu Leu Arg Phe Gly Ala Arg Val Asp
        195                 200                 205

Gly Arg Ser Glu Glu Glu Glu Glu Thr Pro Leu His Val Ala Ala Arg
    210                 215                 220

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

Pro Asp Ala Arg Asn Ala Glu Gly Trp Thr Pro Leu Leu Ala Ala Cys
                245                 250                 255

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

Cys Leu Gln Leu Cys Ser Leu Leu Leu Ser Ala Gly Ala Asp Ala Asp
        275                 280                 285

Ala Ala Asp Gln Asp Lys Gln Arg Pro Leu His Leu Ala Cys Arg Arg
    290                 295                 300

Gly His Ala Ala Val Val Glu Leu Leu Leu Ser Cys Gly Val Ser Ala
305                 310                 315                 320
```

```
Asn Thr Met Asp Tyr Gly Gly His Thr Pro Leu His Cys Ala Leu Gln
                325                 330                 335

Gly Pro Ala Ala Ala Leu Ala Gln Ser Pro Glu His Val Val Arg Ala
            340                 345                 350

Leu Leu Asn His Gly Ala Val Arg Val Trp Pro Gly Ala Leu Pro Lys
        355                 360                 365

Lys His Gln Arg Phe Tyr Ser Ser Leu Phe Ala Leu Val Arg Gln Pro
    370                 375                 380

Arg Ser Leu Gln His Leu Ser Arg Cys Ala Leu Arg Ser His Leu Glu
385                 390                 395                 400

Gly Ser Leu Pro Gln Ala Leu Pro Arg Leu Pro Leu Pro Pro Arg Leu
                405                 410                 415

Leu Arg Tyr Leu Gln Leu Asp Phe Glu Gly Val Leu Tyr
            420                 425


<210> 4986
<211> 452
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1083; "

<220>
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<223> /note="Gene Symbol: ASB10; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID:  Q8WXI3; "

<220>
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<223> /note="ENSP ID: ENSP00000367098"

<400> 4986
Met Pro Trp Gly Lys Asn Ser Ser Pro His Trp Gly His His Leu Gly
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```
1               5                   10                  15

Cys Leu Pro Ser Ala Pro Ala Cys Arg Ile Trp Arg Pro His Ser Arg
            20                  25                  30

Pro Ala Trp Glu Pro Pro Arg Pro Ser Pro Leu Leu Cys Gln Asp Met
        35                  40                  45

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

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

Ala Glu Pro Arg Trp Ser Ser His Gln Arg Gly Leu Trp Ser Leu Thr
                85                  90                  95

Tyr Glu Glu Glu Leu Thr Thr Pro Leu His Val Ala Ala Ser Arg Gly
            100                 105                 110

His Thr Glu Val Leu Arg Leu Leu Leu Arg Arg Arg Ala Arg Pro Asp
        115                 120                 125

Ser Ala Pro Gly Gly Arg Thr Ala Leu His Glu Ala Cys Ala Ala Gly
    130                 135                 140

His Thr Ala Cys Val His Val Leu Leu Val Ala Gly Ala Asp Pro Asn
145                 150                 155                 160

Ile Ala Asp Gln Asp Gly Lys Arg Pro Leu His Leu Cys Arg Gly Pro
                165                 170                 175

Gly Thr Leu Glu Cys Ala Glu Leu Leu Leu Arg Phe Gly Ala Arg Val
            180                 185                 190

Asp Gly Arg Ser Glu Glu Glu Glu Glu Thr Pro Leu His Val Ala Ala
        195                 200                 205

Arg Leu Gly His Val Glu Leu Ala Asp Leu Leu Leu Arg Arg Gly Ala
    210                 215                 220

Cys Pro Asp Ala Arg Asn Ala Glu Gly Trp Thr Pro Leu Leu Ala Ala
225                 230                 235                 240
```

```
Cys Asp Val Arg Cys Gln Ser Ile Thr Asp Ala Glu Ala Thr Thr Ala
                245                 250                 255

Arg Cys Leu Gln Leu Cys Ser Leu Leu Leu Ser Ala Gly Ala Asp Ala
            260                 265                 270

Asp Ala Ala Asp Gln Asp Lys Gln Arg Pro Leu His Leu Ala Cys Arg
        275                 280                 285

Arg Gly His Ala Ala Val Val Glu Leu Leu Leu Ser Cys Gly Val Ser
    290                 295                 300

Ala Asn Thr Met Asp Tyr Gly Gly His Thr Pro Leu His Cys Ala Leu
305                 310                 315                 320

Gln Gly Pro Ala Ala Ala Leu Ala Gln Ser Pro Glu His Val Val Arg
                325                 330                 335

Ala Leu Leu Asn His Gly Ala Val Arg Val Trp Pro Gly Ala Leu Pro
            340                 345                 350

Lys Val Leu Glu Arg Trp Ser Thr Cys Pro Arg Thr Ile Glu Val Leu
        355                 360                 365

Met Asn Thr Tyr Ser Val Val Gln Leu Pro Glu Glu Ala Val Gly Leu
    370                 375                 380

Val Thr Pro Glu Thr Leu Gln Lys His Gln Arg Phe Tyr Ser Ser Leu
385                 390                 395                 400

Phe Ala Leu Val Arg Gln Pro Arg Ser Leu Gln His Leu Ser Arg Cys
                405                 410                 415

Ala Leu Arg Ser His Leu Glu Gly Ser Leu Pro Gln Ala Leu Pro Arg
            420                 425                 430

Leu Pro Leu Pro Pro Arg Leu Leu Arg Tyr Leu Gln Leu Asp Phe Glu
        435                 440                 445

Gly Val Leu Tyr
    450
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<210> 4987
<211> 467
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<220>
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<220>
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<400> 4987
Met Leu Met Ser Trp Ser Pro Glu Glu Cys Lys Gly Gln Gly Glu Pro
1   5   10   15

Leu Asp Asp Arg His Pro Leu Cys Ala Arg Leu Val Glu Lys Pro Ser
            20   25   30

Arg Gly Ser Glu Glu His Leu Lys Ser Gly Pro Gly Pro Ile Val Thr
        35   40   45

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

Gly Asp Val Gly Cys Val Ser Arg Ile Leu Ala Asp Ser Ser Thr Gly
65   70   75   80

Leu Ala Pro Asp Ser Val Phe Asp Thr Ser Asp Pro Glu Arg Trp Arg
                85   90   95

Asp Phe Arg Phe Asn Ile Arg Ala Leu Arg Leu Trp Ser Leu Thr Tyr
            100   105   110

Glu Glu Glu Leu Thr Thr Pro Leu His Val Ala Ala Ser Arg Gly His

```
        115                 120                 125

Thr Glu Val Leu Arg Leu Leu Leu Arg Arg Arg Ala Arg Pro Asp Ser
    130                 135                 140

Ala Pro Gly Gly Arg Thr Ala Leu His Glu Ala Cys Ala Ala Gly His
145                 150                 155                 160

Thr Ala Cys Val His Val Leu Leu Val Ala Gly Ala Asp Pro Asn Ile
                165                 170                 175

Ala Asp Gln Asp Gly Lys Arg Pro Leu His Leu Cys Arg Gly Pro Gly
            180                 185                 190

Thr Leu Glu Cys Ala Glu Leu Leu Leu Arg Phe Gly Ala Arg Val Asp
        195                 200                 205

Gly Arg Ser Glu Glu Glu Glu Glu Thr Pro Leu His Val Ala Ala Arg
    210                 215                 220

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

Pro Asp Ala Arg Asn Ala Glu Gly Trp Thr Pro Leu Leu Ala Ala Cys
                245                 250                 255

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

Cys Leu Gln Leu Cys Ser Leu Leu Leu Ser Ala Gly Ala Asp Ala Asp
        275                 280                 285

Ala Ala Asp Gln Asp Lys Gln Arg Pro Leu His Leu Ala Cys Arg Arg
    290                 295                 300

Gly His Ala Ala Val Val Glu Leu Leu Leu Ser Cys Gly Val Ser Ala
305                 310                 315                 320

Asn Thr Met Asp Tyr Gly Gly His Thr Pro Leu His Cys Ala Leu Gln
                325                 330                 335

Gly Pro Ala Ala Ala Leu Ala Gln Ser Pro Glu His Val Val Arg Ala
            340                 345                 350
```

```
Leu Leu Asn His Gly Ala Val Arg Val Trp Pro Gly Ala Leu Pro Lys
        355                 360                 365

Val Leu Glu Arg Trp Ser Thr Cys Pro Arg Thr Ile Glu Val Leu Met
    370                 375                 380

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

Thr Pro Glu Thr Leu Gln Lys His Gln Arg Phe Tyr Ser Ser Leu Phe
                405                 410                 415

Ala Leu Val Arg Gln Pro Arg Ser Leu Gln His Leu Ser Arg Cys Ala
            420                 425                 430

Leu Arg Ser His Leu Glu Gly Ser Leu Pro Gln Ala Leu Pro Arg Leu
        435                 440                 445

Pro Leu Pro Pro Arg Leu Leu Arg Tyr Leu Gln Leu Asp Phe Glu Gly
    450                 455                 460

Val Leu Tyr
465


<210> 4988
<211> 115
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="ENSP ID: ENSP00000410871"

<400> 4988
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```
Met Pro Trp Gly Lys Asn Ser Ser Pro His Trp Gly His His Leu Gly
1               5                   10                  15

Cys Leu Pro Ser Ala Pro Ala Cys Arg Ile Trp Arg Pro His Ser Arg
            20                  25                  30

Pro Ala Trp Glu Pro Pro Arg Pro Ser Pro Leu Leu Cys Gln Asp Met
        35                  40                  45

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

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

Ala Glu Pro Arg Trp Ser Ser His Gln Arg Gly Glu Gly His Leu Gly
                85                  90                  95

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

Leu Arg Ala
        115
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<210> 4989
<211> 302
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1084; "

<220>
<221> source
<223> /note="Gene Symbol: ASB11; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 11, E3
ubiquitin
prt ligase; "

<220>
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<220>

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<223> /note="ENSP ID: ENSP00000343408"

<400> 4989
Met Leu Gln Leu Thr Gly Glu Asn Glu Lys Asn Cys Glu Val Ser Glu
1 5 10 15

Arg Ile Arg Arg Ser Gly Pro Trp Lys Glu Ile Ser Phe Gly Asp Tyr
20 25 30

Ile Cys His Thr Phe Gln Gly Asp Cys Trp Ala Asp Arg Ser Pro Leu
35 40 45

His Glu Ala Ala Ala Gln Gly Arg Leu Leu Ala Leu Lys Thr Leu Ile
50 55 60

Ala Gln Gly Val Asn Val Asn Leu Val Thr Ile Asn Arg Val Ser Ser
65 70 75 80

Leu His Glu Ala Cys Leu Gly Gly His Val Ala Cys Ala Lys Ala Leu
85 90 95

Leu Glu Asn Gly Ala His Val Asn Gly Val Thr Val His Gly Ala Thr
100 105 110

Pro Leu Phe Asn Ala Cys Cys Ser Gly Ser Ala Ala Cys Val Asn Val
115 120 125

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

Pro Ile His Glu Ala Val Lys Arg Gly His Arg Glu Cys Met Glu Ile
145 150 155 160

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

Thr Pro Leu Tyr Val Ala Cys Thr Tyr Gln Arg Val Asp Cys Val Lys
180 185 190

Lys Leu Leu Glu Leu Gly Ala Ser Val Asp His Gly Gln Trp Leu Asp
195 200 205

Thr Pro Leu His Ala Ala Ala Arg Gln Ser Asn Val Glu Val Ile His

```
    210                 215                 220

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

Lys Ser Ala Leu Asp Leu Ala Ala Pro Lys Ser Ser Val Glu Gln Ala
                245                 250                 255

Leu Leu Leu Arg Glu Gly Pro Pro Ala Leu Ser Gln Leu Cys Arg Leu
            260                 265                 270

Cys Val Arg Lys Cys Leu Gly Arg Ala Cys His Gln Ala Ile His Lys
        275                 280                 285

Leu His Leu Pro Glu Pro Leu Glu Arg Phe Leu Leu Tyr Gln
    290                 295                 300


<210> 4990
<211> 306
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1084; "

<220>
<221> source
<223> /note="Gene Symbol: ASB11; "

<220>
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<223> /note="Gene Name:
      ankyrin repeat and SOCS box containing 11, E3
      ubiquitin
      prt ligase; "

<220>
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<223> /note="Uniprot ID:  Q8WXH4; "

<220>
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<223> /note="ENSP ID: ENSP00000369837"

<400> 4990
Met Glu Asp Gly Pro Val Phe Tyr Gly Phe Lys Asn Ile Phe Ile Thr
1               5                   10                  15

Met Phe Ala Thr Phe Phe Phe Phe Lys Leu Leu Ile Lys Val Phe Leu
```

```
            20                  25                  30

Ala Leu Leu Thr His Phe Tyr Ile Val Lys Gly Asn Arg Lys Glu Ala
        35                  40                  45

Ala Arg Ile Ala Glu Glu Ile Tyr Gly Gly Ile Ser Asp Cys Trp Ala
    50                  55                  60

Asp Arg Ser Pro Leu His Glu Ala Ala Ala Gln Gly Arg Leu Leu Ala
65                  70                  75                  80

Leu Lys Thr Leu Ile Ala Gln Ala Cys Leu Gly Gly His Val Ala Cys
                85                  90                  95

Ala Lys Ala Leu Leu Glu Asn Gly Ala His Val Asn Gly Val Thr Val
            100                 105                 110

His Gly Ala Thr Pro Leu Phe Asn Ala Cys Cys Ser Gly Ser Ala Ala
        115                 120                 125

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

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

Cys Met Glu Ile Leu Leu Ala Asn Asn Val Asn Ile Asp His Glu Val
                165                 170                 175

Pro Gln Leu Gly Thr Pro Leu Tyr Val Ala Cys Thr Tyr Gln Arg Val
            180                 185                 190

Asp Cys Val Lys Lys Leu Leu Glu Leu Gly Ala Ser Val Asp His Gly
        195                 200                 205

Gln Trp Leu Asp Thr Pro Leu His Ala Ala Ala Arg Gln Ser Asn Val
    210                 215                 220

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

Asn Ala Gln Gly Lys Ser Ala Leu Asp Leu Ala Ala Pro Lys Ser Ser
                245                 250                 255
```

```
Val Glu Gln Ala Leu Leu Leu Arg Glu Gly Pro Pro Ala Leu Ser Gln
            260                 265                 270

Leu Cys Arg Leu Cys Val Arg Lys Cys Leu Gly Arg Ala Cys His Gln
        275                 280                 285

Ala Ile His Lys Leu His Leu Pro Glu Pro Leu Glu Arg Phe Leu Leu
    290                 295                 300

Tyr Gln
305
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<210> 4991
<211> 323
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1084; "

<220>
<221> source
<223> /note="Gene Symbol: ASB11; "

<220>
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<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 11, E3
ubiquitin
prt ligase; "

<220>
<221> source
<223> /note="Uniprot ID: Q8WXH4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000417914"

<400> 4991

```
Met Glu Asp Gly Pro Val Phe Tyr Gly Phe Lys Asn Ile Phe Ile Thr
1               5                  10                  15

Met Phe Ala Thr Phe Phe Phe Phe Lys Leu Leu Ile Lys Val Phe Leu
            20                  25                  30

Ala Leu Leu Thr His Phe Tyr Ile Val Lys Gly Asn Arg Lys Glu Ala
        35                  40                  45
```

```
Ala Arg Ile Ala Glu Glu Ile Tyr Gly Gly Ile Ser Asp Cys Trp Ala
    50                  55                  60

Asp Arg Ser Pro Leu His Glu Ala Ala Ala Gln Gly Arg Leu Leu Ala
65                  70                  75                  80

Leu Lys Thr Leu Ile Ala Gln Gly Val Asn Val Asn Leu Val Thr Ile
                85                  90                  95

Asn Arg Val Ser Ser Leu His Glu Ala Cys Leu Gly Gly His Val Ala
            100                 105                 110

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

Val His Gly Ala Thr Pro Leu Phe Asn Ala Cys Cys Ser Gly Ser Ala
    130                 135                 140

Ala Cys Val Asn Val Leu Leu Glu Phe Gly Ala Lys Ala Gln Leu Glu
145                 150                 155                 160

Val His Leu Ala Ser Pro Ile His Glu Ala Val Lys Arg Gly His Arg
                165                 170                 175

Glu Cys Met Glu Ile Leu Leu Ala Asn Asn Val Asn Ile Asp His Glu
            180                 185                 190

Val Pro Gln Leu Gly Thr Pro Leu Tyr Val Ala Cys Thr Tyr Gln Arg
        195                 200                 205

Val Asp Cys Val Lys Lys Leu Leu Glu Leu Gly Ala Ser Val Asp His
    210                 215                 220

Gly Gln Trp Leu Asp Thr Pro Leu His Ala Ala Ala Arg Gln Ser Asn
225                 230                 235                 240

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

Arg Asn Ala Gln Gly Lys Ser Ala Leu Asp Leu Ala Ala Pro Lys Ser
            260                 265                 270
```

```
Ser Val Glu Gln Ala Leu Leu Leu Arg Glu Gly Pro Pro Ala Leu Ser
        275                 280                 285


Gln Leu Cys Arg Leu Cys Val Arg Lys Cys Leu Gly Arg Ala Cys His
    290                 295                 300


Gln Ala Ile His Lys Leu His Leu Pro Glu Pro Leu Glu Arg Phe Leu
305                 310                 315                 320


Leu Tyr Gln



<210> 4992
<211> 224
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1084; "

<220>
<221> source
<223> /note="Gene Symbol: ASB11; "

<220>
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<223> /note="Gene Name:
      ankyrin repeat and SOCS box containing 11, E3
      ubiquitin
      prt ligase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419385"

<400> 4992
Met Glu Asp Gly Pro Val Phe Tyr Gly Phe Lys Asn Ile Phe Ile Thr
1               5                   10                  15


Met Phe Ala Thr Phe Phe Phe Phe Lys Leu Leu Ile Lys Val Phe Leu
            20                  25                  30


Ala Leu Leu Thr His Phe Tyr Ile Val Lys Gly Asn Arg Lys Glu Ala
        35                  40                  45


Ala Arg Ile Ala Glu Glu Ile Tyr Gly Gly Ile Ser Asp Cys Trp Ala
    50                  55                  60
```

```
Asp Arg Ser Pro Leu His Glu Ala Ala Ala Gln Gly Arg Leu Leu Ala
65                  70                  75                  80

Leu Lys Thr Leu Ile Ala Gln Gly Val Asn Val Asn Leu Val Thr Ile
                85                  90                  95

Asn Arg Val Ser Ser Leu His Glu Ala Cys Leu Gly Gly His Val Ala
            100                 105                 110

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

Val His Gly Ala Thr Pro Leu Phe Asn Ala Cys Cys Ser Gly Ser Ala
    130                 135                 140

Ala Cys Val Asn Val Leu Leu Glu Phe Gly Ala Lys Ala Gln Leu Glu
145                 150                 155                 160

Val His Leu Ala Ser Pro Ile His Glu Ala Val Lys Arg Glu Ser Arg
                165                 170                 175

Ala Val Ala Gln Ala Ala Val Gln Trp His Asp Phe Cys Ser Leu Gln
            180                 185                 190

Pro Leu Ala Pro Gly Phe Lys Arg Phe Ser Cys Leu Ser Leu Pro Ser
        195                 200                 205

Ser Trp Asp Tyr Arg Ser Gln Arg Val His Gly Asp Pro Ala Gly Lys
    210                 215                 220


<210> 4993
<211> 318
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ASB12; "

<220>
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<223> /note="Gene Name:
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ankyrin repeat and SOCS box containing 12; "

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<223> /note="Uniprot ID: Q8WXK4; "

<220>
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<400> 4993

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Met Arg Ile Val Leu Gln Leu Ala Lys Met Asn Leu Met Asp Ile Thr
1               5                  10                  15

Lys Ile Phe Ser Leu Leu Gln Pro Asp Lys Glu Glu Glu Asp Thr Asp
            20                  25                  30

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

Tyr Thr Leu Asp Gln Leu Leu Arg Gln Glu Arg Tyr Lys Arg Phe Ile
    50                  55                  60

Asn Ser Arg Ser Gly Trp Gly Val Pro Gly Thr Pro Leu Arg Leu Ala
65                  70                  75                  80

Ala Ser Tyr Gly His Leu Ser Cys Leu Gln Val Leu Leu Ala His Gly
                85                  90                  95

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

Ala Val Ser His Gly His Leu Asp Cys Val Arg Val Leu Leu Glu Ala
        115                 120                 125

Gly Ala Ser Pro Gly Gly Ser Ile Tyr Asn Asn Cys Ser Pro Val Leu
    130                 135                 140

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

His Gly Ala Glu Ala Asn Val Lys Ala Lys Leu Pro Val Trp Ala Ser
                165                 170                 175

Asn Ile Ala Ser Cys Ser Gly Pro Leu Tyr Leu Ala Ala Val Tyr Gly
            180                 185                 190
```

```
His Leu Asp Cys Phe Arg Leu Leu Leu Leu His Gly Ala Asp Pro Asp
        195                 200                 205

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

Thr Leu Leu Glu Ile Cys Leu His His Asn Cys Glu Pro Glu Tyr Ile
225                 230                 235                 240

Gln Leu Leu Ile Asp Phe Gly Ala Asn Ile Tyr Leu Pro Ser Leu Ser
                245                 250                 255

Leu Asp Leu Thr Ser Gln Asp Asp Lys Gly Ile Ala Leu Leu Leu Gln
            260                 265                 270

Ala Arg Ala Thr Pro Arg Ser Leu Leu Ser Gln Val Arg Leu Val Val
        275                 280                 285

Arg Arg Ala Leu Cys Gln Ala Gly Gln Pro Gln Ala Ile Asn Gln Leu
    290                 295                 300

Asp Ile Pro Pro Met Leu Ile Ser Tyr Leu Lys His Gln Leu
305                 310                 315


<210> 4994
<211> 278
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1086; "

<220>
<221> source
<223> /note="Gene Symbol: ASB13; "

<220>
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<223> /note="Gene Name:
      ankyrin repeat and SOCS box containing 13; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8WXK3; "

<220>
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<221> source
<223> /note="ENSP ID: ENSP00000350331"

<400> 4994
Met Glu Pro Arg Ala Ala Asp Gly Cys Phe Leu Gly Asp Val Gly Phe
1 5 10 15

Trp Val Glu Arg Thr Pro Val His Glu Ala Ala Gln Arg Gly Glu Ser
20 25 30

Leu Gln Leu Gln Gln Leu Ile Glu Ser Gly Ala Cys Val Asn Gln Val
35 40 45

Thr Val Asp Ser Ile Thr Pro Leu His Ala Ala Ser Leu Gln Gly Gln
50 55 60

Ala Arg Cys Val Gln Leu Leu Leu Ala Ala Gly Ala Gln Val Asp Ala
65 70 75 80

Arg Asn Ile Asp Gly Ser Thr Pro Leu Cys Asp Ala Cys Ala Ser Gly
85 90 95

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

Pro Pro Leu Tyr Thr Ala Ser Pro Leu His Glu Ala Cys Met Ser Gly
115 120 125

Ser Ser Glu Cys Val Arg Leu Leu Ile Asp Val Gly Ala Asn Leu Glu
130 135 140

Ala His Asp Cys His Phe Gly Thr Pro Leu His Val Ala Cys Ala Arg
145 150 155 160

Glu His Leu Asp Cys Val Lys Val Leu Leu Asn Ala Gly Ala Asn Val
165 170 175

Asn Ala Ala Lys Leu His Glu Thr Ala Leu His His Ala Ala Lys Val
180 185 190

Lys Asn Val Asp Leu Ile Glu Met Leu Ile Glu Phe Gly Gly Asn Ile
195 200 205

Tyr Ala Arg Asp Asn Arg Gly Lys Lys Pro Ser Asp Tyr Thr Trp Ser

```
    210                 215                 220

Ser Ser Ala Pro Ala Lys Cys Phe Glu Tyr Tyr Glu Lys Thr Pro Leu
225                 230                 235                 240

Thr Leu Ser Gln Leu Cys Arg Val Asn Leu Arg Lys Ala Thr Gly Val
                245                 250                 255

Arg Gly Leu Glu Lys Ile Ala Lys Leu Asn Ile Pro Pro Arg Leu Ile
            260                 265                 270

Asp Tyr Leu Ser Tyr Asn
        275


<210> 4995
<211> 173
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1086; "

<220>
<221> source
<223> /note="Gene Symbol: ASB13; "

<220>
<221> source
<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID:  Q8WXK3; "

<220>
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<223> /note="ENSP ID: ENSP00000433358"

<400> 4995
Met Glu Pro Arg Ala Ala Asp Gly Cys Phe Leu Gly Asp Val Gly Phe
1               5                   10                  15

Trp Val Glu Arg Thr Pro Val His Glu Ala Ala Gln Arg Gly Glu Ser
            20                  25                  30

Leu Gln Leu Gln Gln Leu Ile Glu Ser Gly Ala Cys Val Asn Gln Val
        35                  40                  45
```

```
Thr Val Asp Ser Ile Thr Pro Leu His Ala Ala Ser Leu Gln Gly Gln
    50                  55                  60

Ala Arg Cys Val Gln Leu Leu Leu Ala Ala Gly Ala Gln Val Asp Ala
65                  70                  75                  80

Arg Asn Ile Asp Gly Ser Thr Pro Leu Cys Asp Ala Cys Ala Ser Gly
                85                  90                  95

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

Pro Pro Leu Tyr Thr Ala Ser Pro Leu His Glu Ala Cys Met Ser Gly
        115                 120                 125

Ser Ser Glu Cys Val Arg Leu Leu Ile Asp Val Gly Ala Asn Leu Glu
    130                 135                 140

Ala His Asp Cys His Phe Gly Thr Pro Leu His Val Ala Cys Ala Arg
145                 150                 155                 160

Glu His Leu Asp Cys Val Lys Val Leu Leu Asn Ala Ala
                165                 170


<210> 4996
<211> 587
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<220>
<221> source
<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID:  A6NK59; "

<220>
<221> source
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<223> /note="ENSP ID: ENSP00000374252"

<400> 4996

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Met Asp Asn Tyr Thr Ser Asp Glu Asp Ile Asp Glu Asp Phe Asp Thr
1               5                  10                  15

Gln Leu Ile Ile Gln Gln Ser Leu Gln Asp Ile Tyr Lys Pro Gly Thr
            20                  25                  30

Ala Gln His Ala Pro Lys Asp Glu Ser Leu His Ser Phe Leu Ser Ala
        35                  40                  45

Asp Tyr Lys Lys Ile Val Glu Thr Ile Glu Lys Val Gly Lys Glu Asp
    50                  55                  60

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

Glu Ile Gly Trp Ile Pro Leu His Lys Ala Ala Val Gln Leu Asn Arg
                85                  90                  95

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

Gln Thr Thr His Asn Gly Glu Thr Pro Leu Phe Leu Ala Val Ser Ser
        115                 120                 125

Cys Leu Leu Glu Asn Ala Thr Phe Leu Leu Leu Asn Gly Cys Asn Pro
    130                 135                 140

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

Arg Asp Cys Tyr Asp Met Ala Ala Leu Leu Ile Asn Tyr Gly Ala Asp
                165                 170                 175

Val Asn Leu Arg Cys Ala Asn Glu Arg Thr Ala Leu His Glu Ala Ala
            180                 185                 190

Lys Leu Gly Arg Glu Asp Met Val Lys Leu Met Leu Val Ser Gly Ala
        195                 200                 205

His Pro Asp Pro Gln Ser Thr Tyr Gly Phe Thr Pro Leu Ala Leu Ala
    210                 215                 220
```

```
Ala Gln Ser Gly His Thr Glu Ile Met Glu Met Leu Leu Arg Lys Gly
225                 230                 235                 240

Lys Ile Phe Cys Leu Ala Ser Asp Ser Ser Ser Ile Leu Leu Glu Ala
                245                 250                 255

Ala Ser Gly Gly Asn Pro Asp Ala Val Ala Leu Leu Leu Glu Tyr Gly
            260                 265                 270

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

Ala Ala Asp Arg Gly His Leu Leu Ala Leu Lys Ile Leu Ile Pro Val
    290                 295                 300

Thr Asp Leu Ala Ala Ile Lys Gln Ser Gly Ile Ser Pro Val His Cys
305                 310                 315                 320

Ala Ala Ala Gly Ala His Pro Gln Cys Leu Glu Leu Leu Ile Gln Ala
                325                 330                 335

Gly Phe Asp Val Asn Phe Met Leu Asp Gln Arg Ile Asn Lys His Tyr
            340                 345                 350

Asp Asp His Arg Lys Ser Ala Leu Tyr Phe Ala Val Ser Asn Ser Asp
        355                 360                 365

Leu Ser Ser Val Lys Leu Leu Leu Ser Ala Gly Ala Leu Pro Asn Gln
    370                 375                 380

Asp Pro Val Asn Cys Leu Gln Ile Ala Leu Arg Met Gly Asn Tyr Glu
385                 390                 395                 400

Leu Ile Ser Leu Leu Leu Arg His Gly Ala Asn Val Asn Tyr Phe Cys
                405                 410                 415

Arg Val Asn Pro Leu His Phe Pro Ser Ala Leu Gln Tyr Thr Leu Lys
            420                 425                 430

Asp Glu Val Met Leu Arg Met Leu Leu Asn Tyr Gly Tyr Asp Thr Glu
        435                 440                 445
```

```
Arg Cys Phe Asp Cys Pro His Gly Asp Lys Val His Pro Ser Tyr Thr
    450                 455                 460

Val Glu Gly Trp Thr Ser Thr Val Ile Lys Asp Thr Lys Phe Cys Glu
465                 470                 475                 480

Val Ile Thr Leu Ser Trp Leu Gln His Leu Ser Gly Lys Val Val Arg
                485                 490                 495

Val Met Leu Asp Tyr Val Asp Gln Val Arg Ile Cys Ser Lys Leu Lys
            500                 505                 510

Ala Val Leu Gln Lys Gln Gly Ile Trp Ser Glu Ile His Phe Ile Leu
        515                 520                 525

Thr Asn Pro Arg Ser Leu Lys His Leu Cys Arg Leu Lys Ile Arg Lys
    530                 535                 540

Cys Met Gly Arg Leu His Leu Arg Cys Pro Val Phe Met Ser Phe Leu
545                 550                 555                 560

Pro Leu Pro Asn Arg Leu Lys Ala Tyr Val Leu Tyr Lys Glu Tyr Asp
                565                 570                 575

Leu Tyr Gly Gln Gly Ile Phe Thr Gly Thr Trp
            580                 585


<210> 4997
<211> 587
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
      ankyrin repeat and SOCS box containing 14; "

<220>
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<223> /note="Uniprot ID: A6NK59; "

<220>
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<400> 4997

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Met Asp Asn Tyr Thr Ser Asp Glu Asp Ile Asp Glu Asp Phe Asp Thr
1               5                  10                  15

Gln Leu Ile Ile Gln Gln Ser Leu Gln Asp Ile Tyr Lys Pro Gly Thr
            20                  25                  30

Ala Gln His Ala Pro Lys Asp Glu Ser Leu His Ser Phe Leu Ser Ala
        35                  40                  45

Asp Tyr Lys Lys Ile Val Glu Thr Ile Glu Lys Gly Lys Glu Asp Ala
    50                  55                  60

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

Ile Gly Trp Ile Pro Leu His Lys Ala Ala Val Gln Leu Asn Arg Lys
                85                  90                  95

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

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

Leu Leu Glu Asn Ala Thr Phe Leu Leu Leu Asn Gly Cys Asn Pro Asn
    130                 135                 140

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

Asp Cys Tyr Asp Met Ala Ala Leu Leu Ile Asn Tyr Gly Ala Asp Val
                165                 170                 175

Asn Leu Arg Cys Ala Asn Glu Arg Thr Ala Leu His Glu Ala Ala Lys
            180                 185                 190

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

```
Pro Asp Pro Gln Ser Thr Tyr Gly Phe Thr Pro Leu Ala Leu Ala Ala
    210                 215                 220

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

Asn Ala His Gly Gln Ala Ser Asp Ser Ser Ser Ile Leu Leu Glu Ala
                245                 250                 255

Ala Ser Gly Gly Asn Pro Asp Ala Val Ala Leu Leu Leu Glu Tyr Gly
            260                 265                 270

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

Ala Ala Asp Arg Gly His Leu Leu Ala Leu Lys Ile Leu Ile Pro Val
    290                 295                 300

Thr Asp Leu Ala Ala Ile Lys Gln Ser Gly Ile Ser Pro Val His Cys
305                 310                 315                 320

Ala Ala Ala Gly Ala His Pro Gln Cys Leu Glu Leu Leu Ile Gln Ala
                325                 330                 335

Gly Phe Asp Val Asn Phe Met Leu Asp Gln Arg Ile Asn Lys His Tyr
            340                 345                 350

Asp Asp His Arg Lys Ser Ala Leu Tyr Phe Ala Val Ser Asn Ser Asp
        355                 360                 365

Leu Ser Ser Val Lys Leu Leu Leu Ser Ala Gly Ala Leu Pro Asn Gln
    370                 375                 380

Asp Pro Val Asn Cys Leu Gln Ile Ala Leu Arg Met Gly Asn Tyr Glu
385                 390                 395                 400

Leu Ile Ser Leu Leu Leu Arg His Gly Ala Asn Val Asn Tyr Phe Cys
                405                 410                 415

Arg Val Asn Pro Leu His Phe Pro Ser Ala Leu Gln Tyr Thr Leu Lys
            420                 425                 430
```

```
Asp Glu Val Met Leu Arg Met Leu Leu Asn Tyr Gly Tyr Asp Thr Glu
        435                 440                 445

Arg Cys Phe Asp Cys Pro His Gly Asp Lys Val His Pro Ser Tyr Thr
    450                 455                 460

Val Glu Gly Trp Thr Ser Thr Val Ile Lys Asp Thr Lys Phe Cys Glu
465                 470                 475                 480

Val Ile Thr Leu Ser Trp Leu Gln His Leu Ser Gly Lys Val Val Arg
                485                 490                 495

Val Met Leu Asp Tyr Val Asp Gln Val Arg Ile Cys Ser Lys Leu Lys
            500                 505                 510

Ala Val Leu Gln Lys Gln Gly Ile Trp Ser Glu Ile His Phe Ile Leu
        515                 520                 525

Thr Asn Pro Arg Ser Leu Lys His Leu Cys Arg Leu Lys Ile Arg Lys
    530                 535                 540

Cys Met Gly Arg Leu His Leu Arg Cys Pro Val Phe Met Ser Phe Leu
545                 550                 555                 560

Pro Leu Pro Asn Arg Leu Lys Ala Tyr Val Leu Tyr Lys Glu Tyr Asp
                565                 570                 575

Leu Tyr Gly Gln Gly Ile Phe Thr Gly Thr Trp
            580                 585


<210> 4998
<211> 588
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1088; "

<220>
<221> source
<223> /note="Gene Symbol: ASB15; "

<220>
<221> source
<223> /note="Gene Name:
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ankyrin repeat and SOCS box containing 15; "

<220>
<221> source
<223> /note="Uniprot ID: Q8WXK1; "

<220>
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<223> /note="ENSP ID: ENSP00000275699"

<400> 4998

```
Met Asp Thr Asn Asp Asp Pro Asp Glu Asp His Leu Thr Ser Tyr Asp
1               5                  10                  15

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

Cys Pro Glu Arg Phe Val Pro Leu Ser Ala Gln Asn Arg Lys Leu Val
        35                  40                  45

Glu Ala Ile Lys Gln Gly His Ile Pro Glu Leu Gln Glu Tyr Val Lys
    50                  55                  60

Tyr Lys Tyr Ala Met Asp Glu Ala Asp Glu Lys Gly Trp Phe Pro Leu
65                  70                  75                  80

His Glu Ala Val Val Gln Pro Ile Gln Gln Ile Leu Glu Ile Val Leu
                85                  90                  95

Asp Ala Ser Tyr Lys Thr Leu Trp Glu Phe Lys Thr Cys Asp Gly Glu
            100                 105                 110

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

Thr Leu Leu Glu Lys Gly Val Trp Pro Asn Thr Lys Asn Asp Lys Gly
    130                 135                 140

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

Ser Thr Leu Ile Lys His Asn Thr Ser Leu Asp Gln Pro Cys Val Lys
                165                 170                 175

Arg Trp Ser Ala Met His Glu Ala Ala Lys Gln Gly Arg Lys Asp Ile
            180                 185                 190
```

```
Val Ala Leu Leu Leu Lys His Gly Gly Asn Val His Leu Arg Asp Gly
        195                 200                 205

Phe Gly Val Thr Pro Leu Gly Val Ala Ala Glu Tyr Gly His Cys Asp
    210                 215                 220

Val Leu Glu His Leu Ile His Lys Gly Gly Asp Val Leu Ala Leu Ala
225                 230                 235                 240

Asp Asp Gly Ala Ser Val Leu Phe Glu Ala Ala Gly Gly Gly Asn Pro
                245                 250                 255

Asp Cys Ile Ser Leu Leu Leu Glu Tyr Gly Gly Ser Gly Asn Val Pro
            260                 265                 270

Asn Arg Ala Gly His Leu Pro Ile His Arg Ala Ala Tyr Glu Gly His
        275                 280                 285

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

Arg Lys Ser Gly Leu Thr Pro Ile His Ser Ala Ala Asp Gly Gln Asn
305                 310                 315                 320

Ala Gln Cys Leu Glu Leu Leu Ile Glu Asn Gly Phe Asp Val Asn Thr
                325                 330                 335

Leu Leu Ala Asp His Ile Ser Gln Ser Tyr Asp Asp Glu Arg Lys Thr
            340                 345                 350

Ala Leu Tyr Phe Gly Val Ser Asn Asn Asp Val His Cys Thr Glu Val
        355                 360                 365

Leu Leu Ala Ala Gly Ala Asp Pro Asn Leu Asp Pro Leu Asn Cys Leu
    370                 375                 380

Leu Val Ala Val Arg Ala Asn Asn Tyr Glu Ile Val Arg Leu Leu Leu
385                 390                 395                 400

Ser His Gly Ala Asn Val Asn Cys Tyr Phe Met His Val Asn Asp Thr
                405                 410                 415
```

```
Arg Phe Pro Ser Val Ile Gln Tyr Ala Leu Asn Asp Glu Val Met Leu
            420                 425                 430

Arg Leu Leu Leu Asn Asn Gly Tyr Gln Val Glu Met Cys Phe Asp Cys
        435                 440                 445

Met His Gly Asp Ile Phe Gly Asn Ser Phe Val Trp Ser Glu Ile Gln
    450                 455                 460

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

Phe Cys Glu Phe Ile Thr Val Pro Trp Met Lys His Leu Val Gly Arg
                485                 490                 495

Val Thr Arg Val Leu Ile Asp Tyr Met Asp Tyr Val Pro Leu Cys Ala
            500                 505                 510

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

Gln Ile Leu Glu Asn Pro Cys Ser Leu Lys His Leu Cys Arg Leu Lys
    530                 535                 540

Ile Arg Arg Leu Met Gly Leu Gln Lys Leu Cys Gln Pro Ala Ser Val
545                 550                 555                 560

Glu Lys Leu Pro Leu Pro Pro Ala Ile Gln Arg Tyr Ile Leu Phe Lys
                565                 570                 575

Glu Tyr Asp Leu Tyr Gly Gln Glu Leu Lys Leu Thr
            580                 585


<210> 4999
<211> 588
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1088; "

<220>
<221> source
<223> /note="Gene Symbol: ASB15; "
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<220>
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<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 15; "

<220>
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<223> /note="Uniprot ID: Q8WXK1; "

<220>
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<223> /note="ENSP ID: ENSP00000390963"

<400> 4999
Met Asp Thr Asn Asp Asp Pro Asp Glu Asp His Leu Thr Ser Tyr Asp
1   5   10   15

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

Cys Pro Glu Arg Phe Val Pro Leu Ser Ala Gln Asn Arg Lys Leu Val
        35   40   45

Glu Ala Ile Lys Gln Gly His Ile Pro Glu Leu Gln Glu Tyr Val Lys
    50   55   60

Tyr Lys Tyr Ala Met Asp Glu Ala Asp Glu Lys Gly Trp Phe Pro Leu
65   70   75   80

His Glu Ala Val Val Gln Pro Ile Gln Gln Ile Leu Glu Ile Val Leu
                85   90   95

Asp Ala Ser Tyr Lys Thr Leu Trp Glu Phe Lys Thr Cys Asp Gly Glu
            100   105   110

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

Thr Leu Leu Glu Lys Gly Val Trp Pro Asn Thr Lys Asn Asp Lys Gly
    130   135   140

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

Ser Thr Leu Ile Lys His Asn Thr Ser Leu Asp Gln Pro Cys Val Lys
                165   170   175

```
Arg Trp Ser Ala Met His Glu Ala Ala Lys Gln Gly Arg Lys Asp Ile
            180                 185                 190

Val Ala Leu Leu Leu Lys His Gly Gly Asn Val His Leu Arg Asp Gly
        195                 200                 205

Phe Gly Val Thr Pro Leu Gly Val Ala Ala Glu Tyr Gly His Cys Asp
    210                 215                 220

Val Leu Glu His Leu Ile His Lys Gly Gly Asp Val Leu Ala Leu Ala
225                 230                 235                 240

Asp Asp Gly Ala Ser Val Leu Phe Glu Ala Ala Gly Gly Gly Asn Pro
                245                 250                 255

Asp Cys Ile Ser Leu Leu Leu Glu Tyr Gly Gly Ser Gly Asn Val Pro
            260                 265                 270

Asn Arg Ala Gly His Leu Pro Ile His Arg Ala Ala Tyr Glu Gly His
        275                 280                 285

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

Arg Lys Ser Gly Leu Thr Pro Ile His Ser Ala Ala Asp Gly Gln Asn
305                 310                 315                 320

Ala Gln Cys Leu Glu Leu Leu Ile Glu Asn Gly Phe Asp Val Asn Thr
                325                 330                 335

Leu Leu Ala Asp His Ile Ser Gln Ser Tyr Asp Asp Glu Arg Lys Thr
            340                 345                 350

Ala Leu Tyr Phe Gly Val Ser Asn Asn Asp Val His Cys Thr Glu Val
        355                 360                 365

Leu Leu Ala Ala Gly Ala Asp Pro Asn Leu Asp Pro Leu Asn Cys Leu
    370                 375                 380

Leu Val Ala Val Arg Ala Asn Asn Tyr Glu Ile Val Arg Leu Leu Leu
385                 390                 395                 400
```

```
Ser His Gly Ala Asn Val Asn Cys Tyr Phe Met His Val Asn Asp Thr
                405                 410                 415

Arg Phe Pro Ser Val Ile Gln Tyr Ala Leu Asn Asp Glu Val Met Leu
            420                 425                 430

Arg Leu Leu Leu Asn Asn Gly Tyr Gln Val Glu Met Cys Phe Asp Cys
        435                 440                 445

Met His Gly Asp Ile Phe Gly Asn Ser Phe Val Trp Ser Glu Ile Gln
    450                 455                 460

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

Phe Cys Glu Phe Ile Thr Val Pro Trp Met Lys His Leu Val Gly Arg
                485                 490                 495

Val Thr Arg Val Leu Ile Asp Tyr Met Asp Tyr Val Pro Leu Cys Ala
            500                 505                 510

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

Gln Ile Leu Glu Asn Pro Cys Ser Leu Lys His Leu Cys Arg Leu Lys
    530                 535                 540

Ile Arg Arg Leu Met Gly Leu Gln Lys Leu Cys Gln Pro Ala Ser Val
545                 550                 555                 560

Glu Lys Leu Pro Leu Pro Pro Ala Ile Gln Arg Tyr Ile Leu Phe Lys
                565                 570                 575

Glu Tyr Asp Leu Tyr Gly Gln Glu Leu Lys Leu Thr
            580                 585


<210> 5000
<211> 588
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1088; "
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<220>
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<223> /note="Gene Symbol: ASB15; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 15; "

<220>
<221> source
<223> /note="Uniprot ID: Q8WXK1; "

<220>
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<223> /note="ENSP ID: ENSP00000397655"

<400> 5000
Met Asp Thr Asn Asp Asp Pro Asp Glu Asp His Leu Thr Ser Tyr Asp
1   5   10   15

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

Cys Pro Glu Arg Phe Val Pro Leu Ser Ala Gln Asn Arg Lys Leu Val
        35   40   45

Glu Ala Ile Lys Gln Gly His Ile Pro Glu Leu Gln Glu Tyr Val Lys
    50   55   60

Tyr Lys Tyr Ala Met Asp Glu Ala Asp Glu Lys Gly Trp Phe Pro Leu
65   70   75   80

His Glu Ala Val Val Gln Pro Ile Gln Gln Ile Leu Glu Ile Val Leu
                85   90   95

Asp Ala Ser Tyr Lys Thr Leu Trp Glu Phe Lys Thr Cys Asp Gly Glu
            100   105   110

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

Thr Leu Leu Glu Lys Gly Val Trp Pro Asn Thr Lys Asn Asp Lys Gly
    130   135   140

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

Ser Thr Leu Ile Lys His Asn Thr Ser Leu Asp Gln Pro Cys Val Lys
165 170 175

Arg Trp Ser Ala Met His Glu Ala Ala Lys Gln Gly Arg Lys Asp Ile
180 185 190

Val Ala Leu Leu Leu Lys His Gly Gly Asn Val His Leu Arg Asp Gly
195 200 205

Phe Gly Val Thr Pro Leu Gly Val Ala Ala Glu Tyr Gly His Cys Asp
210 215 220

Val Leu Glu His Leu Ile His Lys Gly Gly Asp Val Leu Ala Leu Ala
225 230 235 240

Asp Asp Gly Ala Ser Val Leu Phe Glu Ala Ala Gly Gly Gly Asn Pro
245 250 255

Asp Cys Ile Ser Leu Leu Leu Glu Tyr Gly Gly Ser Gly Asn Val Pro
260 265 270

Asn Arg Ala Gly His Leu Pro Ile His Arg Ala Ala Tyr Glu Gly His
275 280 285

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

Arg Lys Ser Gly Leu Thr Pro Ile His Ser Ala Ala Asp Gly Gln Asn
305 310 315 320

Ala Gln Cys Leu Glu Leu Leu Ile Glu Asn Gly Phe Asp Val Asn Thr
325 330 335

Leu Leu Ala Asp His Ile Ser Gln Ser Tyr Asp Asp Glu Arg Lys Thr
340 345 350

Ala Leu Tyr Phe Gly Val Ser Asn Asn Asp Val His Cys Thr Glu Val
355 360 365

Leu Leu Ala Ala Gly Ala Asp Pro Asn Leu Asp Pro Leu Asn Cys Leu
370 375 380

```
Leu Val Ala Val Arg Ala Asn Asn Tyr Glu Ile Val Arg Leu Leu Leu
385                 390                 395                 400

Ser His Gly Ala Asn Val Asn Cys Tyr Phe Met His Val Asn Asp Thr
                405                 410                 415

Arg Phe Pro Ser Val Ile Gln Tyr Ala Leu Asn Asp Glu Val Met Leu
            420                 425                 430

Arg Leu Leu Leu Asn Asn Gly Tyr Gln Val Glu Met Cys Phe Asp Cys
        435                 440                 445

Met His Gly Asp Ile Phe Gly Asn Ser Phe Val Trp Ser Glu Ile Gln
    450                 455                 460

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

Phe Cys Glu Phe Ile Thr Val Pro Trp Met Lys His Leu Val Gly Arg
                485                 490                 495

Val Thr Arg Val Leu Ile Asp Tyr Met Asp Tyr Val Pro Leu Cys Ala
            500                 505                 510

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

Gln Ile Leu Glu Asn Pro Cys Ser Leu Lys His Leu Cys Arg Leu Lys
    530                 535                 540

Ile Arg Arg Leu Met Gly Leu Gln Lys Leu Cys Gln Pro Ala Ser Val
545                 550                 555                 560

Glu Lys Leu Pro Leu Pro Pro Ala Ile Gln Arg Tyr Ile Leu Phe Lys
                565                 570                 575

Glu Tyr Asp Leu Tyr Gly Gln Glu Leu Lys Leu Thr
            580                 585
```

<210> 5001
<211> 241
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ASB15; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 15; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000401166"

<400> 5001
Met Asp Thr Asn Asp Asp Pro Asp Glu Asp His Leu Thr Ser Tyr Asp
1 5 10 15

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

Cys Pro Glu Arg Phe Val Pro Leu Ser Ala Gln Asn Arg Lys Leu Val
35 40 45

Glu Ala Ile Lys Gln Gly His Ile Pro Glu Leu Gln Glu Tyr Val Lys
50 55 60

Tyr Lys Tyr Ala Met Asp Glu Ala Asp Glu Lys Gly Trp Phe Pro Leu
65 70 75 80

His Glu Ala Val Val Gln Pro Ile Gln Gln Ile Leu Glu Ile Val Leu
85 90 95

Asp Ala Ser Tyr Lys Thr Leu Trp Glu Phe Lys Thr Cys Asp Gly Glu
100 105 110

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

Thr Leu Leu Glu Lys Gly Val Trp Pro Asn Thr Lys Asn Asp Lys Gly
130 135 140

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

```
Ser Thr Leu Ile Lys His Asn Thr Ser Leu Asp Gln Pro Cys Val Lys
                165                 170                 175

Arg Trp Ser Ala Met His Glu Ala Ala Lys Gln Gly Arg Lys Asp Ile
            180                 185                 190

Val Ala Leu Leu Leu Lys His Gly Gly Asn Val His Leu Arg Asp Gly
        195                 200                 205

Phe Gly Val Thr Pro Leu Gly Val Ala Ala Glu Tyr Gly His Cys Asp
    210                 215                 220

Val Leu Glu His Leu Ile His Lys Gly Gly Asp Val Leu Ala Leu Ala
225                 230                 235                 240

Asp
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<210> 5002
<211> 97
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1088; "

<220>
<221> source
<223> /note="Gene Symbol: ASB15; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 15; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406163"

<400> 5002

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Met Asp Thr Asn Asp Asp Pro Asp Glu Asp His Leu Thr Ser Tyr Asp
1               5                   10                  15

Ile Gln Leu Ser Ile Gln Glu Ser Ile Glu Ala Ser Lys Thr Ala Leu
            20                  25                  30
```

```
Cys Pro Glu Arg Phe Val Pro Leu Ser Ala Gln Asn Arg Lys Leu Val
        35                  40                  45

Glu Ala Ile Lys Gln Gly His Ile Pro Glu Leu Gln Glu Tyr Val Lys
    50                  55                  60

Tyr Lys Tyr Ala Met Asp Glu Ala Asp Glu Lys Gly Trp Phe Pro Leu
65                  70                  75                  80

His Glu Ala Val Val Gln Pro Ile Gln Gln Ile Leu Glu Ile Val Leu
                85                  90                  95

Asp
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<210> 5003
<211> 588
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<223> /note="Gene Symbol: ASB15; "

<220>
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<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 15; "

<220>
<221> source
<223> /note="Uniprot ID: Q8WXK1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000416433"

<400> 5003

```
Met Asp Thr Asn Asp Asp Pro Asp Glu Asp His Leu Thr Ser Tyr Asp
1               5                   10                  15

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

Cys Pro Glu Arg Phe Val Pro Leu Ser Ala Gln Asn Arg Lys Leu Val
        35                  40                  45
```

```
Glu Ala Ile Lys Gln Gly His Ile Pro Glu Leu Gln Glu Tyr Val Lys
    50                  55                  60

Tyr Lys Tyr Ala Met Asp Glu Ala Asp Glu Lys Gly Trp Phe Pro Leu
65                  70                  75                  80

His Glu Ala Val Val Gln Pro Ile Gln Gln Ile Leu Glu Ile Val Leu
                85                  90                  95

Asp Ala Ser Tyr Lys Thr Leu Trp Glu Phe Lys Thr Cys Asp Gly Glu
            100                 105                 110

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

Thr Leu Leu Glu Lys Gly Val Trp Pro Asn Thr Lys Asn Asp Lys Gly
    130                 135                 140

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

Ser Thr Leu Ile Lys His Asn Thr Ser Leu Asp Gln Pro Cys Val Lys
                165                 170                 175

Arg Trp Ser Ala Met His Glu Ala Ala Lys Gln Gly Arg Lys Asp Ile
            180                 185                 190

Val Ala Leu Leu Leu Lys His Gly Gly Asn Val His Leu Arg Asp Gly
        195                 200                 205

Phe Gly Val Thr Pro Leu Gly Val Ala Ala Glu Tyr Gly His Cys Asp
    210                 215                 220

Val Leu Glu His Leu Ile His Lys Gly Gly Asp Val Leu Ala Leu Ala
225                 230                 235                 240

Asp Asp Gly Ala Ser Val Leu Phe Glu Ala Ala Gly Gly Gly Asn Pro
                245                 250                 255

Asp Cys Ile Ser Leu Leu Leu Glu Tyr Gly Gly Ser Gly Asn Val Pro
            260                 265                 270
```

```
Asn Arg Ala Gly His Leu Pro Ile His Arg Ala Ala Tyr Glu Gly His
        275                 280                 285

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

Arg Lys Ser Gly Leu Thr Pro Ile His Ser Ala Ala Asp Gly Gln Asn
305                 310                 315                 320

Ala Gln Cys Leu Glu Leu Leu Ile Glu Asn Gly Phe Asp Val Asn Thr
                325                 330                 335

Leu Leu Ala Asp His Ile Ser Gln Ser Tyr Asp Asp Glu Arg Lys Thr
            340                 345                 350

Ala Leu Tyr Phe Gly Val Ser Asn Asn Asp Val His Cys Thr Glu Val
        355                 360                 365

Leu Leu Ala Ala Gly Ala Asp Pro Asn Leu Asp Pro Leu Asn Cys Leu
    370                 375                 380

Leu Val Ala Val Arg Ala Asn Asn Tyr Glu Ile Val Arg Leu Leu Leu
385                 390                 395                 400

Ser His Gly Ala Asn Val Asn Cys Tyr Phe Met His Val Asn Asp Thr
                405                 410                 415

Arg Phe Pro Ser Val Ile Gln Tyr Ala Leu Asn Asp Glu Val Met Leu
            420                 425                 430

Arg Leu Leu Leu Asn Asn Gly Tyr Gln Val Glu Met Cys Phe Asp Cys
        435                 440                 445

Met His Gly Asp Ile Phe Gly Asn Ser Phe Val Trp Ser Glu Ile Gln
    450                 455                 460

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

Phe Cys Glu Phe Ile Thr Val Pro Trp Met Lys His Leu Val Gly Arg
                485                 490                 495
```

```
Val Thr Arg Val Leu Ile Asp Tyr Met Asp Tyr Val Pro Leu Cys Ala
            500                 505                 510

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

Gln Ile Leu Glu Asn Pro Cys Ser Leu Lys His Leu Cys Arg Leu Lys
    530                 535                 540

Ile Arg Arg Leu Met Gly Leu Gln Lys Leu Cys Gln Pro Ala Ser Val
545                 550                 555                 560

Glu Lys Leu Pro Leu Pro Pro Ala Ile Gln Arg Tyr Ile Leu Phe Lys
                565                 570                 575

Glu Tyr Asp Leu Tyr Gly Gln Glu Leu Lys Leu Thr
            580                 585


<210> 5004
<211> 249
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1088; "

<220>
<221> source
<223> /note="Gene Symbol: ASB15; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat and SOCS box containing 15; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000438643"

<400> 5004
Met Lys Gln Pro Ser Lys Ala Glu Tyr Gly His Cys Asp Val Leu Glu
1               5                   10                  15

His Leu Ile His Lys Gly Gly Asp Val Leu Ala Leu Ala Asp Asp Gly
            20                  25                  30

Ala Ser Val Leu Phe Glu Ala Ala Gly Gly Gly Asn Pro Asp Cys Ile
        35                  40                  45
```

```
Ser Leu Leu Leu Glu Tyr Gly Gly Ser Gly Asn Val Pro Asn Arg Ala
    50                  55                  60

Gly His Leu Pro Ile His Arg Ala Ala Tyr Glu Gly His Tyr Leu Ala
65                  70                  75                  80

Leu Lys Tyr Leu Ile Pro Val Thr Ser Lys Asn Ala Ile Arg Lys Ser
                85                  90                  95

Gly Leu Thr Pro Ile His Ser Ala Ala Asp Gly Gln Asn Ala Gln Cys
            100                 105                 110

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

Asp His Ile Ser Gln Ser Tyr Asp Asp Glu Arg Lys Thr Ala Leu Tyr
    130                 135                 140

Phe Gly Val Ser Asn Asn Asp Val His Cys Thr Glu Val Leu Leu Ala
145                 150                 155                 160

Ala Gly Ala Asp Pro Asn Leu Asp Pro Leu Asn Cys Leu Leu Val Ala
                165                 170                 175

Val Arg Ala Asn Asn Tyr Glu Ile Val Arg Leu Leu Leu Ser His Gly
            180                 185                 190

Ala Asn Val Asn Cys Tyr Phe Met His Val Asn Asp Thr Arg Phe Pro
        195                 200                 205

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

Leu Asn Asn Gly Tyr Gln Val Glu Met Cys Phe Asp Cys Met His Gly
225                 230                 235                 240

Asp Ile Phe Gly Asn Ser Phe Val Cys
                245
```

<210> 5005
<211> 453
<212> PRT

<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1089; "

<220>
<221> source
<223> /note="Gene Symbol: ASB16; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 16; "

<220>
<221> source
<223> /note="Uniprot ID: Q96NS5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000293414"

<400> 5005

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

```
    130                 135                 140

Ala Ala Leu His Glu Ala Cys Ala Arg Ala Gln Phe Asp Cys Val Arg
145                 150                 155                 160

Leu Leu Leu Thr Phe Gly Ala Lys Ala Asn Val Leu Thr Glu Glu Gly
                165                 170                 175

Thr Thr Pro Leu His Leu Cys Thr Ile Pro Glu Ser Leu Gln Cys Ala
            180                 185                 190

Lys Leu Leu Leu Glu Ala Gly Ala Thr Val Asn Leu Ala Ala Gly Glu
        195                 200                 205

Ser Gln Glu Thr Pro Leu His Val Ala Ala Ala Arg Gly Leu Glu Gln
    210                 215                 220

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

Ser Gln Gly Glu Thr Ala Leu Asn Thr Ala Cys Ala Gly Ala Glu Gly
                245                 250                 255

Pro Gly Ser Cys Arg Arg His Gln Ala Ala Ala Arg Arg Leu Leu Glu
            260                 265                 270

Ala Gly Ala Asp Ala Arg Ala Ala Gly Arg Lys Arg His Thr Pro Leu
        275                 280                 285

His Asn Ala Cys Ala Asn Gly Cys Gly Gly Leu Ala Glu Leu Leu Leu
    290                 295                 300

Arg Tyr Gly Ala Arg Ala Glu Val Pro Asn Gly Ala Gly His Thr Pro
305                 310                 315                 320

Met Asp Cys Ala Leu Gln Ala Val Gln Asp Ser Pro Asn Trp Glu Pro
                325                 330                 335

Glu Val Leu Phe Ala Ala Leu Leu Asp Tyr Gly Ala Gln Pro Val Arg
            340                 345                 350

Pro Glu Met Leu Lys His Cys Ala Asn Phe Pro Arg Ala Leu Glu Val
        355                 360                 365
```

```
Leu Leu Asn Ala Tyr Pro Cys Val Pro Ser Cys Glu Thr Trp Val Glu
    370                 375                 380

Ala Val Leu Pro Glu Leu Trp Lys Glu His Glu Ala Phe Tyr Ser Ser
385                 390                 395                 400

Ala Leu Cys Met Val Asn Gln Pro Arg Gln Leu Gln His Leu Ala Arg
                405                 410                 415

Leu Ala Val Arg Ala Arg Leu Gly Ser Arg Cys Arg Gln Gly Ala Thr
            420                 425                 430

Arg Leu Pro Leu Pro Pro Leu Leu Arg Asp Tyr Leu Leu Leu Arg Val
        435                 440                 445

Glu Gly Cys Ile Gln
    450
```

<210> 5006
<211> 273
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1089; "

<220>
<221> source
<223> /note="Gene Symbol: ASB16; "

<220>
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<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 16; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466033"

<400> 5006

```
Met Ala Arg Glu Thr Phe Pro Phe Thr Ser Ser Met Leu Arg Ser Leu
1               5                   10                  15

Arg Leu Gln Gln Glu Trp Leu Glu Trp Glu Asp Arg Arg Arg Ala Ala
            20                  25                  30
```

```
Ala Gln Gln Cys Arg Ser Arg Arg Cys Pro Ser Ser Pro Arg Ala Arg
        35                  40                  45

Leu Thr Arg Pro His Arg Ser Cys Arg Asp Pro Ala Val His Gln Ala
    50                  55                  60

Leu Phe Ser Gly Asn Leu Gln Gln Val Gln Ala Leu Phe Gln Asp Glu
65                  70                  75                  80

Glu Ala Ala Asn Met Ile Val Glu Thr Val Ser Asn Gln Leu Ala Trp
                85                  90                  95

Ser Ala Glu Gln Gly Phe Trp Val Leu Thr Pro Lys Thr Lys Gln Thr
            100                 105                 110

Ala Pro Leu Ala Ile Ala Thr Ala Arg Gly Tyr Thr Asp Cys Ala Arg
        115                 120                 125

His Leu Ile Arg Gln Gly Ala Glu Leu Asp Ala Arg Val Gly Gly Arg
    130                 135                 140

Ala Ala Leu His Glu Ala Cys Ala Arg Ala Gln Phe Asp Cys Val Arg
145                 150                 155                 160

Leu Leu Leu Thr Phe Gly Ala Lys Ala Asn Val Leu Thr Glu Glu Gly
                165                 170                 175

Thr Thr Pro Leu His Leu Cys Thr Ile Pro Glu Ser Leu Gln Cys Ala
            180                 185                 190

Lys Leu Leu Leu Glu Ala Gly Ala Thr Val Asn Leu Ala Ala Gly Glu
        195                 200                 205

Ser Gln Glu Thr Pro Leu His Val Ala Ala Ala Arg Gly Leu Glu Gln
    210                 215                 220

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

Ser Gln Gly Glu Thr Ala Leu Asn Thr Ala Cys Ala Gly Ala Glu Gly
                245                 250                 255

Pro Asp Ala Glu Thr Leu Arg Gln Leu Pro Ser Gly Pro Gly Ser Pro
```

260 265 270

Ala

<210> 5007
<211> 71
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1089; "

<220>
<221> source
<223> /note="Gene Symbol: ASB16; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 16; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466349"

<400> 5007
Met Ile Val Glu Thr Val Ser Asn Gln Leu Ala Trp Ser Ala Glu Gln
1 5 10 15

Gly Phe Trp Val Leu Thr Pro Lys Thr Lys Gln Thr Ala Pro Leu Ala
20 25 30

Ile Ala Thr Ala Arg Gly Tyr Thr Asp Cys Ala Arg His Leu Ile Arg
35 40 45

Gln Gly Ala Glu Leu Asp Ala Arg Val Gly Gly Arg Ala Ala Leu His
50 55 60

Glu Ala Cys Ala Arg Ala Gln
65 70

<210> 5008
<211> 295
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1090; "

<220>
<221> source
<223> /note="Gene Symbol: ASB17; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 17; "

<220>
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<223> /note="Uniprot ID: Q8WXJ9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000284142"

<400> 5008

```
Met Ser Lys Ser Thr Lys Leu Cys Gly Lys Thr Ser Cys Pro Arg Ser
1               5                  10                  15

Asn Ile Phe Cys Asn Leu Leu Asp Lys Ile Val Lys Arg Pro Ser Leu
            20                  25                  30

Gln Phe Leu Gly Gln Trp Gly Tyr His Cys Tyr Glu Pro Arg Ile Tyr
        35                  40                  45

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

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

Phe Glu Val Ser Phe Asn Leu Asp Phe Thr Glu Ile Cys Val Asn Thr
                85                  90                  95

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

Leu Leu Leu Lys Lys Thr Lys Asp Tyr Val Gln Asp Arg Ser Cys Asn
        115                 120                 125

Leu Ala Leu Ile Trp Arg Thr Phe Thr Pro Val Tyr Cys Pro Ser Pro
    130                 135                 140

Leu Ser Gly Ile Thr Pro Leu Phe Tyr Val Ala Gln Thr Arg Gln Ser
```

```
145                 150                 155                 160

Asn Ile Phe Lys Ile Leu Leu Gln Tyr Gly Ile Leu Glu Arg Glu Lys
                165                 170                 175

Asn Pro Ile Asn Ile Val Leu Thr Ile Val Leu Tyr Pro Ser Arg Val
            180                 185                 190

Arg Val Met Val Asp Arg Glu Leu Ala Asp Ile His Glu Asp Ala Lys
        195                 200                 205

Thr Cys Leu Val Leu Cys Ser Arg Val Leu Ser Val Ile Ser Val Lys
    210                 215                 220

Glu Ile Lys Thr Gln Leu Ser Leu Gly Arg His Pro Ile Ile Ser Asn
225                 230                 235                 240

Trp Phe Asp Tyr Ile Pro Ser Thr Arg Tyr Lys Asp Pro Cys Glu Leu
                245                 250                 255

Leu His Leu Cys Arg Leu Thr Ile Arg Asn Gln Leu Leu Thr Asn Asn
            260                 265                 270

Met Leu Pro Asp Gly Ile Phe Ser Leu Leu Ile Pro Ala Arg Leu Gln
        275                 280                 285

Asn Tyr Leu Asn Leu Glu Ile
    290                 295


<210> 5009
<211> 466
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1091; "

<220>
<221> source
<223> /note="Gene Symbol: ASB18; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat and SOCS box containing 18; "
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<220>
<221> source
<223> /note="Uniprot ID: Q6ZVZ8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000386532"

<400> 5009
Met Ser Asn Ser Asp Tyr Leu Pro Asp Tyr Pro Leu Asn Ser Asp Leu
1   5   10   15

Val Lys Arg Leu Lys Ser Ala Leu Asp Ala Lys Asp Glu Glu Arg Val
            20   25   30

Arg Asp Leu Ile Cys Thr Glu Ile Thr Pro Val Asp Ala Val Ile Glu
        35   40   45

Leu Ala Asn Asp Asp Trp Met Lys Asp Pro Ser Ala Gln Leu Pro Thr
    50   55   60

Gly Met Leu Leu Gly Asp Leu Asp His Leu Lys Pro Leu Met Asp Gln
65   70   75   80

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

Glu Trp Gln Val Lys Ser Pro Ala Thr Phe Gly Leu Ser Gly Leu Trp
            100   105   110

Thr Leu Glu Tyr Lys Arg Glu Leu Thr Thr Pro Leu Cys Ile Ala Ala
        115   120   125

Ala His Gly His Thr Ala Cys Val Arg His Leu Leu Gly Arg Gly Ala
    130   135   140

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

Leu Gly Gly His Thr Ala Cys Val Arg Leu Leu Leu Gln His Arg Ala
                165   170   175

Asp Pro Asp Leu Leu Ser Ala Glu Gly Leu Ala Pro Leu His Leu Cys
            180   185   190

```
Arg Thr Ala Ala Ser Leu Gly Cys Ala Gln Ala Leu Leu Glu His Gly
        195                 200                 205

Ala Ser Val Gln Arg Val Gly Gly Thr Gly Arg Asp Thr Pro Leu His
    210                 215                 220

Val Ala Ala Gln Arg Gly Leu Asp Glu His Ala Arg Leu Tyr Leu Gly
225                 230                 235                 240

Arg Gly Ala His Val Asp Ala Arg Asn Gly Arg Gly Glu Thr Ala Leu
                245                 250                 255

Ser Ala Ala Cys Gly Ala Ala Arg Arg Pro Asp Glu His Gly Arg Cys
            260                 265                 270

Leu Arg Leu Cys Ala Leu Leu Leu Arg Arg Gly Ala Glu Ala Asp Ala
        275                 280                 285

Arg Asp Glu Asp Glu Arg Ser Pro Leu His Lys Ala Cys Gly His Ala
    290                 295                 300

Ser His Ser Leu Ala Arg Leu Leu Leu Arg His Gly Ala Asp Ala Gly
305                 310                 315                 320

Ala Leu Asp Tyr Gly Gly Ala Ser Pro Leu Gly Arg Val Leu Gln Thr
                325                 330                 335

Ala Ser Cys Ala Leu Gln Ala Ser Pro Gln Arg Thr Val Gln Ala Leu
            340                 345                 350

Leu Asn His Gly Ser Pro Thr Val Trp Pro Asp Ala Phe Pro Lys Val
        355                 360                 365

Leu Lys Thr Cys Ala Ser Val Pro Ala Val Ile Glu Val Leu Phe Asn
    370                 375                 380

Ser Tyr Pro Gln Leu Cys Leu Ser Glu Ser Trp Lys Glu Val Ile Pro
385                 390                 395                 400

Glu Glu Val Phe Gln Met His Lys Pro Phe Tyr Gln Ser Leu Phe Ala
                405                 410                 415

Leu Ala Leu Thr Pro Arg Cys Leu Gln His Leu Cys Arg Cys Ala Leu
```

420 425 430

Arg Arg Leu Phe Gly Lys Arg Cys Phe Asp Leu Ile Pro Leu Leu Pro
435 440 445

Leu Pro Lys Pro Leu Gln Asn Tyr Leu Leu Leu Glu Pro Gln Gly Val
450 455 460

Leu His
465

<210> 5010
<211> 195
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1091; "

<220>
<221> source
<223> /note="Gene Symbol: ASB18; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 18; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000410021"

<400> 5010
Met Ser Asn Ser Asp Tyr Leu Pro Asp Tyr Pro Leu Asn Ser Asp Leu
1 5 10 15

Val Lys Arg Leu Lys Ser Ala Leu Asp Ala Lys Asp Glu Glu Arg Val
20 25 30

Arg Asp Leu Ile Cys Thr Glu Ile Thr Pro Val Asp Ala Val Ile Glu
35 40 45

Leu Ala Asn Asp Asp Trp Met Lys Asp Pro Ser Ala Gln Leu Pro Thr
50 55 60

Gly Met Leu Leu Gly Leu Trp Thr Leu Glu Tyr Lys Arg Glu Leu Thr
65 70 75 80

```
Thr Pro Leu Cys Ile Ala Ala Ala His Gly His Thr Ala Cys Val Arg
                85                  90                  95

His Leu Leu Gly Arg Gly Ala Asp Pro Asp Ala Ser Pro Gly Gly Arg
            100                 105                 110

Gly Ala Leu His Glu Ala Cys Leu Gly Gly His Thr Ala Cys Val Arg
        115                 120                 125

Leu Leu Leu Gln His Arg Ala Asp Pro Asp Leu Leu Ser Ala Glu Gly
    130                 135                 140

Leu Ala Pro Leu His Leu Cys Arg Thr Ala Ala Ser Leu Gly Cys Ala
145                 150                 155                 160

Gln Ala Leu Leu Glu His Gly Ala Ser Val Gln Arg Val Gly Gly Thr
                165                 170                 175

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

His Ala Arg
        195


<210> 5011
<211> 148
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1091; "

<220>
<221> source
<223> /note="Gene Symbol: ASB18; "

<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000411434"

<400> 5011
Ala Arg Asp Glu Asp Glu Arg Ser Pro Leu His Lys Ala Cys Gly His
```

```
1               5                   10                  15

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

Gly Ala Leu Asp Tyr Gly Gly Ala Ser Pro Leu Gly Arg Val Leu Gln
        35                  40                  45

Thr Ala Ser Cys Ala Leu Gln Ala Ser Pro Gln Arg Thr Val Gln Ala
    50                  55                  60

Leu Leu Asn His Gly Ser Pro Thr Val Trp Pro Asp Ala Phe Pro Lys
65                  70                  75                  80

Val Leu Lys Thr Cys Ala Ser Val Pro Ala Val Ile Glu Val Leu Phe
                85                  90                  95

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

Pro Glu Glu Val Phe Gln Ala Arg Gly Leu Pro Phe Cys Pro Ser Leu
        115                 120                 125

Val Gln Asn Phe Cys Leu Phe Leu Leu Leu Cys Met Gly Ser Phe Ala
    130                 135                 140

Leu Ile Phe Gly
145


<210> 5012
<211> 587
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1092; "

<220>
<221> source
<223> /note="Gene Symbol: ASB2; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat and SOCS box containing 2; "
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<220>
<221> source
<223> /note="Uniprot ID: Q96Q27; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000320675"

<400> 5012
Met Thr Arg Phe Ser Tyr Ala Glu Tyr Phe Ser Leu Phe His Ser Cys
1   5   10   15

Ser Ala Pro Ser Arg Ser Thr Ala Pro Pro Glu Ser Ser Pro Ala Arg
            20   25   30

Ala Pro Met Gly Leu Phe Gln Gly Val Met Gln Lys Tyr Ser Ser Ser
        35   40   45

Leu Phe Lys Thr Ser Gln Leu Ala Pro Ala Asp Pro Leu Ile Lys Ala
    50   55   60

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

Lys Asn Leu Ala Glu Pro Asn Lys Glu Gly Trp Leu Pro Leu His Glu
                85   90   95

Ala Ala Tyr Tyr Gly Gln Val Gly Cys Leu Lys Val Leu Gln Arg Ala
            100   105   110

Tyr Pro Gly Thr Ile Asp Gln Arg Thr Leu Gln Glu Glu Thr Ala Val
        115   120   125

Tyr Leu Ala Thr Cys Arg Gly His Leu Asp Cys Leu Leu Ser Leu Leu
    130   135   140

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

Leu Tyr Lys Ala Cys Glu Arg Lys Asn Ala Glu Ala Val Lys Ile Leu
                165   170   175

Val Gln His Asn Ala Asp Thr Asn His Arg Cys Asn Arg Gly Trp Thr
            180   185   190

```
Ala Leu His Glu Ser Val Ser Arg Asn Asp Leu Glu Val Met Gln Ile
        195                 200                 205

Leu Val Ser Gly Gly Ala Lys Val Glu Ser Lys Asn Ala Tyr Gly Ile
    210                 215                 220

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

Phe Leu Ala Lys Tyr Gly Ala Asp Ile Asn Thr Gln Ala Ser Asp Asn
                245                 250                 255

Ala Ser Ala Leu Tyr Glu Ala Cys Lys Asn Glu His Glu Glu Val Val
            260                 265                 270

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

Gly Leu Leu Pro Leu His Ile Ala Ser Lys Lys Gly Asn Tyr Arg Ile
    290                 295                 300

Val Gln Met Leu Leu Pro Val Thr Ser Arg Thr Arg Ile Arg Arg Ser
305                 310                 315                 320

Gly Val Ser Pro Leu His Leu Ala Ala Glu Arg Asn His Asp Glu Val
                325                 330                 335

Leu Glu Ala Leu Leu Ser Ala Arg Phe Asp Val Asn Thr Pro Leu Ala
            340                 345                 350

Pro Glu Arg Ala Arg Leu Tyr Glu Asp Arg Arg Ser Ser Ala Leu Tyr
        355                 360                 365

Phe Ala Val Val Asn Asn Asn Val Tyr Ala Thr Glu Leu Leu Leu Gln
    370                 375                 380

His Gly Ala Asp Pro Asn Arg Asp Val Ile Ser Pro Leu Leu Val Ala
385                 390                 395                 400

Ile Arg His Gly Cys Leu Arg Thr Met Gln Leu Leu Leu Asp His Gly
                405                 410                 415

Ala Asn Ile Asp Ala Tyr Ile Ala Thr His Pro Thr Ala Phe Pro Ala
```

```
            420                 425                 430

Thr Ile Met Phe Ala Met Lys Cys Leu Ser Leu Leu Lys Phe Leu Met
        435                 440                 445

Asp Leu Gly Cys Asp Gly Glu Pro Cys Phe Ser Cys Leu Tyr Gly Asn
    450                 455                 460

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

Pro Ala Ala Asp Lys Glu Pro Ser Val Val Gln Phe Cys Glu Phe Val
                485                 490                 495

Ser Ala Pro Glu Val Ser Arg Trp Ala Gly Pro Ile Ile Asp Val Leu
            500                 505                 510

Leu Asp Tyr Val Gly Asn Val Gln Leu Cys Ser Arg Leu Lys Glu His
        515                 520                 525

Ile Asp Ser Phe Glu Asp Trp Ala Val Ile Lys Glu Lys Ala Glu Pro
    530                 535                 540

Pro Arg Pro Leu Ala His Leu Cys Arg Leu Arg Val Arg Lys Ala Ile
545                 550                 555                 560

Gly Lys Tyr Arg Ile Lys Leu Leu Asp Thr Leu Pro Leu Pro Gly Arg
                565                 570                 575

Leu Ile Arg Tyr Leu Lys Tyr Glu Asn Thr Gln
            580                 585


<210> 5013
<211> 481
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1092; "

<220>
<221> source
<223> /note="Gene Symbol: ASB2; "

<220>
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<221> source
<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000450940"

<400> 5013

```
Met Arg Pro Ala Asp Pro Leu Ile Lys Ala Ile Lys Asp Gly Asp Glu
1               5                  10                  15

Glu Ala Leu Lys Thr Met Ile Lys Glu Gly Lys Asn Leu Ala Glu Pro
            20                  25                  30

Asn Lys Glu Gly Trp Leu Pro Leu His Glu Ala Ala Tyr Tyr Gly Gln
        35                  40                  45

Val Gly Cys Leu Lys Val Leu Gln Arg Ala Tyr Pro Gly Thr Ile Asp
    50                  55                  60

Gln Arg Thr Leu Gln Glu Glu Thr Ala Val Tyr Leu Ala Thr Cys Arg
65                  70                  75                  80

Gly His Leu Asp Cys Leu Leu Ser Leu Leu Gln Ala Gly Ala Glu Pro
                85                  90                  95

Asp Ile Ser Asn Lys Ser Arg Glu Thr Pro Leu Tyr Lys Ala Cys Glu
            100                 105                 110

Arg Lys Asn Ala Glu Ala Val Lys Ile Leu Val Gln His Asn Ala Asp
        115                 120                 125

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

Ser Arg Asn Asp Leu Glu Val Met Gln Ile Leu Val Ser Gly Gly Ala
145                 150                 155                 160

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

Ala Gln Ser Gly Gln Leu Glu Ala Leu Arg Phe Leu Ala Lys Tyr Gly
            180                 185                 190
```

```
Ala Asp Ile Asn Thr Gln Ala Ser Asp Asn Ala Ser Ala Leu Tyr Glu
        195                 200                 205

Ala Cys Lys Asn Glu His Glu Glu Val Val Glu Phe Leu Leu Ser Gln
    210                 215                 220

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

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

Val Thr Ser Arg Thr Arg Ile Arg Arg Ser Gly Val Ser Pro Leu His
            260                 265                 270

Leu Ala Ala Glu Arg Asn His Asp Glu Val Leu Glu Ala Leu Leu Ser
        275                 280                 285

Ala Arg Phe Asp Val Asn Thr Pro Leu Ala Pro Glu Arg Ala Arg Leu
    290                 295                 300

Tyr Glu Asp Arg Arg Ser Ser Ala Leu Tyr Phe Ala Val Val Asn Asn
305                 310                 315                 320

Asn Val Tyr Ala Thr Glu Leu Leu Leu Gln His Gly Ala Asp Pro Asn
                325                 330                 335

Arg Asp Val Ile Ser Pro Leu Leu Val Ala Ile Arg His Gly Cys Leu
            340                 345                 350

Arg Thr Met Gln Leu Leu Leu Asp His Gly Ala Asn Ile Asp Ala Tyr
        355                 360                 365

Ile Ala Thr His Pro Thr Ala Phe Pro Ala Thr Ile Met Phe Ala Met
    370                 375                 380

Lys Cys Leu Ser Leu Leu Lys Phe Leu Met Asp Leu Gly Cys Asp Gly
385                 390                 395                 400

Glu Pro Cys Phe Ser Cys Leu Tyr Gly Asn Gly Pro His Pro Pro Ala
                405                 410                 415

Pro Gln Pro Ser Ser Arg Phe Asn Asp Ala Pro Ala Ala Asp Lys Glu
```

420 425 430

Pro Ser Val Val Gln Phe Cys Glu Phe Val Ser Ala Pro Glu Val Ser
435 440 445

Arg Trp Ala Gly Pro Ile Ile Asp Val Leu Leu Asp Tyr Val Gly Asn
450 455 460

Val Gln Leu Cys Ser Arg Leu Lys Glu His Ile Asp Ser Phe Glu Asp
465 470 475 480

Trp

<210> 5014
<211> 122
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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ankyrin repeat and SOCS box containing 2; "

<220>
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<400> 5014
Met Ala Thr Gln Ile Ser Thr Arg Gly Ser Gln Cys Thr Ile Gly Gln
1 5 10 15

Glu Glu Tyr Ser Leu Tyr Ser Ser Leu Ser Glu Asp Glu Leu Val Gln
20 25 30

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

Ala Glu Ala Thr Ala Ser Ala Cys Thr Asn Arg Gln Pro Ala His Phe
50 55 60

```
Tyr Pro Trp Thr Arg Pro Ala Asp Pro Leu Ile Lys Ala Ile Lys Asp
65                  70                  75                  80


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


Ala Glu Pro Asn Lys Glu Gly Trp Leu Pro Leu His Glu Ala Ala Tyr
            100                 105                 110


Tyr Gly Gln Val Gly Cys Leu Lys Val Leu
        115                 120


<210> 5015
<211> 635
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000451575"

<400> 5015
Met Ala Thr Gln Ile Ser Thr Arg Gly Ser Gln Cys Thr Ile Gly Gln
1               5                   10                  15


Glu Glu Tyr Ser Leu Tyr Ser Ser Leu Ser Glu Asp Glu Leu Val Gln
            20                  25                  30


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


Ala Glu Ala Thr Ala Ser Ala Cys Thr Asn Arg Gln Pro Ala His Phe
```

```
    50                  55                  60

Tyr Pro Trp Thr Arg Ser Thr Ala Pro Pro Glu Ser Ser Pro Ala Arg
65                  70                  75                  80

Ala Pro Met Gly Leu Phe Gln Gly Val Met Gln Lys Tyr Ser Ser Ser
                85                  90                  95

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

Ile Lys Asp Gly Asp Glu Glu Ala Leu Lys Thr Met Ile Lys Glu Gly
        115                 120                 125

Lys Asn Leu Ala Glu Pro Asn Lys Glu Gly Trp Leu Pro Leu His Glu
    130                 135                 140

Ala Ala Tyr Tyr Gly Gln Val Gly Cys Leu Lys Val Leu Gln Arg Ala
145                 150                 155                 160

Tyr Pro Gly Thr Ile Asp Gln Arg Thr Leu Gln Glu Glu Thr Ala Val
                165                 170                 175

Tyr Leu Ala Thr Cys Arg Gly His Leu Asp Cys Leu Leu Ser Leu Leu
            180                 185                 190

Gln Ala Gly Ala Glu Pro Asp Ile Ser Asn Lys Ser Arg Glu Thr Pro
        195                 200                 205

Leu Tyr Lys Ala Cys Glu Arg Lys Asn Ala Glu Ala Val Lys Ile Leu
    210                 215                 220

Val Gln His Asn Ala Asp Thr Asn His Arg Cys Asn Arg Gly Trp Thr
225                 230                 235                 240

Ala Leu His Glu Ser Val Ser Arg Asn Asp Leu Glu Val Met Gln Ile
                245                 250                 255

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

Thr Pro Leu Phe Val Ala Ala Gln Ser Gly Gln Leu Glu Ala Leu Arg
        275                 280                 285
```

```
Phe Leu Ala Lys Tyr Gly Ala Asp Ile Asn Thr Gln Ala Ser Asp Asn
    290                 295                 300

Ala Ser Ala Leu Tyr Glu Ala Cys Lys Asn Glu His Glu Glu Val Val
305                 310                 315                 320

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

Gly Leu Leu Pro Leu His Ile Ala Ser Lys Lys Gly Asn Tyr Arg Ile
            340                 345                 350

Val Gln Met Leu Leu Pro Val Thr Ser Arg Thr Arg Ile Arg Arg Ser
        355                 360                 365

Gly Val Ser Pro Leu His Leu Ala Ala Glu Arg Asn His Asp Glu Val
    370                 375                 380

Leu Glu Ala Leu Leu Ser Ala Arg Phe Asp Val Asn Thr Pro Leu Ala
385                 390                 395                 400

Pro Glu Arg Ala Arg Leu Tyr Glu Asp Arg Arg Ser Ser Ala Leu Tyr
                405                 410                 415

Phe Ala Val Val Asn Asn Asn Val Tyr Ala Thr Glu Leu Leu Leu Gln
            420                 425                 430

His Gly Ala Asp Pro Asn Arg Asp Val Ile Ser Pro Leu Leu Val Ala
        435                 440                 445

Ile Arg His Gly Cys Leu Arg Thr Met Gln Leu Leu Leu Asp His Gly
    450                 455                 460

Ala Asn Ile Asp Ala Tyr Ile Ala Thr His Pro Thr Ala Phe Pro Ala
465                 470                 475                 480

Thr Ile Met Phe Ala Met Lys Cys Leu Ser Leu Leu Lys Phe Leu Met
                485                 490                 495

Asp Leu Gly Cys Asp Gly Glu Pro Cys Phe Ser Cys Leu Tyr Gly Asn
            500                 505                 510
```

Gly Pro His Pro Pro Ala Pro Gln Pro Ser Ser Arg Phe Asn Asp Ala
515 520 525

Pro Ala Ala Asp Lys Glu Pro Ser Val Val Gln Phe Cys Glu Phe Val
530 535 540

Ser Ala Pro Glu Val Ser Arg Trp Ala Gly Pro Ile Ile Asp Val Leu
545 550 555 560

Leu Asp Tyr Val Gly Asn Val Gln Leu Cys Ser Arg Leu Lys Glu His
565 570 575

Ile Asp Ser Phe Glu Asp Trp Ala Val Ile Lys Glu Lys Ala Glu Pro
580 585 590

Pro Arg Pro Leu Ala His Leu Cys Arg Leu Arg Val Arg Lys Ala Ile
595 600 605

Gly Lys Tyr Arg Ile Lys Leu Leu Asp Thr Leu Pro Leu Pro Gly Arg
610 615 620

Leu Ile Arg Tyr Leu Lys Tyr Glu Asn Thr Gln
625 630 635

<210> 5016
<211> 111
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 2; "

<220>
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<223> /note="ENSP ID: ENSP00000451654"

<400> 5016
Met Gly Leu Phe Gln Gly Val Met Gln Lys Tyr Ser Ser Ser Leu Phe

1 5 10 15

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

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

Leu Ala Glu Pro Asn Lys Glu Gly Trp Leu Pro Leu His Glu Ala Ala
50 55 60

Tyr Tyr Gly Gln Val Gly Cys Leu Lys Val Leu Gln Arg Ala Tyr Pro
65 70 75 80

Gly Thr Ile Asp Gln Arg Thr Leu Gln Glu Glu Thr Ala Val Tyr Leu
85 90 95

Ala Thr Cys Arg Gly His Leu Asp Cys Leu Leu Ser Leu Leu Gln
100 105 110

<210> 5017
<211> 135
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 2; "

<220>
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<223> /note="ENSP ID: ENSP00000451694"

<400> 5017
Met Arg Pro Ala Asp Pro Leu Ile Lys Ala Ile Lys Asp Gly Asp Glu
1 5 10 15

Glu Ala Leu Lys Thr Met Ile Lys Glu Gly Lys Asn Leu Ala Glu Pro
20 25 30

```
Asn Lys Glu Gly Trp Leu Pro Leu His Glu Ala Ala Tyr Tyr Gly Gln
        35                  40                  45

Val Gly Cys Leu Lys Val Leu Gln Arg Ala Cys Glu Arg Lys Asn Ala
    50                  55                  60

Glu Ala Val Lys Ile Leu Val Gln His Asn Ala Asp Thr Asn His Arg
65                  70                  75                  80

Cys Asn Arg Gly Trp Thr Ala Leu His Glu Ser Val Ser Arg Asn Asp
                85                  90                  95

Leu Glu Val Met Gln Ile Leu Val Ser Gly Gly Ala Lys Val Glu Ser
            100                 105                 110

Lys Asn Ala Tyr Gly Ile Thr Pro Leu Phe Val Ala Ala Gln Ser Gly
        115                 120                 125

Gln Leu Glu Ala Leu Arg Phe
    130                 135
```

<210> 5018
<211> 635
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Uniprot ID: Q96Q27; "

<220>
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<400> 5018
Met Ala Thr Gln Ile Ser Thr Arg Gly Ser Gln Cys Thr Ile Gly Gln

```
1               5                   10                  15

Glu Glu Tyr Ser Leu Tyr Ser Ser Leu Ser Glu Asp Glu Leu Val Gln
            20                  25                  30

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

Ala Glu Ala Thr Ala Ser Ala Cys Thr Asn Arg Gln Pro Ala His Phe
    50                  55                  60

Tyr Pro Trp Thr Arg Ser Thr Ala Pro Pro Glu Ser Ser Pro Ala Arg
65                  70                  75                  80

Ala Pro Met Gly Leu Phe Gln Gly Val Met Gln Lys Tyr Ser Ser Ser
                85                  90                  95

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

Ile Lys Asp Gly Asp Glu Glu Ala Leu Lys Thr Met Ile Lys Glu Gly
        115                 120                 125

Lys Asn Leu Ala Glu Pro Asn Lys Glu Gly Trp Leu Pro Leu His Glu
    130                 135                 140

Ala Ala Tyr Tyr Gly Gln Val Gly Cys Leu Lys Val Leu Gln Arg Ala
145                 150                 155                 160

Tyr Pro Gly Thr Ile Asp Gln Arg Thr Leu Gln Glu Glu Thr Ala Val
                165                 170                 175

Tyr Leu Ala Thr Cys Arg Gly His Leu Asp Cys Leu Leu Ser Leu Leu
            180                 185                 190

Gln Ala Gly Ala Glu Pro Asp Ile Ser Asn Lys Ser Arg Glu Thr Pro
        195                 200                 205

Leu Tyr Lys Ala Cys Glu Arg Lys Asn Ala Glu Ala Val Lys Ile Leu
    210                 215                 220

Val Gln His Asn Ala Asp Thr Asn His Arg Cys Asn Arg Gly Trp Thr
225                 230                 235                 240
```

```
Ala Leu His Glu Ser Val Ser Arg Asn Asp Leu Glu Val Met Gln Ile
                245                 250                 255

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

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

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

Ala Ser Ala Leu Tyr Glu Ala Cys Lys Asn Glu His Glu Glu Val Val
305                 310                 315                 320

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

Gly Leu Leu Pro Leu His Ile Ala Ser Lys Lys Gly Asn Tyr Arg Ile
            340                 345                 350

Val Gln Met Leu Leu Pro Val Thr Ser Arg Thr Arg Ile Arg Arg Ser
        355                 360                 365

Gly Val Ser Pro Leu His Leu Ala Ala Glu Arg Asn His Asp Glu Val
    370                 375                 380

Leu Glu Ala Leu Leu Ser Ala Arg Phe Asp Val Asn Thr Pro Leu Ala
385                 390                 395                 400

Pro Glu Arg Ala Arg Leu Tyr Glu Asp Arg Arg Ser Ser Ala Leu Tyr
                405                 410                 415

Phe Ala Val Val Asn Asn Asn Val Tyr Ala Thr Glu Leu Leu Leu Gln
            420                 425                 430

His Gly Ala Asp Pro Asn Arg Asp Val Ile Ser Pro Leu Leu Val Ala
        435                 440                 445

Ile Arg His Gly Cys Leu Arg Thr Met Gln Leu Leu Leu Asp His Gly
    450                 455                 460
```

```
Ala Asn Ile Asp Ala Tyr Ile Ala Thr His Pro Thr Ala Phe Pro Ala
465                 470                 475                 480

Thr Ile Met Phe Ala Met Lys Cys Leu Ser Leu Leu Lys Phe Leu Met
                485                 490                 495

Asp Leu Gly Cys Asp Gly Glu Pro Cys Phe Ser Cys Leu Tyr Gly Asn
            500                 505                 510

Gly Pro His Pro Pro Ala Pro Gln Pro Ser Ser Arg Phe Asn Asp Ala
        515                 520                 525

Pro Ala Ala Asp Lys Glu Pro Ser Val Val Gln Phe Cys Glu Phe Val
    530                 535                 540

Ser Ala Pro Glu Val Ser Arg Trp Ala Gly Pro Ile Ile Asp Val Leu
545                 550                 555                 560

Leu Asp Tyr Val Gly Asn Val Gln Leu Cys Ser Arg Leu Lys Glu His
                565                 570                 575

Ile Asp Ser Phe Glu Asp Trp Ala Val Ile Lys Glu Lys Ala Glu Pro
            580                 585                 590

Pro Arg Pro Leu Ala His Leu Cys Arg Leu Arg Val Arg Lys Ala Ile
        595                 600                 605

Gly Lys Tyr Arg Ile Lys Leu Leu Asp Thr Leu Pro Leu Pro Gly Arg
    610                 615                 620

Leu Ile Arg Tyr Leu Lys Tyr Glu Asn Thr Gln
625                 630                 635


<210> 5019
<211> 111
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 2; "

<220>
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<223> /note="ENSP ID: ENSP00000486208"

<400> 5019
Met Gly Leu Phe Gln Gly Val Met Gln Lys Tyr Ser Ser Ser Leu Phe
1 5 10 15

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

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

Leu Ala Glu Pro Asn Lys Glu Gly Trp Leu Pro Leu His Glu Ala Ala
50 55 60

Tyr Tyr Gly Gln Val Gly Cys Leu Lys Val Leu Gln Arg Ala Tyr Pro
65 70 75 80

Gly Thr Ile Asp Gln Arg Thr Leu Gln Glu Glu Thr Ala Val Tyr Leu
85 90 95

Ala Thr Cys Arg Gly His Leu Asp Cys Leu Leu Ser Leu Leu Gln
100 105 110

<210> 5020
<211> 481
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1092; "

<220>
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<223> /note="Gene Symbol: ASB2; "

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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000486398"

<400> 5020
Met Arg Pro Ala Asp Pro Leu Ile Lys Ala Ile Lys Asp Gly Asp Glu
1 5 10 15

Glu Ala Leu Lys Thr Met Ile Lys Glu Gly Lys Asn Leu Ala Glu Pro
20 25 30

Asn Lys Glu Gly Trp Leu Pro Leu His Glu Ala Ala Tyr Tyr Gly Gln
35 40 45

Val Gly Cys Leu Lys Val Leu Gln Arg Ala Tyr Pro Gly Thr Ile Asp
50 55 60

Gln Arg Thr Leu Gln Glu Glu Thr Ala Val Tyr Leu Ala Thr Cys Arg
65 70 75 80

Gly His Leu Asp Cys Leu Leu Ser Leu Leu Gln Ala Gly Ala Glu Pro
85 90 95

Asp Ile Ser Asn Lys Ser Arg Glu Thr Pro Leu Tyr Lys Ala Cys Glu
100 105 110

Arg Lys Asn Ala Glu Ala Val Lys Ile Leu Val Gln His Asn Ala Asp
115 120 125

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

Ser Arg Asn Asp Leu Glu Val Met Gln Ile Leu Val Ser Gly Gly Ala
145 150 155 160

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

Ala Gln Ser Gly Gln Leu Glu Ala Leu Arg Phe Leu Ala Lys Tyr Gly
180 185 190

Ala Asp Ile Asn Thr Gln Ala Ser Asp Asn Ala Ser Ala Leu Tyr Glu
195 200 205

```
Ala Cys Lys Asn Glu His Glu Glu Val Val Glu Phe Leu Leu Ser Gln
    210                 215                 220

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

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

Val Thr Ser Arg Thr Arg Ile Arg Arg Ser Gly Val Ser Pro Leu His
            260                 265                 270

Leu Ala Ala Glu Arg Asn His Asp Glu Val Leu Glu Ala Leu Leu Ser
        275                 280                 285

Ala Arg Phe Asp Val Asn Thr Pro Leu Ala Pro Glu Arg Ala Arg Leu
    290                 295                 300

Tyr Glu Asp Arg Arg Ser Ser Ala Leu Tyr Phe Ala Val Val Asn Asn
305                 310                 315                 320

Asn Val Tyr Ala Thr Glu Leu Leu Leu Gln His Gly Ala Asp Pro Asn
                325                 330                 335

Arg Asp Val Ile Ser Pro Leu Leu Val Ala Ile Arg His Gly Cys Leu
            340                 345                 350

Arg Thr Met Gln Leu Leu Leu Asp His Gly Ala Asn Ile Asp Ala Tyr
        355                 360                 365

Ile Ala Thr His Pro Thr Ala Phe Pro Ala Thr Ile Met Phe Ala Met
    370                 375                 380

Lys Cys Leu Ser Leu Leu Lys Phe Leu Met Asp Leu Gly Cys Asp Gly
385                 390                 395                 400

Glu Pro Cys Phe Ser Cys Leu Tyr Gly Asn Gly Pro His Pro Pro Ala
                405                 410                 415

Pro Gln Pro Ser Ser Arg Phe Asn Asp Ala Pro Ala Ala Asp Lys Glu
            420                 425                 430

Pro Ser Val Val Gln Phe Cys Glu Phe Val Ser Ala Pro Glu Val Ser
```

435 440 445

Arg Trp Ala Gly Pro Ile Ile Asp Val Leu Leu Asp Tyr Val Gly Asn
450 455 460

Val Gln Leu Cys Ser Arg Leu Lys Glu His Ile Asp Ser Phe Glu Asp
465 470 475 480

Trp

<210> 5021
<211> 122
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="ENSP ID: ENSP00000487105"

<400> 5021
Met Ala Thr Gln Ile Ser Thr Arg Gly Ser Gln Cys Thr Ile Gly Gln
1 5 10 15

Glu Glu Tyr Ser Leu Tyr Ser Ser Leu Ser Glu Asp Glu Leu Val Gln
20 25 30

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

Ala Glu Ala Thr Ala Ser Ala Cys Thr Asn Arg Gln Pro Ala His Phe
50 55 60

Tyr Pro Trp Thr Arg Pro Ala Asp Pro Leu Ile Lys Ala Ile Lys Asp
65 70 75 80

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

Ala Glu Pro Asn Lys Glu Gly Trp Leu Pro Leu His Glu Ala Ala Tyr
100 105 110

Tyr Gly Gln Val Gly Cys Leu Lys Val Leu
115 120

<210> 5022
<211> 587
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Uniprot ID: Q96Q27; "

<220>
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<223> /note="ENSP ID: ENSP00000487399"

<400> 5022
Met Thr Arg Phe Ser Tyr Ala Glu Tyr Phe Ser Leu Phe His Ser Cys
1 5 10 15

Ser Ala Pro Ser Arg Ser Thr Ala Pro Pro Glu Ser Ser Pro Ala Arg
20 25 30

Ala Pro Met Gly Leu Phe Gln Gly Val Met Gln Lys Tyr Ser Ser Ser
35 40 45

Leu Phe Lys Thr Ser Gln Leu Ala Pro Ala Asp Pro Leu Ile Lys Ala
50 55 60

Ile Lys Asp Gly Asp Glu Glu Ala Leu Lys Thr Met Ile Lys Glu Gly

65 70 75 80

Lys Asn Leu Ala Glu Pro Asn Lys Glu Gly Trp Leu Pro Leu His Glu
85 90 95

Ala Ala Tyr Tyr Gly Gln Val Gly Cys Leu Lys Val Leu Gln Arg Ala
100 105 110

Tyr Pro Gly Thr Ile Asp Gln Arg Thr Leu Gln Glu Glu Thr Ala Val
115 120 125

Tyr Leu Ala Thr Cys Arg Gly His Leu Asp Cys Leu Leu Ser Leu Leu
130 135 140

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

Leu Tyr Lys Ala Cys Glu Arg Lys Asn Ala Glu Ala Val Lys Ile Leu
165 170 175

Val Gln His Asn Ala Asp Thr Asn His Arg Cys Asn Arg Gly Trp Thr
180 185 190

Ala Leu His Glu Ser Val Ser Arg Asn Asp Leu Glu Val Met Gln Ile
195 200 205

Leu Val Ser Gly Gly Ala Lys Val Glu Ser Lys Asn Ala Tyr Gly Ile
210 215 220

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

Phe Leu Ala Lys Tyr Gly Ala Asp Ile Asn Thr Gln Ala Ser Asp Asn
245 250 255

Ala Ser Ala Leu Tyr Glu Ala Cys Lys Asn Glu His Glu Glu Val Val
260 265 270

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

Gly Leu Leu Pro Leu His Ile Ala Ser Lys Lys Gly Asn Tyr Arg Ile
290 295 300

```
Val Gln Met Leu Leu Pro Val Thr Ser Arg Thr Arg Ile Arg Arg Ser
305                 310                 315                 320

Gly Val Ser Pro Leu His Leu Ala Ala Glu Arg Asn His Asp Glu Val
                325                 330                 335

Leu Glu Ala Leu Leu Ser Ala Arg Phe Asp Val Asn Thr Pro Leu Ala
            340                 345                 350

Pro Glu Arg Ala Arg Leu Tyr Glu Asp Arg Arg Ser Ser Ala Leu Tyr
        355                 360                 365

Phe Ala Val Val Asn Asn Asn Val Tyr Ala Thr Glu Leu Leu Leu Gln
    370                 375                 380

His Gly Ala Asp Pro Asn Arg Asp Val Ile Ser Pro Leu Leu Val Ala
385                 390                 395                 400

Ile Arg His Gly Cys Leu Arg Thr Met Gln Leu Leu Leu Asp His Gly
                405                 410                 415

Ala Asn Ile Asp Ala Tyr Ile Ala Thr His Pro Thr Ala Phe Pro Ala
            420                 425                 430

Thr Ile Met Phe Ala Met Lys Cys Leu Ser Leu Leu Lys Phe Leu Met
        435                 440                 445

Asp Leu Gly Cys Asp Gly Glu Pro Cys Phe Ser Cys Leu Tyr Gly Asn
    450                 455                 460

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

Pro Ala Ala Asp Lys Glu Pro Ser Val Val Gln Phe Cys Glu Phe Val
                485                 490                 495

Ser Ala Pro Glu Val Ser Arg Trp Ala Gly Pro Ile Ile Asp Val Leu
            500                 505                 510

Leu Asp Tyr Val Gly Asn Val Gln Leu Cys Ser Arg Leu Lys Glu His
        515                 520                 525
```

```
Ile Asp Ser Phe Glu Asp Trp Ala Val Ile Lys Glu Lys Ala Glu Pro
    530                 535                 540

Pro Arg Pro Leu Ala His Leu Cys Arg Leu Arg Val Arg Lys Ala Ile
545                 550                 555                 560

Gly Lys Tyr Arg Ile Lys Leu Leu Asp Thr Leu Pro Leu Pro Gly Arg
                565                 570                 575

Leu Ile Arg Tyr Leu Lys Tyr Glu Asn Thr Gln
            580                 585
```

<210> 5023
<211> 135
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ASB2; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 2; "

<220>
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<223> /note="ENSP ID: ENSP00000487497"

<400> 5023

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Met Arg Pro Ala Asp Pro Leu Ile Lys Ala Ile Lys Asp Gly Asp Glu
1               5                   10                  15

Glu Ala Leu Lys Thr Met Ile Lys Glu Gly Lys Asn Leu Ala Glu Pro
            20                  25                  30

Asn Lys Glu Gly Trp Leu Pro Leu His Glu Ala Ala Tyr Tyr Gly Gln
        35                  40                  45

Val Gly Cys Leu Lys Val Leu Gln Arg Ala Cys Glu Arg Lys Asn Ala
    50                  55                  60

Glu Ala Val Lys Ile Leu Val Gln His Asn Ala Asp Thr Asn His Arg
```

65 70 75 80

Cys Asn Arg Gly Trp Thr Ala Leu His Glu Ser Val Ser Arg Asn Asp
85 90 95

Leu Glu Val Met Gln Ile Leu Val Ser Gly Gly Ala Lys Val Glu Ser
100 105 110

Lys Asn Ala Tyr Gly Ile Thr Pro Leu Phe Val Ala Ala Gln Ser Gly
115 120 125

Gln Leu Glu Ala Leu Arg Phe
130 135

<210> 5024
<211> 518
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1093; "

<220>
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<223> /note="Gene Symbol: ASB3; "

<220>
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<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 3; "

<220>
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<220>
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<400> 5024
Met Asp Phe Thr Glu Ala Tyr Ala Asp Thr Cys Ser Thr Val Gly Leu
1 5 10 15

Ala Ala Arg Glu Gly Asn Val Lys Val Leu Arg Lys Leu Leu Lys Lys
20 25 30

Gly Arg Ser Val Asp Val Ala Asp Asn Arg Gly Trp Met Pro Ile His
35 40 45

```
Glu Ala Ala Tyr His Asn Ser Val Glu Cys Leu Gln Met Leu Ile Asn
    50                  55                  60

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

Cys Ala Leu His Leu Ala Ala Ser Gln Gly His Trp Lys Ile Val Gln
                85                  90                  95

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

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

Arg Leu Leu Leu Gln His Gly Ala Asn Val Asn Gly Ser His Ser Met
    130                 135                 140

Cys Gly Trp Asn Ser Leu His Gln Ala Ser Phe Gln Glu Asn Ala Glu
145                 150                 155                 160

Ile Ile Lys Leu Leu Leu Arg Lys Gly Ala Asn Lys Glu Cys Gln Asp
                165                 170                 175

Asp Phe Gly Ile Thr Pro Leu Phe Val Ala Ala Gln Tyr Gly Lys Leu
            180                 185                 190

Glu Ser Leu Ser Ile Leu Ile Ser Ser Gly Ala Asn Val Asn Cys Gln
        195                 200                 205

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

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

Tyr Cys Asn Glu Asp Ser Trp Gln Leu Pro Ile His Ala Ala Ala Gln
                245                 250                 255

Met Gly His Thr Lys Ile Leu Asp Leu Leu Ile Pro Leu Thr Asn Arg
            260                 265                 270
```

```
Ala Cys Asp Thr Gly Leu Asn Lys Val Ser Pro Val Tyr Ser Ala Val
        275                 280                 285

Phe Gly Gly His Glu Asp Cys Leu Glu Ile Leu Leu Arg Asn Gly Tyr
    290                 295                 300

Ser Pro Asp Ala Gln Ala Cys Leu Val Phe Gly Phe Ser Ser Pro Val
305                 310                 315                 320

Cys Met Ala Phe Gln Lys Asp Cys Glu Phe Phe Gly Ile Val Asn Ile
                325                 330                 335

Leu Leu Lys Tyr Gly Ala Gln Ile Asn Glu Leu His Leu Ala Tyr Cys
            340                 345                 350

Leu Lys Tyr Glu Lys Phe Ser Ile Phe Arg Tyr Phe Leu Arg Lys Gly
        355                 360                 365

Cys Ser Leu Gly Pro Trp Asn His Ile Tyr Glu Phe Val Asn His Ala
    370                 375                 380

Ile Lys Ala Gln Ala Lys Tyr Lys Glu Trp Leu Pro His Leu Leu Val
385                 390                 395                 400

Ala Gly Phe Asp Pro Leu Ile Leu Leu Cys Asn Ser Trp Ile Asp Ser
                405                 410                 415

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

Thr Leu Ala Pro Ala Val Glu Arg Met Leu Ser Ala Arg Ala Ser Asn
        435                 440                 445

Ala Trp Ile Leu Gln Gln His Ile Ala Thr Val Pro Ser Leu Thr His
    450                 455                 460

Leu Cys Arg Leu Glu Ile Arg Ser Ser Leu Lys Ser Glu Arg Leu Arg
465                 470                 475                 480

Ser Asp Ser Tyr Ile Ser Gln Leu Pro Leu Pro Arg Ser Leu His Asn
                485                 490                 495

Tyr Leu Leu Tyr Glu Asp Val Leu Arg Met Tyr Glu Val Pro Glu Leu
```

500 505 510

Ala Ala Ile Gln Asp Gly
515

<210> 5025
<211> 445
<212> PRT
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<220>
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<221> source
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ankyrin repeat and SOCS box containing 3; "

<220>
<221> source
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<400> 5025
Met Lys Thr Phe Glu Gly Phe Cys Ala Leu His Leu Ala Ala Ser Gln
1 5 10 15

Gly His Trp Lys Ile Val Gln Ile Leu Leu Glu Ala Gly Ala Asp Pro
20 25 30

Asn Ala Thr Thr Leu Glu Glu Thr Thr Pro Leu Phe Leu Ala Val Glu
35 40 45

Asn Gly Gln Ile Asp Val Leu Arg Leu Leu Leu Gln His Gly Ala Asn
50 55 60

Val Asn Gly Ser His Ser Met Cys Gly Trp Asn Ser Leu His Gln Ala
65 70 75 80

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

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

```
Ala Ala Gln Tyr Gly Lys Leu Glu Ser Leu Ser Ile Leu Ile Ser Ser
        115                 120                 125

Gly Ala Asn Val Asn Cys Gln Ala Leu Asp Lys Ala Thr Pro Leu Phe
    130                 135                 140

Ile Ala Ala Gln Glu Gly His Thr Lys Cys Val Glu Leu Leu Leu Ser
145                 150                 155                 160

Ser Gly Ala Asp Pro Asp Leu Tyr Cys Asn Glu Asp Ser Trp Gln Leu
                165                 170                 175

Pro Ile His Ala Ala Ala Gln Met Gly His Thr Lys Ile Leu Asp Leu
            180                 185                 190

Leu Ile Pro Leu Thr Asn Arg Ala Cys Asp Thr Gly Leu Asn Lys Val
        195                 200                 205

Ser Pro Val Tyr Ser Ala Val Phe Gly Gly His Glu Asp Cys Leu Glu
    210                 215                 220

Ile Leu Leu Arg Asn Gly Tyr Ser Pro Asp Ala Gln Ala Cys Leu Val
225                 230                 235                 240

Phe Gly Phe Ser Ser Pro Val Cys Met Ala Phe Gln Lys Asp Cys Glu
                245                 250                 255

Phe Phe Gly Ile Val Asn Ile Leu Leu Lys Tyr Gly Ala Gln Ile Asn
            260                 265                 270

Glu Leu His Leu Ala Tyr Cys Leu Lys Tyr Glu Lys Phe Ser Ile Phe
        275                 280                 285

Arg Tyr Phe Leu Arg Lys Gly Cys Ser Leu Gly Pro Trp Asn His Ile
    290                 295                 300

Tyr Glu Phe Val Asn His Ala Ile Lys Ala Gln Ala Lys Tyr Lys Glu
305                 310                 315                 320

Trp Leu Pro His Leu Leu Val Ala Gly Phe Asp Pro Leu Ile Leu Leu
                325                 330                 335
```

```
Cys Asn Ser Trp Ile Asp Ser Val Ser Ile Asp Thr Leu Ile Phe Thr
            340                 345                 350

Leu Glu Phe Thr Asn Trp Lys Thr Leu Ala Pro Ala Val Glu Arg Met
        355                 360                 365

Leu Ser Ala Arg Ala Ser Asn Ala Trp Ile Leu Gln Gln His Ile Ala
    370                 375                 380

Thr Val Pro Ser Leu Thr His Leu Cys Arg Leu Glu Ile Arg Ser Ser
385                 390                 395                 400

Leu Lys Ser Glu Arg Leu Arg Ser Asp Ser Tyr Ile Ser Gln Leu Pro
                405                 410                 415

Leu Pro Arg Ser Leu His Asn Tyr Leu Leu Tyr Glu Asp Val Leu Arg
            420                 425                 430

Met Tyr Glu Val Pro Glu Leu Ala Ala Ile Gln Asp Gly
        435                 440                 445


<210> 5026
<211> 445
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1093; "

<220>
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<223> /note="Gene Symbol: ASB3; "

<220>
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<223> /note="Gene Name:
      ankyrin repeat and SOCS box containing 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000384728"

<400> 5026
Met Lys Thr Phe Glu Gly Phe Cys Ala Leu His Leu Ala Ala Ser Gln
1               5                   10                  15

Gly His Trp Lys Ile Val Gln Ile Leu Leu Glu Ala Gly Ala Asp Pro
            20                  25                  30
```

```
Asn Ala Thr Thr Leu Glu Glu Thr Thr Pro Leu Phe Leu Ala Val Glu
        35                  40                  45

Asn Gly Gln Ile Asp Val Leu Arg Leu Leu Leu Gln His Gly Ala Asn
    50                  55                  60

Val Asn Gly Ser His Ser Met Cys Gly Trp Asn Ser Leu His Gln Ala
65                  70                  75                  80

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

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

Ala Ala Gln Tyr Gly Lys Leu Glu Ser Leu Ser Ile Leu Ile Ser Ser
        115                 120                 125

Gly Ala Asn Val Asn Cys Gln Ala Leu Asp Lys Ala Thr Pro Leu Phe
    130                 135                 140

Ile Ala Ala Gln Glu Gly His Thr Lys Cys Val Glu Leu Leu Leu Ser
145                 150                 155                 160

Ser Gly Ala Asp Pro Asp Leu Tyr Cys Asn Glu Asp Ser Trp Gln Leu
                165                 170                 175

Pro Ile His Ala Ala Ala Gln Met Gly His Thr Lys Ile Leu Asp Leu
            180                 185                 190

Leu Ile Pro Leu Thr Asn Arg Ala Cys Asp Thr Gly Leu Asn Lys Val
        195                 200                 205

Ser Pro Val Tyr Ser Ala Val Phe Gly Gly His Glu Asp Cys Leu Glu
    210                 215                 220

Ile Leu Leu Arg Asn Gly Tyr Ser Pro Asp Ala Gln Ala Cys Leu Val
225                 230                 235                 240

Phe Gly Phe Ser Ser Pro Val Cys Met Ala Phe Gln Lys Asp Cys Glu
                245                 250                 255
```

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

Glu Leu His Leu Ala Tyr Cys Leu Lys Tyr Glu Lys Phe Ser Ile Phe
        275                 280                 285

Arg Tyr Phe Leu Arg Lys Gly Cys Ser Leu Gly Pro Trp Asn His Ile
    290                 295                 300

Tyr Glu Phe Val Asn His Ala Ile Lys Ala Gln Ala Lys Tyr Lys Glu
305                 310                 315                 320

Trp Leu Pro His Leu Leu Val Ala Gly Phe Asp Pro Leu Ile Leu Leu
                325                 330                 335

Cys Asn Ser Trp Ile Asp Ser Val Ser Ile Asp Thr Leu Ile Phe Thr
            340                 345                 350

Leu Glu Phe Thr Asn Trp Lys Thr Leu Ala Pro Ala Val Glu Arg Met
        355                 360                 365

Leu Ser Ala Arg Ala Ser Asn Ala Trp Ile Leu Gln Gln His Ile Ala
    370                 375                 380

Thr Val Pro Ser Leu Thr His Leu Cys Arg Leu Glu Ile Arg Ser Ser
385                 390                 395                 400

Leu Lys Ser Glu Arg Leu Arg Ser Asp Ser Tyr Ile Ser Gln Leu Pro
                405                 410                 415

Leu Pro Arg Ser Leu His Asn Tyr Leu Leu Tyr Glu Asp Val Leu Arg
            420                 425                 430

Met Tyr Glu Val Pro Glu Leu Ala Ala Ile Gln Asp Gly
        435                 440                 445


<210> 5027
<211> 477
<212> PRT
<213> Homo sapiens

<220>
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<220>
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ankyrin repeat and SOCS box containing 3; "

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<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5027
Xaa Asp Thr Cys Ser Thr Val Gly Leu Ala Ala Arg Glu Gly Asn Val
1 5 10 15

Lys Val Leu Arg Lys Leu Leu Lys Lys Gly Arg Ser Val Asp Val Ala
20 25 30

Asp Asn Arg Gly Trp Met Pro Ile His Glu Ala Ala Tyr His Asn Ser
35 40 45

Val Glu Cys Leu Gln Met Leu Ile Asn Ala Asp Ser Ser Glu Asn Tyr
50 55 60

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

Ser Gln Gly His Trp Lys Ile Val Gln Ile Leu Leu Glu Ala Gly Ala
85 90 95

Asp Pro Asn Ala Thr Thr Leu Glu Glu Thr Thr Pro Leu Phe Leu Ala
100 105 110

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

Ala Asn Val Asn Gly Ser His Ser Met Cys Gly Trp Asn Ser Leu His
130 135 140

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

Lys Gly Ala Asn Lys Glu Cys Gln Asp Asp Phe Gly Ile Thr Pro Leu
                165                 170                 175

Phe Val Ala Ala Gln Tyr Gly Lys Leu Glu Ser Leu Ser Ile Leu Ile
            180                 185                 190

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

Leu Phe Ile Ala Ala Gln Glu Gly His Thr Lys Cys Val Glu Leu Leu
    210                 215                 220

Leu Ser Ser Gly Ala Asp Pro Asp Leu Tyr Cys Asn Glu Asp Ser Trp
225                 230                 235                 240

Gln Leu Pro Ile His Ala Ala Ala Gln Met Gly His Thr Lys Ile Leu
                245                 250                 255

Asp Leu Leu Ile Pro Leu Thr Asn Arg Ala Cys Asp Thr Gly Leu Asn
            260                 265                 270

Lys Val Ser Pro Val Tyr Ser Ala Val Phe Gly Gly His Glu Asp Cys
        275                 280                 285

Leu Glu Ile Leu Leu Arg Asn Gly Tyr Ser Pro Asp Ala Gln Ala Cys
    290                 295                 300

Leu Val Phe Gly Phe Ser Ser Pro Val Cys Met Ala Phe Gln Lys Asp
305                 310                 315                 320

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

Ile Asn Glu Leu His Leu Ala Tyr Cys Leu Lys Tyr Glu Lys Phe Ser
            340                 345                 350

Ile Phe Arg Tyr Phe Leu Arg Lys Gly Cys Ser Leu Gly Pro Trp Asn
        355                 360                 365

His Ile Tyr Glu Phe Val Asn His Ala Ile Lys Ala Gln Ala Lys Tyr
```

```
    370                 375                 380

Lys Glu Trp Leu Pro His Leu Leu Val Ala Gly Phe Asp Pro Leu Ile
385                 390                 395                 400

Leu Leu Cys Asn Ser Trp Ile Asp Ser Val Ser Ile Asp Thr Leu Ile
                405                 410                 415

Phe Thr Leu Glu Phe Thr Asn Trp Lys Thr Leu Ala Pro Ala Val Glu
            420                 425                 430

Arg Met Leu Ser Ala Arg Ala Ser Asn Ala Trp Ile Leu Gln Gln His
        435                 440                 445

Ile Glu Gln Gly Phe Ile Leu Gln Lys Tyr Leu Gly Pro Ser Asn Ser
    450                 455                 460

Gln Val Asp Phe Leu Leu Arg Gly Glu Leu Pro Ile Gly
465                 470                 475


<210> 5028
<211> 426
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ASB4; "

<220>
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<220>
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<223> /note="Uniprot ID:  Q9Y574; "

<220>
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<223> /note="ENSP ID: ENSP00000321388"

<400> 5028
Met Asp Gly Thr Thr Ala Pro Val Thr Lys Ser Gly Ala Ala Lys Leu
1               5                   10                  15
```

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

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

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

Trp Leu Pro Ser Tyr Lys Leu Lys Ser Ser Trp Ala Thr Gly Leu His
65                  70                  75                  80

Leu Ser Val Leu Phe Gly His Val Glu Cys Leu Leu Val Leu Leu Asp
                85                  90                  95

His Asn Ala Thr Ile Asn Cys Arg Pro Asn Gly Lys Thr Pro Leu His
            100                 105                 110

Val Ala Cys Glu Met Ala Asn Val Asp Cys Val Lys Ile Leu Cys Asp
        115                 120                 125

Arg Gly Ala Lys Leu Asn Cys Tyr Ser Leu Ser Gly His Thr Ala Leu
    130                 135                 140

His Phe Cys Thr Thr Pro Ser Ser Ile Leu Cys Ala Lys Gln Leu Val
145                 150                 155                 160

Trp Arg Gly Ala Asn Val Asn Met Lys Thr Asn Asn Gln Asp Glu Glu
                165                 170                 175

Thr Pro Leu His Thr Ala Ala His Phe Gly Leu Ser Glu Leu Val Ala
            180                 185                 190

Phe Tyr Val Glu His Gly Ala Ile Val Asp Ser Val Asn Ala His Met
        195                 200                 205

Glu Thr Pro Leu Ala Ile Ala Ala Tyr Trp Ala Leu Arg Phe Lys Glu
    210                 215                 220

Gln Glu Tyr Ser Thr Glu His His Leu Val Cys Arg Met Leu Leu Asp
225                 230                 235                 240
```

```
Tyr Lys Ala Glu Val Asn Ala Arg Asp Asp Asp Phe Lys Ser Pro Leu
                245                 250                 255

His Lys Ala Ala Trp Asn Cys Asp His Val Leu Met His Met Met Leu
            260                 265                 270

Glu Ala Gly Ala Glu Ala Asn Leu Met Asp Ile Asn Gly Cys Ala Ala
        275                 280                 285

Ile Gln Tyr Val Leu Lys Val Thr Ser Val Arg Pro Ala Ala Gln Pro
    290                 295                 300

Glu Ile Cys Tyr Gln Leu Leu Leu Asn His Gly Ala Ala Arg Ile Tyr
305                 310                 315                 320

Pro Pro Gln Phe His Lys Val Ile Gln Ala Cys His Ser Cys Pro Lys
                325                 330                 335

Ala Ile Glu Val Val Val Asn Ala Tyr Glu His Ile Arg Trp Asn Thr
            340                 345                 350

Lys Trp Arg Arg Ala Ile Pro Asp Asp Asp Leu Glu Lys Tyr Trp Asp
        355                 360                 365

Phe Tyr His Ser Leu Phe Thr Val Cys Cys Asn Ser Pro Arg Thr Leu
    370                 375                 380

Met His Leu Ser Arg Cys Ala Ile Arg Arg Thr Leu His Asn Arg Cys
385                 390                 395                 400

His Arg Ala Ile Pro Leu Leu Ser Leu Pro Leu Ser Leu Lys Lys Tyr
                405                 410                 415

Leu Leu Leu Glu Pro Glu Gly Ile Ile Tyr
            420                 425


<210> 5029
<211> 349
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1094; "
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<220>
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<223> /note="Gene Symbol: ASB4; "

<220>
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<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 4; "

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<223> /note="Uniprot ID: Q9Y574; "

<220>
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<400> 5029
Met Asp Gly Thr Thr Ala Pro Val Thr Lys Ser Gly Ala Ala Lys Leu
1 5 10 15

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

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

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

Trp Leu Pro Ser Tyr Lys Leu Lys Ser Ser Trp Ala Thr Gly Leu His
65 70 75 80

Leu Ser Val Leu Phe Gly His Val Glu Cys Leu Leu Val Leu Leu Asp
85 90 95

His Asn Ala Thr Ile Asn Cys Arg Pro Asn Gly Lys Thr Pro Leu His
100 105 110

Val Ala Cys Glu Met Ala Asn Val Asp Cys Val Lys Ile Leu Cys Asp
115 120 125

Arg Gly Ala Lys Leu Asn Cys Tyr Ser Leu Ser Gly His Thr Ala Leu
130 135 140

His Phe Cys Thr Thr Pro Ser Ser Ile Leu Cys Ala Lys Gln Leu Val
145 150 155 160

```
Trp Arg Gly Ala Asn Val Asn Met Lys Thr Asn Asn Gln Asp Glu Glu
                165                 170                 175

Thr Pro Leu His Thr Ala Ala His Phe Gly Leu Ser Glu Leu Val Ala
            180                 185                 190

Phe Tyr Val Glu His Gly Ala Ile Val Asp Ser Val Asn Ala His Met
        195                 200                 205

Glu Thr Pro Leu Ala Ile Ala Ala Tyr Trp Ala Leu Arg Phe Lys Glu
    210                 215                 220

Gln Glu Tyr Ser Thr Glu His His Leu Val Cys Arg Met Leu Leu Asp
225                 230                 235                 240

Tyr Lys Ala Glu Val Asn Ala Arg Asp Asp Asp Phe Lys Ser Pro Leu
                245                 250                 255

His Lys Ala Ala Trp Asn Cys Asp His Val Leu Met His Met Met Leu
            260                 265                 270

Glu Ala Gly Ala Glu Ala Asn Leu Met Asp Ile Asn Gly Cys Ala Ala
        275                 280                 285

Ile Gln Tyr Val Leu Lys Val Thr Ser Val Arg Pro Ala Ala Gln Pro
    290                 295                 300

Glu Ile Cys Tyr Gln Leu Leu Leu Asn His Gly Ala Ala Arg Ile Tyr
305                 310                 315                 320

Pro Pro Gln Phe His Lys Val Arg Leu Cys Pro Val Val Ser Arg Leu
                325                 330                 335

Arg Lys Ile Gln Met Ala Ala Leu Ser Glu Ile Ser Lys
            340                 345


<210> 5030
<211> 329
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1095; "
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<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID: Q8WWX0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000296525"

<400> 5030
Met Ser Val Leu Glu Glu Asn Arg Pro Phe Ala Gln Gln Leu Ser Asn
1   5   10   15

Val Tyr Phe Thr Ile Leu Ser Leu Phe Cys Phe Lys Leu Phe Val Lys
            20   25   30

Ile Ser Leu Ala Ile Leu Ser His Phe Tyr Ile Val Lys Gly Asn Arg
        35   40   45

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

Gln Gly Ser Trp Ala Asp Arg Ser Pro Leu His Glu Ala Ala Ser Gln
65   70   75   80

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

Asn Ala Val Thr Leu Asp His Val Thr Pro Leu His Glu Ala Cys Leu
            100   105   110

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

Val Asn Ala Ile Thr Ile Asp Gly Val Thr Pro Leu Phe Asn Ala Cys
    130   135   140

Ser Gln Gly Ser Pro Ser Cys Ala Glu Leu Leu Leu Glu Tyr Gly Ala
145   150   155   160

```
Lys Ala Gln Leu Glu Ser Cys Leu Pro Ser Pro Thr His Glu Ala Ala
                165                 170                 175

Ser Lys Gly His His Glu Cys Leu Asp Ile Leu Ile Ser Trp Gly Ile
            180                 185                 190

Asp Val Asp Gln Glu Ile Pro His Leu Gly Thr Pro Leu Tyr Val Ala
        195                 200                 205

Cys Met Ser Gln Gln Phe His Cys Ile Trp Lys Leu Leu Tyr Ala Gly
    210                 215                 220

Ala Asp Val Gln Lys Gly Lys Tyr Trp Asp Thr Pro Leu His Ala Ala
225                 230                 235                 240

Ala Gln Gln Ser Ser Thr Glu Ile Val Asn Leu Leu Leu Glu Phe Gly
                245                 250                 255

Ala Asp Ile Asn Ala Lys Asn Thr Glu Leu Leu Arg Pro Ile Asp Val
            260                 265                 270

Ala Thr Ser Ser Ser Met Val Glu Arg Ile Leu Leu Gln His Glu Ala
        275                 280                 285

Thr Pro Ser Ser Leu Tyr Gln Leu Cys Arg Leu Cys Ile Arg Ser Tyr
    290                 295                 300

Ile Gly Lys Pro Arg Leu His Leu Ile Pro Gln Leu Gln Leu Pro Thr
305                 310                 315                 320

Leu Leu Lys Asn Phe Leu Gln Tyr Arg
                325
```

<210> 5031
<211> 276
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1095; "

<220>
<221> source

<223> /note="Gene Symbol: ASB5; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 5; "

<220>
<221> source
<223> /note="Uniprot ID: Q8WWX0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000422877"

<400> 5031
Met Pro Leu Cys Asn Gly Gly Asn Leu Ala Val Thr Gly Ser Trp Ala
1 5 10 15

Asp Arg Ser Pro Leu His Glu Ala Ala Ser Gln Gly Arg Leu Leu Ala
            20 25 30

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

Asp His Val Thr Pro Leu His Glu Ala Cys Leu Gly Asp His Val Ala
    50 55 60

Cys Ala Arg Thr Leu Leu Glu Ala Gly Ala Asn Val Asn Ala Ile Thr
65 70 75 80

Ile Asp Gly Val Thr Pro Leu Phe Asn Ala Cys Ser Gln Gly Ser Pro
                85 90 95

Ser Cys Ala Glu Leu Leu Leu Glu Tyr Gly Ala Lys Ala Gln Leu Glu
            100 105 110

Ser Cys Leu Pro Ser Pro Thr His Glu Ala Ala Ser Lys Gly His His
        115 120 125

Glu Cys Leu Asp Ile Leu Ile Ser Trp Gly Ile Asp Val Asp Gln Glu
    130 135 140

Ile Pro His Leu Gly Thr Pro Leu Tyr Val Ala Cys Met Ser Gln Gln
145 150 155 160

Phe His Cys Ile Trp Lys Leu Leu Tyr Ala Gly Ala Asp Val Gln Lys

```
                165                 170                 175

Gly Lys Tyr Trp Asp Thr Pro Leu His Ala Ala Ala Gln Gln Ser Ser
            180                 185                 190

Thr Glu Ile Val Asn Leu Leu Leu Glu Phe Gly Ala Asp Ile Asn Ala
        195                 200                 205

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

Met Val Glu Arg Ile Leu Leu Gln His Glu Ala Thr Pro Ser Ser Leu
225                 230                 235                 240

Tyr Gln Leu Cys Arg Leu Cys Ile Arg Ser Tyr Ile Gly Lys Pro Arg
                245                 250                 255

Leu His Leu Ile Pro Gln Leu Gln Leu Pro Thr Leu Leu Lys Asn Phe
            260                 265                 270

Leu Gln Tyr Arg
        275


<210> 5032
<211> 20
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1095; "

<220>
<221> source
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<220>
<221> source
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<220>
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<223> /note="ENSP ID: ENSP00000423232"

<400> 5032
Met Ser Val Leu Glu Glu Asn Arg Pro Phe Ala Gln Gln Leu Ser Asn
1               5                   10                  15
```

Val Tyr Phe Thr
20

<210> 5033
<211> 421
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1096; "

<220>
<221> source
<223> /note="Gene Symbol: ASB6; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 6; "

<220>
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<223> /note="Uniprot ID: Q9NWX5; "

<220>
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<223> /note="ENSP ID: ENSP00000277458"

<400> 5033
Met Pro Phe Leu His Gly Phe Arg Arg Ile Ile Phe Glu Tyr Gln Pro
1 5 10 15

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

Gln Glu Ser Leu Asp Arg Pro Ser Tyr Val Ala Ser Glu Glu Ser Arg
35 40 45

Ile Leu Val Leu Thr Glu Leu Leu Glu Arg Lys Ala His Ser Pro Phe
50 55 60

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

Leu Thr Arg Ala Ala Asp Val Leu Leu Arg His Gly Ala Asn Leu Asn
85 90 95

Phe Glu Asp Pro Val Thr Tyr Tyr Thr Ala Leu His Ile Ala Val Leu

```
            100                 105                 110

Arg Asn Gln Pro Asp Met Val Glu Leu Leu Val His His Gly Ala Asp
        115                 120                 125

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

Ser Glu Glu Pro Glu Arg Leu Pro Cys Leu Gln Arg Leu Leu Asp Leu
145                 150                 155                 160

Gly Ala Asp Val Asn Ala Ala Asp Lys His Gly Lys Thr Ala Leu Leu
                165                 170                 175

His Ala Leu Ala Ser Ser Asp Gly Val Gln Ile His Asn Thr Glu Asn
            180                 185                 190

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

Asp Gly Asp Thr Val Phe Thr Cys Ile Ile Phe Leu Leu Gly Glu Thr
    210                 215                 220

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

Gln Val Thr Arg Leu Leu Leu Ala His Gly Ala Asp Pro Ser Glu Cys
                245                 250                 255

Pro Ala His Glu Ser Leu Thr His Ile Cys Leu Lys Ser Phe Lys Leu
            260                 265                 270

His Phe Pro Leu Leu Arg Phe Leu Leu Glu Ser Gly Ala Ala Tyr Asn
        275                 280                 285

Cys Ser Leu His Gly Ala Ser Cys Trp Ser Gly Phe His Ile Ile Phe
    290                 295                 300

Glu Arg Leu Cys Ser His Pro Gly Cys Thr Glu Asp Glu Ser His Ala
305                 310                 315                 320

Asp Leu Leu Arg Lys Ala Glu Thr Val Leu Asp Leu Met Val Thr Asn
                325                 330                 335
```

```
Ser Gln Lys Leu Gln Leu Pro Glu Asn Phe Asp Ile His Pro Val Gly
            340                 345                 350

Ser Leu Ala Glu Lys Ile Gln Ala Leu His Phe Ser Leu Arg Gln Leu
        355                 360                 365

Glu Ser Tyr Pro Pro Pro Leu Lys His Leu Cys Arg Val Ala Ile Arg
    370                 375                 380

Leu Tyr Leu Gln Pro Trp Pro Val Asp Val Lys Val Lys Ala Leu Pro
385                 390                 395                 400

Leu Pro Asp Arg Leu Lys Trp Tyr Leu Leu Ser Glu His Ser Gly Ser
                405                 410                 415

Val Glu Asp Asp Ile
            420


<210> 5034
<211> 197
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1096; "

<220>
<221> source
<223> /note="Gene Symbol: ASB6; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat and SOCS box containing 6; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9NWX5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000277459"

<400> 5034
Met Pro Phe Leu His Gly Phe Arg Arg Ile Ile Phe Glu Tyr Gln Pro
1               5                   10                  15
```

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

Gln Glu Ser Leu Asp Arg Pro Ser Tyr Val Ala Ser Glu Glu Ser Arg
        35                  40                  45

Ile Leu Val Leu Thr Glu Leu Leu Glu Arg Lys Ala His Ser Pro Phe
    50                  55                  60

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

Leu Thr Arg Ala Ala Asp Val Leu Leu Arg His Gly Ala Asn Leu Asn
                85                  90                  95

Phe Glu Asp Pro Val Thr Tyr Tyr Thr Ala Leu His Ile Ala Val Leu
            100                 105                 110

Arg Asn Gln Pro Asp Met Val Glu Leu Leu Val His His Gly Ala Asp
        115                 120                 125

Val Asn Arg Arg Asp Arg Glu Lys Leu Leu Cys Ser Met Leu Trp Pro
    130                 135                 140

Ala Ala Thr Gly Cys Arg Ser Thr Ile Leu Arg Thr Phe Val Ser Tyr
145                 150                 155                 160

Trp Lys Glu Gly Gln Thr Ser Arg Pro Pro Pro Lys Met Gly Thr Gln
                165                 170                 175

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

Lys Arg Arg Pro Arg
        195


<210> 5035
<211> 392
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1096; "
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<220>
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<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000416172"

<400> 5035

```
Met Pro Phe Leu His Gly Phe Arg Arg Ile Ile Phe Glu Tyr Gln Pro
1               5                  10                  15

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

Gln Glu Ser Leu Asp Arg Pro Ser Tyr Val Ala Ser Glu Glu Ser Arg
        35                  40                  45

Ile Leu Val Leu Thr Glu Leu Leu Glu Arg Lys Ala His Ser Pro Phe
    50                  55                  60

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

Leu Thr Arg Ala Ala Asp Val Leu Leu Arg His Gly Ala Asn Leu Asn
                85                  90                  95

Phe Glu Asp Pro Val Thr Tyr Tyr Thr Ala Leu His Ile Ala Val Leu
            100                 105                 110

Arg Asn Gln Pro Asp Met Val Glu Leu Leu Val His His Gly Ala Asp
        115                 120                 125

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

Ser Glu Glu Pro Glu Arg Leu Pro Cys Leu Gln Arg Leu Leu Asp Leu
145                 150                 155                 160

Gly Ala Asp Val Asn Ala Ala Asp Lys His Gly Ala Asp Val Lys Ala
                165                 170                 175
```

```
Thr Thr Lys Asp Gly Asp Thr Val Phe Thr Cys Ile Ile Phe Leu Leu
            180                 185                 190

Gly Glu Thr Val Gly Gly Asp Lys Glu Glu Ala Gln Met Ile Asn Arg
        195                 200                 205

Phe Cys Phe Gln Val Thr Arg Leu Leu Leu Ala His Gly Ala Asp Pro
    210                 215                 220

Ser Glu Cys Pro Ala His Glu Ser Leu Thr His Ile Cys Leu Lys Ser
225                 230                 235                 240

Phe Lys Leu His Phe Pro Leu Leu Arg Phe Leu Leu Glu Ser Gly Ala
                245                 250                 255

Ala Tyr Asn Cys Ser Leu His Gly Ala Ser Cys Trp Ser Gly Phe His
            260                 265                 270

Ile Ile Phe Glu Arg Leu Cys Ser His Pro Gly Cys Thr Glu Asp Glu
        275                 280                 285

Ser His Ala Asp Leu Leu Arg Lys Ala Glu Thr Val Leu Asp Leu Met
    290                 295                 300

Val Thr Asn Ser Gln Lys Leu Gln Leu Pro Glu Asn Phe Asp Ile His
305                 310                 315                 320

Pro Val Gly Ser Leu Ala Glu Lys Ile Gln Ala Leu His Phe Ser Leu
                325                 330                 335

Arg Gln Leu Glu Ser Tyr Pro Pro Pro Leu Lys His Leu Cys Arg Val
            340                 345                 350

Ala Ile Arg Leu Tyr Leu Gln Pro Trp Pro Val Asp Val Lys Val Lys
        355                 360                 365

Ala Leu Pro Leu Pro Asp Arg Leu Lys Trp Tyr Leu Leu Ser Glu His
    370                 375                 380

Ser Gly Ser Val Glu Asp Asp Ile
385                 390
```

<210> 5036
<211> 318
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1097; "

<220>
<221> source
<223> /note="Gene Symbol: ASB7; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 7; "

<220>
<221> source
<223> /note="Uniprot ID: Q9H672; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000328327"

<400> 5036
Met Leu His His His Cys Arg Arg Asn Pro Glu Leu Gln Glu Glu Leu
1   5   10   15

Gln Ile Gln Ala Ala Val Ala Ala Gly Asp Val His Thr Val Arg Lys
            20   25   30

Met Leu Glu Gln Gly Tyr Ser Pro Asn Gly Arg Asp Ala Asn Gly Trp
        35   40   45

Thr Leu Leu His Phe Ser Ala Ala Arg Gly Lys Glu Arg Cys Val Arg
    50   55   60

Val Phe Leu Glu His Gly Ala Asp Pro Thr Val Lys Asp Leu Ile Gly
65   70   75   80

Gly Phe Thr Ala Leu His Tyr Ala Ala Met His Gly Arg Ala Arg Ile
                85   90   95

Ala Arg Leu Met Leu Glu Ser Glu Tyr Arg Ser Asp Ile Ile Asn Ala
            100   105   110

Lys Ser Asn Asp Gly Trp Thr Pro Leu His Val Ala Ala His Tyr Gly
        115   120   125

```
Arg Asp Ser Phe Val Arg Leu Leu Leu Glu Phe Lys Ala Glu Val Asp
    130                 135                 140

Pro Leu Ser Asp Lys Gly Thr Thr Pro Leu Gln Leu Ala Ile Ile Arg
145                 150                 155                 160

Glu Arg Ser Ser Cys Val Lys Ile Leu Leu Asp His Asn Ala Asn Ile
                165                 170                 175

Asp Ile Gln Asn Gly Phe Leu Leu Arg Tyr Ala Val Ile Lys Ser Asn
            180                 185                 190

His Ser Tyr Cys Arg Met Phe Leu Gln Arg Gly Ala Asp Thr Asn Leu
        195                 200                 205

Gly Arg Leu Glu Asp Gly Gln Thr Pro Leu His Leu Ser Ala Leu Arg
    210                 215                 220

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

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

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

Arg Gln Pro Arg Asn Leu Gln Asp Leu Cys Arg Ile Lys Ile Arg Gln
        275                 280                 285

Cys Ile Gly Leu Gln Asn Leu Lys Leu Leu Asp Glu Leu Pro Ile Ala
    290                 295                 300

Lys Val Met Lys Asp Tyr Leu Lys His Lys Phe Asp Asp Ile
305                 310                 315
```

<210> 5037
<211> 274
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1097; "

<220>
<221> source
<223> /note="Gene Symbol: ASB7; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 7; "

<220>
<221> source
<223> /note="Uniprot ID: Q9H672; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000339819"

<400> 5037

```
Met Leu His His His Cys Arg Arg Asn Pro Glu Leu Gln Glu Glu Leu
1               5                  10                  15

Gln Ile Gln Ala Ala Val Ala Ala Gly Asp Val His Thr Val Arg Lys
            20                  25                  30

Met Leu Glu Gln Gly Tyr Ser Pro Asn Gly Arg Asp Ala Asn Gly Trp
        35                  40                  45

Thr Leu Leu His Phe Ser Ala Ala Arg Gly Lys Glu Arg Cys Val Arg
    50                  55                  60

Val Phe Leu Glu His Gly Ala Asp Pro Thr Val Lys Asp Leu Ile Gly
65                  70                  75                  80

Gly Phe Thr Ala Leu His Tyr Ala Ala Met His Gly Arg Ala Arg Ile
                85                  90                  95

Ala Arg Leu Met Leu Glu Ser Glu Tyr Arg Ser Asp Ile Ile Asn Ala
            100                 105                 110

Lys Ser Asn Asp Gly Trp Thr Pro Leu His Val Ala Ala His Tyr Gly
        115                 120                 125

Arg Asp Ser Phe Val Arg Leu Leu Leu Glu Phe Lys Ala Glu Val Asp
    130                 135                 140

Pro Leu Ser Asp Lys Gly Thr Thr Pro Leu Gln Leu Ala Ile Ile Arg
```

```
145                 150                 155                 160

Glu Arg Ser Ser Cys Val Lys Ile Leu Leu Asp His Asn Ala Asn Ile
                165                 170                 175

Asp Ile Gln Asn Gly Phe Leu Leu Arg Tyr Ala Val Ile Lys Ser Asn
            180                 185                 190

His Ser Tyr Cys Arg Met Phe Leu Gln Arg Gly Ala Asp Thr Asn Leu
        195                 200                 205

Gly Arg Leu Glu Asp Gly Gln Thr Pro Leu His Leu Ser Ala Leu Arg
    210                 215                 220

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

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

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

Ser Met
```

<210> 5038
<211> 116
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1097; "

<220>
<221> source
<223> /note="Gene Symbol: ASB7; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453626"

<400> 5038
Met Leu His His His Cys Arg Arg Asn Pro Glu Leu Gln Glu Glu Leu
1   5   10   15

Gln Ile Gln Ala Ala Val Ala Ala Gly Asp Val His Thr Val Arg Lys
            20   25   30

Met Leu Glu Gln Gly Tyr Ser Pro Asn Gly Arg Asp Ala Asn Gly Trp
        35   40   45

Thr Leu Leu His Phe Ser Ala Ala Arg Gly Lys Glu Arg Cys Val Arg
    50   55   60

Val Phe Leu Glu His Gly Gly Gln Pro Arg Asn Leu Gln Asp Leu Cys
65   70   75   80

Arg Ile Lys Ile Arg Gln Cys Ile Gly Leu Gln Asn Leu Lys Leu Leu
                85   90   95

Asp Glu Leu Pro Ile Ala Lys Val Met Lys Asp Tyr Leu Lys His Lys
            100   105   110

Phe Asp Asp Ile
        115

<210> 5039
<211> 288
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1098; "

<220>
<221> source
<223> /note="Gene Symbol: ASB8; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat and SOCS box containing 8; "

<220>
<221> source
<223> /note="Uniprot ID: Q9H765; "

<220>
<221> source

<223> /note="ENSP ID: ENSP00000320893"

<400> 5039

```
Met Ser Ser Ser Met Trp Tyr Ile Met Gln Ser Ile Gln Ser Lys Tyr
1               5                  10                  15

Ser Leu Ser Glu Arg Leu Ile Arg Thr Ile Ala Ala Ile Arg Ser Phe
            20                  25                  30

Pro His Asp Asn Val Glu Asp Leu Ile Arg Gly Gly Ala Asp Val Asn
        35                  40                  45

Cys Thr His Gly Thr Leu Lys Pro Leu His Cys Ala Cys Met Val Ser
    50                  55                  60

Asp Ala Asp Cys Val Glu Leu Leu Leu Glu Lys Gly Ala Glu Val Asn
65                  70                  75                  80

Ala Leu Asp Gly Tyr Asn Arg Thr Ala Leu His Tyr Ala Ala Glu Lys
                85                  90                  95

Asp Glu Ala Cys Val Glu Val Leu Leu Glu Tyr Gly Ala Asn Pro Asn
            100                 105                 110

Ala Leu Asp Gly Asn Arg Asp Thr Pro Leu His Trp Ala Ala Phe Lys
        115                 120                 125

Asn Asn Ala Glu Cys Val Arg Ala Leu Leu Glu Ser Gly Ala Ser Val
    130                 135                 140

Asn Ala Leu Asp Tyr Asn Asn Asp Thr Pro Leu Ser Trp Ala Ala Met
145                 150                 155                 160

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

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

Ala Leu Leu Val Arg Gly Leu Gly Thr Glu Lys Glu Asp Ser Cys Phe
        195                 200                 205

Glu Leu Leu His Arg Ala Val Gly His Phe Glu Leu Arg Lys Asn Gly
    210                 215                 220
```

Thr Met Pro Arg Glu Val Ala Arg Asp Pro Gln Leu Cys Glu Lys Leu
225 230 235 240

Thr Val Leu Cys Ser Ala Pro Gly Thr Leu Lys Thr Leu Ala Arg Tyr
245 250 255

Ala Val Arg Arg Ser Leu Gly Leu Gln Tyr Leu Pro Asp Ala Val Lys
260 265 270

Gly Leu Pro Leu Pro Ala Ser Leu Lys Glu Tyr Leu Leu Leu Leu Glu
275 280 285

<210> 5040
<211> 86
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1098; "

<220>
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<223> /note="Gene Symbol: ASB8; "

<220>
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<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000437530"

<400> 5040
Met Ser Ser Ser Met Trp Tyr Ile Met Gln Ser Ile Gln Ser Lys Tyr
1 5 10 15

Ser Leu Ser Glu Arg Leu Ile Arg Thr Ile Ala Ala Ile Arg Ser Phe
20 25 30

Pro His Asp Asn Val Glu Asp Leu Ile Arg Gly Gly Ala Asp Val Asn
35 40 45

Cys Thr His Gly Thr Leu Lys Pro Leu His Cys Ala Cys Met Val Ser
50 55 60

Asp Ala Asp Cys Val Glu Leu Leu Leu Glu Lys Gly Ala Glu Val Met
65 70 75 80

Phe Leu Thr His Ser His
85

<210> 5041
<211> 114
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1098; "

<220>
<221> source
<223> /note="Gene Symbol: ASB8; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000437769"

<400> 5041
Met Ser Ser Ser Met Trp Tyr Ile Met Gln Ser Ile Gln Ser Lys Tyr
1 5 10 15

Ser Leu Ser Glu Arg Leu Ile Arg Thr Ile Ala Ala Ile Arg Ser Phe
20 25 30

Pro His Asp Asn Val Glu Asp Leu Ile Arg Gly Gly Ala Asp Val Asn
35 40 45

Cys Thr His Gly Thr Leu Lys Pro Leu His Cys Ala Cys Met Val Ser
50 55 60

Asp Ala Asp Cys Val Glu Leu Leu Leu Glu Lys Gly Ala Glu Val Asn
65 70 75 80

Ala Leu Asp Gly Tyr Asn Arg Thr Ala Leu His Tyr Ala Ala Glu Lys
85 90 95

Asp Glu Ala Cys Val Glu Val Leu Leu Glu Tyr Gly Ala Asn Pro Asn
100 105 110

Ala Leu

<210> 5042
<211> 65
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1098; "

<220>
<221> source
<223> /note="Gene Symbol: ASB8; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000438434"

<400> 5042
Met Ser Ser Ser Met Trp Tyr Ile Met Gln Ser Ile Gln Ser Lys Tyr
1 5 10 15

Ser Leu Ser Glu Arg Leu Ile Arg Thr Ile Ala Ala Ile Arg Ser Phe
20 25 30

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

Glu Ser Gly Leu Leu Val Gln Leu Ser Cys Leu Met Ile Arg Glu Gln
50 55 60

Met
65

<210> 5043
<211> 85
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1098; "

<220>
<221> source
<223> /note="Gene Symbol: ASB8; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000438498"

<400> 5043
Met Ser Ser Ser Met Trp Tyr Ile Met Gln Ser Ile Gln Ser Lys Tyr
1 5 10 15

Ser Leu Ser Glu Arg Leu Ile Arg Thr Ile Ala Ala Ile Arg Ser Phe
20 25 30

Pro His Asp Asn Val Glu Asp Leu Ile Arg Gly Gly Ala Asp Val Asn
35 40 45

Cys Thr His Gly Thr Leu Lys Pro Leu His Cys Ala Cys Met Val Ser
50 55 60

Asp Ala Asp Cys Val Glu Leu Leu Leu Glu Lys Gly Ala Glu Asp Ser
65 70 75 80

Leu Gly Val Ala Cys
85

<210> 5044
<211> 66
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1098; "

<220>
<221> source
<223> /note="Gene Symbol: ASB8; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000439557"

<400> 5044
Met Ser Ser Ser Met Trp Tyr Ile Met Gln Ser Ile Gln Ser Lys Tyr
1   5   10   15

Ser Leu Ser Glu Arg Leu Ile Arg Thr Ile Ala Ala Ile Arg Ser Phe
            20   25   30

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

Glu Ser Gly Leu Leu Val Gln Leu Ser Cys Leu Met Ile Arg Phe Pro
    50   55   60

Val Leu
65

<210> 5045
<211> 85
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1098; "

<220>
<221> source
<223> /note="Gene Symbol: ASB8; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat and SOCS box containing 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000440773"

<400> 5045
Met Ser Ser Ser Met Trp Tyr Ile Met Gln Ser Ile Gln Ser Lys Tyr
1   5   10   15

Ser Leu Ser Glu Arg Leu Ile Arg Thr Ile Ala Ala Ile Arg Ser Phe
            20   25   30

Pro His Asp Asn Val Glu Asp Leu Ile Arg Gly Gly Ala Asp Val Asn

```
        35                  40                  45

Cys Thr His Gly Thr Leu Lys Pro Leu His Cys Ala Cys Met Val Ser
    50                  55                  60

Asp Ala Asp Cys Val Glu Leu Leu Leu Glu Lys Gly Ala Glu Asp Ser
65                  70                  75                  80

Leu Gly Val Ala Cys
                85
```

<210> 5046
<211> 112
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1098; "

<220>
<221> source
<223> /note="Gene Symbol: ASB8; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000442639"

<400> 5046

```
Met Ser Ser Ser Met Trp Tyr Ile Met Gln Ser Ile Gln Ser Lys Tyr
1               5                   10                  15

Ser Leu Ser Glu Arg Leu Ile Arg Thr Ile Ala Ala Ile Arg Ser Phe
            20                  25                  30

Pro His Asp Asn Val Glu Asp Leu Ile Arg Gly Gly Ala Asp Val Asn
        35                  40                  45

Cys Thr His Gly Thr Leu Lys Pro Leu His Cys Ala Cys Met Val Ser
    50                  55                  60

Asp Ala Asp Cys Val Glu Leu Leu Leu Glu Lys Gly Ala Glu Val Asn
65                  70                  75                  80
```

```
Ala Leu Asp Gly Tyr Asn Arg Thr Ala Leu His Tyr Ala Ala Glu Lys
                85                  90                  95


Asp Glu Ala Cys Val Glu Val Leu Leu Glu Tyr Gly Ala Asn Pro Asn
            100                 105                 110


<210> 5047
<211> 95
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1098; "

<220>
<221> source
<223> /note="Gene Symbol: ASB8; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat and SOCS box containing 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000442737"

<400> 5047
Met Ser Ser Ser Met Trp Tyr Ile Met Gln Ser Ile Gln Ser Lys Tyr
1               5                   10                  15


Ser Leu Ser Glu Arg Leu Ile Arg Thr Ile Ala Ala Ile Arg Ser Phe
            20                  25                  30


Pro His Asp Asn Val Glu Asp Leu Ile Arg Gly Gly Ala Asp Val Asn
        35                  40                  45


Cys Thr His Gly Thr Leu Lys Pro Leu His Cys Ala Cys Met Val Ser
    50                  55                  60


Asp Ala Asp Cys Val Glu Leu Leu Leu Glu Lys Gly Ala Glu Leu Leu
65                  70                  75                  80


Ser Tyr Leu His Leu Tyr His Gln Asp Ser Leu Gly Val Ala Cys
                85                  90                  95


<210> 5048
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<211> 86
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1098; "

<220>
<221> source
<223> /note="Gene Symbol: ASB8; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000443148"

<400> 5048
Met Ser Ser Ser Met Trp Tyr Ile Met Gln Ser Ile Gln Ser Lys Tyr
1 5 10 15

Ser Leu Ser Glu Arg Leu Ile Arg Thr Ile Ala Ala Ile Arg Ser Phe
20 25 30

Pro His Asp Asn Val Glu Asp Leu Ile Arg Gly Gly Ala Asp Val Asn
35 40 45

Cys Thr His Gly Thr Leu Lys Pro Leu His Cys Ala Cys Met Val Ser
50 55 60

Asp Ala Asp Cys Val Glu Leu Leu Leu Glu Lys Gly Ala Glu Val Met
65 70 75 80

Phe Leu Thr His Ser His
85

<210> 5049
<211> 66
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1098; "

<220>
<221> source

<223> /note="Gene Symbol: ASB8; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000443835"

<400> 5049
Met Ser Ser Ser Met Trp Tyr Ile Met Gln Ser Ile Gln Ser Lys Tyr
1 5 10 15

Ser Leu Ser Glu Arg Leu Ile Arg Thr Ile Ala Ala Ile Arg Ser Phe
20 25 30

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

Glu Ser Gly Leu Leu Val Gln Leu Ser Cys Leu Met Ile Arg Phe Pro
50 55 60

Val Leu
65

<210> 5050
<211> 127
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1098; "

<220>
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<223> /note="Gene Symbol: ASB8; "

<220>
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<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 8; "

<220>
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<223> /note="ENSP ID: ENSP00000444093"

<400> 5050
Met Ser Ser Ser Met Trp Tyr Ile Met Gln Ser Ile Gln Ser Lys Tyr
1 5 10 15

```
Ser Leu Ser Glu Arg Leu Ile Arg Thr Ile Ala Ala Ile Arg Ser Phe
            20                  25                  30

Pro His Asp Asn Val Glu Asp Leu Ile Arg Gly Gly Ala Asp Val Asn
        35                  40                  45

Cys Thr His Gly Thr Leu Lys Pro Leu His Cys Ala Cys Met Val Ser
    50                  55                  60

Asp Ala Asp Cys Val Glu Leu Leu Leu Glu Lys Gly Ala Glu Val Asn
65                  70                  75                  80

Ala Leu Asp Gly Tyr Asn Arg Thr Ala Leu His Tyr Ala Ala Glu Lys
                85                  90                  95

Asp Glu Ala Cys Val Glu Val Leu Leu Glu Tyr Gly Ala Asn Pro Asn
            100                 105                 110

Ala Leu Asp Gly Asn Arg Asp Thr Pro Leu His Trp Ala Ala Phe
        115                 120                 125


<210> 5051
<211> 85
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000445540"

<400> 5051
Met Ser Ser Ser Met Trp Tyr Ile Met Gln Ser Ile Gln Ser Lys Tyr
1               5                   10                  15
```

```
Ser Leu Ser Glu Arg Leu Ile Arg Thr Ile Ala Ala Ile Arg Ser Phe
            20                  25                  30

Pro His Asp Asn Val Glu Asp Leu Ile Arg Gly Gly Ala Asp Val Asn
        35                  40                  45

Cys Thr His Gly Thr Leu Lys Pro Leu His Cys Ala Cys Met Val Ser
    50                  55                  60

Asp Ala Asp Cys Val Glu Leu Leu Leu Glu Lys Gly Ala Glu Asp Ser
65                  70                  75                  80

Leu Gly Val Ala Cys
                85


<210> 5052
<211> 288
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<220>
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<223> /note="Uniprot ID:  Q9H765; "

<220>
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<223> /note="ENSP ID: ENSP00000445622"

<400> 5052
Met Ser Ser Ser Met Trp Tyr Ile Met Gln Ser Ile Gln Ser Lys Tyr
1               5                   10                  15

Ser Leu Ser Glu Arg Leu Ile Arg Thr Ile Ala Ala Ile Arg Ser Phe
            20                  25                  30

Pro His Asp Asn Val Glu Asp Leu Ile Arg Gly Gly Ala Asp Val Asn
        35                  40                  45
```

```
Cys Thr His Gly Thr Leu Lys Pro Leu His Cys Ala Cys Met Val Ser
    50                  55                  60

Asp Ala Asp Cys Val Glu Leu Leu Leu Glu Lys Gly Ala Glu Val Asn
65                  70                  75                  80

Ala Leu Asp Gly Tyr Asn Arg Thr Ala Leu His Tyr Ala Ala Glu Lys
                85                  90                  95

Asp Glu Ala Cys Val Glu Val Leu Leu Glu Tyr Gly Ala Asn Pro Asn
            100                 105                 110

Ala Leu Asp Gly Asn Arg Asp Thr Pro Leu His Trp Ala Ala Phe Lys
        115                 120                 125

Asn Asn Ala Glu Cys Val Arg Ala Leu Leu Glu Ser Gly Ala Ser Val
    130                 135                 140

Asn Ala Leu Asp Tyr Asn Asn Asp Thr Pro Leu Ser Trp Ala Ala Met
145                 150                 155                 160

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

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

Ala Leu Leu Val Arg Gly Leu Gly Thr Glu Lys Glu Asp Ser Cys Phe
        195                 200                 205

Glu Leu Leu His Arg Ala Val Gly His Phe Glu Leu Arg Lys Asn Gly
    210                 215                 220

Thr Met Pro Arg Glu Val Ala Arg Asp Pro Gln Leu Cys Glu Lys Leu
225                 230                 235                 240

Thr Val Leu Cys Ser Ala Pro Gly Thr Leu Lys Thr Leu Ala Arg Tyr
                245                 250                 255

Ala Val Arg Arg Ser Leu Gly Leu Gln Tyr Leu Pro Asp Ala Val Lys
            260                 265                 270
```

```
Gly Leu Pro Leu Pro Ala Ser Leu Lys Glu Tyr Leu Leu Leu Leu Glu
        275                 280                 285


<210> 5053
<211> 51
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<400> 5053
Met Ser Ser Ser Met Trp Tyr Ile Met Gln Ser Ile Gln Ser Lys Tyr
1               5                   10                  15


Ser Leu Ser Glu Arg Leu Ile Arg Thr Ile Ala Ala Ile Arg Ser Phe
            20                  25                  30


Pro His Asp Asn Val Glu Asp Leu Ile Arg Gly Gly Ala Asp Val Asn
        35                  40                  45


Cys Thr His
    50


<210> 5054
<211> 66
<212> PRT
<213> Homo sapiens

<220>
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<220>
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ankyrin repeat and SOCS box containing 8; "

<220>
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<223> /note="ENSP ID: ENSP00000486138"

<400> 5054
Met Ser Ser Ser Met Trp Tyr Ile Met Gln Ser Ile Gln Ser Lys Tyr
1 5 10 15

Ser Leu Ser Glu Arg Leu Ile Arg Thr Ile Ala Ala Ile Arg Ser Phe
20 25 30

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

Glu Ser Gly Leu Leu Val Gln Leu Ser Cys Leu Met Ile Arg Phe Pro
50 55 60

Val Leu
65

<210> 5055
<211> 252
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1099; "

<220>
<221> source
<223> /note="Gene Symbol: ASB9; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 9; "

<220>
<221> source
<223> /note="Uniprot ID: Q96DX5; "

<220>
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<223> /note="ENSP ID: ENSP00000369850"

<400> 5055

```
Met Asp Gly Lys Gln Gly Gly Met Asp Gly Ser Lys Pro Ala Gly Pro
1               5                  10                  15

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

Ala Val Ser Asp Trp Ser Pro Met His Glu Ala Ala Ile His Gly His
        35                  40                  45

Gln Leu Ser Leu Arg Asn Leu Ile Ser Gln Gly Trp Ala Val Asn Ile
    50                  55                  60

Ile Thr Ala Asp His Val Ser Pro Leu His Glu Ala Cys Leu Gly Gly
65                  70                  75                  80

His Leu Ser Cys Val Lys Ile Leu Leu Lys His Gly Ala Gln Val Asn
                85                  90                  95

Gly Val Thr Ala Asp Trp His Thr Pro Leu Phe Asn Ala Cys Val Ser
            100                 105                 110

Gly Ser Trp Asp Cys Val Asn Leu Leu Leu Gln His Gly Ala Ser Val
        115                 120                 125

Gln Pro Glu Ser Asp Leu Ala Ser Pro Ile His Glu Ala Ala Arg Arg
    130                 135                 140

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

Leu Tyr Leu Ala Cys Glu Asn Gln Gln Arg Ala Cys Val Lys Lys Leu
                165                 170                 175

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

Leu His Ala Val Ala Arg Thr Ala Ser Glu Glu Leu Ala Cys Leu Leu
        195                 200                 205

Met Asp Phe Gly Ala Asp Thr Gln Ala Lys Asn Ala Glu Gly Lys Arg
    210                 215                 220

Pro Val Glu Leu Val Pro Pro Glu Ser Pro Leu Ala Gln Leu Phe Leu
```

225 230 235 240

Glu Arg Glu Gly Ala Ser Leu Pro Lys Pro Lys Pro
245 250

<210> 5056
<211> 262
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1099; "

<220>
<221> source
<223> /note="Gene Symbol: ASB9; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 9; "

<220>
<221> source
<223> /note="Uniprot ID: Q96DX5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000369852"

<400> 5056
Met Asp Gly Lys Gln Gly Gly Met Asp Gly Ser Lys Pro Ala Gly Pro
1 5 10 15

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

Ala Val Ser Asp Trp Ser Pro Met His Glu Ala Ala Ile His Gly His
35 40 45

Gln Leu Ser Leu Arg Asn Leu Ile Ser Gln Gly Trp Ala Val Asn Ile
50 55 60

Ile Thr Ala Asp His Val Ser Pro Leu His Glu Ala Cys Leu Gly Gly
65 70 75 80

His Leu Ser Cys Val Lys Ile Leu Leu Lys His Gly Ala Gln Val Asn
85 90 95

```
Gly Val Thr Ala Asp Trp His Thr Pro Leu Phe Asn Ala Cys Val Ser
            100                 105                 110

Gly Ser Trp Asp Cys Val Asn Leu Leu Leu Gln His Gly Ala Ser Val
        115                 120                 125

Gln Pro Glu Ser Asp Leu Ala Ser Pro Ile His Glu Ala Ala Arg Arg
    130                 135                 140

Gly His Val Glu Cys Val Asn Ser Leu Ile Ala Tyr Gly Gly Asn Ile
145                 150                 155                 160

Asp His Lys Ile Ser His Leu Gly Thr Pro Leu Tyr Leu Ala Cys Glu
                165                 170                 175

Asn Gln Gln Arg Ala Cys Val Lys Lys Leu Leu Glu Ser Gly Ala Asp
            180                 185                 190

Val Asn Gln Gly Lys Gly Gln Asp Ser Pro Leu His Ala Val Ala Arg
        195                 200                 205

Thr Ala Ser Glu Glu Leu Ala Cys Leu Leu Met Asp Phe Gly Ala Asp
    210                 215                 220

Thr Gln Ala Lys Asn Ala Glu Gly Lys Arg Pro Val Glu Leu Val Pro
225                 230                 235                 240

Pro Glu Ser Pro Leu Ala Gln Leu Phe Leu Glu Arg Glu Gly Ala Ser
                245                 250                 255

Leu Pro Lys Pro Lys Pro
            260


<210> 5057
<211> 294
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1099; "

<220>
<221> source
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<220>
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<223> /note="Gene Name:
ankyrin repeat and SOCS box containing 9; "

<220>
<221> source
<223> /note="Uniprot ID: Q96DX5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000369855"

<400> 5057

```
Met Asp Gly Lys Gln Gly Gly Met Asp Gly Ser Lys Pro Ala Gly Pro
1               5                  10                  15


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


Ala Val Ser Asp Trp Ser Pro Met His Glu Ala Ala Ile His Gly His
        35                  40                  45


Gln Leu Ser Leu Arg Asn Leu Ile Ser Gln Gly Trp Ala Val Asn Ile
    50                  55                  60


Ile Thr Ala Asp His Val Ser Pro Leu His Glu Ala Cys Leu Gly Gly
65                  70                  75                  80


His Leu Ser Cys Val Lys Ile Leu Leu Lys His Gly Ala Gln Val Asn
                85                  90                  95


Gly Val Thr Ala Asp Trp His Thr Pro Leu Phe Asn Ala Cys Val Ser
            100                 105                 110


Gly Ser Trp Asp Cys Val Asn Leu Leu Leu Gln His Gly Ala Ser Val
        115                 120                 125


Gln Pro Glu Ser Asp Leu Ala Ser Pro Ile His Glu Ala Ala Arg Arg
    130                 135                 140


Gly His Val Glu Cys Val Asn Ser Leu Ile Ala Tyr Gly Gly Asn Ile
145                 150                 155                 160


Asp His Lys Ile Ser His Leu Gly Thr Pro Leu Tyr Leu Ala Cys Glu
                165                 170                 175
```

```
Asn Gln Gln Arg Ala Cys Val Lys Lys Leu Leu Glu Ser Gly Ala Asp
            180                 185                 190

Val Asn Gln Gly Lys Gly Gln Asp Ser Pro Leu His Ala Val Ala Arg
        195                 200                 205

Thr Ala Ser Glu Glu Leu Ala Cys Leu Leu Met Asp Phe Gly Ala Asp
    210                 215                 220

Thr Gln Ala Lys Asn Ala Glu Gly Lys Arg Pro Val Glu Leu Val Pro
225                 230                 235                 240

Pro Glu Ser Pro Leu Ala Gln Leu Phe Leu Glu Arg Glu Gly Pro Pro
                245                 250                 255

Ser Leu Met Gln Leu Cys Arg Leu Arg Ile Arg Lys Cys Phe Gly Ile
            260                 265                 270

Gln Gln His His Lys Ile Thr Lys Leu Val Leu Pro Glu Asp Leu Lys
        275                 280                 285

Gln Phe Leu Leu His Leu
    290


<210> 5058
<211> 262
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1099; "

<220>
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<223> /note="Gene Symbol: ASB9; "

<220>
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<223> /note="Gene Name:
      ankyrin repeat and SOCS box containing 9; "

<220>
<221> source
<223> /note="Uniprot ID:  Q96DX5; "

<220>
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<221> source
<223> /note="ENSP ID: ENSP00000438943"

<400> 5058
Met Asp Gly Lys Gln Gly Gly Met Asp Gly Ser Lys Pro Ala Gly Pro
1 5 10 15

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

Ala Val Ser Asp Trp Ser Pro Met His Glu Ala Ala Ile His Gly His
35 40 45

Gln Leu Ser Leu Arg Asn Leu Ile Ser Gln Gly Trp Ala Val Asn Ile
50 55 60

Ile Thr Ala Asp His Val Ser Pro Leu His Glu Ala Cys Leu Gly Gly
65 70 75 80

His Leu Ser Cys Val Lys Ile Leu Leu Lys His Gly Ala Gln Val Asn
85 90 95

Gly Val Thr Ala Asp Trp His Thr Pro Leu Phe Asn Ala Cys Val Ser
100 105 110

Gly Ser Trp Asp Cys Val Asn Leu Leu Leu Gln His Gly Ala Ser Val
115 120 125

Gln Pro Glu Ser Asp Leu Ala Ser Pro Ile His Glu Ala Ala Arg Arg
130 135 140

Gly His Val Glu Cys Val Asn Ser Leu Ile Ala Tyr Gly Gly Asn Ile
145 150 155 160

Asp His Lys Ile Ser His Leu Gly Thr Pro Leu Tyr Leu Ala Cys Glu
165 170 175

Asn Gln Gln Arg Ala Cys Val Lys Lys Leu Leu Glu Ser Gly Ala Asp
180 185 190

Val Asn Gln Gly Lys Gly Gln Asp Ser Pro Leu His Ala Val Ala Arg
195 200 205

Thr Ala Ser Glu Glu Leu Ala Cys Leu Leu Met Asp Phe Gly Ala Asp

```
    210                 215                 220

Thr Gln Ala Lys Asn Ala Glu Gly Lys Arg Pro Val Glu Leu Val Pro
225                 230                 235                 240

Pro Glu Ser Pro Leu Ala Gln Leu Phe Leu Glu Arg Glu Gly Ala Ser
                245                 250                 255

Leu Pro Lys Pro Lys Pro
            260

<210> 5059
<211> 211
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1099; "

<220>
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<223> /note="Gene Symbol: ASB9; "

<220>
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<223> /note="Gene Name:
      ankyrin repeat and SOCS box containing 9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000473542"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5059
Xaa Lys Ile Leu Leu Lys His Gly Ala Gln Val Asn Gly Val Thr Ala
1               5                   10                  15

Asp Trp His Thr Pro Leu Phe Asn Ala Cys Val Ser Gly Ser Trp Asp
            20                  25                  30

Cys Val Asn Leu Leu Leu Gln His Gly Ala Ser Val Gln Pro Glu Ser
        35                  40                  45

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

```
    50                  55                  60

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

Ser His Leu Gly Thr Pro Leu Tyr Leu Ala Cys Glu Asn Gln Gln Arg
                85                  90                  95

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

Lys Gly Gln Asp Ser Pro Leu His Ala Val Ala Arg Thr Ala Ser Glu
        115                 120                 125

Glu Leu Ala Cys Leu Leu Met Asp Phe Gly Ala Asp Thr Gln Ala Lys
    130                 135                 140

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

Leu Ala Gln Leu Phe Leu Glu Arg Glu Asp Gly Val Thr Leu Cys Arg
                165                 170                 175

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

Ser Arg Asn Ser Asp Lys Met Cys Ser Pro Gly Gln Gln Ser Phe Met
        195                 200                 205

Leu Leu Val
    210


<210> 5060
<211> 1134
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1100; "

<220>
<221> source
<223> /note="Gene Symbol: ANKS1A; "

<220>
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<221> source
<223> /note="Gene Name:
ankyrin repeat and sterile alpha motif
domain containing 1A; "

<220>
<221> source
<223> /note="Uniprot ID: Q92625; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000353518"

<400> 5060

```
Met Gly Lys Glu Gln Glu Leu Leu Glu Ala Ala Arg Thr Gly His Leu
1               5                  10                  15

Pro Ala Val Glu Lys Leu Leu Ser Gly Lys Arg Leu Ser Ser Gly Phe
            20                  25                  30

Gly Gly Gly Gly Gly Gly Gly Ser Gly Gly Gly Gly Gly Gly Ser Gly
        35                  40                  45

Gly Gly Gly Gly Gly Leu Gly Ser Ser Ser His Pro Leu Ser Ser Leu
    50                  55                  60

Leu Ser Met Trp Arg Gly Pro Asn Val Asn Cys Val Asp Ser Thr Gly
65                  70                  75                  80

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

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

Gly Cys Tyr Pro Leu His Leu Ala Ala Trp Lys Gly Asp Ala Gln Ile
        115                 120                 125

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

Gln Asn Asn Asp Asn Glu Thr Ala Leu His Cys Ala Ala Gln Tyr Gly
145                 150                 155                 160

His Thr Glu Val Val Lys Val Leu Leu Glu Glu Leu Thr Asp Pro Thr
                165                 170                 175
```

```
Met Arg Asn Asn Lys Phe Glu Thr Pro Leu Asp Leu Ala Ala Leu Tyr
            180                 185                 190

Gly Arg Leu Glu Val Val Lys Met Leu Leu Asn Ala His Pro Asn Leu
        195                 200                 205

Leu Ser Cys Asn Thr Lys Lys His Thr Pro Leu His Leu Ala Ala Arg
    210                 215                 220

Asn Gly His Lys Ala Val Val Gln Val Leu Leu Asp Ala Gly Met Asp
225                 230                 235                 240

Ser Asn Tyr Gln Thr Glu Met Gly Ser Ala Leu His Glu Ala Ala Leu
                245                 250                 255

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

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

Glu Leu Pro Ser Gln Lys Ser Gln Gln Ile Ala Ala Leu Ile Glu Asp
    290                 295                 300

His Met Thr Gly Lys Arg Ser Thr Lys Glu Val Asp Lys Thr Pro Pro
305                 310                 315                 320

Pro Gln Pro Pro Leu Ile Ser Ser Met Asp Ser Ile Ser Gln Lys Ser
                325                 330                 335

Gln Gly Asp Val Glu Lys Ala Val Thr Glu Leu Ile Ile Asp Phe Asp
            340                 345                 350

Ala Asn Ala Glu Glu Glu Gly Pro Tyr Glu Ala Leu Tyr Asn Ala Ile
        355                 360                 365

Ser Cys His Ser Leu Asp Ser Met Ala Ser Gly Arg Ser Ser Asp Gln
    370                 375                 380

Asp Ser Thr Asn Lys Glu Ala Glu Ala Ala Gly Val Lys Pro Ala Gly
385                 390                 395                 400
```

```
Val Arg Pro Arg Glu Arg Pro Pro Pro Pro Ala Lys Pro Pro Pro Asp
                405                 410                 415

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

Ser Glu Val Leu Ser Met Arg Pro Arg Ile His Gly Ser Ala Ala Arg
        435                 440                 445

Glu Glu Asp Glu His Pro Tyr Glu Leu Leu Leu Thr Ala Glu Thr Lys
    450                 455                 460

Lys Val Val Leu Val Asp Gly Lys Thr Lys Asp His Arg Arg Ser Ser
465                 470                 475                 480

Ser Ser Arg Ser Gln Asp Ser Ala Glu Gly Gln Asp Gly Gln Val Pro
                485                 490                 495

Glu Gln Phe Ser Gly Leu Leu His Gly Ser Ser Pro Val Cys Glu Val
            500                 505                 510

Gly Gln Asp Pro Phe Gln Leu Leu Cys Thr Ala Gly Gln Ser His Pro
        515                 520                 525

Asp Gly Ser Pro Gln Gln Gly Ala Cys His Lys Ala Ser Met Gln Leu
    530                 535                 540

Glu Glu Thr Gly Val His Ala Pro Gly Ala Ser Gln Pro Ser Ala Leu
545                 550                 555                 560

Asp Gln Ser Lys Arg Val Gly Tyr Leu Thr Gly Leu Pro Thr Thr Asn
                565                 570                 575

Ser Arg Ser His Pro Glu Thr Leu Thr His Thr Ala Ser Pro His Pro
            580                 585                 590

Gly Gly Ala Glu Glu Gly Asp Arg Ser Gly Ala Arg Ser Arg Ala Pro
        595                 600                 605

Pro Thr Ser Lys Pro Lys Ala Glu Leu Lys Leu Ser Arg Ser Leu Ser
    610                 615                 620

Lys Ser Asp Ser Asp Leu Leu Thr Cys Ser Pro Thr Glu Asp Ala Thr
```

625 630 635 640

Met Gly Ser Arg Ser Glu Ser Leu Ser Asn Cys Ser Ile Gly Lys Lys
645 650 655

Arg Leu Glu Lys Ser Pro Ser Phe Ala Ser Glu Trp Asp Glu Ile Glu
660 665 670

Lys Ile Met Ser Ser Ile Gly Glu Gly Ile Asp Phe Ser Gln Glu Arg
675 680 685

Gln Lys Ile Ser Gly Leu Arg Thr Leu Glu Gln Ser Val Gly Glu Trp
690 695 700

Leu Glu Ser Ile Gly Leu Gln Gln Tyr Glu Ser Lys Leu Leu Leu Asn
705 710 715 720

Gly Phe Asp Asp Val His Phe Leu Gly Ser Asn Val Met Glu Glu Gln
725 730 735

Asp Leu Arg Asp Ile Gly Ile Ser Asp Pro Gln His Arg Arg Lys Leu
740 745 750

Leu Gln Ala Ala Arg Ser Leu Pro Lys Val Lys Ala Leu Gly Tyr Asp
755 760 765

Gly Asn Ser Pro Pro Ser Val Pro Ser Trp Leu Asp Ser Leu Gly Leu
770 775 780

Gln Asp Tyr Val His Ser Phe Leu Ser Ser Gly Tyr Ser Ser Ile Asp
785 790 795 800

Thr Val Lys Asn Leu Trp Glu Leu Glu Leu Val Asn Val Leu Lys Val
805 810 815

Gln Leu Leu Gly His Arg Lys Arg Ile Ile Ala Ser Leu Ala Asp Arg
820 825 830

Pro Tyr Glu Glu Pro Pro Gln Lys Pro Pro Arg Phe Ser Gln Leu Arg
835 840 845

Cys Gln Asp Leu Leu Ser Gln Thr Ser Ser Pro Leu Ser Gln Asn Asp
850 855 860

```
Ser Cys Thr Gly Arg Ser Ala Asp Leu Leu Leu Pro Pro Gly Asp Thr
865                 870                 875                 880

Gly Arg Arg Arg His Asp Ser Leu His Asp Pro Ala Ala Pro Ser Arg
                885                 890                 895

Ala Glu Arg Phe Arg Ile Gln Glu Glu His Arg Glu Ala Lys Leu Thr
            900                 905                 910

Leu Arg Pro Pro Ser Leu Ala Ala Pro Tyr Ala Pro Val Gln Ser Trp
        915                 920                 925

Gln His Gln Pro Glu Lys Leu Ile Phe Glu Ser Cys Gly Tyr Glu Ala
    930                 935                 940

Asn Tyr Leu Gly Ser Met Leu Ile Lys Asp Leu Arg Gly Thr Glu Ser
945                 950                 955                 960

Thr Gln Asp Ala Cys Ala Lys Met Arg Lys Ser Thr Glu His Met Lys
                965                 970                 975

Lys Ile Pro Thr Ile Ile Leu Ser Ile Thr Tyr Lys Gly Val Lys Phe
            980                 985                 990

Ile Asp Ala Ser Asn Lys Asn Val  Ile Ala Glu His Glu  Ile Arg
Asn
        995                 1000                1005

Ile Ser  Cys Ala Ala Gln Asp  Pro Glu Asp Leu Cys  Thr Phe Ala
    1010                1015                1020

Tyr Ile  Thr Lys Asp Leu Gln  Thr Ser His His Tyr  Cys His Val
    1025                1030                1035

Phe Ser  Thr Val Asp Val Asn  Leu Thr Tyr Glu Ile  Ile Leu Thr
    1040                1045                1050

Leu Gly  Gln Ala Phe Glu Val  Ala Tyr Gln Leu Ala  Leu Gln Ala
    1055                1060                1065

Gln Lys  Ser Arg Ala Thr Gly  Ala Ser Ala Ala Glu  Met Ile Glu
    1070                1075                1080
```

```
Thr Lys  Ser Ser Lys Pro Val  Pro Lys Pro Arg Val  Gly Val Arg
    1085                1090                1095


Lys Ser  Ala Leu Glu Pro Pro  Asp Met Asp Gln Asp  Ala Gln Ser
    1100                1105                1110


His Ala  Ser Val Ser Trp Val  Val Asp Pro Lys Pro  Asp Ser Lys
    1115                1120                1125


Arg Ser  Leu Ser Thr Asn
    1130


<210> 5061
<211> 289
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1101; "

<220>
<221> source
<223> /note="Gene Symbol: ANKS1B; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat and sterile alpha motif
      domain containing 1B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000331256"

<400> 5061
Met Gln Gly Asp Ala Arg Arg Arg Arg Asn Glu Asn Tyr Phe Asp Asp
1               5                  10                  15


Ile Pro Arg Ser Lys Leu Glu Arg Gln Met Ala Gln Ser Ser Val Cys
            20                  25                  30


Glu Ile Trp Thr Asn Gln Asn Ala Gly Phe Pro Phe Ser Ala Ile His
        35                  40                  45


Gln Val His Asn Thr Gly Asp Trp Gly Glu Pro Ser Ile Thr Leu Arg
    50                  55                  60
```

```
Pro Pro Asn Glu Ala Thr Ala Ser Thr Pro Val Gln Tyr Trp Gln His
65                  70                  75                  80

His Pro Glu Lys Leu Ile Phe Gln Ser Cys Asp Tyr Lys Ala Phe Tyr
                85                  90                  95

Leu Gly Ser Met Leu Ile Lys Glu Leu Arg Gly Thr Glu Ser Thr Gln
            100                 105                 110

Asp Ala Cys Ala Lys Met Arg Ala Asn Cys Gln Lys Ser Thr Glu Gln
        115                 120                 125

Met Lys Lys Val Pro Thr Ile Ile Leu Ser Val Ser Tyr Lys Gly Val
    130                 135                 140

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

Arg Asn Ile Ser Cys Ala Ala Gln Asp Pro Glu Asp Leu Ser Thr Phe
                165                 170                 175

Ala Tyr Ile Thr Lys Asp Leu Lys Ser Asn His His Tyr Cys His Val
            180                 185                 190

Phe Thr Ala Phe Asp Val Asn Leu Ala Tyr Glu Ile Ile Leu Thr Leu
        195                 200                 205

Gly Gln Ala Phe Glu Val Ala Tyr Gln Leu Ala Leu Gln Ala Arg Lys
    210                 215                 220

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

Lys Pro Ile Pro Lys Pro Arg Val Ser Ile Arg Lys Ser Val Ile Asp
                245                 250                 255

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

Gly Gln Glu Ala Lys Arg Gly Ile Asn Thr Lys Tyr Glu Thr Thr Ile
        275                 280                 285
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Phe

<210> 5062
<211> 332
<212> PRT
<213> Homo sapiens

<220>
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domain containing 1B; "

<220>
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<400> 5062
Ser Ile Trp Arg Gly Pro Asn Val Asn Cys Thr Asp Ser Ser Gly Tyr
1 5 10 15

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

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

Tyr Phe Pro Ile His Leu Ala Ala Trp Lys Gly Asp Val Glu Ile Val
50 55 60

Lys Ile Leu Ile His His Gly Pro Ser His Ser Arg Val Asn Glu Gln
65 70 75 80

Asn Asn Glu Asn Glu Thr Ala Leu His Cys Ala Ala Gln Tyr Gly His
85 90 95

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

Arg Asn Ser Lys Leu Glu Thr Pro Leu Asp Leu Ala Ala Leu Tyr Gly

```
        115                 120                 125

Arg Leu Arg Val Val Lys Met Ile Ile Ser Ala His Pro Asn Leu Met
    130                 135                 140

Ser Cys Asn Thr Arg Lys His Thr Pro Leu His Leu Ala Ala Arg Asn
145                 150                 155                 160

Gly His Lys Ala Val Val Gln Val Leu Leu Glu Ala Gly Met Asp Val
                165                 170                 175

Ser Cys Gln Thr Glu Lys Gly Ser Ala Leu His Glu Ala Ala Leu Phe
            180                 185                 190

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

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

His Pro Ser Gln Lys Ser Leu Gln Ile Ala Thr Leu Leu Gln Glu Tyr
225                 230                 235                 240

Leu Glu Gly Val Gly Arg Ser Thr Val Leu Glu Glu Pro Val Gln Glu
                245                 250                 255

Asp Ala Thr Gln Glu Thr His Ile Ser Ser Pro Val Glu Ser Pro Ser
            260                 265                 270

Gln Lys Thr Lys Ser Glu Thr Val Thr Gly Glu Leu Ser Lys Leu Leu
        275                 280                 285

Asp Glu Ile Lys Leu Cys Gln Glu Lys Asp Tyr Ser Phe Glu Asp Leu
    290                 295                 300

Cys His Thr Ile Ser Asp His Tyr Leu Asp Asn Leu Ser Lys Ile Ser
305                 310                 315                 320

Glu Glu Glu Leu Gly Lys Asn Gly Ser Gln Ser Val
                325                 330
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<210> 5063
<211> 254

<212> PRT
<213> Homo sapiens

<220>
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domain containing 1B; "

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<223> /note="Uniprot ID: Q7Z6G8; "

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<223> /note="ENSP ID: ENSP00000345510"

<400> 5063

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Met Gln Gly Asp Ala Arg Arg Arg Arg Asn Glu Asn Tyr Phe Asp Asp
1               5                  10                  15

Ile Pro Arg Ser Lys Leu Glu Arg Gln Met Ala Gln Thr Gly Asp Trp
            20                  25                  30

Gly Glu Pro Ser Ile Thr Leu Arg Pro Pro Asn Glu Ala Thr Ala Ser
        35                  40                  45

Thr Pro Val Gln Tyr Trp Gln His His Pro Glu Lys Leu Ile Phe Gln
    50                  55                  60

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

Leu Arg Gly Thr Glu Ser Thr Gln Asp Ala Cys Ala Lys Met Arg Ala
                85                  90                  95

Asn Cys Gln Lys Ser Thr Glu Gln Met Lys Lys Val Pro Thr Ile Ile
            100                 105                 110

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

```
Asn Ile Ile Ala Glu His Glu Ile Arg Asn Ile Ser Cys Ala Ala Gln
    130                 135                 140

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

Ser Asn His His Tyr Cys His Val Phe Thr Ala Phe Asp Val Asn Leu
                165                 170                 175

Ala Tyr Glu Ile Ile Leu Thr Leu Gly Gln Ala Phe Glu Val Ala Tyr
            180                 185                 190

Gln Leu Ala Leu Gln Ala Arg Lys Gly Gly His Ser Ser Thr Leu Pro
        195                 200                 205

Glu Ser Phe Glu Asn Lys Pro Ser Lys Pro Ile Pro Lys Pro Arg Val
    210                 215                 220

Ser Ile Arg Lys Ser Val Asp Leu Leu His Ala Ser His Thr Gly Gln
225                 230                 235                 240

Glu Pro Ser Glu Arg His Thr Glu Glu Ala Leu Arg Lys Phe
                245                 250


<210> 5064
<211> 357
<212> PRT
<213> Homo sapiens

<220>
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<221> source
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<400> 5064

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Met Ala Asn Gly Phe Asp Asn Val Gln Phe Met Gly Ser Asn Val Met
1               5                  10                  15

Glu Asp Gln Asp Leu Leu Glu Ile Gly Ile Leu Asn Ser Gly His Arg
            20                  25                  30

Gln Arg Ile Leu Gln Ala Ile Gln Leu Leu Pro Lys Met Arg Pro Ile
        35                  40                  45

Gly His Asp Gly Tyr His Pro Thr Ser Val Ala Glu Trp Leu Asp Ser
    50                  55                  60

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

Ser Met Asp Leu Leu Lys Lys Ile Trp Glu Val Glu Leu Ile Asn Gln
                85                  90                  95

Ser Ser Val Cys Glu Ile Trp Thr Asn Gln Asn Ala Gly Phe Pro Phe
            100                 105                 110

Ser Ala Ile His Gln Val His Asn Thr Gly Asp Trp Gly Glu Pro Ser
        115                 120                 125

Ile Thr Leu Arg Pro Pro Asn Glu Ala Thr Ala Ser Thr Pro Val Gln
    130                 135                 140

Tyr Trp Gln His His Pro Glu Lys Leu Ile Phe Gln Ser Cys Asp Tyr
145                 150                 155                 160

Lys Ala Phe Tyr Leu Gly Ser Met Leu Ile Lys Glu Leu Arg Gly Thr
                165                 170                 175

Glu Ser Thr Gln Asp Ala Cys Ala Lys Met Arg Ala Asn Cys Gln Lys
            180                 185                 190

Ser Thr Glu Gln Met Lys Lys Val Pro Thr Ile Ile Leu Ser Val Ser
        195                 200                 205

Tyr Lys Gly Val Lys Phe Ile Asp Ala Thr Asn Lys Asn Ile Ile Ala
```

```
    210                 215                 220

Glu His Glu Ile Arg Asn Ile Ser Cys Ala Ala Gln Asp Pro Glu Asp
225                 230                 235                 240

Leu Ser Thr Phe Ala Tyr Ile Thr Lys Asp Leu Lys Ser Asn His His
                245                 250                 255

Tyr Cys His Val Phe Thr Ala Phe Asp Val Asn Leu Ala Tyr Glu Ile
            260                 265                 270

Ile Leu Thr Leu Gly Gln Ala Phe Glu Val Ala Tyr Gln Leu Ala Leu
        275                 280                 285

Gln Ala Arg Lys Gly Gly His Ser Ser Thr Leu Pro Glu Ser Phe Glu
    290                 295                 300

Asn Lys Pro Ser Lys Pro Ile Pro Lys Pro Arg Val Ser Ile Arg Lys
305                 310                 315                 320

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

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

Glu Thr Thr Ile Phe
        355


<210> 5065
<211> 460
<212> PRT
<213> Homo sapiens

<220>
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<400> 5065
Met Met Trp Gln Cys His Leu Ser Ala Gln Asp Tyr Arg Tyr Tyr Pro
1   5   10   15

Val Asp Gly Tyr Ser Leu Leu Lys Arg Phe Pro Leu His Pro Leu Thr
            20   25   30

Gly Pro Arg Cys Pro Val Gln Thr Val Gly Gln Trp Leu Glu Ser Ile
        35   40   45

Gly Leu Pro Gln Tyr Glu Asn His Leu Met Ala Asn Gly Phe Asp Asn
    50   55   60

Val Gln Phe Met Gly Ser Asn Val Met Glu Asp Gln Asp Leu Leu Glu
65   70   75   80

Ile Gly Ile Leu Asn Ser Gly His Arg Gln Arg Ile Leu Gln Ala Ile
                85   90   95

Gln Leu Leu Pro Lys Met Arg Pro Ile Gly His Asp Gly Tyr His Pro
            100   105   110

Thr Ser Val Ala Glu Trp Leu Asp Ser Ile Glu Leu Gly Asp Tyr Thr
        115   120   125

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

Ile Trp Glu Val Glu Leu Ile Asn Val Leu Lys Ile Asn Leu Ile Gly
145   150   155   160

His Arg Lys Arg Ile Leu Ala Ser Leu Gly Asp Arg Leu His Asp Asp
                165   170   175

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

```
Asn His Thr Pro Pro Gln Leu Ser Pro Ser Leu Ser Gln Ser Thr Tyr
        195                 200                 205

Thr Thr Gly Gly Ser Leu Asp Val Pro His Ile Ile Met Gln Gly Asp
    210                 215                 220

Ala Arg Arg Arg Arg Asn Glu Asn Tyr Phe Asp Asp Ile Pro Arg Ser
225                 230                 235                 240

Lys Leu Glu Arg Gln Met Ala Gln Thr Gly Asp Trp Gly Glu Pro Ser
                245                 250                 255

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

Tyr Trp Gln His His Pro Glu Lys Leu Ile Phe Gln Ser Cys Asp Tyr
        275                 280                 285

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

Glu Ser Thr Gln Asp Ala Cys Ala Lys Met Arg Ala Asn Cys Gln Lys
305                 310                 315                 320

Ser Thr Glu Gln Met Lys Lys Val Pro Thr Ile Ile Leu Ser Val Ser
                325                 330                 335

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

Glu His Glu Ile Arg Asn Ile Ser Cys Ala Ala Gln Asp Pro Glu Asp
        355                 360                 365

Leu Ser Thr Phe Ala Tyr Ile Thr Lys Asp Leu Lys Ser Asn His His
    370                 375                 380

Tyr Cys His Val Phe Thr Ala Phe Asp Val Asn Leu Ala Tyr Glu Ile
385                 390                 395                 400

Ile Leu Thr Leu Gly Gln Ala Phe Glu Val Ala Tyr Gln Leu Ala Leu
                405                 410                 415
```

```
Gln Ala Arg Lys Gly Gly His Ser Ser Thr Leu Pro Glu Ser Phe Glu
            420                 425                 430

Asn Lys Pro Ser Lys Pro Ile Pro Lys Pro Arg Val Ser Ile Arg Lys
        435                 440                 445

Ser Val Pro Phe Cys Phe Lys Ala Asp Arg Pro Ile
    450                 455                 460


<210> 5066
<211> 450
<212> PRT
<213> Homo sapiens

<220>
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      domain containing 1B; "

<220>
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<400> 5066
Met Met Trp Gln Cys His Leu Ser Ala Gln Asp Tyr Arg Tyr Tyr Pro
1               5                  10                  15

Val Asp Gly Tyr Ser Leu Leu Lys Arg Phe Pro Leu His Pro Leu Thr
            20                  25                  30

Gly Pro Arg Cys Pro Val Gln Thr Val Gly Gln Trp Leu Glu Ser Ile
        35                  40                  45

Gly Leu Pro Gln Tyr Glu Asn His Leu Met Ala Asn Gly Phe Asp Asn
    50                  55                  60

Val Gln Phe Met Gly Ser Asn Val Met Glu Asp Gln Asp Leu Leu Glu
```

65 70 75 80

Ile Gly Ile Leu Asn Ser Gly His Arg Gln Arg Ile Leu Gln Ala Ile
85 90 95

Gln Leu Leu Pro Lys Met Arg Pro Ile Gly His Asp Gly Tyr His Pro
100 105 110

Thr Ser Val Ala Glu Trp Leu Asp Ser Ile Glu Leu Gly Asp Tyr Thr
115 120 125

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

Ile Trp Glu Val Glu Leu Ile Asn Val Leu Lys Ile Asn Leu Ile Gly
145 150 155 160

His Arg Lys Arg Ile Leu Ala Ser Leu Gly Asp Arg Leu His Asp Asp
165 170 175

Pro Pro Gln Lys Pro Pro Arg Ser Ile Thr Leu Arg Ser Ser Val Cys
180 185 190

Glu Ile Trp Thr Asn Gln Asn Ala Gly Phe Pro Phe Ser Ala Ile His
195 200 205

Gln Val His Asn Thr Gly Asp Trp Gly Glu Pro Ser Ile Thr Leu Arg
210 215 220

Pro Pro Asn Glu Ala Thr Ala Ser Thr Pro Val Gln Tyr Trp Gln His
225 230 235 240

His Pro Glu Lys Leu Ile Phe Gln Ser Cys Asp Tyr Lys Ala Phe Tyr
245 250 255

Leu Gly Ser Met Leu Ile Lys Glu Leu Arg Gly Thr Glu Ser Thr Gln
260 265 270

Asp Ala Cys Ala Lys Met Arg Ala Asn Cys Gln Lys Ser Thr Glu Gln
275 280 285

Met Lys Lys Val Pro Thr Ile Ile Leu Ser Val Ser Tyr Lys Gly Val
290 295 300

```
Lys Phe Ile Asp Ala Thr Asn Lys Asn Ile Ile Ala Glu His Glu Ile
305                 310                 315                 320

Arg Asn Ile Ser Cys Ala Ala Gln Asp Pro Glu Asp Leu Ser Thr Phe
                325                 330                 335

Ala Tyr Ile Thr Lys Asp Leu Lys Ser Asn His His Tyr Cys His Val
            340                 345                 350

Phe Thr Ala Phe Asp Val Asn Leu Ala Tyr Glu Ile Ile Leu Thr Leu
        355                 360                 365

Gly Gln Ala Phe Glu Val Ala Tyr Gln Leu Ala Leu Gln Ala Arg Lys
    370                 375                 380

Gly Gly His Ser Ser Thr Leu Pro Glu Ser Phe Glu Asn Lys Pro Ser
385                 390                 395                 400

Lys Pro Ile Pro Lys Pro Arg Val Ser Ile Arg Lys Ser Val Gln Ile
                405                 410                 415

Asp Pro Ser Glu Gln Lys Thr Leu Ala Asn Leu Pro Trp Ile Val Glu
            420                 425                 430

Pro Gly Gln Glu Ala Lys Arg Gly Ile Asn Thr Lys Tyr Glu Thr Thr
        435                 440                 445

Ile Phe
    450


<210> 5067
<211> 510
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
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domain containing 1B; "

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<223> /note="Uniprot ID: Q7Z6G8; "

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<400> 5067

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Met Met Trp Gln Cys His Leu Ser Ala Gln Asp Tyr Arg Tyr Tyr Pro
1               5                  10                  15

Val Asp Gly Tyr Ser Leu Leu Lys Arg Phe Pro Leu His Pro Leu Thr
            20                  25                  30

Gly Pro Arg Cys Pro Val Gln Thr Val Gly Gln Trp Leu Glu Ser Ile
        35                  40                  45

Gly Leu Pro Gln Tyr Glu Asn His Leu Met Ala Asn Gly Phe Asp Asn
    50                  55                  60

Val Gln Phe Met Gly Ser Asn Val Met Glu Asp Gln Asp Leu Leu Glu
65                  70                  75                  80

Ile Gly Ile Leu Asn Ser Gly His Arg Gln Arg Ile Leu Gln Ala Ile
                85                  90                  95

Gln Leu Leu Pro Lys Met Arg Pro Ile Gly His Asp Gly Tyr His Pro
            100                 105                 110

Thr Ser Val Ala Glu Trp Leu Asp Ser Ile Glu Leu Gly Asp Tyr Thr
        115                 120                 125

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

Ile Trp Glu Val Glu Leu Ile Asn Val Leu Lys Ile Asn Leu Ile Gly
145                 150                 155                 160

His Arg Lys Arg Ile Leu Ala Ser Leu Gly Asp Arg Leu His Asp Asp
                165                 170                 175
```

```
Pro Pro Gln Lys Pro Pro Arg Ser Ile Thr Leu Arg Glu Pro Ser Gly
            180                 185                 190

Asn His Thr Pro Pro Gln Leu Ser Pro Ser Leu Ser Gln Ser Thr Tyr
        195                 200                 205

Thr Thr Gly Gly Ser Leu Asp Val Pro His Ile Ile Met Gln Gly Asp
    210                 215                 220

Ala Arg Arg Arg Arg Asn Glu Asn Tyr Phe Asp Asp Ile Pro Arg Ser
225                 230                 235                 240

Lys Leu Glu Arg Gln Met Ala Gln Ser Ser Val Cys Glu Ile Trp Thr
                245                 250                 255

Asn Gln Asn Ala Gly Phe Pro Phe Ser Ala Ile His Gln Val His Asn
            260                 265                 270

Thr Gly Asp Trp Gly Glu Pro Ser Ile Thr Leu Arg Pro Pro Asn Glu
        275                 280                 285

Ala Thr Ala Ser Thr Pro Val Gln Tyr Trp Gln His His Pro Glu Lys
    290                 295                 300

Leu Ile Phe Gln Ser Cys Asp Tyr Lys Ala Phe Tyr Leu Gly Ser Met
305                 310                 315                 320

Leu Ile Lys Glu Leu Arg Gly Thr Glu Ser Thr Gln Asp Ala Cys Ala
                325                 330                 335

Lys Met Arg Ala Asn Cys Gln Lys Ser Thr Glu Gln Met Lys Lys Val
            340                 345                 350

Pro Thr Ile Ile Leu Ser Val Ser Tyr Lys Gly Val Lys Phe Ile Asp
        355                 360                 365

Ala Thr Asn Lys Asn Ile Ile Ala Glu His Glu Ile Arg Asn Ile Ser
    370                 375                 380

Cys Ala Ala Gln Asp Pro Glu Asp Leu Ser Thr Phe Ala Tyr Ile Thr
385                 390                 395                 400

Lys Asp Leu Lys Ser Asn His His Tyr Cys His Val Phe Thr Ala Phe
```

```
                405                 410                 415

Asp Val Asn Leu Ala Tyr Glu Ile Ile Leu Thr Leu Gly Gln Ala Phe
            420                 425                 430

Glu Val Ala Tyr Gln Leu Ala Leu Gln Ala Arg Lys Gly Gly His Ser
        435                 440                 445

Ser Thr Leu Pro Glu Ser Phe Glu Asn Lys Pro Ser Lys Pro Ile Pro
    450                 455                 460

Lys Pro Arg Val Ser Ile Arg Lys Ser Val Gln Ile Asp Pro Ser Glu
465                 470                 475                 480

Gln Lys Thr Leu Ala Asn Leu Pro Trp Ile Val Glu Pro Gly Gln Glu
                485                 490                 495

Ala Lys Arg Gly Ile Asn Thr Lys Tyr Glu Thr Thr Ile Phe
            500                 505                 510


<210> 5068
<211> 426
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="ENSP ID: ENSP00000448205"

<400> 5068
Met Met Trp Gln Cys His Leu Ser Ala Gln Asp Tyr Arg Tyr Tyr Pro
1               5                   10                  15
```

```
Val Asp Gly Tyr Ser Leu Leu Lys Arg Phe Pro Leu His Pro Leu Thr
            20                  25                  30

Gly Pro Arg Cys Pro Val Gln Thr Val Gly Gln Trp Leu Glu Ser Ile
        35                  40                  45

Gly Leu Pro Gln Tyr Glu Asn His Leu Met Ala Asn Gly Phe Asp Asn
    50                  55                  60

Val Gln Phe Met Gly Ser Asn Val Met Glu Asp Gln Asp Leu Leu Glu
65                  70                  75                  80

Ile Gly Ile Leu Asn Ser Gly His Arg Gln Arg Ile Leu Gln Ala Ile
                85                  90                  95

Gln Leu Leu Pro Lys Met Arg Pro Ile Gly His Asp Gly Tyr His Pro
            100                 105                 110

Thr Ser Val Ala Glu Trp Leu Asp Ser Ile Glu Leu Gly Asp Tyr Thr
        115                 120                 125

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

Ile Trp Glu Val Glu Leu Ile Asn Val Leu Lys Ile Asn Leu Ile Gly
145                 150                 155                 160

His Arg Lys Arg Ile Leu Ala Ser Leu Gly Asp Arg Leu His Asp Asp
                165                 170                 175

Pro Pro Gln Lys Pro Pro Arg Ser Ile Thr Leu Arg Thr Gly Asp Trp
            180                 185                 190

Gly Glu Pro Ser Ile Thr Leu Arg Pro Pro Asn Glu Ala Thr Ala Ser
        195                 200                 205

Thr Pro Val Gln Tyr Trp Gln His His Pro Glu Lys Leu Ile Phe Gln
    210                 215                 220

Ser Cys Asp Tyr Lys Ala Phe Tyr Leu Gly Ser Met Leu Ile Lys Glu
225                 230                 235                 240
```

```
Leu Arg Gly Thr Glu Ser Thr Gln Asp Ala Cys Ala Lys Met Arg Ala
                245                 250                 255

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

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

Asn Ile Ile Ala Glu His Glu Ile Arg Asn Ile Ser Cys Ala Ala Gln
    290                 295                 300

Asp Pro Glu Asp Leu Ser Thr Phe Ala Tyr Ile Thr Lys Asp Leu Lys
305                 310                 315                 320

Ser Asn His His Tyr Cys His Val Phe Thr Ala Phe Asp Val Asn Leu
                325                 330                 335

Ala Tyr Glu Ile Ile Leu Thr Leu Gly Gln Ala Phe Glu Val Ala Tyr
            340                 345                 350

Gln Leu Ala Leu Gln Ala Arg Lys Gly Gly His Ser Ser Thr Leu Pro
        355                 360                 365

Glu Ser Phe Glu Asn Lys Pro Ser Lys Pro Ile Pro Lys Pro Arg Val
    370                 375                 380

Ser Ile Arg Lys Ser Val Gln Ile Asp Pro Ser Glu Gln Lys Thr Leu
385                 390                 395                 400

Ala Asn Leu Pro Trp Ile Val Glu Pro Gly Gln Glu Ala Lys Arg Gly
                405                 410                 415

Ile Asn Thr Lys Tyr Glu Thr Thr Ile Phe
            420                 425
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<210> 5069
<211> 764
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<400> 5069
Met Leu Ala Gln Glu Ser Tyr Pro Lys Lys Arg Asn Tyr Thr Met Glu
1   5   10   15

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

Phe Leu Cys Asp Leu Met Asp Thr Ala Val Thr Lys Lys Pro Cys Ser
        35   40   45

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

Val Ala Val Thr Thr Pro Gly Thr Ser Asn His Arg Asn Ser Ser Thr
65   70   75   80

Gly Pro Thr Pro Asp Cys Ser Pro Pro Ser Pro Asp Thr Ala Leu Lys
                85   90   95

Asn Ile Val Lys Val Ile Arg Pro Gln Pro Lys Gln Arg Thr Ser Ile
            100   105   110

Val Ser Ser Leu Asp Phe His Arg Met Asn His Asn Gln Glu Tyr Phe
        115   120   125

Glu Ile Asn Thr Ser Thr Gly Cys Thr Ser Phe Thr Ala Ser Pro Pro
    130   135   140

Ala Ser Pro Pro Thr Ser Ser Val Gly Thr Thr Glu Val Lys Asn Glu

145 150 155 160

Gly Thr Asn His Thr Asp Asp Leu Ser Arg Gln Asp Asp Asn Asp Pro
165 170 175

Pro Lys Glu Tyr Asp Pro Gly Gln Phe Ala Gly Leu Leu His Gly Ser
180 185 190

Ser Pro Ala Cys Glu Ser Pro Glu Asn Pro Phe His Leu Tyr Gly Lys
195 200 205

Arg Glu Gln Cys Glu Lys Gly Gln Asp Glu Val Ser Leu Ala Asn Ser
210 215 220

Pro Leu Pro Phe Lys Gln Ser Pro Ile Glu Asn Asn Ser Glu Pro Leu
225 230 235 240

Val Lys Lys Ile Lys Pro Lys Val Val Ser Arg Thr Ile Phe His Lys
245 250 255

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

Arg Ser Gly Ser Arg Asn Gly Asp Gln Trp Val Met Asn Ala Gly Gly
275 280 285

Phe Val Glu Arg Ala Cys Thr Leu Gly Arg Ile Arg Ser Leu Pro Lys
290 295 300

Ala Leu Ile Asp Met His Leu Ser Lys Ser Val Ser Lys Ser Asp Ser
305 310 315 320

Asp Leu Ile Ala Tyr Pro Ser Asn Glu Lys Thr Ser Arg Val Asn Trp
325 330 335

Ser Glu Ser Ser Thr Ala Glu His Ser Ser Lys Gly Asn Ser Glu Arg
340 345 350

Thr Pro Ser Phe Thr Ser Glu Trp Glu Glu Ile Asp Lys Ile Met Ser
355 360 365

Ser Ile Asp Val Gly Ile Asn Asn Glu Leu Lys Glu Met Asn Gly Pro
370 375 380

```
Arg Cys Pro Val Gln Thr Val Gly Gln Trp Leu Glu Ser Ile Gly Leu
385                 390                 395                 400

Pro Gln Tyr Glu Asn His Leu Met Ala Asn Gly Phe Asp Asn Val Gln
                405                 410                 415

Phe Met Gly Ser Asn Val Met Glu Asp Gln Asp Leu Leu Glu Ile Gly
            420                 425                 430

Ile Leu Asn Ser Gly His Arg Gln Arg Ile Leu Gln Ala Ile Gln Leu
        435                 440                 445

Leu Pro Lys Met Arg Pro Ile Gly His Asp Gly Tyr His Pro Thr Ser
    450                 455                 460

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

Phe Leu Ile Asn Gly Tyr Thr Ser Met Asp Leu Leu Lys Lys Ile Trp
                485                 490                 495

Glu Val Glu Leu Ile Asn Val Leu Lys Ile Asn Leu Ile Gly His Arg
            500                 505                 510

Lys Arg Ile Leu Ala Ser Leu Gly Asp Arg Leu His Asp Asp Pro Pro
        515                 520                 525

Gln Lys Pro Pro Arg Ser Ile Thr Leu Arg Thr Gly Asp Trp Gly Glu
    530                 535                 540

Pro Ser Ile Thr Leu Arg Pro Pro Asn Glu Ala Thr Ala Ser Thr Pro
545                 550                 555                 560

Val Gln Tyr Trp Gln His His Pro Glu Lys Leu Ile Phe Gln Ser Cys
                565                 570                 575

Asp Tyr Lys Ala Phe Tyr Leu Gly Ser Met Leu Ile Lys Glu Leu Arg
            580                 585                 590

Gly Thr Glu Ser Thr Gln Asp Ala Cys Ala Lys Met Arg Ala Asn Cys
        595                 600                 605
```

```
Gln Lys Ser Thr Glu Gln Met Lys Lys Val Pro Thr Ile Ile Leu Ser
    610                 615                 620

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

Ile Ala Glu His Glu Ile Arg Asn Ile Ser Cys Ala Ala Gln Asp Pro
                645                 650                 655

Glu Asp Leu Ser Thr Phe Ala Tyr Ile Thr Lys Asp Leu Lys Ser Asn
            660                 665                 670

His His Tyr Cys His Val Phe Thr Ala Phe Asp Val Asn Leu Ala Tyr
        675                 680                 685

Glu Ile Ile Leu Thr Leu Gly Gln Ala Phe Glu Val Ala Tyr Gln Leu
    690                 695                 700

Ala Leu Gln Ala Arg Lys Gly Gly His Ser Ser Thr Leu Pro Glu Ser
705                 710                 715                 720

Phe Glu Asn Lys Pro Ser Lys Pro Ile Pro Lys Pro Arg Val Ser Ile
                725                 730                 735

Arg Lys Ser Val Asp Leu Leu His Ala Ser His Thr Gly Gln Glu Pro
            740                 745                 750

Ser Glu Arg His Thr Glu Glu Ala Leu Arg Lys Phe
        755                 760


<210> 5070
<211> 532
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<213> Homo sapiens

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ankyrin repeat and sterile alpha motif
domain containing 1B; "

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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 5070

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Xaa His Leu Ser Lys Ser Val Ser Lys Ser Asp Ser Asp Leu Ile Ala
1               5                  10                  15

Tyr Pro Ser Asn Glu Lys Thr Ser Arg Val Asn Trp Ser Glu Ser Ser
            20                  25                  30

Thr Ala Glu His Ser Ser Lys Gly Asn Ser Glu Arg Thr Pro Ser Phe
        35                  40                  45

Thr Ser Glu Trp Glu Glu Ile Asp Lys Ile Met Ser Ser Ile Asp Val
    50                  55                  60

Gly Ile Asn Asn Glu Leu Lys Glu Met Asn Gly Glu Thr Thr Arg Pro
65                  70                  75                  80

Arg Cys Pro Val Gln Thr Val Gly Gln Trp Leu Glu Ser Ile Gly Leu
                85                  90                  95

Pro Gln Tyr Glu Asn His Leu Met Ala Asn Gly Phe Asp Asn Val Gln
            100                 105                 110

Phe Met Gly Ser Asn Val Met Glu Asp Gln Asp Leu Leu Glu Ile Gly
        115                 120                 125

Ile Leu Asn Ser Gly His Arg Gln Arg Ile Leu Gln Ala Ile Gln Leu
    130                 135                 140

Leu Pro Lys Met Arg Pro Ile Gly His Asp Gly Tyr His Pro Thr Ser
145                 150                 155                 160

Val Ala Glu Trp Leu Asp Ser Ile Glu Leu Gly Asp Tyr Thr Lys Ala
                165                 170                 175
```

```
Phe Leu Ile Asn Gly Tyr Thr Ser Met Asp Leu Leu Lys Lys Ile Trp
            180                 185                 190

Glu Val Glu Leu Ile Asn Val Leu Lys Ile Asn Leu Ile Gly His Arg
        195                 200                 205

Lys Arg Ile Leu Ala Ser Leu Gly Asp Arg Leu His Asp Asp Pro Pro
    210                 215                 220

Gln Lys Pro Pro Arg Ser Ile Thr Leu Arg Glu Pro Ser Gly Asn His
225                 230                 235                 240

Thr Pro Pro Gln Leu Ser Pro Ser Leu Ser Gln Ser Thr Tyr Thr Thr
                245                 250                 255

Gly Gly Ser Leu Asp Val Pro His Ile Ile Met Gln Gly Asp Ala Arg
            260                 265                 270

Arg Arg Arg Asn Glu Asn Tyr Phe Asp Asp Ile Pro Arg Ser Lys Leu
        275                 280                 285

Glu Arg Gln Met Ala Gln Thr Gly Asp Trp Gly Glu Pro Ser Ile Thr
    290                 295                 300

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

Gln His His Pro Glu Lys Leu Ile Phe Gln Ser Cys Asp Tyr Lys Ala
                325                 330                 335

Phe Tyr Leu Gly Ser Met Leu Ile Lys Glu Leu Arg Gly Thr Glu Ser
            340                 345                 350

Thr Gln Asp Ala Cys Ala Lys Met Arg Ala Asn Cys Gln Lys Ser Thr
        355                 360                 365

Glu Gln Met Lys Lys Val Pro Thr Ile Ile Leu Ser Val Ser Tyr Lys
    370                 375                 380

Gly Val Lys Phe Ile Asp Ala Thr Asn Lys Asn Ile Ile Ala Glu His
385                 390                 395                 400
```

```
Glu Ile Arg Asn Ile Ser Cys Ala Ala Gln Asp Pro Glu Asp Leu Ser
                405                 410                 415

Thr Phe Ala Tyr Ile Thr Lys Asp Leu Lys Ser Asn His His Tyr Cys
            420                 425                 430

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

Thr Leu Gly Gln Ala Phe Glu Val Ala Tyr Gln Leu Ala Leu Gln Ala
    450                 455                 460

Arg Lys Gly Gly His Ser Ser Thr Leu Pro Glu Ser Phe Glu Asn Lys
465                 470                 475                 480

Pro Ser Lys Pro Ile Pro Lys Pro Arg Val Ser Ile Arg Lys Ser Val
                485                 490                 495

Gln Ile Asp Pro Ser Glu Gln Lys Thr Leu Ala Asn Leu Pro Trp Ile
            500                 505                 510

Val Glu Pro Gly Gln Glu Ala Lys Arg Gly Ile Asn Thr Lys Tyr Glu
        515                 520                 525

Thr Thr Ile Phe
    530


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      domain containing 1B; "

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<223> /note="Uniprot ID: Q7Z6G8; "

<220>
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<400> 5071

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Met Met Trp Gln Cys His Leu Ser Ala Gln Asp Tyr Arg Tyr Tyr Pro
1               5                  10                  15

Val Asp Gly Tyr Ser Leu Leu Lys Arg Phe Pro Leu His Pro Leu Thr
            20                  25                  30

Gly Pro Arg Cys Pro Val Gln Thr Val Gly Gln Trp Leu Glu Ser Ile
        35                  40                  45

Gly Leu Pro Gln Tyr Glu Asn His Leu Met Ala Asn Gly Phe Asp Asn
    50                  55                  60

Val Gln Phe Met Gly Ser Asn Val Met Glu Asp Gln Asp Leu Leu Glu
65                  70                  75                  80

Ile Gly Ile Leu Asn Ser Gly His Arg Gln Arg Ile Leu Gln Ala Ile
                85                  90                  95

Gln Leu Leu Pro Lys Met Arg Pro Ile Gly His Asp Gly Tyr His Pro
            100                 105                 110

Thr Ser Val Ala Glu Trp Leu Asp Ser Ile Glu Leu Gly Asp Tyr Thr
        115                 120                 125

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

Ile Trp Glu Val Glu Leu Ile Asn Val Leu Lys Ile Asn Leu Ile Gly
145                 150                 155                 160

His Arg Lys Arg Ile Leu Ala Ser Leu Gly Asp Arg Leu His Asp Asp
                165                 170                 175

Pro Pro Gln Lys Pro Pro Arg Ser Ile Thr Leu Arg Thr Gly Asp Trp
            180                 185                 190

Gly Glu Pro Ser Ile Thr Leu Arg Pro Pro Asn Glu Ala Thr Ala Ser
        195                 200                 205
```

```
Thr Pro Val Gln Tyr Trp Gln His His Pro Glu Lys Leu Ile Phe Gln
    210                 215                 220

Ser Cys Asp Tyr Lys Ala Phe Tyr Leu Gly Ser Met Leu Ile Lys Glu
225                 230                 235                 240

Leu Arg Gly Thr Glu Ser Thr Gln Asp Ala Cys Ala Lys Met Arg Ala
                245                 250                 255

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

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

Asn Ile Ile Ala Glu His Glu Ile Arg Asn Ile Ser Cys Ala Ala Gln
    290                 295                 300

Asp Pro Glu Asp Leu Ser Thr Phe Ala Tyr Ile Thr Lys Asp Leu Lys
305                 310                 315                 320

Ser Asn His His Tyr Cys His Val Phe Thr Ala Phe Asp Val Asn Leu
                325                 330                 335

Ala Tyr Glu Ile Ile Leu Thr Leu Gly Gln Ala Phe Glu Val Ala Tyr
            340                 345                 350

Gln Leu Ala Leu Gln Ala Arg Lys Gly Gly His Ser Ser Thr Leu Pro
        355                 360                 365

Glu Ser Phe Glu Asn Lys Pro Ser Lys Pro Ile Pro Lys Pro Arg Val
    370                 375                 380

Ser Ile Arg Lys Ser Val Asp Leu Leu His Ala Ser His Thr Gly Gln
385                 390                 395                 400

Glu Pro Ser Glu Arg His Thr Glu Glu Ala Leu Arg Lys Phe
                405                 410
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<210> 5072
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<213> Homo sapiens

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ankyrin repeat and sterile alpha motif
domain containing 1B; "

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<400> 5072

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Met Gly Lys Asp Gln Glu Leu Leu Glu Ala Ala Arg Thr Gly Asn Val
1               5                  10                  15

Ala Leu Val Glu Lys Leu Leu Ser Gly Arg Lys Gly Gly Ile Leu Gly
            20                  25                  30

Gly Gly Ser Gly Pro Leu Pro Leu Ser Asn Leu Leu Ser Ile Trp Arg
        35                  40                  45

Gly Pro Asn Val Asn Cys Thr Asp Ser Ser Gly Tyr Thr Ala Leu His
    50                  55                  60

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

Tyr Glu Ala Ser Thr Asn Val Ala Asp Asn Lys Gly Tyr Phe Pro Ile
                85                  90                  95

His Leu Ala Ala Trp Lys Gly Asp Val Glu Ile Val Lys Ile Leu Ile
            100                 105                 110

His His Gly Pro Ser His Ser Arg Val Asn Glu Gln Asn Asn Glu Asn
        115                 120                 125
```

```
Glu Thr Ala Leu His Cys Ala Ala Gln Tyr Gly His Ser Glu Val Val
    130                 135                 140

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

Leu Glu Thr Pro Leu Asp Leu Ala Ala Leu Tyr Gly Arg Leu Arg Val
                165                 170                 175

Val Lys Met Ile Ile Ser Ala His Pro Asn Leu Met Ser Cys Asn Thr
            180                 185                 190

Arg Lys His Thr Pro Leu His Leu Ala Ala Arg Asn Gly His Lys Ala
        195                 200                 205

Val Val Gln Val Leu Leu Glu Ala Gly Met Asp Val Ser Cys Gln Thr
    210                 215                 220

Glu Lys Gly Ser Ala Leu His Glu Ala Ala Leu Phe Gly Lys Val Asp
225                 230                 235                 240

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

Ser Leu Gly Arg Thr Val Leu Asp Ile Leu Lys Glu His Pro Ser Gln
            260                 265                 270

Lys Ser Leu Gln Ile Ala Thr Leu Leu Gln Glu Tyr Leu Glu Gly Val
        275                 280                 285

Gly Arg Ser Thr Val Leu Glu Glu Pro Val Gln Glu Asp Ala Thr Gln
    290                 295                 300

Glu Thr His Ile Ser Ser Pro Val Glu Ser Pro Ser Gln Lys Thr Lys
305                 310                 315                 320

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

Leu Cys Gln Glu Lys Asp Tyr Ser Phe Glu Asp Leu Cys His Thr Ile
            340                 345                 350

Ser Asp His Tyr Leu Asp Asn Leu Ser Lys Ile Ser Glu Glu Glu Leu
```

```
        355                 360                 365

Gly Lys Asn Gly Ser Gln Ser Val Arg Thr Ser Ser Thr Ile Asn Leu
    370                 375                 380

Ser Pro Gly Glu Val Glu Glu Glu Asp Asp Asp Glu Asn Thr Cys Gly
385                 390                 395                 400

Pro Ser Gly Leu Trp Glu Ala Leu Thr Pro Cys Asn Gly Cys Arg Asn
                405                 410                 415

Leu Gly Phe Pro Met Leu Ala Gln Glu Ser Tyr Pro Lys Lys Arg Asn
            420                 425                 430

Tyr Thr Met Glu Ile Val Pro Ser Ala Ser Leu Asp Thr Phe Pro Ser
        435                 440                 445

Glu Asn Glu Asn Phe Leu Cys Asp Leu Met Asp Thr Ala Val Thr Lys
    450                 455                 460

Lys Pro Cys Ser Leu Glu Ile Ala Arg Ala Pro Ser Pro Arg Thr Asp
465                 470                 475                 480

Asn Ala Ser Glu Val Ala Val Thr Thr Pro Gly Thr Ser Asn His Arg
                485                 490                 495

Asn Ser Ser Thr Gly Pro Thr Pro Asp Cys Ser Pro Pro Ser Pro Asp
            500                 505                 510

Thr Ala Leu Lys Asn Ile Val Lys Val Ile Arg Pro Gln Pro Lys Gln
        515                 520                 525

Arg Thr Ser Ile Val Ser Ser Leu Asp Phe His Arg Met Asn His Asn
    530                 535                 540

Gln Glu Tyr Phe Glu Ile Asn Thr Ser Thr Gly Cys Thr Ser Phe Thr
545                 550                 555                 560

Ala Ser Pro Pro Ala Ser Pro Pro Thr Ser Ser Val Gly Thr Thr Glu
                565                 570                 575

Val Lys Asn Glu Gly Thr Asn His Thr Asp Asp Leu Ser Arg Gln Asp
            580                 585                 590
```

```
Asp Asn Asp Pro Pro Lys Glu Tyr Asp Pro Gly Gln Phe Ala Gly Leu
        595                 600                 605

Leu His Gly Ser Ser Pro Ala Cys Glu Ser Pro Glu Asn Pro Phe His
    610                 615                 620

Leu Tyr Gly Lys Arg Glu Gln Cys Glu Lys Gly Gln Asp Glu Val Ser
625                 630                 635                 640

Leu Ala Asn Ser Pro Leu Pro Phe Lys Gln Ser Pro Ile Glu Asn Asn
                645                 650                 655

Ser Glu Pro Leu Val Lys Lys Ile Lys Pro Lys Val Val Ser Arg Thr
            660                 665                 670

Ile Phe His Lys Lys Ser Asn Gln Leu Glu Asn His Thr Ile Val Gly
        675                 680                 685

Thr Arg Ser Thr Arg Ser Gly Ser Arg Asn Gly Asp Gln Trp Val Met
    690                 695                 700

Asn Ala Gly Gly Phe Val Glu Arg Ala Cys Thr Leu Gly Arg Ile Arg
705                 710                 715                 720

Ser Leu Pro Lys Ala Leu Ile Asp Met His Leu Ser Lys Ser Val Ser
                725                 730                 735

Lys Ser Asp Ser Asp Leu Ile Ala Tyr Pro Ser Asn Glu Lys Thr Ser
            740                 745                 750

Arg Val Asn Trp Ser Glu Ser Ser Thr Ala Glu His Ser Ser Lys Gly
        755                 760                 765

Asn Ser Glu Arg Thr Pro Ser Phe Thr Ser Glu Trp Glu Glu Ile Asp
    770                 775                 780

Lys Ile Met Ser Ser Ile Asp Val Gly Ile Asn Asn Glu Leu Lys Glu
785                 790                 795                 800

Met Asn Gly Glu Thr Thr Arg Pro Arg Cys Pro Val Gln Thr Val Gly
                805                 810                 815
```

```
Gln Trp Leu Glu Ser Ile Gly Leu Pro Gln Tyr Glu Asn His Leu Met
            820                 825                 830

Ala Asn Gly Phe Asp Asn Val Gln Phe Met Gly Ser Asn Val Met Glu
        835                 840                 845

Asp Gln Asp Leu Leu Glu Ile Gly Ile Leu Asn Ser Gly His Arg Gln
    850                 855                 860

Arg Ile Leu Gln Ala Ile Gln Leu Leu Pro Lys Met Arg Pro Ile Gly
865                 870                 875                 880

His Asp Gly Tyr His Pro Thr Ser Val Ala Glu Trp Leu Asp Ser Ile
                885                 890                 895

Glu Leu Gly Asp Tyr Thr Lys Ala Phe Leu Ile Asn Gly Tyr Thr Ser
            900                 905                 910

Met Asp Leu Leu Lys Lys Ile Trp Glu Val Glu Leu Ile Asn Val Leu
        915                 920                 925

Lys Ile Asn Leu Ile Gly His Arg Lys Arg Ile Leu Ala Ser Leu Gly
    930                 935                 940

Asp Arg Leu His Asp Asp Pro Pro Gln Lys Pro Pro Arg Ser Ile Thr
945                 950                 955                 960

Leu Arg Glu Pro Ser Gly Asn His Thr Pro Pro Gln Leu Ser Pro Ser
                965                 970                 975

Leu Ser Gln Ser Thr Tyr Thr Thr Gly Gly Ser Leu Asp Val Pro His
            980                 985                 990

Ile Ile Met Gln Gly Asp Ala Arg  Arg Arg Arg Asn Glu  Asn Tyr
Phe
        995                 1000                1005

Asp Asp  Ile Pro Arg Ser Lys  Leu Glu Arg Gln Met  Ala Gln Thr
    1010                1015                1020

Gly Asp  Trp Gly Glu Pro Ser  Ile Thr Leu Arg Pro  Pro Asn Glu
    1025                1030                1035
```

```
Ala Thr  Ala Ser Thr Pro Val  Gln Tyr Trp Gln His  His Pro Glu
    1040                1045                1050

Lys Leu  Ile Phe Gln Ser Cys  Asp Tyr Lys Ala Phe  Tyr Leu Gly
    1055                1060                1065

Ser Met  Leu Ile Lys Glu Leu  Arg Gly Thr Glu Ser  Thr Gln Asp
    1070                1075                1080

Ala Cys  Ala Lys Met Arg Ala  Asn Cys Gln Lys Ser  Thr Glu Gln
    1085                1090                1095

Met Lys  Lys Val Pro Thr Ile  Ile Leu Ser Val Ser  Tyr Lys Gly
    1100                1105                1110

Val Lys  Phe Ile Asp Ala Thr  Asn Lys Asn Ile Ile  Ala Glu His
    1115                1120                1125

Glu Ile  Arg Asn Ile Ser Cys  Ala Ala Gln Asp Pro  Glu Asp Leu
    1130                1135                1140

Ser Thr  Phe Ala Tyr Ile Thr  Lys Asp Leu Lys Ser  Asn His His
    1145                1150                1155

Tyr Cys  His Val Phe Thr Ala  Phe Asp Val Asn Leu  Ala Tyr Glu
    1160                1165                1170

Ile Ile  Leu Thr Leu Gly Gln  Ala Phe Glu Val Ala  Tyr Gln Leu
    1175                1180                1185

Ala Leu  Gln Ala Arg Lys Gly  Gly His Ser Ser Thr  Leu Pro Glu
    1190                1195                1200

Ser Phe  Glu Asn Lys Pro Ser  Lys Pro Ile Pro Lys  Pro Arg Val
    1205                1210                1215

Ser Ile  Arg Lys Ser Val Asp  Leu Leu His Ala Ser  His Thr Gly
    1220                1225                1230

Gln Glu  Pro Ser Glu Arg His  Thr Glu Glu Ala Leu  Arg Lys Phe
    1235                1240                1245
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<210> 5073
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domain containing 1B; "

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Met Gly Lys Asp Gln Glu Leu Leu Glu Ala Ala Arg Thr Gly Asn Val
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Ala Leu Val Glu Lys Leu Leu Ser Gly Arg Lys Gly Gly Ile Leu Gly
20 25 30

Gly Gly Ser Gly Pro Leu Pro Leu Ser Asn Leu Leu Ser Ile Trp Arg
35 40 45

Gly Pro Asn Val Asn Cys Thr Asp Ser Ser Gly Tyr Thr Ala Leu His
50 55 60

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

Tyr Glu Ala Ser Thr Asn Val Ala Asp Asn Lys Gly Tyr Phe Pro Ile
85 90 95

His Leu Ala Ala Trp Lys Gly Asp Val Glu Ile Val Lys Ile Leu Ile
100 105 110

His His Gly Pro Ser His Ser Arg Val Asn Glu Gln Asn Asn Glu Asn
115 120 125

Glu Thr Ala Leu His Cys Ala Ala Gln Tyr Gly His Ser Glu Val Val

```
    130                 135                 140

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

Leu Glu Thr Pro Leu Asp Leu Ala Ala Leu Tyr Gly Arg Leu Arg Val
                165                 170                 175

Val Lys Met Ile Ile Ser Ala His Pro Asn Leu Met Ser Cys Asn Thr
            180                 185                 190

Arg Lys His Thr Pro Leu His Leu Ala Ala Arg Asn Gly His Lys Ala
        195                 200                 205

Val Val Gln Val Leu Leu Glu Ala Gly Met Asp Val Ser Cys Gln Thr
    210                 215                 220

Glu Lys Gly Ser Ala Leu His Glu Ala Ala Leu Phe Gly Lys Val Asp
225                 230                 235                 240

Val Val Arg Val Leu Leu Glu Thr Glu Tyr Leu Glu Gly Val Gly Arg
                245                 250                 255

Ser Thr Val Leu Glu Glu Pro Val Gln Glu Asp Ala Thr Gln Glu Thr
            260                 265                 270

His Ile Ser Ser Pro Val Glu Ser Pro Ser Gln Lys Thr Lys Ser Glu
        275                 280                 285

Thr Val Thr Gly Glu Leu Ser Lys Leu Leu Asp Glu Ile Lys Leu Cys
    290                 295                 300

Gln Glu Lys Asp Tyr Ser Phe Glu Asp Leu Cys His Thr Ile Ser Asp
305                 310                 315                 320

His Tyr Leu Asp Asn Leu Ser Lys Ile Ser Glu Glu Glu Leu Gly Lys
                325                 330                 335

Asn Gly Ser Gln Ser Val Arg Thr Ser Ser Thr Ile Asn Leu Ser Pro
            340                 345                 350

Gly Glu Val Glu Glu Glu Asp Asp Asp Glu Asn Thr Cys Gly Pro Ser
        355                 360                 365
```

```
Gly Leu Trp Glu Ala Leu Thr Pro Cys Asn Gly Cys Arg Asn Leu Gly
    370                 375                 380

Phe Pro Met Leu Ala Gln Glu Ser Tyr Pro Lys Lys Arg Asn Tyr Thr
385                 390                 395                 400

Met Glu Ile Val Pro Ser Ala Ser Leu Asp Thr Phe Pro Ser Glu Asn
                405                 410                 415

Glu Asn Phe Leu Cys Asp Leu Met Asp Thr Ala Val Thr Lys Lys Pro
            420                 425                 430

Cys Ser Leu Glu Ile Ala Arg Ala Pro Ser Pro Arg Thr Asp Asn Ala
        435                 440                 445

Ser Glu Val Ala Val Thr Thr Pro Gly Thr Ser Asn His Arg Asn Ser
    450                 455                 460

Ser Thr Gly Pro Thr Pro Asp Cys Ser Pro Pro Ser Pro Asp Thr Ala
465                 470                 475                 480

Leu Lys Asn Ile Val Lys Val Ile Arg Pro Gln Pro Lys Gln Arg Thr
                485                 490                 495

Ser Ile Val Ser Ser Leu Asp Phe His Arg Met Asn His Asn Gln Glu
            500                 505                 510

Tyr Phe Glu Ile Asn Thr Ser Thr Gly Cys Thr Ser Phe Thr Ala Ser
        515                 520                 525

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

Asn Glu Gly Thr Asn His Thr Asp Asp Leu Ser Arg Gln Asp Asp Asn
545                 550                 555                 560

Asp Pro
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<210> 5074
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Met Gly Pro Arg Cys Pro Val Gln Thr Val Gly Gln Trp Leu Glu Ser
1               5                  10                  15


Ile Gly Leu Pro Gln Tyr Glu Asn His Leu Met Ala Asn Gly Phe Asp
            20                  25                  30


Asn Val Gln Phe Met Gly Ser Asn Val Met Glu Asp Gln Asp Leu Leu
        35                  40                  45


Glu Ile Gly Ile Leu Asn Ser Gly His Arg Gln Arg Ile Leu Gln Ala
    50                  55                  60


Ile Gln Leu Leu Pro Lys Met Arg Pro Ile Gly His Asp Gly Tyr His
65                  70                  75                  80


Pro Thr Ser Val Ala Glu Trp Leu Asp Ser Ile Glu Leu Gly Asp Tyr
                85                  90                  95


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


Lys Ile Trp Glu Val Glu Leu Ile Asn Val Leu Lys Ile Asn Leu Ile
        115                 120                 125
```

```
Gly His Arg Lys Arg Ile Leu Ala Ser Leu Gly Asp Arg Leu His Asp
    130                 135                 140

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

Trp Gly Glu Pro Ser Ile Thr Leu Arg Pro Pro Asn Glu Ala Thr Ala
                165                 170                 175

Ser Thr Pro Val Gln Tyr Trp Gln His His Pro Glu Lys Leu Ile Phe
            180                 185                 190

Gln Ser Cys Asp Tyr Lys Ala Phe Tyr Leu Gly Ser Met Leu Ile Lys
        195                 200                 205

Glu Leu Arg Gly Thr Glu Ser Thr Gln Asp Ala Cys Ala Lys Met Arg
    210                 215                 220

Ala Asn Cys Gln Lys Ser Thr Glu Gln Met Lys Lys Val Pro Thr Ile
225                 230                 235                 240

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

Lys Asn Ile Ile Ala Glu His Glu Ile Arg Asn Ile Ser Cys Ala Ala
            260                 265                 270

Gln Asp Pro Glu Asp Leu Ser Thr Phe Ala Tyr Ile Thr Lys Asp Leu
        275                 280                 285

Lys Ser Asn His His Tyr Cys His Val Phe Thr Ala Phe Asp Val Asn
    290                 295                 300

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

Tyr Gln Leu Ala Leu Gln Ala Arg Lys Gly Gly His Ser Ser Thr Leu
                325                 330                 335

Pro Glu Ser Phe Glu Asn Lys Pro Ser Lys Pro Ile Pro Lys Pro Arg
            340                 345                 350

Val Ser Ile Arg Lys Ser Val Ile Asp Pro Ser Glu Gln Lys Thr Leu
```

355 360 365

Ala Asn Leu Pro Trp Ile Val Glu Pro Gly Gln Glu Ala Lys Arg Gly
370 375 380

Ile Asn Thr Lys Tyr Glu Thr Thr Ile Phe
385 390

<210> 5075
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<212> PRT
<213> Homo sapiens

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<223> /note="ENSP ID: ENSP00000452523"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5075
Xaa Ser Ser Thr Leu Pro Glu Ser Phe Glu Asn Lys Pro Ser Lys Pro
1 5 10 15

Ile Pro Lys Pro Arg Val Ser Ile Arg Lys Ser Val Asp Leu Leu His
20 25 30

Ala Ser His Thr Gly Gln Glu Pro Ser Glu Arg His Thr Glu Glu Ala
35 40 45

Leu Arg Lys Phe
50

<210> 5076
<211> 107
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1101; "

<220>
<221> source
<223> /note="Gene Symbol: ANKS1B; "

<220>
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<223> /note="Gene Name:
ankyrin repeat and sterile alpha motif
domain containing 1B; "

<220>
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<223> /note="ENSP ID: ENSP00000473277"

<400> 5076
Met Gln Gly Asp Ala Arg Arg Arg Arg Asn Glu Asn Tyr Phe Asp Asp
1 5 10 15

Ile Pro Arg Ser Lys Leu Glu Arg Gln Met Ala Gln Thr Gly Asp Trp
20 25 30

Gly Glu Pro Ser Ile Thr Leu Arg Pro Pro Asn Glu Ala Thr Ala Ser
35 40 45

Thr Pro Val Gln Tyr Trp Gln His His Pro Glu Lys Leu Ile Phe Gln
50 55 60

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

Leu Arg Gly Thr Glu Ser Thr Gln Asp Ala Cys Ala Lys Met Arg Leu
85 90 95

Ser Asn Phe Asn Phe Arg Ser Leu Gln Ser Lys
100 105

<210> 5077
<211> 95
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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ankyrin repeat and sterile alpha motif
domain containing 1B; "

<220>
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<223> /note="ENSP ID: ENSP00000473300"

<400> 5077
Met Ala Gln Gln Ser Ser Val Cys Glu Ile Trp Thr Asn Gln Asn Ala
1 5 10 15

Gly Phe Pro Phe Ser Ala Ile His Gln Val His Asn Thr Gly Asp Trp
20 25 30

Gly Glu Pro Ser Ile Thr Leu Arg Pro Pro Asn Glu Ala Thr Ala Ser
35 40 45

Thr Pro Val Gln Tyr Trp Gln His His Pro Glu Lys Leu Ile Phe Gln
50 55 60

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

Leu Arg Gly Thr Glu Ser Thr Gln Asp Ala Cys Ala Lys Met Arg
85 90 95

<210> 5078
<211> 96
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ANKS1B; "

<220>

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<223> /note="Gene Name:
ankyrin repeat and sterile alpha motif
domain containing 1B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000473331"

<400> 5078
Met Gln Gly Asp Ala Arg Arg Arg Arg Asn Glu Asn Tyr Phe Asp Asp
1 5 10 15

Ile Pro Arg Ser Lys Leu Glu Arg Gln Met Ala Gln Thr Gly Asp Trp
20 25 30

Gly Glu Pro Ser Ile Thr Leu Arg Pro Pro Asn Glu Ala Thr Ala Ser
35 40 45

Thr Pro Val Gln Tyr Trp Gln His His Pro Glu Lys Leu Ile Phe Gln
50 55 60

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

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

<210> 5079
<211> 39
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<220>
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<220>
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<220>
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ankyrin repeat and sterile alpha motif
domain containing 1B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000473434"

<400> 5079
Met Gln Gly Asp Ala Arg Arg Arg Arg Asn Glu Asn Tyr Phe Asp Asp
1   5   10   15

Ile Pro Arg Ser Lys Leu Glu Arg Gln Met Ala Gln Thr Gly Asp Trp
            20   25   30

Gly Glu Pro Ser Ile Thr Leu
        35

<210> 5080
<211> 20
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ANKS1B; "

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<223> /note="Gene Name:
      ankyrin repeat and sterile alpha motif
      domain containing 1B; "

<220>
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<223> /note="ENSP ID: ENSP00000473513"

<400> 5080
Met Leu Ile Lys Glu Leu Arg Gly Thr Glu Ser Thr Gln Asp Ala Cys
1   5   10   15

Ala Lys Met Arg
            20

<210> 5081
<211> 27
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1101; "

<220>
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<223> /note="Gene Symbol: ANKS1B; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and sterile alpha motif
domain containing 1B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000473517"

<400> 5081
Met Gln Gly Asp Ala Arg Arg Arg Arg Asn Glu Asn Tyr Phe Asp Asp
1 5 10 15

Ile Pro Arg Ser Lys Leu Glu Arg Gln Met Ala
20 25

<210> 5082
<211> 151
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1101; "

<220>
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<223> /note="Gene Symbol: ANKS1B; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and sterile alpha motif
domain containing 1B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000473522"

<400> 5082
Met Gln Gly Asp Ala Arg Arg Arg Arg Asn Glu Asn Tyr Phe Asp Asp
1 5 10 15

Ile Pro Arg Ser Lys Leu Glu Arg Gln Met Ala Gln Ser Ser Val Cys
20 25 30

Glu Ile Trp Thr Asn Gln Asn Ala Gly Phe Pro Phe Ser Ala Ile His
35 40 45

Gln Val His Asn Thr Gly Asp Trp Gly Glu Pro Ser Ile Thr Leu Arg

```
    50                  55                  60

Pro Pro Asn Glu Ala Thr Ala Ser Thr Pro Val Gln Tyr Trp Gln His
65                  70                  75                  80

His Pro Glu Lys Leu Ile Phe Gln Ser Cys Asp Tyr Lys Ala Phe Tyr
                85                  90                  95

Leu Gly Ser Met Leu Ile Lys Glu Leu Arg Gly Thr Glu Ser Thr Gln
            100                 105                 110

Asp Ala Cys Ala Lys Met Arg Gly Lys Glu Lys Ser Thr Glu Gln Met
        115                 120                 125

Lys Lys Val Pro Thr Ile Ile Leu Ser Val Ser Tyr Lys Gly Val Lys
    130                 135                 140

Phe Ile Asp Ala Thr Asn Lys
145                 150


<210> 5083
<211> 64
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
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<220>
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<223> /note="Gene Name:
      ankyrin repeat and sterile alpha motif
      domain containing 1B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000473673"

<400> 5083
Met Gln Gly Asp Ala Arg Arg Arg Arg Asn Glu Asn Tyr Phe Asp Asp
1               5                   10                  15

Ile Pro Arg Ser Lys Leu Glu Arg Gln Met Ala Gln Ser Ser Val Cys
            20                  25                  30
```

Glu Ile Trp Thr Asn Gln Asn Ala Gly Phe Pro Phe Ser Ala Ile His
35 40 45

Gln Val His Asn Thr Gly Asp Trp Gly Glu Pro Ser Ile Thr Leu Arg
50 55 60

<210> 5084
<211> 656
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1102; "

<220>
<221> source
<223> /note="Gene Symbol: ANKS3; "

<220>
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<223> /note="Gene Name:
ankyrin repeat and sterile alpha motif
domain containing 3; "

<220>
<221> source
<223> /note="Uniprot ID: Q6ZW76; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000304586"

<400> 5084
Met Ser Glu Leu Ser Asp Glu Ala Ser Glu Pro Glu Leu Leu Asn Arg
1 5 10 15

Ser Leu Ser Met Trp His Gly Leu Gly Thr Gln Val Ser Gly Glu Glu
20 25 30

Leu Asp Val Pro Leu Asp Leu His Thr Ala Ala Ser Ile Gly Gln Tyr
35 40 45

Glu Val Val Lys Glu Cys Val Gln Arg Arg Glu Leu Asp Leu Asn Lys
50 55 60

Lys Asn Gly Gly Gly Trp Thr Pro Leu Met Tyr Ala Ser Tyr Ile Gly
65 70 75 80

```
His Asp Thr Ile Val His Leu Leu Leu Glu Ala Gly Val Ser Val Asn
                85                  90                  95

Val Pro Thr Pro Glu Gly Gln Thr Pro Leu Met Leu Ala Ser Ser Cys
            100                 105                 110

Gly Asn Glu Ser Ile Ala Tyr Phe Leu Leu Gln Gln Gly Ala Glu Leu
        115                 120                 125

Glu Met Lys Asp Ile Gln Gly Trp Thr Ala Leu Phe His Cys Thr Ser
    130                 135                 140

Ala Gly His Gln His Met Val Arg Phe Leu Leu Asp Ser Gly Ala Asn
145                 150                 155                 160

Ala Asn Val Arg Glu Pro Ile Cys Gly Phe Thr Pro Leu Met Glu Ala
                165                 170                 175

Ala Ala Ala Gly His Glu Ile Ile Val Gln Tyr Phe Leu Asn His Gly
            180                 185                 190

Val Lys Val Asp Ala Arg Asp His Ser Gly Ala Thr Ala Arg Met Leu
        195                 200                 205

Ala Lys Gln Tyr Gly His Met Lys Ile Val Ala Leu Met Asp Thr Tyr
    210                 215                 220

Ser Pro Ser Leu Pro Lys Ser Leu Tyr Arg Ser Pro Glu Lys Tyr Glu
225                 230                 235                 240

Asp Leu Ser Ser Ser Asp Glu Ser Cys Pro Ala Pro Gln Arg Gln Arg
                245                 250                 255

Pro Cys Arg Lys Lys Gly Val Ser Ile His Glu Gly Pro Arg Ala Leu
            260                 265                 270

Ala Arg Ile Thr Gly Ile Gly Leu Gly Gly Arg Ala Pro Arg Pro Arg
        275                 280                 285

Tyr Glu Gln Ala Pro Pro Arg Gly Tyr Val Thr Phe Asn Ser Ser Gly
    290                 295                 300
```

```
Glu Asn Pro Leu Glu Glu Glu Gly Leu Cys Cys Arg Asp Val Thr Ser
305                 310                 315                 320

Pro Ile Asn Glu Arg Asp Val Glu Ser Ser Ser Ser Ser Ser Ser Arg
                325                 330                 335

Glu Glu His Ala Phe Cys Ala Asn Leu Gly Pro Val Gln Ser Ser Ser
            340                 345                 350

Ser Ser Glu Gly Leu Ala Arg Ala Gln Gly Leu Ser Ser Glu Ala Ser
        355                 360                 365

Val Glu Ser Asn Glu Asp Ser Asp His Ala Cys Lys Ser Ser Ala Arg
    370                 375                 380

Lys Gln Ala Lys Ser Tyr Met Lys Thr Lys Asn Pro Asp Ser Gln Trp
385                 390                 395                 400

Pro Pro Arg Ala Ala Thr Asp Arg Glu Gly Phe Leu Ala Glu Ser Ser
                405                 410                 415

Pro Gln Thr Gln Arg Ala Pro Tyr Ser Gly Pro Gln Asp Leu Ala Ala
            420                 425                 430

Leu Leu Glu Gln Ile Gly Cys Leu Lys Tyr Leu Gln Val Phe Glu Glu
        435                 440                 445

Gln Asp Val Asp Leu Arg Ile Phe Leu Thr Leu Thr Glu Ser Asp Leu
    450                 455                 460

Lys Glu Ile Gly Ile Thr Leu Phe Gly Pro Lys Arg Lys Met Thr Ser
465                 470                 475                 480

Ala Ile Ala Arg Trp His Ser Ser Ala Arg Pro Pro Gly Asp Ala Leu
                485                 490                 495

Glu Leu Ala Tyr Ala Asp Arg Leu Glu Ala Glu Met Gln Glu Leu Ala
            500                 505                 510

Ile Gln Leu His Lys Arg Cys Glu Glu Val Glu Ala Thr Arg Gly Gln
        515                 520                 525

Val Cys Gln Glu Gln Glu Leu Arg Ala Val Val Glu Ser Cys Leu Leu
```

```
    530                 535                 540

Glu Gln Asp Arg Ala Arg Glu Asp Leu Gln Ala Arg Leu Arg Glu Thr
545                 550                 555                 560

Trp Ala Leu Ala Arg Asp Ala Ala Leu Val Leu Asp Gln Leu Arg Ala
                565                 570                 575

Cys Gln Ala Glu Leu Ser Ser Arg Val Arg Gln Asp Gln Pro Pro Gly
            580                 585                 590

Ala Ala Thr Leu Gly Leu Ala Val Pro Pro Ala Asp Ser Lys Gly Trp
        595                 600                 605

Gln Ala Ser Leu Gln Ala Met Ser Leu Pro Glu Leu Ser Gly Ala Leu
    610                 615                 620

Glu Asp Arg Val Arg Glu Met Gly Gln Ala Leu Cys Leu Val Thr Gln
625                 630                 635                 640

Ser Leu Glu Lys Leu Gln Val Leu Asn Gly Lys Lys Trp Arg Glu Thr
                645                 650                 655


<210> 5085
<211> 549
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1102; "

<220>
<221> source
<223> /note="Gene Symbol: ANKS3; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat and sterile alpha motif
      domain containing 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000388270"

<400> 5085
Met Ser Glu Leu Ser Asp Glu Ala Ser Glu Pro Glu Leu Leu Asn Arg
1               5                   10                  15
```

```
Ser Leu Ser Met Trp His Gly Leu Gly Thr Gln Val Ser Gly Glu Glu
            20                  25                  30

Leu Asp Val Pro Leu Asp Leu His Thr Ala Ala Ser Ile Gly Gln Tyr
        35                  40                  45

Glu Val Val Lys Glu Cys Val Gln Arg Glu Pro Ile Cys Gly Phe Thr
    50                  55                  60

Pro Leu Met Glu Ala Ala Ala Ala Gly His Glu Ile Ile Val Gln Tyr
65                  70                  75                  80

Phe Leu Asn His Gly Val Lys Val Asp Ala Arg Asp His Ser Gly Ala
                85                  90                  95

Thr Ala Arg Met Leu Ala Lys Gln Tyr Gly His Met Lys Ile Val Ala
            100                 105                 110

Leu Met Asp Thr Tyr Ser Pro Ser Leu Pro Lys Ser Leu Tyr Arg Ser
        115                 120                 125

Pro Glu Lys Tyr Glu Asp Leu Ser Ser Ser Asp Glu Ser Cys Pro Ala
    130                 135                 140

Pro Gln Arg Gln Arg Pro Cys Arg Lys Lys Gly Val Ser Ile His Glu
145                 150                 155                 160

Gly Pro Arg Ala Leu Ala Arg Ile Thr Gly Ile Gly Leu Gly Gly Arg
                165                 170                 175

Ala Pro Arg Pro Arg Tyr Glu Gln Ala Pro Pro Arg Gly Tyr Val Thr
            180                 185                 190

Phe Asn Ser Ser Gly Glu Asn Pro Leu Glu Glu Glu Gly Leu Cys Cys
        195                 200                 205

Arg Asp Val Thr Ser Pro Ile Asn Glu Arg Asp Val Glu Ser Ser Ser
    210                 215                 220

Ser Ser Ser Ser Arg Glu Glu His Ala Phe Cys Ala Asn Leu Gly Pro
225                 230                 235                 240
```

```
Val Gln Ser Ser Ser Ser Ser Glu Gly Leu Ala Arg Ala Gln Gly Leu
                245                 250                 255

Ser Ser Glu Ala Ser Val Glu Ser Asn Glu Asp Ser Asp His Ala Cys
            260                 265                 270

Lys Ser Ser Ala Arg Lys Gln Ala Lys Ser Tyr Met Lys Thr Lys Asn
        275                 280                 285

Pro Asp Ser Gln Trp Pro Pro Arg Ala Ala Thr Asp Arg Glu Gly Phe
    290                 295                 300

Leu Ala Glu Ser Ser Pro Gln Thr Gln Arg Ala Pro Tyr Ser Gly Pro
305                 310                 315                 320

Gln Asp Leu Ala Ala Leu Leu Glu Gln Ile Gly Cys Leu Lys Tyr Leu
                325                 330                 335

Gln Val Phe Glu Glu Gln Asp Val Asp Leu Arg Ile Phe Leu Thr Leu
            340                 345                 350

Thr Glu Ser Asp Leu Lys Glu Ile Gly Ile Thr Leu Phe Gly Pro Lys
        355                 360                 365

Arg Lys Met Thr Ser Ala Ile Ala Arg Trp His Ser Ser Ala Arg Pro
    370                 375                 380

Pro Gly Asp Ala Leu Glu Leu Ala Tyr Ala Asp Arg Leu Glu Ala Glu
385                 390                 395                 400

Met Gln Glu Leu Ala Ile Gln Leu His Lys Arg Cys Glu Glu Val Glu
                405                 410                 415

Ala Thr Arg Gly Gln Val Cys Gln Glu Gln Glu Leu Arg Ala Val Val
            420                 425                 430

Glu Ser Cys Leu Leu Glu Gln Asp Arg Ala Arg Glu Asp Leu Gln Ala
        435                 440                 445

Arg Leu Arg Glu Thr Trp Ala Leu Ala Arg Asp Ala Ala Leu Val Leu
    450                 455                 460
```

```
Asp Gln Leu Arg Ala Cys Gln Ala Glu Leu Ser Ser Arg Val Arg Gln
465                 470                 475                 480


Asp Gln Pro Pro Gly Ala Ala Thr Leu Gly Leu Ala Val Pro Pro Ala
                485                 490                 495


Asp Ser Lys Gly Trp Gln Ala Ser Leu Gln Ala Met Ser Leu Pro Glu
            500                 505                 510


Leu Ser Gly Ala Leu Glu Asp Arg Val Arg Glu Met Gly Gln Ala Leu
        515                 520                 525


Cys Leu Val Thr Gln Ser Leu Glu Lys Leu Gln Val Leu Asn Gly Lys
    530                 535                 540


Lys Trp Arg Glu Thr
545


<210> 5086
<211> 527
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1102; "

<220>
<221> source
<223> /note="Gene Symbol: ANKS3; "

<220>
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<223> /note="Gene Name:
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      domain containing 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406796"

<400> 5086
Met Lys Asp Ile Gln Gly Trp Thr Ala Leu Phe His Cys Thr Ser Ala
1               5                   10                  15


Gly His Gln His Met Val Arg Phe Leu Leu Asp Ser Gly Ala Asn Ala
            20                  25                  30


Asn Val Arg Glu Pro Ile Cys Gly Phe Thr Pro Leu Met Glu Ala Ala
```

```
        35                  40                  45

Ala Ala Gly His Glu Ile Ile Val Gln Tyr Phe Leu Asn His Gly Val
    50                  55                  60

Lys Val Asp Ala Arg Asp His Ser Gly Ala Thr Ala Arg Met Leu Ala
65                  70                  75                  80

Lys Gln Tyr Gly His Met Lys Ile Val Ala Leu Met Asp Thr Tyr Ser
                85                  90                  95

Pro Ser Leu Pro Lys Ser Leu Tyr Arg Ser Pro Glu Lys Tyr Glu Asp
            100                 105                 110

Leu Ser Ser Ser Asp Glu Ser Cys Pro Ala Pro Gln Arg Gln Arg Pro
        115                 120                 125

Cys Arg Lys Lys Gly Val Ser Ile His Glu Gly Pro Arg Ala Leu Ala
    130                 135                 140

Arg Ile Thr Gly Ile Gly Leu Gly Gly Arg Ala Pro Arg Pro Arg Tyr
145                 150                 155                 160

Glu Gln Ala Pro Pro Arg Gly Tyr Val Thr Phe Asn Ser Ser Gly Glu
                165                 170                 175

Asn Pro Leu Glu Glu Glu Gly Leu Cys Cys Arg Asp Val Thr Ser Pro
            180                 185                 190

Ile Asn Glu Arg Asp Val Glu Ser Ser Ser Ser Ser Ser Ser Arg Glu
        195                 200                 205

Glu His Ala Phe Cys Ala Asn Leu Gly Pro Val Gln Ser Ser Ser Ser
    210                 215                 220

Ser Glu Gly Leu Ala Arg Ala Gln Gly Leu Ser Ser Glu Ala Ser Val
225                 230                 235                 240

Glu Ser Asn Glu Asp Ser Asp His Ala Cys Lys Ser Ser Ala Arg Lys
                245                 250                 255

Gln Ala Lys Ser Tyr Met Lys Thr Lys Asn Pro Asp Ser Gln Trp Pro
            260                 265                 270
```

```
Pro Arg Ala Ala Thr Asp Arg Glu Gly Phe Leu Ala Glu Ser Ser Pro
        275                 280                 285

Gln Thr Gln Arg Ala Pro Tyr Ser Gly Pro Gln Asp Leu Ala Ala Leu
    290                 295                 300

Leu Glu Gln Ile Gly Cys Leu Lys Tyr Leu Gln Val Phe Glu Glu Gln
305                 310                 315                 320

Asp Val Asp Leu Arg Ile Phe Leu Thr Leu Thr Glu Ser Asp Leu Lys
                325                 330                 335

Glu Ile Gly Ile Thr Leu Phe Gly Pro Lys Arg Lys Met Thr Ser Ala
            340                 345                 350

Ile Ala Arg Trp His Ser Ser Ala Arg Pro Pro Gly Asp Ala Leu Glu
        355                 360                 365

Leu Ala Tyr Ala Asp Arg Leu Glu Ala Glu Met Gln Glu Leu Ala Ile
    370                 375                 380

Gln Leu His Lys Arg Cys Glu Glu Val Glu Ala Thr Arg Gly Gln Val
385                 390                 395                 400

Cys Gln Glu Gln Glu Leu Arg Ala Val Val Glu Ser Cys Leu Leu Glu
                405                 410                 415

Gln Asp Arg Ala Arg Glu Asp Leu Gln Ala Arg Leu Arg Glu Thr Trp
            420                 425                 430

Ala Leu Ala Arg Asp Ala Ala Leu Val Leu Asp Gln Leu Arg Ala Cys
        435                 440                 445

Gln Ala Glu Leu Ser Ser Arg Val Arg Gln Asp Gln Pro Pro Gly Ala
    450                 455                 460

Ala Thr Leu Gly Leu Ala Val Pro Pro Ala Asp Ser Lys Gly Trp Gln
465                 470                 475                 480

Ala Ser Leu Gln Ala Met Ser Leu Pro Glu Leu Ser Gly Ala Leu Glu
                485                 490                 495
```

```
Asp Arg Val Arg Glu Met Gly Gln Ala Leu Cys Leu Val Thr Gln Ser
            500                 505                 510

Leu Glu Lys Leu Gln Val Leu Asn Gly Lys Lys Trp Arg Glu Thr
        515                 520                 525


<210> 5087
<211> 61
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ANKS3; "

<220>
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<223> /note="Gene Name:
      ankyrin repeat and sterile alpha motif
      domain containing 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000465203"

<400> 5087
Met Ser Glu Leu Ser Asp Glu Ala Ser Glu Pro Glu Leu Leu Asn Arg
1               5                   10                  15

Ser Leu Ser Met Trp His Gly Leu Gly Thr Gln Val Ser Gly Glu Glu
            20                  25                  30

Leu Asp Val Pro Leu Asp Leu His Thr Ala Ala Ser Ile Gly Gln Tyr
        35                  40                  45

Glu Val Val Lys Glu Cys Val Gln Arg Lys Val Gln Ser
    50                  55                  60


<210> 5088
<211> 583
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1102; "
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<220>
<221> source
<223> /note="Gene Symbol: ANKS3; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and sterile alpha motif
domain containing 3; "

<220>
<221> source
<223> /note="Uniprot ID: Q6ZW76; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000465294"

<400> 5088
Met Tyr Ala Ser Tyr Ile Gly His Asp Thr Ile Val His Leu Leu Leu
1   5   10   15

Glu Ala Gly Val Ser Val Asn Val Pro Thr Pro Glu Gly Gln Thr Pro
            20   25   30

Leu Met Leu Ala Ser Ser Cys Gly Asn Glu Ser Ile Ala Tyr Phe Leu
        35   40   45

Leu Gln Gln Gly Ala Glu Leu Glu Met Lys Asp Ile Gln Gly Trp Thr
    50   55   60

Ala Leu Phe His Cys Thr Ser Ala Gly His Gln His Met Val Arg Phe
65   70   75   80

Leu Leu Asp Ser Gly Ala Asn Ala Asn Val Arg Glu Pro Ile Cys Gly
                85   90   95

Phe Thr Pro Leu Met Glu Ala Ala Ala Ala Gly His Glu Ile Ile Val
            100   105   110

Gln Tyr Phe Leu Asn His Gly Val Lys Val Asp Ala Arg Asp His Ser
        115   120   125

Gly Ala Thr Ala Arg Met Leu Ala Lys Gln Tyr Gly His Met Lys Ile
    130   135   140

Val Ala Leu Met Asp Thr Tyr Ser Pro Ser Leu Pro Lys Ser Leu Tyr

145 150 155 160

Arg Ser Pro Glu Lys Tyr Glu Asp Leu Ser Ser Ser Asp Glu Ser Cys
165 170 175

Pro Ala Pro Gln Arg Gln Arg Pro Cys Arg Lys Lys Gly Val Ser Ile
180 185 190

His Glu Gly Pro Arg Ala Leu Ala Arg Ile Thr Gly Ile Gly Leu Gly
195 200 205

Gly Arg Ala Pro Arg Pro Arg Tyr Glu Gln Ala Pro Pro Arg Gly Tyr
210 215 220

Val Thr Phe Asn Ser Ser Gly Glu Asn Pro Leu Glu Glu Glu Gly Leu
225 230 235 240

Cys Cys Arg Asp Val Thr Ser Pro Ile Asn Glu Arg Asp Val Glu Ser
245 250 255

Ser Ser Ser Ser Ser Ser Arg Glu Glu His Ala Phe Cys Ala Asn Leu
260 265 270

Gly Pro Val Gln Ser Ser Ser Ser Ser Glu Gly Leu Ala Arg Ala Gln
275 280 285

Gly Leu Ser Ser Glu Ala Ser Val Glu Ser Asn Glu Asp Ser Asp His
290 295 300

Ala Cys Lys Ser Ser Ala Arg Lys Gln Ala Lys Ser Tyr Met Lys Thr
305 310 315 320

Lys Asn Pro Asp Ser Gln Trp Pro Pro Arg Ala Ala Thr Asp Arg Glu
325 330 335

Gly Phe Leu Ala Glu Ser Ser Pro Gln Thr Gln Arg Ala Pro Tyr Ser
340 345 350

Gly Pro Gln Asp Leu Ala Ala Leu Leu Glu Gln Ile Gly Cys Leu Lys
355 360 365

Tyr Leu Gln Val Phe Glu Glu Gln Asp Val Asp Leu Arg Ile Phe Leu
370 375 380

```
Thr Leu Thr Glu Ser Asp Leu Lys Glu Ile Gly Ile Thr Leu Phe Gly
385                 390                 395                 400

Pro Lys Arg Lys Met Thr Ser Ala Ile Ala Arg Trp His Ser Ser Ala
                405                 410                 415

Arg Pro Pro Gly Asp Ala Leu Glu Leu Ala Tyr Ala Asp Arg Leu Glu
            420                 425                 430

Ala Glu Met Gln Glu Leu Ala Ile Gln Leu His Lys Arg Cys Glu Glu
        435                 440                 445

Val Glu Ala Thr Arg Gly Gln Val Cys Gln Glu Gln Glu Leu Arg Ala
    450                 455                 460

Val Val Glu Ser Cys Leu Leu Glu Gln Asp Arg Ala Arg Glu Asp Leu
465                 470                 475                 480

Gln Ala Arg Leu Arg Glu Thr Trp Ala Leu Ala Arg Asp Ala Ala Leu
                485                 490                 495

Val Leu Asp Gln Leu Arg Ala Cys Gln Ala Glu Leu Ser Ser Arg Val
            500                 505                 510

Arg Gln Asp Gln Pro Pro Gly Ala Ala Thr Leu Gly Leu Ala Val Pro
        515                 520                 525

Pro Ala Asp Ser Lys Gly Trp Gln Ala Ser Leu Gln Ala Met Ser Leu
    530                 535                 540

Pro Glu Leu Ser Gly Ala Leu Glu Asp Arg Val Arg Glu Met Gly Gln
545                 550                 555                 560

Ala Leu Cys Leu Val Thr Gln Ser Leu Glu Lys Leu Gln Val Leu Asn
                565                 570                 575

Gly Lys Lys Trp Arg Glu Thr
            580
```

<210> 5089
<211> 214
<212> PRT

<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1102; "

<220>
<221> source
<223> /note="Gene Symbol: ANKS3; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and sterile alpha motif
domain containing 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000465306"

<400> 5089

```
Met Ser Glu Leu Ser Asp Glu Ala Ser Glu Pro Glu Leu Leu Asn Arg
1               5                  10                  15

Ser Leu Ser Met Trp His Gly Leu Gly Thr Gln Val Ser Gly Glu Glu
            20                  25                  30

Leu Asp Val Pro Leu Asp Leu His Thr Ala Ala Ser Ile Gly Gln Tyr
        35                  40                  45

Glu Val Val Lys Glu Cys Val Gln Arg Glu Pro Ile Cys Gly Phe Thr
    50                  55                  60

Pro Leu Met Glu Ala Ala Ala Ala Gly His Glu Ile Ile Val Gln Tyr
65                  70                  75                  80

Phe Leu Asn His Gly Val Lys Val Asp Ala Arg Asp His Ser Gly Ala
                85                  90                  95

Thr Ala Arg Met Leu Ala Lys Gln Tyr Gly His Met Lys Ile Val Ala
            100                 105                 110

Leu Met Asp Thr Tyr Ser Pro Ser Leu Pro Lys Ser Leu Tyr Arg Ser
        115                 120                 125

Pro Glu Lys Tyr Glu Asp Leu Ser Ser Ser Asp Glu Ser Cys Pro Ala
    130                 135                 140
```

```
Pro Gln Arg Gln Arg Pro Cys Arg Lys Lys Gly Val Ser Ile His Glu
145                 150                 155                 160

Gly Pro Arg Ala Leu Ala Arg Ile Thr Gly Ile Gly Leu Gly Gly Arg
                165                 170                 175

Ala Pro Arg Pro Arg Tyr Gly Ser Ser Pro Trp Leu Cys His Leu Gln
            180                 185                 190

Gln Gln Trp Arg Glu Pro Pro Gly Arg Arg Gly Pro Leu Leu Pro Gly
        195                 200                 205

Cys His Leu Pro His Gln
    210
```

<210> 5090
<211> 126
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1102; "

<220>
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<223> /note="Gene Symbol: ANKS3; "

<220>
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<223> /note="Gene Name:
ankyrin repeat and sterile alpha motif
domain containing 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000465361"

<400> 5090

```
Met Ser Glu Leu Ser Asp Glu Ala Ser Glu Pro Glu Leu Leu Asn Arg
1               5                   10                  15

Ser Leu Ser Met Trp His Gly Leu Gly Thr Gln Val Ser Gly Glu Glu
            20                  25                  30

Leu Asp Val Pro Leu Asp Leu His Thr Ala Ala Ser Ile Gly Gln Tyr
        35                  40                  45

Glu Val Val Lys Glu Cys Val Gln Arg Arg Glu Leu Asp Leu Asn Lys
```

```
    50                  55                  60

Lys Asn Gly Gly Gly Trp Thr Pro Leu Met Tyr Ala Ser Tyr Ile Gly
65                  70                  75                  80

His Asp Thr Ile Val His Leu Leu Leu Glu Ala Gly Val Ser Val Asn
                85                  90                  95

Val Pro Thr Pro Glu Gly Gln Thr Pro Leu Met Leu Ala Ser Ser Cys
            100                 105                 110

Gly Asn Glu Ser Ile Ala Tyr Phe Leu Leu Gln Val Gln Ser
        115                 120                 125


<210> 5091
<211> 172
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ANKS3; "

<220>
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      domain containing 3; "

<220>
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<223> /note="ENSP ID: ENSP00000465373"

<400> 5091
Met Leu Ala Lys Gln Tyr Gly His Met Lys Ile Val Ala Leu Met Asp
1               5                   10                  15

Thr Tyr Ser Pro Ser Leu Pro Lys Ser Leu Tyr Arg Ser Pro Glu Lys
            20                  25                  30

Tyr Glu Asp Leu Ser Ser Ser Asp Glu Ser Cys Pro Ala Pro Gln Arg
        35                  40                  45

Gln Arg Pro Cys Arg Lys Lys Gly Val Ser Ile His Glu Gly Pro Arg
    50                  55                  60
```

```
Ala Leu Ala Arg Ile Thr Gly Ile Gly Leu Gly Gly Arg Ala Pro Arg
65                  70                  75                  80

Pro Arg Tyr Glu Gln Ala Pro Pro Arg Gly Tyr Val Thr Phe Asn Ser
                85                  90                  95

Ser Gly Glu Asn Pro Leu Glu Glu Glu Gly Leu Cys Cys Arg Asp Val
            100                 105                 110

Thr Ser Pro Ile Asn Glu Arg Asp Val Glu Ser Ser Ser Ser Ser Ser
        115                 120                 125

Ser Arg Glu Glu His Ala Phe Cys Ala Asn Leu Gly Pro Val Gln Ser
    130                 135                 140

Ser Ser Ser Ser Glu Gly Leu Ala Arg Ala Gln Gly Leu Ser Ser Glu
145                 150                 155                 160

Ala Ser Val Glu Ser Asn Glu Asp Ser Asp His Ala
                165                 170


<210> 5092
<211> 61
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
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      domain containing 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000465454"

<400> 5092
Met Ser Glu Leu Ser Asp Glu Ala Ser Glu Pro Glu Leu Leu Asn Arg
1               5                   10                  15
```

```
Ser Leu Ser Met Trp His Gly Leu Gly Thr Gln Val Ser Gly Glu Glu
            20                  25                  30

Leu Asp Val Pro Leu Asp Leu His Thr Ala Ala Ser Ile Gly Gln Tyr
        35                  40                  45

Glu Val Val Lys Glu Cys Val Gln Arg Lys Val Gln Ser
    50                  55                  60
```

<210> 5093
<211> 163
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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ankyrin repeat and sterile alpha motif
domain containing 3; "

<220>
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<223> /note="ENSP ID: ENSP00000465566"

<400> 5093

```
Met Ser Glu Leu Ser Asp Glu Ala Ser Glu Pro Glu Leu Leu Asn Arg
1               5                   10                  15

Ser Leu Ser Met Trp His Gly Leu Gly Thr Gln Val Ser Gly Glu Glu
            20                  25                  30

Leu Asp Val Pro Leu Asp Leu His Thr Ala Ala Ser Ile Gly Gln Tyr
        35                  40                  45

Glu Val Val Lys Glu Cys Val Gln Arg Arg Glu Leu Asp Leu Asn Lys
    50                  55                  60

Lys Asn Gly Gly Gly Trp Thr Pro Leu Met Tyr Ala Ser Tyr Ile Gly
65                  70                  75                  80
```

```
His Asp Thr Ile Val His Leu Leu Leu Glu Ala Gly Val Ser Val Asn
                85                  90                  95

Val Pro Thr Pro Glu Gly Gln Thr Pro Leu Met Leu Ala Ser Ser Cys
            100                 105                 110

Gly Asn Glu Ser Ile Ala Tyr Phe Leu Leu Gln Gln Gly Ala Glu Leu
        115                 120                 125

Glu Met Lys Asp Ile Gln Gly Trp Thr Ala Leu Phe His Cys Thr Ser
    130                 135                 140

Ala Gly His Gln His Met Val Arg Phe Leu Leu Asp Ser Gly Ala Asn
145                 150                 155                 160

Ala Asn Val
```

<210> 5094
<211> 80
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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ankyrin repeat and sterile alpha motif
domain containing 3; "

<220>
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<223> /note="ENSP ID: ENSP00000466162"

<400> 5094

```
Met Ser Glu Leu Ser Asp Glu Ala Ser Glu Pro Glu Leu Leu Asn Arg
1               5                   10                  15

Ser Leu Ser Met Trp His Gly Leu Gly Thr Gln Val Ser Gly Glu Glu
            20                  25                  30

Leu Asp Val Pro Leu Asp Leu His Thr Ala Ala Ser Ile Gly Gln Tyr
```

```
        35                  40                  45

Glu Val Val Lys Glu Cys Val Gln Arg Glu Ser Arg Trp Thr Arg Glu
    50                  55                  60

Thr Thr Val Glu Pro Gln Pro Gly Cys Trp Pro Ser Ser Thr Asp Thr
65                  70                  75                  80


<210> 5095
<211> 318
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
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      domain containing 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466228"

<400> 5095
Met Ser Glu Leu Ser Asp Glu Ala Ser Glu Pro Glu Leu Leu Asn Arg
1               5                   10                  15

Ser Leu Ser Met Trp His Gly Leu Gly Thr Gln Val Ser Gly Glu Glu
            20                  25                  30

Leu Asp Val Pro Leu Asp Leu His Thr Ala Ala Ser Ile Gly Gln Tyr
        35                  40                  45

Glu Val Val Lys Glu Cys Val Gln Arg Glu Pro Ile Cys Gly Phe Thr
    50                  55                  60

Pro Leu Met Glu Ala Ala Ala Ala Gly His Glu Ile Ile Val Gln Tyr
65                  70                  75                  80

Phe Leu Asn His Gly Val Lys Val Asp Ala Arg Asp His Ser Gly Ala
                85                  90                  95
```

```
Thr Ala Arg Met Leu Ala Lys Gln Tyr Gly His Met Lys Ile Val Ala
            100                 105                 110

Leu Met Asp Thr Tyr Ser Pro Ser Leu Pro Lys Ser Leu Tyr Arg Ser
        115                 120                 125

Pro Glu Lys Tyr Glu Asp Leu Ser Ser Ser Asp Glu Ser Cys Pro Ala
    130                 135                 140

Pro Gln Arg Gln Arg Pro Cys Arg Lys Lys Gly Val Ser Ile His Glu
145                 150                 155                 160

Gly Pro Arg Ala Leu Ala Arg Ile Thr Gly Ile Gly Leu Gly Gly Arg
                165                 170                 175

Ala Pro Arg Pro Arg Tyr Glu Gln Ala Pro Pro Arg Gly Tyr Val Thr
            180                 185                 190

Phe Asn Ser Ser Gly Glu Asn Pro Leu Glu Glu Glu Gly Leu Cys Cys
        195                 200                 205

Arg Asp Val Thr Ser Pro Ile Asn Glu Arg Asp Val Glu Ser Ser Ser
    210                 215                 220

Ser Ser Ser Ser Arg Glu Glu His Ala Phe Cys Ala Asn Leu Gly Pro
225                 230                 235                 240

Val Gln Ser Ser Ser Ser Ser Glu Gly Leu Ala Arg Ala Gln Gly Leu
                245                 250                 255

Ser Ser Glu Ala Ser Val Glu Ser Asn Glu Asp Ser Asp His Ala Cys
            260                 265                 270

Lys Ser Ser Ala Arg Lys Gln Ala Lys Ser Tyr Met Lys Thr Lys Asn
        275                 280                 285

Pro Asp Ser Gln Trp Pro Pro Arg Ala Ala Thr Asp Arg Glu Gly Phe
    290                 295                 300

Leu Ala Glu Ser Ser Pro Gln Thr Gln Arg Ala Pro Tyr Ser
305                 310                 315
```

<210> 5096
<211> 133
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1102; "

<220>
<221> source
<223> /note="Gene Symbol: ANKS3; "

<220>
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ankyrin repeat and sterile alpha motif
domain containing 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466362"

<400> 5096

```
Met Ser Glu Leu Ser Asp Glu Ala Ser Glu Pro Glu Leu Leu Asn Arg
1               5                  10                  15

Ser Leu Ser Met Trp His Gly Leu Gly Thr Gln Val Ser Gly Glu Glu
            20                  25                  30

Leu Asp Val Pro Leu Asp Leu His Thr Ala Ala Ser Ile Gly Gln Tyr
        35                  40                  45

Glu Val Val Lys Glu Cys Val Gln Arg Glu Pro Ile Cys Gly Phe Thr
    50                  55                  60

Pro Leu Met Glu Ala Ala Ala Ala Gly His Glu Ile Ile Val Gln Tyr
65                  70                  75                  80

Phe Leu Asn His Gly Val Lys Val Asp Ala Arg Asp His Ser Gly Ala
                85                  90                  95

Thr Ala Arg Met Leu Ala Lys Gln Tyr Gly His Met Lys Ile Val Ala
            100                 105                 110

Leu Met Asp Thr Tyr Ser Pro Ser Leu Pro Lys Ser Leu Tyr Arg Ser
        115                 120                 125
```

Pro Glu Lys Tyr Glu
130

<210> 5097
<211> 289
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ANKS3; "

<220>
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domain containing 3; "

<220>
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<223> /note="ENSP ID: ENSP00000467439"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5097
Xaa Leu Thr Ser Pro Ala Leu Leu Leu Arg Asp Arg Gly Leu Ala Gly
1 5 10 15

Arg Arg Val Ser Ala Ser Thr Arg Asp Arg Glu Pro Trp Pro Gly Ser
20 25 30

Gln Ala Leu Ala Trp Ala Ala Glu Pro His Gly Leu Ala Met Ser Arg
35 40 45

Leu Leu Pro Val Ala Met Ser Pro Ser Thr Ala Val Ala Arg Thr Pro
50 55 60

Trp Lys Lys Arg Ala Ser Ala Ala Gly Met Ser Pro Pro Pro Ser Met
65 70 75 80

Ser Gly Met Trp Arg Ala Ala Ala Ala Ala Ala Ala Val Gly Asp Leu Ala
85 90 95

```
Ala Leu Leu Glu Gln Ile Gly Cys Leu Lys Tyr Leu Gln Val Phe Glu
            100                 105                 110

Glu Gln Asp Val Asp Leu Arg Ile Phe Leu Thr Leu Thr Glu Ser Asp
        115                 120                 125

Leu Lys Glu Ile Gly Ile Thr Leu Phe Gly Pro Lys Arg Lys Met Thr
    130                 135                 140

Ser Ala Ile Ala Arg Trp His Ser Ser Ala Arg Pro Pro Gly Asp Ala
145                 150                 155                 160

Leu Glu Leu Ala Tyr Ala Asp Arg Leu Glu Ala Glu Met Gln Glu Leu
                165                 170                 175

Ala Ile Gln Leu His Lys Arg Cys Glu Glu Val Glu Ala Thr Arg Gly
            180                 185                 190

Gln Val Cys Gln Glu Gln Glu Leu Arg Ala Val Val Glu Ser Cys Leu
        195                 200                 205

Leu Glu Gln Asp Arg Ala Arg Glu Asp Leu Gln Ala Arg Leu Arg Glu
    210                 215                 220

Thr Trp Ala Leu Ala Arg Asp Ala Ala Leu Val Leu Asp Gln Leu Arg
225                 230                 235                 240

Ala Cys Gln Ala Glu Leu Ser Ser Arg Val Arg Gln Asp Gln Pro Pro
                245                 250                 255

Gly Ala Ala Thr Leu Gly Leu Ala Val Pro Pro Ala Asp Ser Lys Gly
            260                 265                 270

Trp Gln Ala Ser Leu Gln Ala Met Ser Leu Pro Glu Leu Ser Gly Ala
        275                 280                 285

Leu
```

<210> 5098
<211> 61
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1102; "

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<220>
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<223> /note="Gene Name:
ankyrin repeat and sterile alpha motif
domain containing 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467474"

<400> 5098
Met Ser Glu Leu Ser Asp Glu Ala Ser Glu Pro Glu Leu Leu Asn Arg
1 5 10 15

Ser Leu Ser Met Trp His Gly Leu Gly Thr Gln Val Ser Gly Glu Glu
20 25 30

Leu Asp Val Pro Leu Asp Leu His Thr Ala Ala Ser Ile Gly Gln Tyr
35 40 45

Glu Val Val Lys Glu Cys Val Gln Arg Lys Val Gln Ser
50 55 60

<210> 5099
<211> 140
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1102; "

<220>
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<223> /note="Gene Symbol: ANKS3; "

<220>
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<223> /note="Gene Name:
ankyrin repeat and sterile alpha motif
domain containing 3; "

<220>
<221> source

<223> /note="ENSP ID: ENSP00000467591"

<400> 5099
Met Ser Glu Leu Ser Asp Glu Ala Ser Glu Pro Glu Leu Leu Asn Arg
1 5 10 15

Ser Leu Ser Met Trp His Gly Leu Gly Thr Gln Val Ser Gly Glu Glu
20 25 30

Leu Asp Val Pro Leu Asp Leu His Thr Ala Ala Ser Ile Gly Gln Tyr
35 40 45

Glu Val Val Lys Glu Cys Val Gln Arg Arg Glu Leu Asp Leu Asn Lys
50 55 60

Lys Asn Gly Gly Gly Trp Thr Pro Leu Met Tyr Ala Ser Tyr Ile Gly
65 70 75 80

His Asp Thr Ile Val His Leu Leu Leu Glu Ala Gly Val Ser Val Asn
85 90 95

Val Pro Thr Pro Glu Gly Gln Thr Pro Leu Met Leu Ala Ser Ser Cys
100 105 110

Gly Asn Glu Ser Ile Ala Tyr Phe Leu Leu Gln Gly Ala Asp Met Trp
115 120 125

Ile Tyr Ser Leu Asp Gly Ser Ser Cys Cys Trp Pro
130 135 140

<210> 5100
<211> 108
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1102; "

<220>
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<223> /note="Gene Symbol: ANKS3; "

<220>
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<223> /note="Gene Name:
ankyrin repeat and sterile alpha motif
domain containing 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467783"

<400> 5100
Met Leu Ala Lys Gln Tyr Gly His Met Lys Ile Val Ala Leu Met Asp
1   5   10   15

Thr Tyr Ser Pro Ser Leu Pro Lys Ser Leu Tyr Arg Ser Pro Glu Lys
            20   25   30

Tyr Glu Asp Leu Ser Ser Ser Asp Glu Ser Cys Pro Ala Pro Gln Arg
        35   40   45

Gln Arg Pro Cys Arg Lys Lys Gly Val Ser Ile His Glu Gly Pro Arg
    50   55   60

Ala Leu Ala Arg Ile Thr Gly Ile Gly Leu Gly Gly Arg Ala Pro Arg
65   70   75   80

Pro Arg Tyr Glu Gln Ala Pro Pro Arg Gly Tyr Val Thr Phe Asn Ser
                85   90   95

Ser Gly Glu Asn Pro Leu Glu Glu Glu Gly Leu Cys
            100   105

<210> 5101
<211> 255
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
      ankyrin repeat and sterile alpha motif
      domain containing 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000468234"

<400> 5101
Met Glu Ala Ala Ala Ala Gly His Glu Ile Ile Val Gln Tyr Phe Leu
1 5 10 15

Asn His Gly Val Lys Val Asp Ala Arg Asp His Ser Gly Ala Thr Ala
20 25 30

Arg Met Leu Ala Lys Gln Tyr Gly His Met Lys Ile Val Ala Leu Met
35 40 45

Asp Thr Tyr Ser Pro Ser Leu Pro Lys Ser Leu Tyr Arg Ser Pro Glu
50 55 60

Lys Tyr Glu Asp Leu Ser Ser Ser Asp Glu Ser Cys Pro Ala Pro Gln
65 70 75 80

Arg Gln Arg Pro Cys Arg Lys Lys Gly Val Ser Ile His Glu Gly Pro
85 90 95

Arg Ala Leu Ala Arg Ile Thr Gly Ile Gly Leu Gly Gly Arg Ala Pro
100 105 110

Arg Pro Arg Tyr Glu Gln Ala Pro Pro Arg Gly Tyr Val Thr Phe Asn
115 120 125

Ser Ser Gly Glu Asn Pro Leu Glu Glu Glu Gly Leu Cys Cys Arg Asp
130 135 140

Val Thr Ser Pro Ile Asn Glu Arg Asp Val Glu Ser Ser Ser Ser Ser
145 150 155 160

Ser Ser Arg Glu Glu His Ala Phe Cys Ala Asn Leu Gly Pro Val Gln
165 170 175

Ser Ser Ser Ser Ser Glu Gly Leu Ala Arg Ala Gln Gly Leu Ser Ser
180 185 190

Glu Ala Ser Val Glu Ser Asn Glu Asp Ser Asp His Ala Cys Lys Ser
195 200 205

Ser Ala Arg Lys Gln Ala Lys Ser Tyr Met Lys Thr Lys Asn Pro Asp
210 215 220

```
Ser Gln Trp Pro Pro Arg Ala Ala Thr Asp Arg Glu Gly Phe Leu Ala
225                 230                 235                 240


Glu Ser Ser Pro Gln Thr Gln Arg Ala Pro Tyr Ser Gly Pro Gln
                245                 250                 255


<210> 5102
<211> 166
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
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      domain containing 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000468380"

<400> 5102
Met Ser Glu Leu Ser Asp Glu Ala Ser Glu Pro Glu Leu Leu Asn Arg
1               5                   10                  15


Ser Leu Ser Met Trp His Gly Leu Gly Thr Gln Val Ser Gly Glu Glu
            20                  25                  30


Leu Asp Val Pro Leu Asp Leu His Thr Ala Ala Ser Ile Gly Gln Tyr
        35                  40                  45


Glu Val Val Lys Glu Cys Val Gln Arg Arg Glu Leu Asp Leu Asn Lys
    50                  55                  60


Lys Asn Gly Gly Gly Trp Thr Pro Leu Met Tyr Ala Ser Tyr Ile Gly
65                  70                  75                  80


His Asp Thr Ile Val His Leu Leu Leu Glu Ala Gly Val Ser Val Asn
                85                  90                  95


Val Pro Thr Pro Glu Gly Gln Thr Pro Leu Met Leu Ala Ser Ser Cys
```

```
            100                 105                 110

Gly Asn Glu Ser Ile Ala Tyr Phe Leu Leu Gln Gln Gly Ala Glu Leu
        115                 120                 125

Glu Met Lys Asp Ile Gln Gly Trp Thr Ala Leu Phe His Cys Thr Ser
    130                 135                 140

Ala Gly His Gln His Met Val Arg Phe Leu Leu Asp Ser Gly Ala Asn
145                 150                 155                 160

Ala Asn Val Arg Glu Pro
                165


<210> 5103
<211> 114
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1102; "

<220>
<221> source
<223> /note="Gene Symbol: ANKS3; "

<220>
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<223> /note="Gene Name:
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      domain containing 3; "

<220>
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<223> /note="ENSP ID: ENSP00000468464"

<400> 5103
Met Ser Glu Leu Ser Asp Glu Ala Ser Glu Pro Glu Leu Leu Asn Arg
1               5                   10                  15

Ser Leu Ser Met Trp His Gly Leu Gly Thr Gln Val Ser Gly Glu Glu
            20                  25                  30

Leu Asp Val Pro Leu Asp Leu His Thr Ala Ala Ser Ile Gly Gln Tyr
        35                  40                  45

Glu Val Val Lys Glu Cys Val Gln Arg Glu Pro Ile Cys Gly Phe Thr
    50                  55                  60
```

```
Pro Leu Met Glu Ala Ala Ala Ala Gly His Glu Ile Ile Val Gln Tyr
65                  70                  75                  80

Phe Leu Asn His Ser Pro Ser Val Ala Gln Ala Gly Val Gln Gln Leu
                85                  90                  95

Thr Ala Ile Ser Ala Ser Arg Val Glu Ala Ile Leu Leu Pro Gln Pro
            100                 105                 110

Pro Glu
```

<210> 5104
<211> 656
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1102; "

<220>
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<223> /note="Gene Symbol: ANKS3; "

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<223> /note="Gene Name:
ankyrin repeat and sterile alpha motif
domain containing 3; "

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<223> /note="Uniprot ID: Q6ZW76; "

<220>
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<223> /note="ENSP ID: ENSP00000480350"

<400> 5104

```
Met Ser Glu Leu Ser Asp Glu Ala Ser Glu Pro Glu Leu Leu Asn Arg
1               5                  10                  15

Ser Leu Ser Met Trp His Gly Leu Gly Thr Gln Val Ser Gly Glu Glu
            20                  25                  30

Leu Asp Val Pro Leu Asp Leu His Thr Ala Ala Ser Ile Gly Gln Tyr
        35                  40                  45
```

```
Glu Val Val Lys Glu Cys Val Gln Arg Arg Glu Leu Asp Leu Asn Lys
    50                  55                  60

Lys Asn Gly Gly Gly Trp Thr Pro Leu Met Tyr Ala Ser Tyr Ile Gly
65                  70                  75                  80

His Asp Thr Ile Val His Leu Leu Leu Glu Ala Gly Val Ser Val Asn
                85                  90                  95

Val Pro Thr Pro Glu Gly Gln Thr Pro Leu Met Leu Ala Ser Ser Cys
            100                 105                 110

Gly Asn Glu Ser Ile Ala Tyr Phe Leu Leu Gln Gln Gly Ala Glu Leu
        115                 120                 125

Glu Met Lys Asp Ile Gln Gly Trp Thr Ala Leu Phe His Cys Thr Ser
    130                 135                 140

Ala Gly His Gln His Met Val Arg Phe Leu Leu Asp Ser Gly Ala Asn
145                 150                 155                 160

Ala Asn Val Arg Glu Pro Ile Cys Gly Phe Thr Pro Leu Met Glu Ala
                165                 170                 175

Ala Ala Ala Gly His Glu Ile Ile Val Gln Tyr Phe Leu Asn His Gly
            180                 185                 190

Val Lys Val Asp Ala Arg Asp His Ser Gly Ala Thr Ala Arg Met Leu
        195                 200                 205

Ala Lys Gln Tyr Gly His Met Lys Ile Val Ala Leu Met Asp Thr Tyr
    210                 215                 220

Ser Pro Ser Leu Pro Lys Ser Leu Tyr Arg Ser Pro Glu Lys Tyr Glu
225                 230                 235                 240

Asp Leu Ser Ser Ser Asp Glu Ser Cys Pro Ala Pro Gln Arg Gln Arg
                245                 250                 255

Pro Cys Arg Lys Lys Gly Val Ser Ile His Glu Gly Pro Arg Ala Leu
            260                 265                 270
```

```
Ala Arg Ile Thr Gly Ile Gly Leu Gly Gly Arg Ala Pro Arg Pro Arg
        275                 280                 285

Tyr Glu Gln Ala Pro Pro Arg Gly Tyr Val Thr Phe Asn Ser Ser Gly
    290                 295                 300

Glu Asn Pro Leu Glu Glu Glu Gly Leu Cys Cys Arg Asp Val Thr Ser
305                 310                 315                 320

Pro Ile Asn Glu Arg Asp Val Glu Ser Ser Ser Ser Ser Ser Ser Arg
                325                 330                 335

Glu Glu His Ala Phe Cys Ala Asn Leu Gly Pro Val Gln Ser Ser Ser
            340                 345                 350

Ser Ser Glu Gly Leu Ala Arg Ala Gln Gly Leu Ser Ser Glu Ala Ser
        355                 360                 365

Val Glu Ser Asn Glu Asp Ser Asp His Ala Cys Lys Ser Ser Ala Arg
    370                 375                 380

Lys Gln Ala Lys Ser Tyr Met Lys Thr Lys Asn Pro Asp Ser Gln Trp
385                 390                 395                 400

Pro Pro Arg Ala Ala Thr Asp Arg Glu Gly Phe Leu Ala Glu Ser Ser
                405                 410                 415

Pro Gln Thr Gln Arg Ala Pro Tyr Ser Gly Pro Gln Asp Leu Ala Ala
            420                 425                 430

Leu Leu Glu Gln Ile Gly Cys Leu Lys Tyr Leu Gln Val Phe Glu Glu
        435                 440                 445

Gln Asp Val Asp Leu Arg Ile Phe Leu Thr Leu Thr Glu Ser Asp Leu
    450                 455                 460

Lys Glu Ile Gly Ile Thr Leu Phe Gly Pro Lys Arg Lys Met Thr Ser
465                 470                 475                 480

Ala Ile Ala Arg Trp His Ser Ser Ala Arg Pro Pro Gly Asp Ala Leu
                485                 490                 495

Glu Leu Ala Tyr Ala Asp Arg Leu Glu Ala Glu Met Gln Glu Leu Ala
```

```
            500                 505                 510

Ile Gln Leu His Lys Arg Cys Glu Glu Val Glu Ala Thr Arg Gly Gln
        515                 520                 525

Val Cys Gln Glu Gln Glu Leu Arg Ala Val Val Glu Ser Cys Leu Leu
    530                 535                 540

Glu Gln Asp Arg Ala Arg Glu Asp Leu Gln Ala Arg Leu Arg Glu Thr
545                 550                 555                 560

Trp Ala Leu Ala Arg Asp Ala Ala Leu Val Leu Asp Gln Leu Arg Ala
                565                 570                 575

Cys Gln Ala Glu Leu Ser Ser Arg Val Arg Gln Asp Gln Pro Pro Gly
            580                 585                 590

Ala Ala Thr Leu Gly Leu Ala Val Pro Pro Ala Asp Ser Lys Gly Trp
        595                 600                 605

Gln Ala Ser Leu Gln Ala Met Ser Leu Pro Glu Leu Ser Gly Ala Leu
    610                 615                 620

Glu Asp Arg Val Arg Glu Met Gly Gln Ala Leu Cys Leu Val Thr Gln
625                 630                 635                 640

Ser Leu Glu Lys Leu Gln Val Leu Asn Gly Lys Lys Trp Arg Glu Thr
                645                 650                 655


<210> 5105
<211> 417
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1103; "

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<223> /note="Gene Name:
      ankyrin repeat and sterile alpha motif
      domain containing 4B; "
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<220>
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<223> /note="ENSP ID: ENSP00000308772"

<400> 5105
Met Ser Thr Arg Tyr His Gln Ala Ala Ser Asp Ser Tyr Leu Glu Leu
1   5   10   15

Leu Lys Glu Ala Thr Lys Arg Asp Leu Asn Leu Ser Asp Glu Asp Gly
            20   25   30

Met Thr Pro Thr Leu Leu Ala Ala Tyr His Gly Asn Leu Glu Ala Leu
        35   40   45

Glu Ile Ile Cys Ser Arg Gly Gly Asp Pro Asp Arg Cys Asp Ile Trp
    50   55   60

Gly Asn Thr Pro Leu His Phe Ala Ala Ser Asn Gly His Ala His Cys
65   70   75   80

Val Ser Phe Leu Val Asn Phe Gly Ala Asn Ile Phe Ala Leu Asp Asn
                85   90   95

Asp Leu Gln Thr Pro Leu Asp Ala Ala Ala Ser Arg Glu Gln Asn Glu
            100   105   110

Cys Val Ala Leu Leu Asp Lys Ala Ala Thr Ala Gln Asn Ile Met Asn
        115   120   125

Pro Lys Lys Val Thr Arg Leu Lys Glu Gln Ala Gln Lys Asn Ala Arg
    130   135   140

Arg Gln Ile Lys Glu Cys Glu Arg Leu Gln Glu Lys His Gln Asn Lys
145   150   155   160

Met Ala His Thr Tyr Ser Lys Glu Glu Ser Gly Thr Leu Ser Ser Ser
                165   170   175

Lys Gly Thr Phe Ser Arg Ser Ser Pro Ser Asn Ala Ser Ala Pro Gly
            180   185   190

```
Thr Phe Gly Ser Leu Ser Lys Gly Ile Lys Asp Thr Phe Lys Ile Lys
        195                 200                 205

Phe Lys Lys Asn Lys Asp Thr Ala Glu Gln Val Gly Lys Glu Gly Arg
    210                 215                 220

Ser Gly Gln Arg Asn Val Met Glu Val Phe Arg Glu Glu Glu Glu Asp
225                 230                 235                 240

Ser Phe Ser Gly Asp Phe Lys Glu Lys Leu Gln Leu Ser Ala Glu Glu
                245                 250                 255

Asp Gly Ser Val His His Glu Ser Ile Leu Asn Arg Pro Gly Leu Gly
            260                 265                 270

Ser Ile Val Phe Arg Arg Asn Arg Ile Ser Ser Pro Glu Asp Ile Ser
        275                 280                 285

Asp Ser Lys Arg Glu Phe Gly Phe Lys Leu Pro Ser Glu Leu Leu Gln
    290                 295                 300

Arg Gln Gly Ala Ser Glu Ala Asp Glu Gly Ala Ala Asp Glu Glu Gly
305                 310                 315                 320

Glu Glu Asn Gly Leu Lys Asp Asp Leu Pro Trp Asp Asp Asp Glu Val
                325                 330                 335

Glu Trp Glu Glu Asp Val Val Asp Ala Thr Pro Leu Glu Val Phe Leu
            340                 345                 350

Leu Ser Gln His Leu Glu Glu Phe Leu Pro Ile Phe Lys Arg Glu Gln
        355                 360                 365

Ile Asp Leu Glu Ala Leu Leu Leu Cys Ser Asp Glu Asp Leu Gln Ser
    370                 375                 380

Ile Gln Met Gln Leu Gly Pro Arg Lys Lys Val Leu Asn Ala Ile Asn
385                 390                 395                 400

Arg Arg Lys Gln Val Leu Gln Gln Pro Gly Gln Leu Val Asp Thr Ser
                405                 410                 415
```

Leu

<210> 5106
<211> 871
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1104; "

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<223> /note="Gene Symbol: ANKS6; "

<220>
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<223> /note="Gene Name:
ankyrin repeat and sterile alpha motif
domain containing 6; "

<220>
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<223> /note="Uniprot ID: Q68DC2; "

<220>
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<223> /note="ENSP ID: ENSP00000297837"

<400> 5106
Met Gly Glu Gly Gly Leu Pro Pro Ala Phe Gln Leu Leu Leu Arg Ala
1   5   10   15

Cys Asp Gln Gly Asp Thr Glu Thr Ala Arg Arg Leu Leu Glu Pro Gly
            20   25   30

Ala Ala Glu Pro Ala Glu Arg Gly Ala Glu Pro Glu Ala Gly Ala Glu
        35   40   45

Pro Ala Gly Ala Glu Val Ala Gly Pro Gly Ala Ala Ala Ala Gly Ala
    50   55   60

Val Gly Ala Pro Val Pro Val Asp Cys Ser Asp Glu Ala Gly Asn Thr
65   70   75   80

Ala Leu Gln Phe Ala Ala Ala Gly Gly His Glu Pro Leu Val Arg Phe
                85   90   95

Leu Leu Arg Arg Gly Ala Ser Val Asn Ser Arg Asn His Tyr Gly Trp

```
            100                 105                 110

Ser Ala Leu Met Gln Ala Ala Arg Phe Gly His Val Ser Val Ala His
        115                 120                 125

Leu Leu Leu Asp His Gly Ala Asp Val Asn Ala Gln Asn Arg Leu Gly
    130                 135                 140

Ala Ser Val Leu Thr Val Ala Ser Arg Gly Gly His Leu Gly Val Val
145                 150                 155                 160

Lys Leu Leu Leu Glu Ala Gly Ala Phe Val Asp His His His Pro Ser
                165                 170                 175

Gly Glu Gln Leu Gly Leu Gly Gly Ser Arg Asp Glu Pro Leu Asp Ile
            180                 185                 190

Thr Ala Leu Met Ala Ala Ile Gln His Gly His Glu Ala Val Val Arg
        195                 200                 205

Leu Leu Met Glu Trp Gly Ala Asp Pro Asn His Ala Ala Arg Thr Val
    210                 215                 220

Gly Trp Ser Pro Leu Met Leu Ala Ala Leu Thr Gly Arg Leu Gly Val
225                 230                 235                 240

Ala Gln Gln Leu Val Glu Lys Gly Ala Asn Pro Asp His Leu Ser Val
                245                 250                 255

Leu Glu Lys Thr Ala Phe Glu Val Ala Leu Asp Cys Lys His Arg Asp
            260                 265                 270

Leu Val Asp Tyr Leu Asp Pro Leu Thr Thr Val Arg Pro Lys Thr Asp
        275                 280                 285

Glu Glu Lys Arg Arg Pro Asp Ile Phe His Ala Leu Lys Met Gly Asn
    290                 295                 300

Phe Gln Leu Val Lys Glu Ile Ala Asp Glu Asp Pro Ser His Val Asn
305                 310                 315                 320

Leu Val Asn Gly Asp Gly Ala Thr Pro Leu Met Leu Ala Ala Val Thr
                325                 330                 335
```

```
Gly Gln Leu Ala Leu Val Gln Leu Leu Val Glu Arg His Ala Asp Val
            340                 345                 350

Asp Lys Gln Asp Ser Val His Gly Trp Thr Ala Leu Met Gln Ala Thr
        355                 360                 365

Tyr His Gly Asn Lys Glu Ile Val Lys Tyr Leu Leu Asn Gln Gly Ala
    370                 375                 380

Asp Val Thr Leu Arg Ala Lys Asn Gly Tyr Thr Ala Phe Asp Leu Val
385                 390                 395                 400

Met Leu Leu Asn Asp Pro Asp Thr Glu Leu Val Arg Leu Leu Ala Ser
                405                 410                 415

Val Cys Met Gln Val Asn Lys Asp Lys Gly Arg Pro Ser His Gln Pro
            420                 425                 430

Pro Leu Pro His Ser Lys Val Arg Gln Pro Trp Ser Ile Pro Val Leu
        435                 440                 445

Pro Asp Asp Lys Gly Gly Leu Lys Ser Trp Trp Asn Arg Met Ser Asn
    450                 455                 460

Arg Phe Arg Lys Leu Lys Leu Met Gln Thr Leu Pro Arg Gly Leu Ser
465                 470                 475                 480

Ser Asn Gln Pro Leu Pro Phe Ser Asp Glu Pro Glu Pro Ala Leu Asp
                485                 490                 495

Ser Thr Met Arg Ala Ala Pro Gln Asp Lys Thr Ser Arg Ser Ala Leu
            500                 505                 510

Pro Asp Ala Ala Pro Val Thr Lys Asp Asn Gly Pro Gly Ser Thr Arg
        515                 520                 525

Gly Glu Lys Glu Asp Thr Leu Leu Thr Thr Met Leu Arg Asn Gly Ala
    530                 535                 540

Pro Leu Thr Arg Leu Pro Ser Asp Lys Leu Lys Ala Val Ile Pro Pro
545                 550                 555                 560
```

```
Phe Leu Pro Pro Ser Ser Phe Glu Leu Trp Ser Ser Asp Arg Ser Arg
                565                 570                 575

Thr Arg His Asn Gly Lys Ala Asp Pro Met Lys Thr Ala Leu Pro Gln
            580                 585                 590

Arg Ala Ser Arg Gly His Pro Val Gly Gly Gly Gly Thr Asp Thr Thr
        595                 600                 605

Pro Val Arg Pro Val Lys Phe Pro Ser Leu Pro Arg Ser Pro Ala Ser
    610                 615                 620

Ser Ala Asn Ser Gly Asn Phe Asn His Ser Pro His Ser Ser Gly Gly
625                 630                 635                 640

Ser Ser Gly Val Gly Val Ser Arg His Gly Gly Glu Leu Leu Asn Arg
                645                 650                 655

Ser Gly Gly Ser Ile Asp Asn Val Leu Ser Gln Ile Ala Ala Gln Arg
            660                 665                 670

Lys Lys Ala Ala Gly Leu Leu Glu Gln Lys Pro Ser His Arg Ser Ser
        675                 680                 685

Pro Val Gly Pro Ala Pro Gly Ser Ser Pro Ser Glu Leu Pro Ala Ser
    690                 695                 700

Pro Ala Gly Gly Ser Ala Pro Val Gly Lys Lys Leu Glu Thr Ser Lys
705                 710                 715                 720

Arg Pro Pro Ser Gly Thr Ser Thr Thr Ser Lys Ser Thr Ser Pro Thr
                725                 730                 735

Leu Thr Pro Ser Pro Ser Pro Lys Gly His Thr Ala Glu Ser Ser Val
            740                 745                 750

Ser Ser Ser Ser Ser His Arg Gln Ser Lys Ser Ser Gly Gly Ser Ser
        755                 760                 765

Ser Gly Thr Ile Thr Asp Glu Asp Glu Leu Thr Gly Ile Leu Lys Lys
    770                 775                 780
```

```
Leu Ser Leu Glu Lys Tyr Gln Pro Ile Phe Glu Glu Gln Glu Val Asp
785                 790                 795                 800

Met Glu Ala Phe Leu Thr Leu Thr Asp Gly Asp Leu Lys Glu Leu Gly
                805                 810                 815

Ile Lys Thr Asp Gly Ser Arg Gln Gln Ile Leu Ala Ala Ile Ser Glu
            820                 825                 830

Leu Asn Ala Gly Lys Gly Arg Glu Arg Gln Ile Leu Gln Glu Thr Ile
        835                 840                 845

His Asn Phe His Ser Ser Phe Glu Ser Ser Ala Ser Asn Thr Arg Ala
    850                 855                 860

Pro Gly Asn Ser Pro Cys Ala
865                 870


<210> 5107
<211> 584
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1104; "

<220>
<221> source
<223> /note="Gene Symbol: ANKS6; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat and sterile alpha motif
      domain containing 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000364159"

<400> 5107
Met Gly Asn Phe Gln Leu Val Lys Glu Ile Ala Asp Glu Asp Pro Ser
1               5                   10                  15

His Val Asn Leu Val Asn Gly Asp Gly Ala Thr Pro Leu Met Leu Ala
            20                  25                  30

Ala Val Thr Gly Gln Leu Ala Leu Val Gln Leu Leu Val Glu Arg His
```

```
        35                  40                  45

Ala Asp Val Asp Lys Gln Asp Ser Val His Gly Trp Thr Ala Leu Met
    50                  55                  60

Gln Ala Thr Tyr His Gly Asn Lys Glu Ile Val Lys Tyr Leu Leu Asn
65                  70                  75                  80

Gln Gly Ala Asp Val Thr Leu Arg Ala Lys Asn Gly Tyr Thr Ala Phe
                85                  90                  95

Asp Leu Val Met Leu Leu Asn Asp Pro Asp Thr Glu Leu Val Arg Leu
            100                 105                 110

Leu Ala Ser Val Cys Met Gln Val Asn Lys Asp Lys Gly Arg Pro Ser
        115                 120                 125

His Gln Pro Pro Leu Pro His Ser Lys Val Arg Gln Pro Trp Ser Ile
    130                 135                 140

Pro Val Leu Pro Asp Asp Lys Gly Gly Leu Lys Ser Trp Trp Asn Arg
145                 150                 155                 160

Met Ser Asn Arg Phe Arg Lys Leu Lys Leu Met Gln Thr Leu Pro Arg
                165                 170                 175

Gly Leu Ser Ser Asn Gln Pro Leu Pro Phe Ser Asp Glu Pro Glu Pro
            180                 185                 190

Ala Leu Asp Ser Thr Met Arg Ala Ala Pro Gln Asp Lys Thr Ser Arg
        195                 200                 205

Ser Ala Leu Pro Asp Ala Ala Pro Val Thr Lys Asp Asn Gly Pro Gly
    210                 215                 220

Ser Thr Arg Gly Glu Lys Glu Asp Thr Leu Leu Thr Thr Met Leu Arg
225                 230                 235                 240

Asn Gly Ala Pro Leu Thr Arg Leu Pro Ser Asp Lys Leu Lys Ala Val
                245                 250                 255

Ile Pro Pro Phe Leu Pro Pro Ser Ser Phe Glu Leu Trp Ser Ser Asp
            260                 265                 270
```

```
Arg Ser Arg Thr Arg His Asn Gly Lys Ala Asp Pro Met Lys Thr Ala
        275                 280                 285

Leu Pro Gln Arg Ala Ser Arg Gly His Pro Val Gly Gly Gly Gly Thr
    290                 295                 300

Asp Thr Thr Pro Val Arg Pro Val Lys Phe Pro Ser Leu Pro Arg Ser
305                 310                 315                 320

Pro Ala Ser Ser Ala Asn Ser Gly Asn Phe Asn His Ser Pro His Ser
                325                 330                 335

Ser Gly Gly Ser Ser Gly Val Gly Val Ser Arg His Gly Gly Glu Leu
            340                 345                 350

Leu Asn Arg Ser Gly Gly Ser Ile Asp Asn Val Leu Ser Gln Ile Ala
        355                 360                 365

Ala Gln Arg Lys Lys Ala Ala Gly Leu Leu Glu Gln Lys Pro Ser His
    370                 375                 380

Arg Ser Ser Pro Val Gly Pro Ala Pro Gly Ser Ser Pro Ser Glu Leu
385                 390                 395                 400

Pro Ala Ser Pro Ala Gly Gly Ser Ala Pro Val Gly Lys Lys Leu Glu
                405                 410                 415

Thr Ser Lys Arg Pro Pro Ser Gly Thr Ser Thr Thr Ser Lys Ser Thr
            420                 425                 430

Ser Pro Thr Leu Thr Pro Ser Pro Ser Pro Lys Gly His Thr Ala Glu
        435                 440                 445

Ser Ser Val Ser Ser Ser Ser Ser His Arg Gln Ser Lys Ser Ser Gly
    450                 455                 460

Gly Ser Ser Ser Gly Thr Ile Thr Asp Glu Asp Glu Leu Thr Gly Ile
465                 470                 475                 480

Leu Lys Lys Leu Ser Leu Glu Lys Tyr Gln Pro Ile Phe Glu Glu Gln
                485                 490                 495
```

```
Glu Val Asp Met Glu Ala Phe Leu Thr Leu Thr Asp Gly Asp Leu Lys
            500                 505                 510

Glu Leu Gly Ile Lys Thr Asp Gly Ser Arg Gln Gln Ile Leu Ala Ala
        515                 520                 525

Ile Ser Glu Leu Asn Ala Gly Lys Gly Arg Glu Arg Gln Ile Leu Gln
    530                 535                 540

Glu Thr Ile His Asn Phe His Ser Ser Phe Glu Ser Ser Ala Ser Asn
545                 550                 555                 560

Thr Arg Ala Pro Gly Asn Ser Pro Ser Met Val Gly Trp Val Arg Pro
                565                 570                 575

Glu Glu Thr Ala Ser Gly Lys Arg
            580


<210> 5108
<211> 341
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1104; "

<220>
<221> source
<223> /note="Gene Symbol: ANKS6; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat and sterile alpha motif
      domain containing 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000398648"


<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 5108
Xaa Asp Thr Leu Leu Thr Thr Met Leu Arg Asn Gly Ala Pro Leu Thr
1               5                   10                  15
```

```
Arg Leu Pro Ser Asp Lys Leu Lys Ala Val Ile Pro Pro Phe Leu Pro
            20                  25                  30

Pro Ser Ser Phe Glu Leu Trp Ser Ser Asp Arg Ser Arg Thr Arg His
        35                  40                  45

Asn Gly Lys Ala Asp Pro Met Lys Thr Ala Leu Pro Gln Arg Ala Ser
    50                  55                  60

Arg Gly His Pro Val Gly Gly Gly Gly Thr Asp Thr Thr Pro Val Arg
65                  70                  75                  80

Pro Val Lys Phe Pro Ser Leu Pro Arg Ser Pro Ala Ser Ser Ala Asn
                85                  90                  95

Ser Gly Asn Phe Asn His Ser Pro His Ser Ser Gly Gly Ser Ser Gly
            100                 105                 110

Val Gly Val Ser Arg His Gly Gly Glu Leu Leu Asn Arg Ser Gly Gly
        115                 120                 125

Ser Ile Asp Asn Val Leu Ser Gln Ile Ala Ala Gln Arg Lys Lys Ala
    130                 135                 140

Ala Gly Leu Leu Glu Gln Lys Pro Ser His Arg Ser Ser Pro Val Gly
145                 150                 155                 160

Pro Ala Pro Gly Ser Ser Pro Ser Glu Leu Pro Ala Ser Pro Ala Gly
                165                 170                 175

Gly Ser Ala Pro Val Gly Lys Gln Lys Leu Glu Thr Ser Lys Arg Pro
            180                 185                 190

Pro Ser Gly Thr Ser Thr Thr Ser Lys Ser Thr Ser Pro Thr Leu Thr
        195                 200                 205

Pro Ser Pro Ser Pro Lys Gly His Thr Ala Glu Ser Ser Val Ser Ser
    210                 215                 220

Ser Ser Ser His Arg Gln Ser Lys Ser Ser Gly Gly Ser Ser Ser Gly
225                 230                 235                 240
```

```
Thr Ile Thr Asp Glu Asp Glu Leu Thr Gly Ile Leu Lys Lys Leu Ser
                245                 250                 255

Leu Glu Lys Tyr Gln Pro Ile Phe Glu Glu Gln Glu Val Asp Met Glu
            260                 265                 270

Ala Phe Leu Thr Leu Thr Asp Gly Asp Leu Lys Glu Leu Gly Ile Lys
        275                 280                 285

Thr Asp Gly Ser Arg Gln Gln Ile Leu Ala Ala Ile Ser Glu Leu Asn
    290                 295                 300

Ala Gly Lys Gly Arg Glu Arg Gln Ile Leu Gln Glu Thr Ile His Asn
305                 310                 315                 320

Phe His Ser Ser Phe Glu Ser Ser Ala Ser Asn Thr Arg Ala Pro Gly
                325                 330                 335

Asn Ser Pro Cys Ala
            340


<210> 5109
<211> 544
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1105; "

<220>
<221> source
<223> /note="Gene Symbol: ANKUB1; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat and ubiquitin
      domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000387907"

<400> 5109
Met Arg Ile Phe Ile Ala Phe Glu Gly Ser Phe Glu Pro Phe Asp Val
1               5                   10                  15
```

```
Ser Ala Asp Glu Thr Val Glu Val Val Lys Leu Met Ile Lys Asp Tyr
            20                  25                  30

Phe His Ile Pro Leu Ser Glu Asp Lys Gln Gly Arg Arg Tyr Leu Glu
        35                  40                  45

Leu Met Tyr Ala Gly Ala Ala Leu Lys Asp Ser Trp Ser Leu Ala Asp
    50                  55                  60

Val Gly Ile Ser Phe Cys Ser Thr Leu Lys Cys Phe Val Lys Glu Glu
65                  70                  75                  80

Asp Lys Pro Thr Leu Tyr Val Phe Asn Ala Val Thr Gln Asp Thr Met
                85                  90                  95

Pro Val Met Glu Ser Ile Ser Leu Leu Asp Lys Thr Val Ser Asp Leu
            100                 105                 110

Arg Thr Leu Val Thr Leu Arg Cys Gly Leu Pro Val Ser Val Tyr Cys
        115                 120                 125

Leu Arg Thr Pro Arg Gly Leu Glu Met Tyr Asp Cys Asn Thr Leu Lys
    130                 135                 140

Asp Tyr Gln Thr Asp Ile Gly Thr Thr Leu Arg Leu Asp Val Trp Asp
145                 150                 155                 160

Gly Trp Lys Glu Phe Leu Met Gly Cys Leu Leu Gly Gln Lys Leu Lys
                165                 170                 175

Val Gln Arg Tyr Leu Ser Lys Glu Gly Pro Val Leu Lys Tyr Gln Lys
            180                 185                 190

Arg Val Ala Leu Tyr Ile Ala Ala Phe Cys Gly Tyr Ile Glu Leu Thr
        195                 200                 205

Glu Trp Ala Leu Lys Gln Gly Ala Arg Pro His Glu Ala Val Gly Val
    210                 215                 220

His Pro Tyr Arg Ala Trp Cys His Glu Ala Leu His Ala Asp Val Ser
225                 230                 235                 240

Lys Cys Pro Ile His Ala Ala Ala Glu Ala Gly Gln Leu Leu Ile Leu
```

245 250 255

Lys Ala Phe Val Asn Tyr Ser Val Leu Cys Leu Glu Cys Lys Asn Ala
260 265 270

Ala Gly Gln Thr Pro Leu Thr Ile Val Phe Lys His Lys His Lys Asp
275 280 285

Cys Val Leu Tyr Leu Leu Ser Lys Met Trp Ser Thr Val Ser Phe Pro
290 295 300

Lys Ile Ser Val Pro Met Arg Ile Tyr Ile Lys Ile Lys Gln Trp Ile
305 310 315 320

Leu Arg Ala Gln Ser His Ser Leu His Lys Ser Gln Phe Cys Gly Ala
325 330 335

Arg Val Phe Gly Ala Lys Val Gly Asp Thr Val Met Val Asp Gly Phe
340 345 350

Thr Lys Pro Lys Met Thr Ser Lys Ser Trp His Lys Ala Gly Asn Ser
355 360 365

Asp Ser Gln Ser Ile Val Leu Lys Leu Pro Ser Leu Ser Lys Gln Thr
370 375 380

Ala Ser Ser Lys Pro Val Asn Pro Leu Ala Ile Ser Gln Pro Asp Thr
385 390 395 400

Arg Lys Gln Ala Leu Lys Phe His Pro Leu Val Asn Ala Ser Ser Phe
405 410 415

Ser Glu Leu Gln Lys His Gln Gln Gln Asn Gln Lys Lys Ile Thr Ala
420 425 430

Thr Ala Arg Lys Lys Glu Lys Leu Ile Lys Asn Thr Tyr Leu Pro Gln
435 440 445

Val Pro Leu Pro Pro Val Ser Arg Val Gly Tyr Ser His Pro Ser Phe
450 455 460

Phe Tyr Ala Thr Pro Ser Ala Asp Phe Leu Leu Lys Ser Ser Phe Ser
465 470 475 480

```
Ser Phe Leu Glu His Ser Gly Lys Thr Pro Trp Glu Asn Ala Ile Tyr
                485                 490                 495

Cys Leu Ala Val Ala Ser Ala Phe Lys Glu Lys Arg Trp Leu Gln Gln
            500                 505                 510

Leu Glu Ile Ala Arg Val Leu Ala Lys Lys Ser Ile Ser Asn Leu Thr
        515                 520                 525

Thr Arg Gly Gly Leu Thr Ala Cys Glu Asn Ser Leu Glu Thr Val Leu
    530                 535                 540


<210> 5110
<211> 502
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1105; "

<220>
<221> source
<223> /note="Gene Symbol: ANKUB1; "

<220>
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<223> /note="Gene Name:
      ankyrin repeat and ubiquitin
      domain containing 1; "

<220>
<221> source
<223> /note="Uniprot ID:  A6NFN9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000417635"

<400> 5110
Met Arg Ile Phe Ile Ala Phe Glu Gly Ser Phe Glu Pro Phe Asp Val
1               5                   10                  15

Ser Ala Asp Glu Thr Val Glu Val Val Lys Leu Met Ile Lys Asp Tyr
            20                  25                  30

Phe His Ile Pro Leu Ser Glu Asp Lys Gln Gly Arg Arg Tyr Leu Glu
        35                  40                  45
```

```
Leu Met Tyr Ala Gly Ala Ala Leu Lys Asp Ser Trp Ser Leu Ala Asp
    50                  55                  60

Val Gly Ile Ser Phe Cys Ser Thr Leu Lys Cys Phe Val Lys Glu Glu
65                  70                  75                  80

Asp Lys Pro Thr Leu Tyr Val Phe Asn Ala Val Thr Gln Asp Thr Met
                85                  90                  95

Pro Val Met Glu Ser Ile Ser Leu Leu Asp Lys Thr Val Ser Asp Leu
            100                 105                 110

Arg Thr Leu Val Thr Leu Arg Cys Gly Leu Pro Val Ser Val Tyr Cys
        115                 120                 125

Leu Arg Thr Pro Arg Gly Leu Glu Met Tyr Asp Cys Asn Thr Leu Lys
    130                 135                 140

Asp Tyr Gln Thr Asp Ile Gly Thr Thr Leu Arg Leu Asp Val Trp Asp
145                 150                 155                 160

Gly Trp Lys Glu Phe Leu Met Gly Cys Leu Leu Gly Gln Lys Leu Lys
                165                 170                 175

Val Gln Arg Tyr Leu Ser Lys Glu Gly Pro Val Leu Lys Tyr Gln Lys
            180                 185                 190

Arg Val Ala Leu Tyr Ile Ala Ala Phe Cys Gly Tyr Ile Glu Leu Thr
        195                 200                 205

Glu Trp Ala Leu Lys Gln Gly Ala Arg Pro His Glu Ala Val Gly Val
    210                 215                 220

His Pro Tyr Arg Ala Trp Cys His Glu Ala Leu His Ala Asp Val Ser
225                 230                 235                 240

Lys Cys Pro Ile His Ala Ala Ala Glu Ala Gly Gln Leu Leu Ile Leu
                245                 250                 255

Lys Ala Phe Val Asn Tyr Ser Val Leu Cys Leu Glu Cys Lys Asn Ala
            260                 265                 270
```

```
Ala Gly Gln Thr Pro Leu Thr Ile Val Phe Lys His Lys His Lys Asp
        275                 280                 285

Cys Val Leu Tyr Leu Leu Ser Lys Met Trp Ser Thr Val Ser Phe Pro
    290                 295                 300

Lys Ile Ser Val Pro Met Arg Ile Tyr Ile Lys Ile Lys Gln Trp Ile
305                 310                 315                 320

Leu Arg Ala Gln Ser His Ser Leu His Lys Ser Gln Phe Cys Gly Ala
                325                 330                 335

Arg Val Phe Gly Ala Lys Val Gly Asp Thr Val Met Val Asp Gly Phe
            340                 345                 350

Thr Lys Pro Lys Met Thr Ser Lys Ser Trp His Lys Ala Gly Asn Ser
        355                 360                 365

Asp Ser Gln Ser Ile Val Leu Lys Leu Pro Ser Leu Ser Lys Gln Thr
    370                 375                 380

Ala Ser Ser Lys Pro Val Asn Pro Leu Ala Ile Ser Gln Pro Asp Thr
385                 390                 395                 400

Arg Lys Gln Ala Leu Lys Phe His Pro Leu Val Asn Ala Ser Ser Phe
                405                 410                 415

Ser Glu Leu Gln Lys His Gln Gln Gln Asn Gln Lys Lys Ile Thr Ala
            420                 425                 430

Thr Ala Arg Lys Lys Glu Lys Leu Ile Lys Asn Thr Tyr Leu Pro Gln
        435                 440                 445

Val Pro Leu Pro Pro Val Ser Arg Val Gly Tyr Ser His Pro Ser Phe
    450                 455                 460

Phe Tyr Ala Thr Pro Ser Ala Asp Phe Leu Leu Lys Ser Ser Phe Ser
465                 470                 475                 480

Ser Phe Leu Glu His Ser Gly Lys Thr Pro Trp Glu Asn Ala Ile Tyr
                485                 490                 495

Cys Leu Ala Val Ala Arg
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500

<210> 5111
<211> 39
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1105; "

<220>
<221> source
<223> /note="Gene Symbol: ANKUB1; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and ubiquitin
domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420428"

<400> 5111
Met Arg Ile Phe Ile Ala Phe Glu Gly Ser Phe Glu Pro Phe Asp Val
1 5 10 15

Ser Ala Asp Glu Thr Val Glu Val Val Lys Leu Met Ile Lys Thr Asn
20 25 30

Lys Ala Gly Gly Ile Trp Ser
35

<210> 5112
<211> 726
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1106; "

<220>
<221> source
<223> /note="Gene Symbol: ANKZF1; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and zinc finger
domain containing 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q9H8Y5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000321617"

<400> 5112
Met Ser Pro Ala Pro Asp Ala Ala Pro Ala Pro Ala Ser Ile Ser Leu
1   5   10   15

Phe Asp Leu Ser Ala Asp Ala Pro Val Phe Gln Gly Leu Ser Leu Val
            20   25   30

Ser His Ala Pro Gly Glu Ala Leu Ala Arg Ala Pro Arg Thr Ser Cys
        35   40   45

Ser Gly Ser Gly Glu Arg Glu Ser Pro Glu Arg Lys Leu Leu Gln Gly
    50   55   60

Pro Met Asp Ile Ser Glu Lys Leu Phe Cys Ser Thr Cys Asp Gln Thr
65   70   75   80

Phe Gln Asn His Gln Glu Gln Arg Glu His Tyr Lys Leu Asp Trp His
                85   90   95

Arg Phe Asn Leu Lys Gln Arg Leu Lys Asp Lys Pro Leu Leu Ser Ala
            100   105   110

Leu Asp Phe Glu Lys Gln Ser Ser Thr Gly Asp Leu Ser Ser Ile Ser
        115   120   125

Gly Ser Glu Asp Ser Asp Ser Ala Ser Glu Glu Asp Leu Gln Thr Leu
    130   135   140

Asp Arg Glu Arg Ala Thr Phe Glu Lys Leu Ser Arg Pro Pro Gly Phe
145   150   155   160

Tyr Pro His Arg Val Leu Phe Gln Asn Ala Gln Gly Gln Phe Leu Tyr
                165   170   175

Ala Tyr Arg Cys Val Leu Gly Pro His Gln Asp Pro Pro Glu Glu Ala
            180   185   190

```
Glu Leu Leu Leu Gln Asn Leu Gln Ser Arg Gly Pro Arg Asp Cys Val
        195                 200                 205

Val Leu Met Ala Ala Ala Gly His Phe Ala Gly Ala Ile Phe Gln Gly
    210                 215                 220

Arg Glu Val Val Thr His Lys Thr Phe His Arg Tyr Thr Val Arg Ala
225                 230                 235                 240

Lys Arg Gly Thr Ala Gln Gly Leu Arg Asp Ala Arg Gly Gly Pro Ser
                245                 250                 255

His Ser Ala Gly Ala Asn Leu Arg Arg Tyr Asn Glu Ala Thr Leu Tyr
            260                 265                 270

Lys Asp Val Arg Asp Leu Leu Ala Gly Pro Ser Trp Ala Lys Ala Leu
        275                 280                 285

Glu Glu Ala Gly Thr Ile Leu Leu Arg Ala Pro Arg Ser Gly Arg Ser
    290                 295                 300

Leu Phe Phe Gly Gly Lys Gly Ala Pro Leu Gln Arg Gly Asp Pro Arg
305                 310                 315                 320

Leu Trp Asp Ile Pro Leu Ala Thr Arg Arg Pro Thr Phe Gln Glu Leu
                325                 330                 335

Gln Arg Val Leu His Lys Leu Thr Thr Leu His Val Tyr Glu Glu Asp
            340                 345                 350

Pro Arg Glu Ala Val Arg Leu His Ser Pro Gln Thr His Trp Lys Thr
        355                 360                 365

Val Arg Glu Glu Arg Lys Lys Pro Thr Glu Glu Glu Ile Arg Lys Ile
    370                 375                 380

Cys Arg Asp Glu Lys Glu Ala Leu Gly Gln Asn Glu Glu Ser Pro Lys
385                 390                 395                 400

Gln Gly Ser Gly Ser Glu Gly Glu Asp Gly Phe Gln Val Glu Leu Glu
                405                 410                 415
```

```
Leu Val Glu Leu Thr Val Gly Thr Leu Asp Leu Cys Glu Ser Glu Val
            420                 425                 430

Leu Pro Lys Arg Arg Arg Arg Lys Arg Asn Lys Lys Glu Lys Ser Arg
        435                 440                 445

Asp Gln Glu Ala Gly Ala His Arg Thr Leu Leu Gln Gln Thr Gln Glu
    450                 455                 460

Glu Glu Pro Ser Thr Gln Ser Ser Gln Ala Val Ala Ala Pro Leu Gly
465                 470                 475                 480

Pro Leu Leu Asp Glu Ala Lys Ala Pro Gly Gln Pro Glu Leu Trp Asn
                485                 490                 495

Ala Leu Leu Ala Ala Cys Arg Ala Gly Asp Val Gly Val Leu Lys Leu
            500                 505                 510

Gln Leu Ala Pro Ser Pro Ala Asp Pro Arg Val Leu Ser Leu Leu Ser
        515                 520                 525

Ala Pro Leu Gly Ser Gly Gly Phe Thr Leu Leu His Ala Ala Ala Ala
    530                 535                 540

Ala Gly Arg Gly Ser Val Val Arg Leu Leu Leu Glu Ala Gly Ala Asp
545                 550                 555                 560

Pro Thr Val Gln Asp Ser Arg Ala Arg Pro Pro Tyr Thr Val Ala Ala
                565                 570                 575

Asp Lys Ser Thr Arg Asn Glu Phe Arg Arg Phe Met Glu Lys Asn Pro
            580                 585                 590

Asp Ala Tyr Asp Tyr Asn Lys Ala Gln Val Pro Gly Pro Leu Thr Pro
        595                 600                 605

Glu Met Glu Ala Arg Gln Ala Thr Arg Lys Arg Glu Gln Lys Ala Ala
    610                 615                 620

Arg Arg Gln Arg Glu Glu Gln Gln Gln Arg Gln Gln Glu Gln Glu Glu
625                 630                 635                 640

Arg Glu Arg Glu Glu Gln Arg Arg Phe Ala Ala Leu Ser Asp Arg Glu
```

645 650 655

Lys Arg Ala Leu Ala Ala Glu Arg Arg Leu Ala Ala Gln Leu Gly Ala
660 665 670

Pro Thr Ser Pro Ile Pro Asp Ser Ala Ile Val Asn Thr Arg Arg Cys
675 680 685

Trp Ser Cys Gly Ala Ser Leu Gln Gly Leu Thr Pro Phe His Tyr Leu
690 695 700

Asp Phe Ser Phe Cys Ser Thr Arg Cys Leu Gln Asp His Arg Arg Gln
705 710 715 720

Ala Gly Arg Pro Ser Ser
725

<210> 5113
<211> 726
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1106; "

<220>
<221> source
<223> /note="Gene Symbol: ANKZF1; "

<220>
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<223> /note="Gene Name:
ankyrin repeat and zinc finger
domain containing 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q9H8Y5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000386337"

<400> 5113
Met Ser Pro Ala Pro Asp Ala Ala Pro Ala Pro Ala Ser Ile Ser Leu
1 5 10 15

Phe Asp Leu Ser Ala Asp Ala Pro Val Phe Gln Gly Leu Ser Leu Val
20 25 30

```
Ser His Ala Pro Gly Glu Ala Leu Ala Arg Ala Pro Arg Thr Ser Cys
        35                  40                  45

Ser Gly Ser Gly Glu Arg Glu Ser Pro Glu Arg Lys Leu Leu Gln Gly
    50                  55                  60

Pro Met Asp Ile Ser Glu Lys Leu Phe Cys Ser Thr Cys Asp Gln Thr
65                  70                  75                  80

Phe Gln Asn His Gln Glu Gln Arg Glu His Tyr Lys Leu Asp Trp His
                85                  90                  95

Arg Phe Asn Leu Lys Gln Arg Leu Lys Asp Lys Pro Leu Leu Ser Ala
            100                 105                 110

Leu Asp Phe Glu Lys Gln Ser Ser Thr Gly Asp Leu Ser Ser Ile Ser
        115                 120                 125

Gly Ser Glu Asp Ser Asp Ser Ala Ser Glu Glu Asp Leu Gln Thr Leu
    130                 135                 140

Asp Arg Glu Arg Ala Thr Phe Glu Lys Leu Ser Arg Pro Pro Gly Phe
145                 150                 155                 160

Tyr Pro His Arg Val Leu Phe Gln Asn Ala Gln Gly Gln Phe Leu Tyr
                165                 170                 175

Ala Tyr Arg Cys Val Leu Gly Pro His Gln Asp Pro Pro Glu Glu Ala
            180                 185                 190

Glu Leu Leu Leu Gln Asn Leu Gln Ser Arg Gly Pro Arg Asp Cys Val
        195                 200                 205

Val Leu Met Ala Ala Ala Gly His Phe Ala Gly Ala Ile Phe Gln Gly
    210                 215                 220

Arg Glu Val Val Thr His Lys Thr Phe His Arg Tyr Thr Val Arg Ala
225                 230                 235                 240

Lys Arg Gly Thr Ala Gln Gly Leu Arg Asp Ala Arg Gly Gly Pro Ser
                245                 250                 255
```

```
His Ser Ala Gly Ala Asn Leu Arg Arg Tyr Asn Glu Ala Thr Leu Tyr
            260                 265                 270

Lys Asp Val Arg Asp Leu Leu Ala Gly Pro Ser Trp Ala Lys Ala Leu
        275                 280                 285

Glu Glu Ala Gly Thr Ile Leu Leu Arg Ala Pro Arg Ser Gly Arg Ser
    290                 295                 300

Leu Phe Phe Gly Gly Lys Gly Ala Pro Leu Gln Arg Gly Asp Pro Arg
305                 310                 315                 320

Leu Trp Asp Ile Pro Leu Ala Thr Arg Arg Pro Thr Phe Gln Glu Leu
                325                 330                 335

Gln Arg Val Leu His Lys Leu Thr Thr Leu His Val Tyr Glu Glu Asp
            340                 345                 350

Pro Arg Glu Ala Val Arg Leu His Ser Pro Gln Thr His Trp Lys Thr
        355                 360                 365

Val Arg Glu Glu Arg Lys Lys Pro Thr Glu Glu Glu Ile Arg Lys Ile
    370                 375                 380

Cys Arg Asp Glu Lys Glu Ala Leu Gly Gln Asn Glu Glu Ser Pro Lys
385                 390                 395                 400

Gln Gly Ser Gly Ser Glu Gly Glu Asp Gly Phe Gln Val Glu Leu Glu
                405                 410                 415

Leu Val Glu Leu Thr Val Gly Thr Leu Asp Leu Cys Glu Ser Glu Val
            420                 425                 430

Leu Pro Lys Arg Arg Arg Arg Lys Arg Asn Lys Lys Glu Lys Ser Arg
        435                 440                 445

Asp Gln Glu Ala Gly Ala His Arg Thr Leu Leu Gln Gln Thr Gln Glu
    450                 455                 460

Glu Glu Pro Ser Thr Gln Ser Ser Gln Ala Val Ala Ala Pro Leu Gly
465                 470                 475                 480
```

```
Pro Leu Leu Asp Glu Ala Lys Ala Pro Gly Gln Pro Glu Leu Trp Asn
                485                 490                 495

Ala Leu Leu Ala Ala Cys Arg Ala Gly Asp Val Gly Val Leu Lys Leu
            500                 505                 510

Gln Leu Ala Pro Ser Pro Ala Asp Pro Arg Val Leu Ser Leu Leu Ser
        515                 520                 525

Ala Pro Leu Gly Ser Gly Gly Phe Thr Leu Leu His Ala Ala Ala Ala
    530                 535                 540

Ala Gly Arg Gly Ser Val Val Arg Leu Leu Leu Glu Ala Gly Ala Asp
545                 550                 555                 560

Pro Thr Val Gln Asp Ser Arg Ala Arg Pro Pro Tyr Thr Val Ala Ala
                565                 570                 575

Asp Lys Ser Thr Arg Asn Glu Phe Arg Arg Phe Met Glu Lys Asn Pro
            580                 585                 590

Asp Ala Tyr Asp Tyr Asn Lys Ala Gln Val Pro Gly Pro Leu Thr Pro
        595                 600                 605

Glu Met Glu Ala Arg Gln Ala Thr Arg Lys Arg Glu Gln Lys Ala Ala
    610                 615                 620

Arg Arg Gln Arg Glu Glu Gln Gln Gln Arg Gln Gln Glu Gln Glu Glu
625                 630                 635                 640

Arg Glu Arg Glu Glu Gln Arg Arg Phe Ala Ala Leu Ser Asp Arg Glu
                645                 650                 655

Lys Arg Ala Leu Ala Ala Glu Arg Arg Leu Ala Ala Gln Leu Gly Ala
            660                 665                 670

Pro Thr Ser Pro Ile Pro Asp Ser Ala Ile Val Asn Thr Arg Arg Cys
        675                 680                 685

Trp Ser Cys Gly Ala Ser Leu Gln Gly Leu Thr Pro Phe His Tyr Leu
    690                 695                 700

Asp Phe Ser Phe Cys Ser Thr Arg Cys Leu Gln Asp His Arg Arg Gln
```

705 710 715 720

Ala Gly Arg Pro Ser Ser
725

<210> 5114
<211> 516
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1106; "

<220>
<221> source
<223> /note="Gene Symbol: ANKZF1; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and zinc finger
domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000386815"

<400> 5114
Met Ala Ala Ala Gly His Phe Ala Gly Ala Ile Phe Gln Gly Arg Glu
1 5 10 15

Val Val Thr His Lys Thr Phe His Arg Tyr Thr Val Arg Ala Lys Arg
20 25 30

Gly Thr Ala Gln Gly Leu Arg Asp Ala Arg Gly Gly Pro Ser His Ser
35 40 45

Ala Gly Ala Asn Leu Arg Arg Tyr Asn Glu Ala Thr Leu Tyr Lys Asp
50 55 60

Val Arg Asp Leu Leu Ala Gly Pro Ser Trp Ala Lys Ala Leu Glu Glu
65 70 75 80

Ala Gly Thr Ile Leu Leu Arg Ala Pro Arg Ser Gly Arg Ser Leu Phe
85 90 95

Phe Gly Gly Lys Gly Ala Pro Leu Gln Arg Gly Asp Pro Arg Leu Trp
100 105 110

```
Asp Ile Pro Leu Ala Thr Arg Arg Pro Thr Phe Gln Glu Leu Gln Arg
        115                 120                 125

Val Leu His Lys Leu Thr Thr Leu His Val Tyr Glu Glu Asp Pro Arg
    130                 135                 140

Glu Ala Val Arg Leu His Ser Pro Gln Thr His Trp Lys Thr Val Arg
145                 150                 155                 160

Glu Glu Arg Lys Lys Pro Thr Glu Glu Glu Ile Arg Lys Ile Cys Arg
                165                 170                 175

Asp Glu Lys Glu Ala Leu Gly Gln Asn Glu Glu Ser Pro Lys Gln Gly
            180                 185                 190

Ser Gly Ser Glu Gly Glu Asp Gly Phe Gln Val Glu Leu Glu Leu Val
        195                 200                 205

Glu Leu Thr Val Gly Thr Leu Asp Leu Cys Glu Ser Glu Val Leu Pro
    210                 215                 220

Lys Arg Arg Arg Arg Lys Arg Asn Lys Lys Glu Lys Ser Arg Asp Gln
225                 230                 235                 240

Glu Ala Gly Ala His Arg Thr Leu Leu Gln Gln Thr Gln Glu Glu Glu
                245                 250                 255

Pro Ser Thr Gln Ser Ser Gln Ala Val Ala Ala Pro Leu Gly Pro Leu
            260                 265                 270

Leu Asp Glu Ala Lys Ala Pro Gly Gln Pro Glu Leu Trp Asn Ala Leu
        275                 280                 285

Leu Ala Ala Cys Arg Ala Gly Asp Val Gly Val Leu Lys Leu Gln Leu
    290                 295                 300

Ala Pro Ser Pro Ala Asp Pro Arg Val Leu Ser Leu Leu Ser Ala Pro
305                 310                 315                 320

Leu Gly Ser Gly Gly Phe Thr Leu Leu His Ala Ala Ala Ala Ala Gly
                325                 330                 335
```

```
Arg Gly Ser Val Val Arg Leu Leu Leu Glu Ala Gly Ala Asp Pro Thr
            340                 345                 350

Val Gln Asp Ser Arg Ala Arg Pro Pro Tyr Thr Val Ala Ala Asp Lys
        355                 360                 365

Ser Thr Arg Asn Glu Phe Arg Arg Phe Met Glu Lys Asn Pro Asp Ala
    370                 375                 380

Tyr Asp Tyr Asn Lys Ala Gln Val Pro Gly Pro Leu Thr Pro Glu Met
385                 390                 395                 400

Glu Ala Arg Gln Ala Thr Arg Lys Arg Glu Gln Lys Ala Ala Arg Arg
                405                 410                 415

Gln Arg Glu Glu Gln Gln Gln Arg Gln Gln Glu Gln Glu Glu Arg Glu
            420                 425                 430

Arg Glu Glu Gln Arg Arg Phe Ala Ala Leu Ser Asp Arg Glu Lys Arg
        435                 440                 445

Ala Leu Ala Ala Glu Arg Arg Leu Ala Ala Gln Leu Gly Ala Pro Thr
    450                 455                 460

Ser Pro Ile Pro Asp Ser Ala Ile Val Asn Thr Arg Arg Cys Trp Ser
465                 470                 475                 480

Cys Gly Ala Ser Leu Gln Gly Leu Thr Pro Phe His Tyr Leu Asp Phe
                485                 490                 495

Ser Phe Cys Ser Thr Arg Cys Leu Gln Asp His Arg Arg Gln Ala Gly
            500                 505                 510

Arg Pro Ser Ser
        515


<210> 5115
<211> 115
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1106; "
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<220>
<221> source
<223> /note="Gene Symbol: ANKZF1; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and zinc finger
domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000394359"

<400> 5115
Met Asp Ile Ser Glu Lys Leu Phe Cys Ser Thr Cys Asp Gln Thr Phe
1 5 10 15

Gln Asn His Gln Glu Gln Arg Glu His Tyr Lys Leu Asp Trp His Arg
20 25 30

Phe Asn Leu Lys Gln Arg Leu Lys Asp Lys Pro Leu Leu Ser Ala Leu
35 40 45

Asp Phe Glu Lys Gln Ser Ser Thr Gly Asp Leu Ser Ser Ile Ser Gly
50 55 60

Ser Glu Asp Ser Asp Ser Ala Ser Glu Glu Asp Leu Gln Thr Leu Asp
65 70 75 80

Arg Glu Arg Ala Thr Phe Glu Lys Leu Ser Arg Pro Pro Gly Phe Tyr
85 90 95

Pro His Arg Val Leu Phe Gln Asn Ala Gln Gly Gln Phe Leu Tyr Ala
100 105 110

Tyr Arg Cys
115

<210> 5116
<211> 90
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1106; "

<220>
<221> source
<223> /note="Gene Symbol: ANKZF1; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and zinc finger
domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000394652"

<400> 5116
Met Ser Pro Ala Pro Asp Ala Ala Pro Ala Pro Ala Ser Ile Ser Leu
1 5 10 15

Phe Asp Leu Ser Ala Asp Ala Pro Val Phe Gln Gly Leu Ser Leu Val
20 25 30

Ser His Ala Pro Gly Glu Ala Leu Ala Arg Ala Pro Arg Thr Ser Cys
35 40 45

Ser Gly Ser Gly Glu Arg Glu Ser Pro Glu Arg Lys Leu Leu Gln Gly
50 55 60

Pro Met Asp Ile Ser Glu Lys Leu Phe Cys Ser Thr Cys Asp Gln Thr
65 70 75 80

Phe Gln Asn His Gln Glu Gln Arg Glu His
85 90

<210> 5117
<211> 140
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1106; "

<220>
<221> source
<223> /note="Gene Symbol: ANKZF1; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and zinc finger
domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000399667"

<400> 5117
Met Ser Pro Ala Pro Asp Ala Ala Pro Ala Pro Ala Ser Ile Ser Leu
1   5   10   15

Phe Asp Leu Ser Ala Asp Ala Pro Val Phe Gln Gly Leu Ser Leu Val
            20   25   30

Ser His Ala Pro Gly Glu Ala Leu Ala Arg Ala Pro Arg Thr Ser Cys
        35   40   45

Ser Gly Ser Gly Glu Arg Glu Ser Pro Glu Arg Lys Leu Leu Gln Gly
    50   55   60

Pro Met Asp Ile Ser Glu Lys Leu Phe Cys Ser Thr Cys Asp Gln Thr
65   70   75   80

Phe Gln Asn His Gln Glu Gln Arg Glu His Tyr Lys Leu Asp Trp His
                85   90   95

Arg Phe Asn Leu Lys Gln Arg Leu Lys Asp Lys Pro Leu Leu Ser Ala
            100   105   110

Leu Asp Phe Glu Lys Gln Ser Ser Thr Gly Asp Leu Ser Ser Ile Ser
        115   120   125

Gly Ser Glu Asp Ser Asp Ser Ala Ser Glu Glu Asp
    130   135   140

<210> 5118
<211> 53
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1106; "

<220>
<221> source
<223> /note="Gene Symbol: ANKZF1; "

<220>
<221> source

<223> /note="Gene Name:
ankyrin repeat and zinc finger
domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000404113"

<400> 5118
Met Ser Pro Ala Pro Asp Ala Ala Pro Ala Pro Ala Ser Ile Ser Leu
1 5 10 15

Phe Asp Leu Ser Ala Asp Ala Pro Val Phe Gln Gly Leu Ser Leu Val
20 25 30

Ser His Ala Pro Gly Glu Ala Leu Ala Arg Ala Pro Arg Thr Ser Cys
35 40 45

Ser Glu Gly Thr Leu
50

<210> 5119
<211> 59
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1106; "

<220>
<221> source
<223> /note="Gene Symbol: ANKZF1; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat and zinc finger
domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406514"

<400> 5119
Met Ser Pro Ala Pro Asp Ala Ala Pro Ala Pro Ala Ser Ile Ser Leu
1 5 10 15

Phe Asp Leu Ser Ala Asp Ala Pro Val Phe Gln Gly Leu Ser Leu Ala
20 25 30

Gln Gly Arg Glu Lys Ala Gln Lys Glu Ser Tyr Ser Arg Val Leu Trp
        35   40   45

Ile Phe Gln Arg Ser Tyr Phe Val Gln Leu Val
    50   55

<210> 5120
<211> 319
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1107; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD1; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 1 (cardiac muscle); "

<220>
<221> source
<223> /note="Uniprot ID: Q15327; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000360762"

<400> 5120
Met Met Val Leu Lys Val Glu Glu Leu Val Thr Gly Lys Lys Asn Gly
1   5   10   15

Asn Gly Glu Ala Gly Glu Phe Leu Pro Glu Asp Phe Arg Asp Gly Glu
            20   25   30

Tyr Glu Ala Ala Val Thr Leu Glu Lys Gln Glu Asp Leu Lys Thr Leu
        35   40   45

Leu Ala His Pro Val Thr Leu Gly Glu Gln Gln Trp Lys Ser Glu Lys
    50   55   60

Gln Arg Glu Ala Glu Leu Lys Lys Lys Lys Leu Glu Gln Arg Ser Lys
65   70   75   80

Leu Glu Asn Leu Glu Asp Leu Glu Ile Ile Ile Gln Leu Lys Lys Arg
                85   90   95

```
Lys Lys Tyr Arg Lys Thr Lys Val Pro Val Val Lys Glu Pro Glu Pro
            100                 105                 110

Glu Ile Ile Thr Glu Pro Val Asp Val Pro Thr Phe Leu Lys Ala Ala
        115                 120                 125

Leu Glu Asn Lys Leu Pro Val Val Glu Lys Phe Leu Ser Asp Lys Asn
    130                 135                 140

Asn Pro Asp Val Cys Asp Glu Tyr Lys Arg Thr Ala Leu His Arg Ala
145                 150                 155                 160

Cys Leu Glu Gly His Leu Ala Ile Val Glu Lys Leu Met Glu Ala Gly
                165                 170                 175

Ala Gln Ile Glu Phe Arg Asp Met Leu Glu Ser Thr Ala Ile His Trp
            180                 185                 190

Ala Ser Arg Gly Gly Asn Leu Asp Val Leu Lys Leu Leu Leu Asn Lys
        195                 200                 205

Gly Ala Lys Ile Ser Ala Arg Asp Lys Leu Leu Ser Thr Ala Leu His
    210                 215                 220

Val Ala Val Arg Thr Gly His Tyr Glu Cys Ala Glu His Leu Ile Ala
225                 230                 235                 240

Cys Glu Ala Asp Leu Asn Ala Lys Asp Arg Glu Gly Asp Thr Pro Leu
                245                 250                 255

His Asp Ala Val Arg Leu Asn Arg Tyr Lys Met Ile Arg Leu Leu Ile
            260                 265                 270

Met Tyr Gly Ala Asp Leu Asn Ile Lys Asn Cys Ala Gly Lys Thr Pro
        275                 280                 285

Met Asp Leu Val Leu His Trp Gln Asn Gly Thr Lys Ala Ile Phe Asp
    290                 295                 300

Ser Leu Arg Glu Asn Ser Tyr Lys Thr Ser Arg Ile Ala Thr Phe
305                 310                 315
```

<210> 5121
<211> 420
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1108; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD10; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 10; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NXR5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000267339"

<400> 5121
Met Ser Ala Ala Gly Ala Gly Ala Gly Val Glu Ala Gly Phe Ser Ser
1   5   10   15

Glu Glu Leu Leu Ser Leu Arg Phe Pro Leu His Arg Ala Cys Arg Asp
            20   25   30

Gly Asp Leu Ala Thr Leu Cys Ser Leu Leu Gln Gln Thr Pro His Ala
        35   40   45

His Leu Ala Ser Glu Asp Ser Phe Tyr Gly Trp Thr Pro Val His Trp
    50   55   60

Ala Ala His Phe Gly Lys Leu Glu Cys Leu Val Gln Leu Val Arg Ala
65   70   75   80

Gly Ala Thr Leu Asn Val Ser Thr Thr Arg Tyr Ala Gln Thr Pro Ala
                85   90   95

His Ile Ala Ala Phe Gly Gly His Pro Gln Cys Leu Val Trp Leu Ile
            100   105   110

Gln Ala Gly Ala Asn Ile Asn Lys Pro Asp Cys Glu Gly Glu Thr Pro

```
        115                 120                 125

Ile His Lys Ala Ala Arg Ser Gly Ser Leu Glu Cys Ile Ser Ala Leu
    130                 135                 140

Val Ala Asn Gly Ala His Val Asp Leu Arg Asn Ala Ser Gly Leu Thr
145                 150                 155                 160

Ala Ala Asp Ile Ala Gln Thr Gln Gly Phe Gln Glu Cys Ala Gln Phe
                165                 170                 175

Leu Leu Asn Leu Gln Asn Cys His Leu Asn His Phe Tyr Asn Asn Gly
            180                 185                 190

Ile Leu Asn Gly Gly His Gln Asn Val Phe Pro Asn His Ile Ser Val
        195                 200                 205

Gly Thr Asn Arg Lys Arg Cys Leu Glu Asp Ser Glu Asp Phe Gly Val
    210                 215                 220

Lys Lys Ala Arg Thr Glu Ala Gln Ser Leu Asp Ser Ala Val Pro Leu
225                 230                 235                 240

Thr Asn Gly Asp Thr Glu Asp Asp Ala Asp Lys Met His Val Asp Arg
                245                 250                 255

Glu Phe Ala Val Val Thr Asp Met Lys Asn Ser Ser Ser Val Ser Asn
            260                 265                 270

Thr Leu Thr Asn Gly Cys Val Ile Asn Gly His Leu Asp Phe Pro Ser
        275                 280                 285

Thr Thr Pro Leu Ser Gly Met Glu Ser Arg Asn Gly Gln Cys Leu Thr
    290                 295                 300

Gly Thr Asn Gly Ile Ser Ser Gly Leu Ala Pro Gly Gln Pro Phe Pro
305                 310                 315                 320

Ser Ser Gln Gly Ser Leu Cys Ile Ser Gly Thr Glu Glu Pro Glu Lys
                325                 330                 335

Thr Leu Arg Ala Asn Pro Glu Leu Cys Gly Ser Leu His Leu Asn Gly
            340                 345                 350
```

```
Ser Pro Ser Ser Cys Ile Ala Ser Arg Pro Ser Trp Val Glu Asp Ile
        355                 360                 365

Gly Asp Asn Leu Tyr Tyr Gly His Tyr His Gly Phe Gly Asp Thr Ala
    370                 375                 380

Glu Ser Ile Pro Glu Leu Asn Ser Val Val Glu His Ser Lys Ser Val
385                 390                 395                 400

Lys Val Gln Glu Arg Tyr Asp Ser Ala Val Leu Gly Thr Met His Leu
                405                 410                 415

His His Gly Ser
            420


<210> 5122
<211> 220
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1108; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD10; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 10; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9NXR5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000312534"

<400> 5122
Met Ser Ala Ala Gly Ala Gly Ala Gly Val Glu Ala Gly Phe Ser Ser
1               5                   10                  15

Glu Glu Leu Leu Ser Leu Arg Phe Pro Leu His Arg Ala Cys Arg Asp
            20                  25                  30
```

```
Gly Asp Leu Ala Thr Leu Cys Ser Leu Leu Gln Gln Thr Pro His Ala
        35                  40                  45

His Leu Ala Ser Glu Asp Ser Phe Tyr Gly Trp Thr Pro Val His Trp
    50                  55                  60

Ala Ala His Phe Gly Lys Leu Glu Cys Leu Val Gln Leu Val Arg Ala
65                  70                  75                  80

Gly Ala Thr Leu Asn Val Ser Thr Thr Arg Tyr Ala Gln Thr Pro Ala
                85                  90                  95

His Ile Ala Ala Phe Gly Gly His Pro Gln Cys Leu Val Trp Leu Ile
            100                 105                 110

Gln Ala Gly Ala Asn Ile Asn Lys Pro Asp Cys Glu Gly Glu Thr Pro
        115                 120                 125

Ile His Lys Ala Ala Arg Ser Gly Ser Leu Glu Cys Ile Ser Ala Leu
    130                 135                 140

Val Ala Asn Gly Ala His Val Glu Phe Ile Ser Gln Ser Ser Val His
145                 150                 155                 160

Ser Cys Leu Pro Gly Glu Leu Gln His Gly Val Thr Phe Asp Pro Ser
                165                 170                 175

Val Leu Ile Gln Cys Leu Lys Pro Glu Lys Cys Gln Trp Pro Asp Ser
            180                 185                 190

Ser Arg His Cys Thr Asn Pro Gly Phe Pro Arg Val Cys Pro Val Ser
        195                 200                 205

Leu Glu Pro Pro Glu Leu Ser Ser Glu Pro Phe Leu
    210                 215                 220


<210> 5123
<211> 161
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1108; "
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<220>
<221> source
<223> /note="Gene Symbol: ANKRD10; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431927"

<400> 5123

```
Met Ser Ala Ala Gly Ala Gly Ala Gly Val Glu Ala Gly Phe Ser Ser
1               5                  10                  15

Glu Glu Leu Leu Ser Leu Arg Phe Pro Leu His Arg Ala Cys Arg Asp
            20                  25                  30

Gly Asp Leu Ala Thr Leu Cys Ser Leu Leu Gln Gln Thr Pro His Ala
        35                  40                  45

His Leu Ala Ser Glu Asp Ser Phe Tyr Gly Trp Thr Pro Val His Trp
    50                  55                  60

Ala Ala His Phe Gly Lys Leu Glu Cys Leu Val Gln Leu Val Arg Ala
65                  70                  75                  80

Gly Ala Thr Leu Asn Val Ser Thr Thr Arg Tyr Ala Gln Thr Pro Ala
                85                  90                  95

His Ile Ala Ala Phe Gly Gly His Pro Gln Cys Leu Val Trp Leu Ile
            100                 105                 110

Gln Ala Gly Ala Asn Ile Asn Lys Pro Asp Cys Glu Gly Glu Thr Pro
        115                 120                 125

Ile His Lys Ala Ala Arg Ser Gly Ser Leu Glu Cys Ile Ser Ala Leu
    130                 135                 140

Val Ala Asn Gly Ala His Val Asp Asn Pro Arg Lys Gly Glu His Ser
145                 150                 155                 160

Ile
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<210> 5124
<211> 121
<212> PRT
<213> Homo sapiens

<220>
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<221> source
<223> /note="Gene Name:
ankyrin repeat domain 10; "

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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 5124
Xaa Gly His Gln Asn Val Phe Pro Asn His Ile Ser Val Gly Thr Asn
1 5 10 15

Arg Lys Arg Cys Leu Glu Asp Ser Glu Asp Phe Gly Val Lys Lys Ala
20 25 30

Arg Thr Glu Ala Gln Ser Leu Asp Ser Ala Val Pro Leu Thr Asn Gly
35 40 45

Asp Thr Glu Asp Asp Ala Asp Lys Met His Val Asp Arg Glu Phe Ala
50 55 60

Val Val Thr Gly Gly Ser Gly Gln Phe Pro Val Ser Cys Asn Asn Asn
65 70 75 80

Pro Met Val Glu Asp Thr Lys Gln Gln Glu Ser Gly Ser Val Gly Pro
85 90 95

Lys Glu Ile Glu Ile Tyr Thr Val Ser Ala Met Gln Thr Pro Cys Arg
100 105 110

Cys Arg Asn Gln Tyr Ala Tyr Tyr Phe
        115   120

<210> 5125
<211> 2663
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ANKRD11; "

<220>
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<223> /note="Gene Name:
      ankyrin repeat domain 11; "

<220>
<221> source
<223> /note="Uniprot ID: Q6UB99; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000301030"

<400> 5125
Met Pro Lys Gly Gly Cys Pro Lys Ala Pro Gln Gln Glu Glu Leu Pro
1   5   10   15

Leu Ser Ser Asp Met Val Glu Lys Gln Thr Gly Lys Lys Asp Lys Asp
            20   25   30

Lys Val Ser Leu Thr Lys Thr Pro Lys Leu Glu Arg Gly Asp Gly Gly
        35   40   45

Lys Glu Val Arg Glu Arg Ala Ser Lys Arg Lys Leu Pro Phe Thr Ala
    50   55   60

Gly Ala Asn Gly Glu Gln Lys Asp Ser Asp Thr Glu Lys Gln Gly Pro
65   70   75   80

Glu Arg Lys Arg Ile Lys Lys Glu Pro Val Thr Arg Lys Ala Gly Leu
                85   90   95

Leu Phe Gly Met Gly Leu Ser Gly Ile Arg Ala Gly Tyr Pro Leu Ser

```
            100                 105                 110

Glu Arg Gln Gln Val Ala Leu Leu Met Gln Met Thr Ala Glu Glu Ser
        115                 120                 125

Ala Asn Ser Pro Val Asp Thr Thr Pro Lys His Pro Ser Gln Ser Thr
    130                 135                 140

Val Cys Gln Lys Gly Thr Pro Asn Ser Ala Ser Lys Thr Lys Asp Lys
145                 150                 155                 160

Val Asn Lys Arg Asn Glu Arg Gly Glu Thr Arg Leu His Arg Ala Ala
                165                 170                 175

Ile Arg Gly Asp Ala Arg Arg Ile Lys Glu Leu Ile Ser Glu Gly Ala
            180                 185                 190

Asp Val Asn Val Lys Asp Phe Ala Gly Trp Thr Ala Leu His Glu Ala
        195                 200                 205

Cys Asn Arg Gly Tyr Tyr Asp Val Ala Lys Gln Leu Leu Ala Ala Gly
    210                 215                 220

Ala Glu Val Asn Thr Lys Gly Leu Asp Asp Asp Thr Pro Leu His Asp
225                 230                 235                 240

Ala Ala Asn Asn Gly His Tyr Lys Val Val Lys Leu Leu Leu Arg Tyr
                245                 250                 255

Gly Gly Asn Pro Gln Gln Ser Asn Arg Lys Gly Glu Thr Pro Leu Lys
            260                 265                 270

Val Ala Asn Ser Pro Thr Met Val Asn Leu Leu Leu Gly Lys Gly Thr
        275                 280                 285

Tyr Thr Ser Ser Glu Glu Ser Ser Thr Glu Ser Ser Glu Glu Glu Asp
    290                 295                 300

Ala Pro Ser Phe Ala Pro Ser Ser Ser Val Asp Gly Asn Asn Thr Asp
305                 310                 315                 320

Ser Glu Phe Glu Lys Gly Leu Lys His Lys Ala Lys Asn Pro Glu Pro
                325                 330                 335
```

```
Gln Lys Ala Thr Ala Pro Val Lys Asp Glu Tyr Glu Phe Asp Glu Asp
            340                 345                 350

Asp Glu Gln Asp Arg Val Pro Pro Val Asp Asp Lys His Leu Leu Lys
        355                 360                 365

Lys Asp Tyr Arg Lys Glu Thr Lys Ser Asn Ser Phe Ile Ser Ile Pro
    370                 375                 380

Lys Met Glu Val Lys Ser Tyr Thr Lys Asn Asn Thr Ile Ala Pro Lys
385                 390                 395                 400

Lys Ala Ser His Arg Ile Leu Ser Asp Thr Ser Asp Glu Glu Asp Ala
                405                 410                 415

Ser Val Thr Val Gly Thr Gly Glu Lys Leu Arg Leu Ser Ala His Thr
            420                 425                 430

Ile Leu Pro Gly Ser Lys Thr Arg Glu Pro Ser Asn Ala Lys Gln Gln
        435                 440                 445

Lys Glu Lys Asn Lys Val Lys Lys Lys Arg Lys Lys Glu Thr Lys Gly
    450                 455                 460

Arg Glu Val Arg Phe Gly Lys Arg Ser Asp Lys Phe Cys Ser Ser Glu
465                 470                 475                 480

Ser Glu Ser Glu Ser Ser Glu Ser Gly Glu Asp Asp Arg Asp Ser Leu
                485                 490                 495

Gly Ser Ser Gly Cys Leu Lys Gly Ser Pro Leu Val Leu Lys Asp Pro
            500                 505                 510

Ser Leu Phe Ser Ser Leu Ser Ala Ser Ser Thr Ser Ser His Gly Ser
        515                 520                 525

Ser Ala Ala Gln Lys Gln Asn Pro Ser His Thr Asp Gln His Thr Lys
    530                 535                 540

His Trp Arg Thr Asp Asn Trp Lys Thr Ile Ser Ser Pro Ala Trp Ser
545                 550                 555                 560
```

Glu Val Ser Ser Leu Ser Asp Ser Thr Arg Thr Arg Leu Thr Ser Glu
565 570 575

Ser Asp Tyr Ser Ser Glu Gly Ser Ser Val Glu Ser Leu Lys Pro Val
580 585 590

Arg Lys Arg Gln Glu His Arg Lys Arg Ala Ser Leu Ser Glu Lys Lys
595 600 605

Ser Pro Phe Leu Ser Ser Ala Glu Gly Ala Val Pro Lys Leu Asp Lys
610 615 620

Glu Gly Lys Val Val Lys Lys His Lys Thr Lys His Lys His Lys Asn
625 630 635 640

Lys Glu Lys Gly Gln Cys Ser Ile Ser Gln Glu Leu Lys Leu Lys Ser
645 650 655

Phe Thr Tyr Glu Tyr Glu Asp Ser Lys Gln Lys Ser Asp Lys Ala Ile
660 665 670

Leu Leu Glu Asn Asp Leu Ser Thr Glu Asn Lys Leu Lys Val Leu Lys
675 680 685

His Asp Arg Asp His Phe Lys Lys Glu Glu Lys Leu Ser Lys Met Lys
690 695 700

Leu Glu Glu Lys Glu Trp Leu Phe Lys Asp Glu Lys Ser Leu Lys Arg
705 710 715 720

Ile Lys Asp Thr Asn Lys Asp Ile Ser Arg Ser Phe Arg Glu Glu Lys
725 730 735

Asp Arg Ser Asn Lys Ala Glu Lys Glu Arg Ser Leu Lys Glu Lys Ser
740 745 750

Pro Lys Glu Glu Lys Leu Arg Leu Tyr Lys Glu Glu Arg Lys Lys Lys
755 760 765

Ser Lys Asp Arg Pro Ser Lys Leu Glu Lys Lys Asn Asp Leu Lys Glu
770 775 780

```
Asp Lys Ile Ser Lys Glu Lys Glu Lys Ile Phe Lys Glu Asp Lys Glu
785                 790                 795                 800

Lys Leu Lys Lys Glu Lys Val Tyr Arg Glu Asp Ser Ala Phe Asp Glu
                805                 810                 815

Tyr Cys Asn Lys Asn Gln Phe Leu Glu Asn Glu Asp Thr Lys Phe Ser
            820                 825                 830

Leu Ser Asp Asp Gln Arg Asp Arg Trp Phe Ser Asp Leu Ser Asp Ser
        835                 840                 845

Ser Phe Asp Phe Lys Gly Glu Asp Ser Trp Asp Ser Pro Val Thr Asp
    850                 855                 860

Tyr Arg Asp Met Lys Ser Asp Ser Val Ala Lys Leu Ile Leu Glu Thr
865                 870                 875                 880

Val Lys Glu Asp Ser Lys Glu Arg Arg Arg Asp Ser Arg Ala Arg Glu
                885                 890                 895

Lys Arg Asp Tyr Arg Glu Pro Phe Phe Arg Lys Lys Asp Arg Asp Tyr
            900                 905                 910

Leu Asp Lys Asn Ser Glu Lys Arg Lys Glu Gln Thr Glu Lys His Lys
        915                 920                 925

Ser Val Pro Gly Tyr Leu Ser Glu Lys Asp Lys Lys Arg Arg Glu Ser
    930                 935                 940

Ala Glu Ala Gly Arg Asp Arg Lys Asp Ala Leu Glu Ser Cys Lys Glu
945                 950                 955                 960

Arg Arg Asp Gly Arg Ala Lys Pro Glu Glu Ala His Arg Glu Glu Leu
                965                 970                 975

Lys Glu Cys Gly Cys Glu Ser Gly Phe Lys Asp Lys Ser Asp Gly Asp
            980                 985                 990

Phe Gly Lys Gly Leu Glu Pro Trp  Glu Arg His His Pro  Ala Arg
Glu
        995                 1000                1005
```

Lys Glu Lys Lys Asp Gly Pro Asp Lys Glu Arg Lys Glu Lys Thr
1010 1015 1020

Lys Pro Glu Arg Tyr Lys Glu Lys Ser Ser Asp Lys Asp Lys Ser
1025 1030 1035

Glu Lys Ser Ile Leu Glu Lys Cys Gln Lys Asp Lys Glu Phe Asp
1040 1045 1050

Lys Cys Phe Lys Glu Lys Lys Asp Thr Lys Glu Lys His Lys Asp
1055 1060 1065

Thr His Gly Lys Asp Lys Glu Arg Lys Ala Ser Leu Asp Gln Gly
1070 1075 1080

Lys Glu Lys Lys Glu Lys Ala Phe Pro Gly Ile Ile Ser Glu Asp
1085 1090 1095

Phe Ser Glu Lys Lys Asp Asp Lys Lys Gly Lys Glu Lys Ser Trp
1100 1105 1110

Tyr Ile Ala Asp Ile Phe Thr Asp Glu Ser Glu Asp Asp Arg Asp
1115 1120 1125

Ser Cys Met Gly Ser Gly Phe Lys Met Gly Glu Ala Ser Asp Leu
1130 1135 1140

Pro Arg Thr Asp Gly Leu Gln Glu Lys Glu Glu Gly Arg Glu Ala
1145 1150 1155

Tyr Ala Ser Asp Arg His Arg Lys Ser Ser Asp Lys Gln His Pro
1160 1165 1170

Glu Arg Gln Lys Asp Lys Glu Pro Arg Asp Arg Arg Lys Asp Arg
1175 1180 1185

Gly Ala Ala Asp Ala Gly Arg Asp Lys Lys Glu Lys Val Phe Glu
1190 1195 1200

Lys His Lys Glu Lys Lys Asp Lys Glu Ser Thr Glu Lys Tyr Lys
1205 1210 1215

Asp Arg Lys Asp Arg Ala Ser Val Asp Ser Thr Gln Asp Lys Lys

1220 1225 1230

Asn Lys Gln Lys Leu Pro Glu Lys Ala Glu Lys Lys His Ala Ala
1235 1240 1245

Glu Asp Lys Ala Lys Ser Lys His Lys Glu Lys Ser Asp Lys Glu
1250 1255 1260

His Ser Lys Glu Arg Lys Ser Ser Arg Ser Ala Asp Ala Glu Lys
1265 1270 1275

Ser Leu Leu Glu Lys Leu Glu Glu Glu Ala Leu His Glu Tyr Arg
1280 1285 1290

Glu Asp Ser Asn Asp Lys Ile Ser Glu Val Ser Ser Asp Ser Phe
1295 1300 1305

Thr Asp Arg Gly Gln Glu Pro Gly Leu Thr Ala Phe Leu Glu Val
1310 1315 1320

Ser Phe Thr Glu Pro Pro Gly Asp Asp Lys Pro Arg Glu Ser Ala
1325 1330 1335

Cys Leu Pro Glu Lys Leu Lys Glu Lys Glu Arg His Arg His Ser
1340 1345 1350

Ser Ser Ser Ser Lys Lys Ser His Asp Arg Glu Arg Ala Lys Lys
1355 1360 1365

Glu Lys Ala Glu Lys Lys Glu Lys Gly Glu Asp Tyr Lys Glu Gly
1370 1375 1380

Gly Ser Arg Lys Asp Ser Gly Gln Tyr Glu Lys Asp Phe Leu Glu
1385 1390 1395

Ala Asp Ala Tyr Gly Val Ser Tyr Asn Met Lys Ala Asp Ile Glu
1400 1405 1410

Asp Glu Leu Asp Lys Thr Ile Glu Leu Phe Ser Thr Glu Lys Lys
1415 1420 1425

Asp Lys Asn Asp Ser Glu Arg Glu Pro Ser Lys Lys Ile Glu Lys
1430 1435 1440

```
Glu Leu  Lys Pro Tyr Gly Ser  Ser Ala Ile Asn Ile  Leu Lys Glu
    1445                1450                1455

Lys Lys  Lys Arg Glu Lys His  Arg Glu Lys Trp Arg  Asp Glu Lys
    1460                1465                1470

Glu Arg  His Arg Asp Arg His  Ala Asp Gly Leu Leu  Arg His His
    1475                1480                1485

Arg Asp  Glu Leu Leu Arg His  His Arg Asp Glu Gln  Lys Pro Ala
    1490                1495                1500

Thr Arg  Asp Lys Asp Ser Pro  Pro Arg Val Leu Lys  Asp Lys Ser
    1505                1510                1515

Arg Asp  Glu Gly Pro Arg Leu  Gly Asp Ala Lys Leu  Lys Glu Lys
    1520                1525                1530

Phe Lys  Asp Gly Ala Glu Lys  Glu Lys Gly Asp Pro  Val Lys Met
    1535                1540                1545

Ser Asn  Gly Asn Asp Lys Val  Ala Pro Ser Lys Asp  Pro Gly Lys
    1550                1555                1560

Lys Asp  Ala Arg Pro Arg Glu  Lys Leu Leu Gly Asp  Gly Asp Leu
    1565                1570                1575

Met Met  Thr Ser Phe Glu Arg  Met Leu Ser Gln Lys  Asp Leu Glu
    1580                1585                1590

Ile Glu  Glu Arg His Lys Arg  His Lys Glu Arg Met  Lys Gln Met
    1595                1600                1605

Glu Lys  Leu Arg His Arg Ser  Gly Asp Pro Lys Leu  Lys Glu Lys
    1610                1615                1620

Ala Lys  Pro Ala Asp Asp Gly  Arg Lys Lys Gly Leu  Asp Ile Pro
    1625                1630                1635

Ala Lys  Lys Pro Pro Gly Leu  Asp Pro Pro Phe Lys  Asp Lys Lys
    1640                1645                1650
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Leu Lys Glu Ser Thr Pro Ile Pro Pro Ala Ala Glu Asn Lys Leu
1655 1660 1665

His Pro Ala Ser Gly Ala Asp Ser Lys Asp Trp Leu Ala Gly Pro
1670 1675 1680

His Met Lys Glu Val Leu Pro Ala Ser Pro Arg Pro Asp Gln Ser
1685 1690 1695

Arg Pro Thr Gly Val Pro Thr Pro Thr Ser Val Leu Ser Cys Pro
1700 1705 1710

Ser Tyr Glu Glu Val Met His Thr Pro Arg Thr Pro Ser Cys Ser
1715 1720 1725

Ala Asp Asp Tyr Ala Asp Leu Val Phe Asp Cys Ala Asp Ser Gln
1730 1735 1740

His Ser Thr Pro Val Pro Thr Ala Pro Thr Ser Ala Cys Ser Pro
1745 1750 1755

Ser Phe Phe Asp Arg Phe Ser Val Ala Ser Ser Gly Leu Ser Glu
1760 1765 1770

Asn Ala Ser Gln Ala Pro Ala Arg Pro Leu Ser Thr Asn Leu Tyr
1775 1780 1785

Arg Ser Val Ser Val Asp Ile Arg Arg Thr Pro Glu Glu Glu Phe
1790 1795 1800

Ser Val Gly Asp Lys Leu Phe Arg Gln Gln Ser Val Pro Ala Ala
1805 1810 1815

Ser Ser Tyr Asp Ser Pro Met Pro Pro Ser Met Glu Asp Arg Ala
1820 1825 1830

Pro Leu Pro Pro Val Pro Ala Glu Lys Phe Ala Cys Leu Ser Pro
1835 1840 1845

Gly Tyr Tyr Ser Pro Asp Tyr Gly Leu Pro Ser Pro Lys Val Asp
1850 1855 1860

Ala Leu His Cys Pro Pro Ala Ala Val Val Thr Val Thr Pro Ser
1865 1870 1875

Pro Glu Gly Val Phe Ser Ser Leu Gln Ala Lys Pro Ser Pro Ser
1880 1885 1890

Pro Arg Ala Glu Leu Leu Val Pro Ser Leu Glu Gly Ala Leu Pro
1895 1900 1905

Pro Asp Leu Asp Thr Ser Glu Asp Gln Gln Ala Thr Ala Ala Ile
1910 1915 1920

Ile Pro Pro Glu Pro Ser Tyr Leu Glu Pro Leu Asp Glu Gly Pro
1925 1930 1935

Phe Ser Ala Val Ile Thr Glu Glu Pro Val Glu Trp Ala His Pro
1940 1945 1950

Ser Glu Gln Ala Leu Ala Ser Ser Leu Ile Gly Gly Thr Ser Glu
1955 1960 1965

Asn Pro Val Ser Trp Pro Val Gly Ser Asp Leu Leu Leu Lys Ser
1970 1975 1980

Pro Gln Arg Phe Pro Glu Ser Pro Lys Arg Phe Cys Pro Ala Asp
1985 1990 1995

Pro Leu His Ser Ala Ala Pro Gly Pro Phe Ser Ala Ser Glu Ala
2000 2005 2010

Pro Tyr Pro Ala Pro Pro Ala Ser Pro Ala Pro Tyr Ala Leu Pro
2015 2020 2025

Val Ala Glu Pro Gly Leu Glu Asp Val Lys Asp Gly Val Asp Ala
2030 2035 2040

Val Pro Ala Ala Ile Ser Thr Ser Glu Ala Ala Pro Tyr Ala Pro
2045 2050 2055

Pro Ser Gly Leu Glu Ser Phe Phe Ser Asn Cys Lys Ser Leu Pro
2060 2065 2070

Glu Ala Pro Leu Asp Val Ala Pro Glu Pro Ala Cys Val Ala Ala

2075 2080 2085

Val Ala Gln Val Glu Ala Leu Gly Pro Leu Glu Asn Ser Phe Leu
2090 2095 2100

Asp Gly Ser Arg Gly Leu Ser His Leu Gly Gln Val Glu Pro Val
2105 2110 2115

Pro Trp Ala Asp Ala Phe Ala Gly Pro Glu Asp Asp Leu Asp Leu
2120 2125 2130

Gly Pro Phe Ser Leu Pro Glu Leu Pro Leu Gln Thr Lys Asp Ala
2135 2140 2145

Ala Asp Gly Glu Ala Glu Pro Val Glu Glu Ser Leu Ala Pro Pro
2150 2155 2160

Glu Glu Met Pro Pro Gly Ala Pro Gly Val Ile Asn Gly Gly Asp
2165 2170 2175

Val Ser Thr Val Val Ala Glu Glu Pro Pro Ala Leu Pro Pro Asp
2180 2185 2190

Gln Ala Ser Thr Arg Leu Pro Ala Glu Leu Glu Pro Glu Pro Ser
2195 2200 2205

Gly Glu Pro Lys Leu Asp Val Ala Leu Glu Ala Ala Val Glu Ala
2210 2215 2220

Glu Thr Val Pro Glu Glu Arg Ala Arg Gly Asp Pro Asp Ser Ser
2225 2230 2235

Val Glu Pro Ala Pro Val Pro Pro Glu Gln Arg Pro Leu Gly Ser
2240 2245 2250

Gly Asp Gln Gly Ala Glu Ala Glu Gly Pro Pro Ala Ala Ser Leu
2255 2260 2265

Cys Ala Pro Asp Gly Pro Ala Pro Asn Thr Val Ala Gln Ala Gln
2270 2275 2280

Ala Ala Asp Gly Ala Gly Pro Glu Asp Asp Thr Glu Ala Ser Arg
2285 2290 2295

```
Ala Ala  Ala Pro Ala Glu Gly  Pro Pro Gly Gly Ile  Gln Pro Glu
    2300                2305                2310

Ala Ala  Glu Pro Lys Pro Thr  Ala Glu Ala Pro Lys  Ala Pro Arg
    2315                2320                2325

Val Glu  Glu Ile Pro Gln Arg  Met Thr Arg Asn Arg  Ala Gln Met
    2330                2335                2340

Leu Ala  Asn Gln Ser Lys Gln  Gly Pro Pro Pro Ser  Glu Lys Glu
    2345                2350                2355

Cys Ala  Pro Thr Pro Ala Pro  Val Thr Arg Ala Lys  Ala Arg Gly
    2360                2365                2370

Ser Glu  Asp Asp Asp Ala Gln  Ala Gln His Pro Arg  Lys Arg Arg
    2375                2380                2385

Phe Gln  Arg Ser Thr Gln Gln  Leu Gln Gln Gln Leu  Asn Thr Ser
    2390                2395                2400

Thr Gln  Gln Thr Arg Glu Val  Ile Gln Gln Thr Leu  Ala Ala Ile
    2405                2410                2415

Val Asp  Ala Ile Lys Leu Asp  Ala Ile Glu Pro Tyr  His Ser Asp
    2420                2425                2430

Arg Ala  Asn Pro Tyr Phe Glu  Tyr Leu Gln Ile Arg  Lys Lys Ile
    2435                2440                2445

Glu Glu  Lys Arg Lys Ile Leu  Cys Cys Ile Thr Pro  Gln Ala Pro
    2450                2455                2460

Gln Cys  Tyr Ala Glu Tyr Val  Thr Tyr Thr Gly Ser  Tyr Leu Leu
    2465                2470                2475

Asp Gly  Lys Pro Leu Ser Lys  Leu His Ile Pro Val  Ile Ala Pro
    2480                2485                2490

Pro Pro  Ser Leu Ala Glu Pro  Leu Lys Glu Leu Phe  Arg Gln Gln
    2495                2500                2505
```

```
Glu Ala  Val Arg Gly Lys Leu  Arg Leu Gln His Ser  Ile Glu Arg
    2510                2515                2520

Glu Lys  Leu Ile Val Ser Cys  Glu Gln Glu Ile Leu  Arg Val His
    2525                2530                2535

Cys Arg  Ala Ala Arg Thr Ile  Ala Asn Gln Ala Val  Pro Phe Ser
    2540                2545                2550

Ala Cys  Thr Met Leu Leu Asp  Ser Glu Val Tyr Asn  Met Pro Leu
    2555                2560                2565

Glu Ser  Gln Gly Asp Glu Asn  Lys Ser Val Arg Asp  Arg Phe Asn
    2570                2575                2580

Ala Arg  Gln Phe Ile Ser Trp  Leu Gln Asp Val Asp  Asp Lys Tyr
    2585                2590                2595

Asp Arg  Met Lys Thr Cys Leu  Leu Met Arg Gln Gln  His Glu Ala
    2600                2605                2610

Ala Ala  Leu Asn Ala Val Gln  Arg Met Glu Trp Gln  Leu Lys Val
    2615                2620                2625

Gln Glu  Leu Asp Pro Ala Gly  His Lys Ser Leu Cys  Val Asn Glu
    2630                2635                2640

Val Pro  Ser Phe Tyr Val Pro  Met Val Asp Val Asn  Asp Asp Phe
    2645                2650                2655

Val Leu  Leu Pro Ala
    2660
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<210> 5126
<211> 97
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1109; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD11; "

<220>
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<223> /note="Gene Name:
ankyrin repeat domain 11; "

<220>
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<223> /note="ENSP ID: ENSP00000330815"

<400> 5126
Met Pro Lys Gly Gly Cys Pro Lys Ala Pro Gln Gln Glu Glu Leu Pro
1 5 10 15

Leu Ser Ser Asp Met Val Glu Lys Gln Thr Gly Lys Lys Asp Lys Asp
20 25 30

Lys Val Ser Leu Thr Lys Thr Pro Lys Leu Glu Arg Gly Asp Gly Gly
35 40 45

Lys Glu Val Arg Glu Arg Ala Ser Lys Arg Lys Leu Pro Phe Thr Ala
50 55 60

Gly Ala Asn Gly Glu Gln Lys Asp Ser Asp Thr Asp Ala Ser Ser Pro
65 70 75 80

Val Pro Val Val Val Leu Gln Gly Trp Tyr Ala Pro Arg Ser Thr Met
85 90 95

Ala

<210> 5127
<211> 2663
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Uniprot ID: Q6UB99; "

<220>
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<400> 5127
Met Pro Lys Gly Gly Cys Pro Lys Ala Pro Gln Gln Glu Glu Leu Pro
1   5   10   15

Leu Ser Ser Asp Met Val Glu Lys Gln Thr Gly Lys Lys Asp Lys Asp
            20   25   30

Lys Val Ser Leu Thr Lys Thr Pro Lys Leu Glu Arg Gly Asp Gly Gly
        35   40   45

Lys Glu Val Arg Glu Arg Ala Ser Lys Arg Lys Leu Pro Phe Thr Ala
    50   55   60

Gly Ala Asn Gly Glu Gln Lys Asp Ser Asp Thr Glu Lys Gln Gly Pro
65   70   75   80

Glu Arg Lys Arg Ile Lys Lys Glu Pro Val Thr Arg Lys Ala Gly Leu
                85   90   95

Leu Phe Gly Met Gly Leu Ser Gly Ile Arg Ala Gly Tyr Pro Leu Ser
            100   105   110

Glu Arg Gln Gln Val Ala Leu Leu Met Gln Met Thr Ala Glu Glu Ser
        115   120   125

Ala Asn Ser Pro Val Asp Thr Thr Pro Lys His Pro Ser Gln Ser Thr
    130   135   140

Val Cys Gln Lys Gly Thr Pro Asn Ser Ala Ser Lys Thr Lys Asp Lys
145   150   155   160

Val Asn Lys Arg Asn Glu Arg Gly Glu Thr Arg Leu His Arg Ala Ala
                165   170   175

Ile Arg Gly Asp Ala Arg Arg Ile Lys Glu Leu Ile Ser Glu Gly Ala
            180   185   190

```
Asp Val Asn Val Lys Asp Phe Ala Gly Trp Thr Ala Leu His Glu Ala
        195                 200                 205

Cys Asn Arg Gly Tyr Tyr Asp Val Ala Lys Gln Leu Leu Ala Ala Gly
    210                 215                 220

Ala Glu Val Asn Thr Lys Gly Leu Asp Asp Asp Thr Pro Leu His Asp
225                 230                 235                 240

Ala Ala Asn Asn Gly His Tyr Lys Val Val Lys Leu Leu Leu Arg Tyr
                245                 250                 255

Gly Gly Asn Pro Gln Gln Ser Asn Arg Lys Gly Glu Thr Pro Leu Lys
            260                 265                 270

Val Ala Asn Ser Pro Thr Met Val Asn Leu Leu Leu Gly Lys Gly Thr
        275                 280                 285

Tyr Thr Ser Ser Glu Glu Ser Ser Thr Glu Ser Ser Glu Glu Glu Asp
    290                 295                 300

Ala Pro Ser Phe Ala Pro Ser Ser Ser Val Asp Gly Asn Asn Thr Asp
305                 310                 315                 320

Ser Glu Phe Glu Lys Gly Leu Lys His Lys Ala Lys Asn Pro Glu Pro
                325                 330                 335

Gln Lys Ala Thr Ala Pro Val Lys Asp Glu Tyr Glu Phe Asp Glu Asp
            340                 345                 350

Asp Glu Gln Asp Arg Val Pro Pro Val Asp Asp Lys His Leu Leu Lys
        355                 360                 365

Lys Asp Tyr Arg Lys Glu Thr Lys Ser Asn Ser Phe Ile Ser Ile Pro
    370                 375                 380

Lys Met Glu Val Lys Ser Tyr Thr Lys Asn Asn Thr Ile Ala Pro Lys
385                 390                 395                 400

Lys Ala Ser His Arg Ile Leu Ser Asp Thr Ser Asp Glu Glu Asp Ala
                405                 410                 415

Ser Val Thr Val Gly Thr Gly Glu Lys Leu Arg Leu Ser Ala His Thr
```

```
            420                 425                 430

Ile Leu Pro Gly Ser Lys Thr Arg Glu Pro Ser Asn Ala Lys Gln Gln
        435                 440                 445

Lys Glu Lys Asn Lys Val Lys Lys Lys Arg Lys Lys Glu Thr Lys Gly
    450                 455                 460

Arg Glu Val Arg Phe Gly Lys Arg Ser Asp Lys Phe Cys Ser Ser Glu
465                 470                 475                 480

Ser Glu Ser Glu Ser Ser Glu Ser Gly Glu Asp Asp Arg Asp Ser Leu
                485                 490                 495

Gly Ser Ser Gly Cys Leu Lys Gly Ser Pro Leu Val Leu Lys Asp Pro
            500                 505                 510

Ser Leu Phe Ser Ser Leu Ser Ala Ser Ser Thr Ser Ser His Gly Ser
        515                 520                 525

Ser Ala Ala Gln Lys Gln Asn Pro Ser His Thr Asp Gln His Thr Lys
    530                 535                 540

His Trp Arg Thr Asp Asn Trp Lys Thr Ile Ser Ser Pro Ala Trp Ser
545                 550                 555                 560

Glu Val Ser Ser Leu Ser Asp Ser Thr Arg Thr Arg Leu Thr Ser Glu
                565                 570                 575

Ser Asp Tyr Ser Ser Glu Gly Ser Ser Val Glu Ser Leu Lys Pro Val
            580                 585                 590

Arg Lys Arg Gln Glu His Arg Lys Arg Ala Ser Leu Ser Glu Lys Lys
        595                 600                 605

Ser Pro Phe Leu Ser Ser Ala Glu Gly Ala Val Pro Lys Leu Asp Lys
    610                 615                 620

Glu Gly Lys Val Val Lys Lys His Lys Thr Lys His Lys His Lys Asn
625                 630                 635                 640

Lys Glu Lys Gly Gln Cys Ser Ile Ser Gln Glu Leu Lys Leu Lys Ser
                645                 650                 655
```

Phe Thr Tyr Glu Tyr Glu Asp Ser Lys Gln Lys Ser Asp Lys Ala Ile
660 665 670

Leu Leu Glu Asn Asp Leu Ser Thr Glu Asn Lys Leu Lys Val Leu Lys
675 680 685

His Asp Arg Asp His Phe Lys Lys Glu Glu Lys Leu Ser Lys Met Lys
690 695 700

Leu Glu Glu Lys Glu Trp Leu Phe Lys Asp Glu Lys Ser Leu Lys Arg
705 710 715 720

Ile Lys Asp Thr Asn Lys Asp Ile Ser Arg Ser Phe Arg Glu Glu Lys
725 730 735

Asp Arg Ser Asn Lys Ala Glu Lys Glu Arg Ser Leu Lys Glu Lys Ser
740 745 750

Pro Lys Glu Glu Lys Leu Arg Leu Tyr Lys Glu Glu Arg Lys Lys Lys
755 760 765

Ser Lys Asp Arg Pro Ser Lys Leu Glu Lys Lys Asn Asp Leu Lys Glu
770 775 780

Asp Lys Ile Ser Lys Glu Lys Glu Lys Ile Phe Lys Glu Asp Lys Glu
785 790 795 800

Lys Leu Lys Lys Glu Lys Val Tyr Arg Glu Asp Ser Ala Phe Asp Glu
805 810 815

Tyr Cys Asn Lys Asn Gln Phe Leu Glu Asn Glu Asp Thr Lys Phe Ser
820 825 830

Leu Ser Asp Asp Gln Arg Asp Arg Trp Phe Ser Asp Leu Ser Asp Ser
835 840 845

Ser Phe Asp Phe Lys Gly Glu Asp Ser Trp Asp Ser Pro Val Thr Asp
850 855 860

Tyr Arg Asp Met Lys Ser Asp Ser Val Ala Lys Leu Ile Leu Glu Thr
865 870 875 880

```
Val Lys Glu Asp Ser Lys Glu Arg Arg Arg Asp Ser Arg Ala Arg Glu
                885                 890                 895

Lys Arg Asp Tyr Arg Glu Pro Phe Phe Arg Lys Lys Asp Arg Asp Tyr
            900                 905                 910

Leu Asp Lys Asn Ser Glu Lys Arg Lys Glu Gln Thr Glu Lys His Lys
        915                 920                 925

Ser Val Pro Gly Tyr Leu Ser Glu Lys Asp Lys Lys Arg Arg Glu Ser
    930                 935                 940

Ala Glu Ala Gly Arg Asp Arg Lys Asp Ala Leu Glu Ser Cys Lys Glu
945                 950                 955                 960

Arg Arg Asp Gly Arg Ala Lys Pro Glu Glu Ala His Arg Glu Glu Leu
                965                 970                 975

Lys Glu Cys Gly Cys Glu Ser Gly Phe Lys Asp Lys Ser Asp Gly Asp
            980                 985                 990

Phe Gly Lys Gly Leu Glu Pro Trp  Glu Arg His His Pro  Ala Arg
Glu
        995                 1000                1005

Lys Glu  Lys Lys Asp Gly Pro  Asp Lys Glu Arg Lys  Glu Lys Thr
    1010                1015                1020

Lys Pro  Glu Arg Tyr Lys Glu  Lys Ser Ser Asp Lys  Asp Lys Ser
    1025                1030                1035

Glu Lys  Ser Ile Leu Glu Lys  Cys Gln Lys Asp Lys  Glu Phe Asp
    1040                1045                1050

Lys Cys  Phe Lys Glu Lys Lys  Asp Thr Lys Glu Lys  His Lys Asp
    1055                1060                1065

Thr His  Gly Lys Asp Lys Glu  Arg Lys Ala Ser Leu  Asp Gln Gly
    1070                1075                1080

Lys Glu  Lys Lys Glu Lys Ala  Phe Pro Gly Ile Ile  Ser Glu Asp
    1085                1090                1095
```

```
Phe Ser  Glu Lys Lys Asp Asp  Lys Lys Gly Lys Glu  Lys Ser Trp
    1100                1105                1110

Tyr Ile  Ala Asp Ile Phe Thr  Asp Glu Ser Glu Asp  Asp Arg Asp
    1115                1120                1125

Ser Cys  Met Gly Ser Gly Phe  Lys Met Gly Glu Ala  Ser Asp Leu
    1130                1135                1140

Pro Arg  Thr Asp Gly Leu Gln  Glu Lys Glu Glu Gly  Arg Glu Ala
    1145                1150                1155

Tyr Ala  Ser Asp Arg His Arg  Lys Ser Ser Asp Lys  Gln His Pro
    1160                1165                1170

Glu Arg  Gln Lys Asp Lys Glu  Pro Arg Asp Arg Arg  Lys Asp Arg
    1175                1180                1185

Gly Ala  Ala Asp Ala Gly Arg  Asp Lys Lys Glu Lys  Val Phe Glu
    1190                1195                1200

Lys His  Lys Glu Lys Lys Asp  Lys Glu Ser Thr Glu  Lys Tyr Lys
    1205                1210                1215

Asp Arg  Lys Asp Arg Ala Ser  Val Asp Ser Thr Gln  Asp Lys Lys
    1220                1225                1230

Asn Lys  Gln Lys Leu Pro Glu  Lys Ala Glu Lys Lys  His Ala Ala
    1235                1240                1245

Glu Asp  Lys Ala Lys Ser Lys  His Lys Glu Lys Ser  Asp Lys Glu
    1250                1255                1260

His Ser  Lys Glu Arg Lys Ser  Ser Arg Ser Ala Asp  Ala Glu Lys
    1265                1270                1275

Ser Leu  Leu Glu Lys Leu Glu  Glu Glu Ala Leu His  Glu Tyr Arg
    1280                1285                1290

Glu Asp  Ser Asn Asp Lys Ile  Ser Glu Val Ser Ser  Asp Ser Phe
    1295                1300                1305
```

Thr Asp Arg Gly Gln Glu Pro Gly Leu Thr Ala Phe Leu Glu Val
1310 1315 1320

Ser Phe Thr Glu Pro Pro Gly Asp Asp Lys Pro Arg Glu Ser Ala
1325 1330 1335

Cys Leu Pro Glu Lys Leu Lys Glu Lys Glu Arg His Arg His Ser
1340 1345 1350

Ser Ser Ser Ser Lys Lys Ser His Asp Arg Glu Arg Ala Lys Lys
1355 1360 1365

Glu Lys Ala Glu Lys Lys Glu Lys Gly Glu Asp Tyr Lys Glu Gly
1370 1375 1380

Gly Ser Arg Lys Asp Ser Gly Gln Tyr Glu Lys Asp Phe Leu Glu
1385 1390 1395

Ala Asp Ala Tyr Gly Val Ser Tyr Asn Met Lys Ala Asp Ile Glu
1400 1405 1410

Asp Glu Leu Asp Lys Thr Ile Glu Leu Phe Ser Thr Glu Lys Lys
1415 1420 1425

Asp Lys Asn Asp Ser Glu Arg Glu Pro Ser Lys Lys Ile Glu Lys
1430 1435 1440

Glu Leu Lys Pro Tyr Gly Ser Ser Ala Ile Asn Ile Leu Lys Glu
1445 1450 1455

Lys Lys Lys Arg Glu Lys His Arg Glu Lys Trp Arg Asp Glu Lys
1460 1465 1470

Glu Arg His Arg Asp Arg His Ala Asp Gly Leu Leu Arg His His
1475 1480 1485

Arg Asp Glu Leu Leu Arg His His Arg Asp Glu Gln Lys Pro Ala
1490 1495 1500

Thr Arg Asp Lys Asp Ser Pro Pro Arg Val Leu Lys Asp Lys Ser
1505 1510 1515

Arg Asp Glu Gly Pro Arg Leu Gly Asp Ala Lys Leu Lys Glu Lys

1520 1525 1530

Phe Lys Asp Gly Ala Glu Lys Glu Lys Gly Asp Pro Val Lys Met
1535 1540 1545

Ser Asn Gly Asn Asp Lys Val Ala Pro Ser Lys Asp Pro Gly Lys
1550 1555 1560

Lys Asp Ala Arg Pro Arg Glu Lys Leu Leu Gly Asp Gly Asp Leu
1565 1570 1575

Met Met Thr Ser Phe Glu Arg Met Leu Ser Gln Lys Asp Leu Glu
1580 1585 1590

Ile Glu Glu Arg His Lys Arg His Lys Glu Arg Met Lys Gln Met
1595 1600 1605

Glu Lys Leu Arg His Arg Ser Gly Asp Pro Lys Leu Lys Glu Lys
1610 1615 1620

Ala Lys Pro Ala Asp Asp Gly Arg Lys Lys Gly Leu Asp Ile Pro
1625 1630 1635

Ala Lys Lys Pro Pro Gly Leu Asp Pro Pro Phe Lys Asp Lys Lys
1640 1645 1650

Leu Lys Glu Ser Thr Pro Ile Pro Pro Ala Ala Glu Asn Lys Leu
1655 1660 1665

His Pro Ala Ser Gly Ala Asp Ser Lys Asp Trp Leu Ala Gly Pro
1670 1675 1680

His Met Lys Glu Val Leu Pro Ala Ser Pro Arg Pro Asp Gln Ser
1685 1690 1695

Arg Pro Thr Gly Val Pro Thr Pro Thr Ser Val Leu Ser Cys Pro
1700 1705 1710

Ser Tyr Glu Glu Val Met His Thr Pro Arg Thr Pro Ser Cys Ser
1715 1720 1725

Ala Asp Asp Tyr Ala Asp Leu Val Phe Asp Cys Ala Asp Ser Gln
1730 1735 1740

```
His Ser  Thr Pro Val Pro Thr  Ala Pro Thr Ser Ala  Cys Ser Pro
    1745                1750                1755

Ser Phe  Phe Asp Arg Phe Ser  Val Ala Ser Ser Gly  Leu Ser Glu
    1760                1765                1770

Asn Ala  Ser Gln Ala Pro Ala  Arg Pro Leu Ser Thr  Asn Leu Tyr
    1775                1780                1785

Arg Ser  Val Ser Val Asp Ile  Arg Arg Thr Pro Glu  Glu Glu Phe
    1790                1795                1800

Ser Val  Gly Asp Lys Leu Phe  Arg Gln Gln Ser Val  Pro Ala Ala
    1805                1810                1815

Ser Ser  Tyr Asp Ser Pro Met  Pro Pro Ser Met Glu  Asp Arg Ala
    1820                1825                1830

Pro Leu  Pro Pro Val Pro Ala  Glu Lys Phe Ala Cys  Leu Ser Pro
    1835                1840                1845

Gly Tyr  Tyr Ser Pro Asp Tyr  Gly Leu Pro Ser Pro  Lys Val Asp
    1850                1855                1860

Ala Leu  His Cys Pro Pro Ala  Ala Val Val Thr Val  Thr Pro Ser
    1865                1870                1875

Pro Glu  Gly Val Phe Ser Ser  Leu Gln Ala Lys Pro  Ser Pro Ser
    1880                1885                1890

Pro Arg  Ala Glu Leu Leu Val  Pro Ser Leu Glu Gly  Ala Leu Pro
    1895                1900                1905

Pro Asp  Leu Asp Thr Ser Glu  Asp Gln Gln Ala Thr  Ala Ala Ile
    1910                1915                1920

Ile Pro  Pro Glu Pro Ser Tyr  Leu Glu Pro Leu Asp  Glu Gly Pro
    1925                1930                1935

Phe Ser  Ala Val Ile Thr Glu  Glu Pro Val Glu Trp  Ala His Pro
    1940                1945                1950
```

Ser Glu Gln Ala Leu Ala Ser Ser Leu Ile Gly Gly Thr Ser Glu
1955 1960 1965

Asn Pro Val Ser Trp Pro Val Gly Ser Asp Leu Leu Leu Lys Ser
1970 1975 1980

Pro Gln Arg Phe Pro Glu Ser Pro Lys Arg Phe Cys Pro Ala Asp
1985 1990 1995

Pro Leu His Ser Ala Ala Pro Gly Pro Phe Ser Ala Ser Glu Ala
2000 2005 2010

Pro Tyr Pro Ala Pro Pro Ala Ser Pro Ala Pro Tyr Ala Leu Pro
2015 2020 2025

Val Ala Glu Pro Gly Leu Glu Asp Val Lys Asp Gly Val Asp Ala
2030 2035 2040

Val Pro Ala Ala Ile Ser Thr Ser Glu Ala Ala Pro Tyr Ala Pro
2045 2050 2055

Pro Ser Gly Leu Glu Ser Phe Phe Ser Asn Cys Lys Ser Leu Pro
2060 2065 2070

Glu Ala Pro Leu Asp Val Ala Pro Glu Pro Ala Cys Val Ala Ala
2075 2080 2085

Val Ala Gln Val Glu Ala Leu Gly Pro Leu Glu Asn Ser Phe Leu
2090 2095 2100

Asp Gly Ser Arg Gly Leu Ser His Leu Gly Gln Val Glu Pro Val
2105 2110 2115

Pro Trp Ala Asp Ala Phe Ala Gly Pro Glu Asp Asp Leu Asp Leu
2120 2125 2130

Gly Pro Phe Ser Leu Pro Glu Leu Pro Leu Gln Thr Lys Asp Ala
2135 2140 2145

Ala Asp Gly Glu Ala Glu Pro Val Glu Glu Ser Leu Ala Pro Pro
2150 2155 2160

Glu Glu Met Pro Pro Gly Ala Pro Gly Val Ile Asn Gly Gly Asp
2165 2170 2175

Val Ser Thr Val Val Ala Glu Glu Pro Pro Ala Leu Pro Pro Asp
2180 2185 2190

Gln Ala Ser Thr Arg Leu Pro Ala Glu Leu Glu Pro Glu Pro Ser
2195 2200 2205

Gly Glu Pro Lys Leu Asp Val Ala Leu Glu Ala Ala Val Glu Ala
2210 2215 2220

Glu Thr Val Pro Glu Glu Arg Ala Arg Gly Asp Pro Asp Ser Ser
2225 2230 2235

Val Glu Pro Ala Pro Val Pro Pro Glu Gln Arg Pro Leu Gly Ser
2240 2245 2250

Gly Asp Gln Gly Ala Glu Ala Glu Gly Pro Pro Ala Ala Ser Leu
2255 2260 2265

Cys Ala Pro Asp Gly Pro Ala Pro Asn Thr Val Ala Gln Ala Gln
2270 2275 2280

Ala Ala Asp Gly Ala Gly Pro Glu Asp Asp Thr Glu Ala Ser Arg
2285 2290 2295

Ala Ala Ala Pro Ala Glu Gly Pro Pro Gly Gly Ile Gln Pro Glu
2300 2305 2310

Ala Ala Glu Pro Lys Pro Thr Ala Glu Ala Pro Lys Ala Pro Arg
2315 2320 2325

Val Glu Glu Ile Pro Gln Arg Met Thr Arg Asn Arg Ala Gln Met
2330 2335 2340

Leu Ala Asn Gln Ser Lys Gln Gly Pro Pro Pro Ser Glu Lys Glu
2345 2350 2355

Cys Ala Pro Thr Pro Ala Pro Val Thr Arg Ala Lys Ala Arg Gly
2360 2365 2370

Ser Glu Asp Asp Asp Ala Gln Ala Gln His Pro Arg Lys Arg Arg

2375 2380 2385

Phe Gln Arg Ser Thr Gln Gln Leu Gln Gln Gln Leu Asn Thr Ser
2390 2395 2400

Thr Gln Gln Thr Arg Glu Val Ile Gln Gln Thr Leu Ala Ala Ile
2405 2410 2415

Val Asp Ala Ile Lys Leu Asp Ala Ile Glu Pro Tyr His Ser Asp
2420 2425 2430

Arg Ala Asn Pro Tyr Phe Glu Tyr Leu Gln Ile Arg Lys Lys Ile
2435 2440 2445

Glu Glu Lys Arg Lys Ile Leu Cys Cys Ile Thr Pro Gln Ala Pro
2450 2455 2460

Gln Cys Tyr Ala Glu Tyr Val Thr Tyr Thr Gly Ser Tyr Leu Leu
2465 2470 2475

Asp Gly Lys Pro Leu Ser Lys Leu His Ile Pro Val Ile Ala Pro
2480 2485 2490

Pro Pro Ser Leu Ala Glu Pro Leu Lys Glu Leu Phe Arg Gln Gln
2495 2500 2505

Glu Ala Val Arg Gly Lys Leu Arg Leu Gln His Ser Ile Glu Arg
2510 2515 2520

Glu Lys Leu Ile Val Ser Cys Glu Gln Glu Ile Leu Arg Val His
2525 2530 2535

Cys Arg Ala Ala Arg Thr Ile Ala Asn Gln Ala Val Pro Phe Ser
2540 2545 2550

Ala Cys Thr Met Leu Leu Asp Ser Glu Val Tyr Asn Met Pro Leu
2555 2560 2565

Glu Ser Gln Gly Asp Glu Asn Lys Ser Val Arg Asp Arg Phe Asn
2570 2575 2580

Ala Arg Gln Phe Ile Ser Trp Leu Gln Asp Val Asp Asp Lys Tyr
2585 2590 2595

```
Asp Arg  Met Lys Thr Cys Leu  Leu Met Arg Gln Gln  His Glu Ala
    2600                2605                2610

Ala Ala  Leu Asn Ala Val Gln  Arg Met Glu Trp Gln  Leu Lys Val
    2615                2620                2625

Gln Glu  Leu Asp Pro Ala Gly  His Lys Ser Leu Cys  Val Asn Glu
    2630                2635                2640

Val Pro  Ser Phe Tyr Val Pro  Met Val Asp Val Asn  Asp Asp Phe
    2645                2650                2655

Val Leu  Leu Pro Ala
    2660
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<210> 5128
<211> 35
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ANKRD11; "

<220>
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<223> /note="Gene Name:
ankyrin repeat domain 11; "

<220>
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<400> 5128

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Met Pro Lys Gly Gly Cys Pro Lys Ala Pro Gln Gln Glu Glu Leu Pro
1               5                  10                  15

Leu Ser Ser Asp Met Val Glu Lys Gln Thr Gly Lys Lys Ile Phe Pro
            20                  25                  30

Lys Glu Ser
        35
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<210> 5129
<211> 97
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<400> 5129
Met Pro Lys Gly Gly Cys Pro Lys Ala Pro Gln Gln Glu Glu Leu Pro
1 5 10 15

Leu Ser Ser Asp Met Val Glu Lys Gln Thr Gly Lys Lys Asp Lys Asp
20 25 30

Lys Val Ser Leu Thr Lys Thr Pro Lys Leu Glu Arg Gly Asp Gly Gly
35 40 45

Lys Glu Val Arg Glu Arg Ala Ser Lys Arg Lys Leu Pro Phe Thr Ala
50 55 60

Gly Ala Asn Gly Glu Gln Lys Asp Ser Asp Thr Asp Ala Ser Ser Pro
65 70 75 80

Val Pro Val Val Val Leu Gln Gly Trp Tyr Ala Pro Arg Ser Thr Met
85 90 95

Ala

<210> 5130
<211> 124
<212> PRT
<213> Homo sapiens

<220>

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<220>
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<223> /note="ENSP ID: ENSP00000455008"

<400> 5130
Met Pro Lys Gly Gly Cys Pro Lys Ala Pro Gln Gln Glu Glu Leu Pro
1 5 10 15

Leu Ser Ser Asp Met Val Glu Lys Gln Thr Gly Lys Lys Asp Lys Asp
20 25 30

Lys Val Ser Leu Thr Lys Thr Pro Lys Leu Glu Arg Gly Asp Gly Gly
35 40 45

Lys Glu Val Arg Glu Arg Ala Ser Lys Arg Lys Leu Pro Phe Thr Ala
50 55 60

Gly Ala Asn Gly Glu Gln Lys Asp Ser Asp Thr Gly Pro Pro Gly Ser
65 70 75 80

Cys Leu Ser Trp Gly Ser His Glu Gly Ala Leu Val Arg Ser Ala Met
85 90 95

Gly Arg Ser Cys Leu Pro Ser Ala Arg Gly Cys Phe Phe Gly Thr Arg
100 105 110

Gly Lys Ile Met Ile Phe Leu Phe Cys Phe Asp Leu
115 120

<210> 5131
<211> 206
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<222> (1)..(1)
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<400> 5131
Xaa Phe Pro Gly Trp Thr Ala Leu His Glu Ala Cys Asn Arg Gly Tyr
1 5 10 15

Tyr Asp Val Ala Lys Gln Leu Leu Ala Ala Gly Ala Glu Val Asn Thr
20 25 30

Lys Gly Leu Asp Asp Asp Thr Pro Leu His Asp Ala Ala Asn Asn Gly
35 40 45

His Tyr Lys Ile Ala Pro Pro Pro Ser Leu Ala Glu Pro Leu Lys Glu
50 55 60

Leu Phe Arg Gln Gln Glu Ala Val Arg Gly Lys Leu Arg Leu Gln His
65 70 75 80

Ser Ile Glu Arg Glu Lys Leu Ile Val Ser Cys Glu Gln Glu Ile Leu
85 90 95

Arg Val His Cys Arg Ala Ala Arg Thr Ile Ala Asn Gln Ala Val Pro
100 105 110

Phe Ser Ala Cys Thr Met Leu Leu Asp Ser Glu Val Tyr Asn Met Pro
115 120 125

Leu Glu Ser Gln Gly Asp Glu Asn Lys Ser Val Arg Asp Arg Phe Asn
130 135 140

```
Ala Arg Gln Phe Ile Ser Trp Leu Gln Asp Val Asp Asp Lys Tyr Asp
145                 150                 155                 160


Arg Met Lys Thr Cys Leu Leu Met Arg Gln Gln His Glu Ala Ala Ala
                165                 170                 175


Leu Asn Ala Val Gln Arg Met Glu Trp Gln Leu Lys Val Gln Glu Leu
            180                 185                 190


Asp Pro Ala Gly His Lys Ser Leu Cys Val Asn Glu Val Pro
        195                 200                 205


<210> 5132
<211> 366
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<400> 5132
Met Pro Lys Gly Gly Cys Pro Lys Ala Pro Gln Gln Glu Glu Leu Pro
1               5                   10                  15


Leu Ser Ser Asp Met Val Glu Lys Gln Thr Gly Lys Lys Asp Lys Asp
            20                  25                  30


Lys Val Ser Leu Thr Lys Thr Pro Lys Leu Glu Arg Gly Asp Gly Gly
        35                  40                  45


Lys Glu Val Arg Glu Arg Ala Ser Lys Arg Lys Leu Pro Phe Thr Ala
    50                  55                  60


Gly Ala Asn Gly Glu Gln Lys Asp Ser Asp Thr Glu Lys Gln Gly Pro
65                  70                  75                  80
```

```
Glu Arg Lys Arg Ile Lys Lys Glu Pro Val Thr Arg Lys Ala Gly Leu
                85                  90                  95

Leu Phe Gly Met Gly Leu Ser Gly Ile Arg Ala Gly Tyr Pro Leu Ser
            100                 105                 110

Glu Arg Gln Gln Val Ala Leu Leu Met Gln Met Thr Ala Glu Glu Ser
        115                 120                 125

Ala Asn Ser Pro Val Asp Thr Thr Pro Lys His Pro Ser Gln Ser Thr
    130                 135                 140

Val Cys Gln Lys Gly Thr Pro Asn Ser Ala Ser Lys Thr Lys Asp Lys
145                 150                 155                 160

Val Asn Lys Arg Asn Glu Arg Gly Glu Thr Arg Leu His Arg Ala Ala
                165                 170                 175

Ile Arg Gly Asp Ala Arg Arg Ile Lys Glu Leu Ile Ser Glu Gly Ala
            180                 185                 190

Asp Val Asn Val Lys Asp Phe Ala Gly Trp Thr Ala Leu His Glu Ala
        195                 200                 205

Cys Asn Arg Gly Tyr Tyr Asp Val Ala Lys Gln Leu Leu Ala Ala Gly
    210                 215                 220

Ala Glu Val Asn Thr Lys Gly Leu Asp Asp Asp Thr Pro Leu His Asp
225                 230                 235                 240

Ala Ala Asn Asn Gly His Tyr Lys Val Val Lys Leu Leu Leu Arg Tyr
                245                 250                 255

Gly Gly Asn Pro Gln Gln Ser Asn Arg Lys Gly Glu Thr Pro Leu Lys
            260                 265                 270

Val Ala Asn Ser Pro Thr Met Val Asn Leu Leu Leu Gly Lys Gly Thr
        275                 280                 285

Tyr Thr Ser Ser Glu Glu Ser Ser Thr Glu Ser Ser Glu Glu Glu Asp
    290                 295                 300
```

```
Ala Pro Ser Phe Ala Pro Ser Ser Ser Val Asp Gly Asn Asn Thr Asp
305                 310                 315                 320


Ser Glu Phe Glu Lys Gly Ser Ser Thr Arg Pro Arg Thr Gln Ser His
                325                 330                 335


Arg Arg Pro Arg Pro Pro Ser Arg Thr Ser Met Ser Leu Met Arg Thr
            340                 345                 350


Thr Ser Arg Thr Gly Phe Leu Arg Trp Thr Thr Ser Thr Tyr
        355                 360                 365


<210> 5133
<211> 2062
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<220>
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<223> /note="Uniprot ID:  Q6UB98; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000262126"

<400> 5133
Met Pro Lys Ser Gly Phe Thr Lys Pro Ile Gln Ser Glu Asn Ser Asp
1               5                   10                  15


Ser Asp Ser Asn Met Val Glu Lys Pro Tyr Gly Arg Lys Ser Lys Asp
            20                  25                  30


Lys Ile Ala Ser Tyr Ser Lys Thr Pro Lys Ile Glu Arg Ser Asp Val
        35                  40                  45


Ser Lys Glu Met Lys Glu Lys Ser Ser Met Lys Arg Lys Leu Pro Phe
```

```
    50                  55                  60

Thr Ile Ser Pro Ser Arg Asn Glu Glu Arg Asp Ser Asp Thr Asp Ser
65                  70                  75                  80

Asp Pro Gly His Thr Ser Glu Asn Trp Gly Glu Arg Leu Ile Ser Ser
                85                  90                  95

Tyr Arg Thr Tyr Ser Glu Lys Glu Gly Pro Glu Lys Lys Lys Thr Lys
            100                 105                 110

Lys Glu Ala Gly Asn Lys Lys Ser Thr Pro Val Ser Ile Leu Phe Gly
        115                 120                 125

Tyr Pro Leu Ser Glu Arg Lys Gln Met Ala Leu Leu Met Gln Met Thr
    130                 135                 140

Ala Arg Asp Asn Ser Pro Asp Ser Thr Pro Asn His Pro Ser Gln Thr
145                 150                 155                 160

Thr Pro Ala Gln Lys Lys Thr Pro Ser Ser Ser Ser Arg Gln Lys Asp
                165                 170                 175

Lys Val Asn Lys Arg Asn Glu Arg Gly Glu Thr Pro Leu His Met Ala
            180                 185                 190

Ala Ile Arg Gly Asp Val Lys Gln Val Lys Glu Leu Ile Ser Leu Gly
        195                 200                 205

Ala Asn Val Asn Val Lys Asp Phe Ala Gly Trp Thr Pro Leu His Glu
    210                 215                 220

Ala Cys Asn Val Gly Tyr Tyr Asp Val Ala Lys Ile Leu Ile Ala Ala
225                 230                 235                 240

Gly Ala Asp Val Asn Thr Gln Gly Leu Asp Asp Asp Thr Pro Leu His
                245                 250                 255

Asp Ser Ala Ser Ser Gly His Arg Asp Ile Val Lys Leu Leu Leu Arg
            260                 265                 270

His Gly Gly Asn Pro Phe Gln Ala Asn Lys His Gly Glu Arg Pro Val
        275                 280                 285
```

```
Asp Val Ala Glu Thr Glu Glu Leu Glu Leu Leu Leu Lys Arg Glu Val
    290                 295                 300

Pro Leu Ser Asp Asp Asp Glu Ser Tyr Thr Asp Ser Glu Glu Ala Gln
305                 310                 315                 320

Ser Val Asn Pro Ser Ser Val Asp Glu Asn Ile Asp Ser Glu Thr Glu
                325                 330                 335

Lys Asp Ser Leu Ile Cys Glu Ser Lys Gln Ile Leu Pro Ser Lys Thr
            340                 345                 350

Pro Leu Pro Ser Ala Leu Asp Glu Tyr Glu Phe Lys Asp Asp Asp Asp
        355                 360                 365

Glu Glu Ile Asn Lys Met Ile Asp Asp Arg His Ile Leu Arg Lys Glu
    370                 375                 380

Gln Arg Lys Glu Asn Glu Pro Glu Ala Glu Lys Thr His Leu Phe Ala
385                 390                 395                 400

Lys Gln Glu Lys Ala Phe Tyr Pro Lys Ser Phe Lys Ser Lys Lys Gln
                405                 410                 415

Lys Pro Ser Arg Val Leu Tyr Ser Ser Thr Glu Ser Ser Asp Glu Glu
            420                 425                 430

Ala Leu Gln Asn Lys Lys Ile Ser Thr Ser Cys Ser Val Ile Pro Glu
        435                 440                 445

Thr Ser Asn Ser Asp Met Gln Thr Lys Lys Glu Tyr Val Val Ser Gly
    450                 455                 460

Glu His Lys Gln Lys Gly Lys Val Lys Arg Lys Leu Lys Asn Gln Asn
465                 470                 475                 480

Lys Asn Lys Glu Asn Gln Glu Leu Lys Gln Glu Lys Glu Gly Lys Glu
                485                 490                 495

Asn Thr Arg Ile Thr Asn Leu Thr Val Asn Thr Gly Leu Asp Cys Ser
            500                 505                 510
```

```
Glu Lys Thr Arg Glu Glu Gly Asn Phe Arg Lys Ser Phe Ser Pro Lys
        515                 520                 525

Asp Asp Thr Ser Leu His Leu Phe His Ile Ser Thr Gly Lys Ser Pro
    530                 535                 540

Lys His Ser Cys Gly Leu Ser Glu Lys Gln Ser Thr Pro Leu Lys Gln
545                 550                 555                 560

Glu His Thr Lys Thr Cys Leu Ser Pro Gly Ser Ser Glu Met Ser Leu
                565                 570                 575

Gln Pro Asp Leu Val Arg Tyr Asp Asn Thr Glu Ser Glu Phe Leu Pro
            580                 585                 590

Glu Ser Ser Ser Val Lys Ser Cys Lys His Lys Glu Lys Ser Lys His
        595                 600                 605

Gln Lys Asp Phe His Leu Glu Phe Gly Glu Lys Ser Asn Ala Lys Ile
    610                 615                 620

Lys Asp Glu Asp His Ser Pro Thr Phe Glu Asn Ser Asp Cys Thr Leu
625                 630                 635                 640

Lys Lys Met Asp Lys Glu Gly Lys Thr Leu Lys Lys His Lys Leu Lys
                645                 650                 655

His Lys Glu Arg Glu Lys Glu Lys His Lys Lys Glu Ile Glu Gly Glu
            660                 665                 670

Lys Glu Lys Tyr Lys Thr Lys Asp Ser Ala Lys Glu Leu Gln Arg Ser
        675                 680                 685

Val Glu Phe Asp Arg Glu Phe Trp Lys Glu Asn Phe Phe Lys Ser Asp
    690                 695                 700

Glu Thr Glu Asp Leu Phe Leu Asn Met Glu His Glu Ser Leu Thr Leu
705                 710                 715                 720

Glu Lys Lys Ser Lys Leu Glu Lys Asn Ile Lys Asp Asp Lys Ser Thr
                725                 730                 735
```

```
Lys Glu Lys His Val Ser Lys Glu Arg Asn Phe Lys Glu Glu Arg Asp
            740                 745                 750

Lys Ile Lys Lys Glu Ser Glu Lys Ser Phe Arg Glu Glu Lys Ile Lys
        755                 760                 765

Asp Leu Lys Glu Glu Arg Glu Asn Ile Pro Thr Asp Lys Asp Ser Glu
    770                 775                 780

Phe Thr Ser Leu Gly Met Ser Ala Ile Glu Glu Ser Ile Gly Leu His
785                 790                 795                 800

Leu Val Glu Lys Glu Ile Asp Ile Glu Lys Gln Glu Lys His Ile Lys
                805                 810                 815

Glu Ser Lys Glu Lys Pro Glu Lys Arg Ser Gln Ile Lys Glu Lys Asp
            820                 825                 830

Ile Glu Lys Met Glu Arg Lys Thr Phe Glu Lys Glu Lys Lys Ile Lys
        835                 840                 845

His Glu His Lys Ser Glu Lys Asp Lys Leu Asp Leu Ser Glu Cys Val
    850                 855                 860

Asp Lys Ile Lys Glu Lys Asp Lys Leu Tyr Ser His His Thr Glu Lys
865                 870                 875                 880

Cys His Lys Glu Gly Glu Lys Ser Lys Asn Thr Ala Ala Ile Lys Lys
                885                 890                 895

Thr Asp Asp Arg Glu Lys Ser Arg Glu Lys Met Asp Arg Lys His Asp
            900                 905                 910

Lys Glu Lys Pro Glu Lys Glu Arg His Leu Ala Glu Ser Lys Glu Lys
        915                 920                 925

His Leu Met Glu Lys Lys Asn Lys Gln Ser Asp Asn Ser Glu Tyr Ser
    930                 935                 940

Lys Ser Glu Lys Gly Lys Asn Lys Glu Lys Asp Arg Glu Leu Asp Lys
945                 950                 955                 960

Lys Glu Lys Ser Arg Asp Lys Glu Ser Ile Asn Ile Thr Asn Ser Lys
```

965 970 975

His Ile Gln Glu Glu Lys Lys Ser Ser Ile Val Asp Gly Asn Lys Ala
980 985 990

Gln His Glu Lys Pro Leu Ser Leu Lys Glu Lys Thr Lys Asp Glu Pro
995 1000 1005

Leu Lys Thr Pro Asp Gly Lys Glu Lys Asp Lys Lys Asp Lys Asp
1010 1015 1020

Ile Asp Arg Tyr Lys Glu Arg Asp Lys His Lys Asp Lys Ile Gln
1025 1030 1035

Ile Asn Ser Leu Leu Lys Leu Lys Ser Glu Ala Asp Lys Pro Lys
1040 1045 1050

Pro Lys Ser Ser Pro Ala Ser Lys Asp Thr Arg Pro Lys Glu Lys
1055 1060 1065

Arg Leu Val Asn Asp Asp Leu Met Gln Thr Ser Phe Glu Arg Met
1070 1075 1080

Leu Ser Leu Lys Asp Leu Glu Ile Glu Gln Trp His Lys Lys His
1085 1090 1095

Lys Glu Lys Ile Lys Gln Lys Glu Lys Glu Arg Leu Arg Asn Arg
1100 1105 1110

Asn Cys Leu Glu Leu Lys Ile Lys Asp Lys Glu Lys Thr Lys His
1115 1120 1125

Thr Pro Thr Glu Ser Lys Asn Lys Glu Leu Thr Arg Ser Lys Ser
1130 1135 1140

Ser Glu Val Thr Asp Ala Tyr Thr Lys Glu Lys Gln Pro Lys Asp
1145 1150 1155

Ala Val Ser Asn Arg Ser Gln Ser Val Asp Thr Lys Asn Val Met
1160 1165 1170

Thr Leu Gly Lys Ser Ser Phe Val Ser Asp Asn Ser Leu Asn Arg

1175 1180 1185

Ser Pro Arg Ser Glu Asn Glu Lys Pro Gly Leu Ser Ser Arg Ser
1190 1195 1200

Val Ser Met Ile Ser Val Ala Ser Ser Glu Asp Ser Cys His Thr
1205 1210 1215

Thr Val Thr Thr Pro Arg Pro Pro Val Glu Tyr Asp Ser Asp Phe
1220 1225 1230

Met Leu Glu Ser Ser Glu Ser Gln Met Ser Phe Ser Gln Ser Pro
1235 1240 1245

Phe Leu Ser Ile Ala Lys Ser Pro Ala Leu His Glu Arg Glu Leu
1250 1255 1260

Asp Ser Leu Ala Asp Leu Pro Glu Arg Ile Lys Pro Pro Tyr Ala
1265 1270 1275

Asn Arg Leu Ser Thr Ser His Leu Arg Ser Ser Ser Val Glu Asp
1280 1285 1290

Val Lys Leu Ile Ile Ser Glu Gly Arg Pro Thr Ile Glu Val Arg
1295 1300 1305

Arg Cys Ser Met Pro Ser Val Ile Cys Glu His Thr Lys Gln Phe
1310 1315 1320

Gln Thr Ile Ser Glu Glu Ser Asn Gln Gly Ser Leu Leu Thr Val
1325 1330 1335

Pro Gly Asp Thr Ser Pro Ser Pro Lys Pro Glu Val Phe Ser Asn
1340 1345 1350

Val Pro Glu Arg Asp Leu Ser Asn Val Ser Asn Ile His Ser Ser
1355 1360 1365

Phe Ala Thr Ser Pro Thr Gly Ala Ser Asn Ser Lys Tyr Val Ser
1370 1375 1380

Ala Asp Arg Asn Leu Ile Lys Asn Thr Ala Pro Val Asn Thr Val
1385 1390 1395

Met Asp Ser Pro Val His Leu Glu Pro Ser Ser Gln Val Gly Val
1400 1405 1410

Ile Gln Asn Lys Ser Trp Glu Met Pro Val Asp Arg Leu Glu Thr
1415 1420 1425

Leu Ser Thr Arg Asp Phe Ile Cys Pro Asn Ser Asn Ile Pro Asp
1430 1435 1440

Gln Glu Ser Ser Leu Gln Ser Phe Cys Asn Ser Glu Asn Lys Val
1445 1450 1455

Leu Lys Glu Asn Ala Asp Phe Leu Ser Leu Arg Gln Thr Glu Leu
1460 1465 1470

Pro Gly Asn Ser Cys Ala Gln Asp Pro Ala Ser Phe Met Pro Pro
1475 1480 1485

Gln Gln Pro Cys Ser Phe Pro Ser Gln Ser Leu Ser Asp Ala Glu
1490 1495 1500

Ser Ile Ser Lys His Met Ser Leu Ser Tyr Val Ala Asn Gln Glu
1505 1510 1515

Pro Gly Ile Leu Gln Gln Lys Asn Ala Val Gln Ile Ile Ser Ser
1520 1525 1530

Ala Leu Asp Thr Asp Asn Glu Ser Thr Lys Asp Thr Glu Asn Thr
1535 1540 1545

Phe Val Leu Gly Asp Val Gln Lys Thr Asp Ala Phe Val Pro Val
1550 1555 1560

Tyr Ser Asp Ser Thr Ile Gln Glu Ala Ser Pro Asn Phe Glu Lys
1565 1570 1575

Ala Tyr Thr Leu Pro Val Leu Pro Ser Glu Lys Asp Phe Asn Gly
1580 1585 1590

Ser Asp Ala Ser Thr Gln Leu Asn Thr His Tyr Ala Phe Ser Lys
1595 1600 1605

```
Leu Thr  Tyr Lys Ser Ser Ser  Gly His Glu Val Glu  Asn Ser Thr
    1610                1615                1620

Thr Asp  Thr Gln Val Ile Ser  His Glu Lys Glu Asn  Lys Leu Glu
    1625                1630                1635

Ser Leu  Val Leu Thr His Leu  Ser Arg Cys Asp Ser  Asp Leu Cys
    1640                1645                1650

Glu Met  Asn Ala Gly Met Pro  Lys Gly Asn Leu Asn  Glu Gln Asp
    1655                1660                1665

Pro Lys  His Cys Pro Glu Ser  Glu Lys Cys Leu Leu  Ser Ile Glu
    1670                1675                1680

Asp Glu  Glu Ser Gln Gln Ser  Ile Leu Ser Ser Leu  Glu Asn His
    1685                1690                1695

Ser Gln  Gln Ser Thr Gln Pro  Glu Met His Lys Tyr  Gly Gln Leu
    1700                1705                1710

Val Lys  Val Glu Leu Glu Glu  Asn Ala Glu Asp Asp  Lys Thr Glu
    1715                1720                1725

Asn Gln  Ile Pro Gln Arg Met  Thr Arg Asn Lys Ala  Asn Thr Met
    1730                1735                1740

Ala Asn  Gln Ser Lys Gln Ile  Leu Ala Ser Cys Thr  Leu Leu Ser
    1745                1750                1755

Glu Lys  Asp Ser Glu Ser Ser  Ser Pro Arg Gly Arg  Ile Arg Leu
    1760                1765                1770

Thr Glu  Asp Asp Asp Pro Gln  Ile His His Pro Arg  Lys Arg Lys
    1775                1780                1785

Val Ser  Arg Val Pro Gln Pro  Val Gln Val Ser Pro  Ser Leu Leu
    1790                1795                1800

Gln Ala  Lys Glu Lys Thr Gln  Gln Ser Leu Ala Ala  Ile Val Asp
    1805                1810                1815
```

```
Ser Leu  Lys Leu Asp Glu Ile  Gln Pro Tyr Ser Ser  Glu Arg Ala
    1820                 1825                 1830

Asn Pro  Tyr Phe Glu Tyr Leu  His Ile Arg Lys Lys  Ile Glu Glu
    1835                 1840                 1845

Lys Arg  Lys Leu Leu Cys Ser  Val Ile Pro Gln Ala  Pro Gln Tyr
    1850                 1855                 1860

Tyr Asp  Glu Tyr Val Thr Phe  Asn Gly Ser Tyr Leu  Leu Asp Gly
    1865                 1870                 1875

Asn Pro  Leu Ser Lys Ile Cys  Ile Pro Thr Ile Thr  Pro Pro Pro
    1880                 1885                 1890

Ser Leu  Ser Asp Pro Leu Lys  Glu Leu Phe Arg Gln  Gln Glu Val
    1895                 1900                 1905

Val Arg  Met Lys Leu Arg Leu  Gln His Ser Ile Glu  Arg Glu Lys
    1910                 1915                 1920

Leu Ile  Val Ser Asn Glu Gln  Glu Val Leu Arg Val  His Tyr Arg
    1925                 1930                 1935

Ala Ala  Arg Thr Leu Ala Asn  Gln Thr Leu Pro Phe  Ser Ala Cys
    1940                 1945                 1950

Thr Val  Leu Leu Asp Ala Glu  Val Tyr Asn Val Pro  Leu Asp Ser
    1955                 1960                 1965

Gln Ser  Asp Asp Ser Lys Thr  Ser Val Arg Asp Arg  Phe Asn Ala
    1970                 1975                 1980

Arg Gln  Phe Met Ser Trp Leu  Gln Asp Val Asp Asp  Lys Phe Asp
    1985                 1990                 1995

Lys Leu  Lys Thr Cys Leu Leu  Met Arg Gln Gln His  Glu Ala Ala
    2000                 2005                 2010

Ala Leu  Asn Ala Val Gln Arg  Leu Glu Trp Gln Leu  Lys Leu Gln
    2015                 2020                 2025

Glu Leu  Asp Pro Ala Thr Tyr  Lys Ser Ile Ser Ile  Tyr Glu Ile
```

```
    2030                2035                2040

Gln Glu  Phe Tyr Val Pro Leu  Val Asp Val Asn Asp  Asp Phe Glu
    2045                2050                2055

Leu Thr  Pro Ile
    2060

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Xaa Cys Asn Val Gly Tyr Tyr Asp Val Ala Lys Ile Leu Ile Ala Ala
1               5                  10                  15

Gly Ala Asp Val Asn Thr Gln Gly Leu Asp Asp Asp Thr Pro Leu His
            20                  25                  30

Asp Ser Ala Ser Ser Gly His Arg Asp Ile Val Lys Leu Leu Leu Arg
        35                  40                  45

His Gly Gly Asn Pro Phe Gln Ala Asn Lys His Gly Glu Arg Pro Val
    50                  55                  60

Asp Val Ala Glu Thr Glu Glu Leu Glu Leu Leu Leu Lys Arg Glu Val
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65 70 75 80

Pro Leu Ser Asp Asp Asp Glu Ser Tyr Thr Glu Tyr Leu Phe Ser Thr
85 90 95

Trp

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Met Val Asn Val Pro Glu Leu Leu Leu Gly Gln Ser Pro Ser Arg Asn
1 5 10 15

Asp Thr Lys Ile Ile Asn Ser Glu Glu Ala Gln Ser Val Asn Pro Ser
20 25 30

Ser Val Asp Glu Asn Ile Asp Ser Glu Thr Glu Lys Asp Ser Leu Ile
35 40 45

Cys Glu Ser Lys Gln Ile Leu Pro Ser Lys Thr Pro Leu Pro Ser Ala
50 55 60

Leu Asp Glu Tyr Glu Phe Lys Asp Asp Asp Asp Glu Glu Ile Asn Lys
65 70 75 80

Met Ile Asp Asp Arg His Ile Leu Arg Lys Glu Gln Arg Lys Glu Asn
85 90 95

```
Glu Pro Glu Ala Glu Lys Thr His Leu Phe Ala Lys Gln Glu Lys Ala
            100                 105                 110

Phe Tyr Pro Lys Ser Phe Lys Ser Lys Lys Gln Lys Pro Ser Arg Val
        115                 120                 125

Leu Tyr Ser Ser Thr Glu Ser Ser Asp Glu Glu Ala Leu Gln Asn Lys
    130                 135                 140

Lys Ile Ser Thr Ser Cys Ser Val Ile Pro Glu Thr Ser Asn Ser Asp
145                 150                 155                 160

Met Gln Thr Lys Lys Glu Tyr Val Val Ser Gly Glu His Lys Gln Lys
                165                 170                 175

Gly Lys Val Lys Arg Lys Leu Lys Asn Gln Asn Lys Asn Lys Glu Asn
            180                 185                 190

Gln Glu Leu Lys Gln Glu Lys Glu Gly Lys Glu Asn Thr Arg Ile Thr
        195                 200                 205

Asn Leu Thr Val Asn Thr Gly Leu Asp Cys Ser Glu Lys Thr Arg Glu
    210                 215                 220

Glu Gly Asn Phe Arg Lys Ser Phe Ser Pro Lys Asp Asp Thr Ser Leu
225                 230                 235                 240

His Leu Phe His Ile Ser Thr Gly Lys Ser Pro Lys His Ser Cys Gly
                245                 250                 255

Leu Ser Glu Lys Gln Ser Thr Pro Leu Lys Gln Glu His Thr Lys Thr
            260                 265                 270

Cys Leu Ser Pro Gly Ser Ser Glu Met Ser Leu Gln Pro Asp Leu Val
        275                 280                 285

Arg Tyr Asp Asn Thr Glu Ser Glu Phe Leu Pro Glu Ser Ser Ser Val
    290                 295                 300

Lys Ser Cys Lys His Lys Glu Lys Ser Lys His Gln Lys Asp Phe His
305                 310                 315                 320
```

```
Leu Glu Phe Gly Glu Lys Ser Asn Ala Lys Ile Lys Asp Glu Asp His
                325                 330                 335

Ser Pro Thr Phe Glu Asn Ser Asp Cys Thr Leu Lys Lys Met Asp Lys
            340                 345                 350

Glu Gly Lys Thr Leu Lys Lys His Lys Leu Lys His Lys Glu Arg Glu
        355                 360                 365

Lys Glu Lys His Lys Lys Glu Ile Glu Gly Glu Lys Glu Lys Tyr Lys
    370                 375                 380

Thr Lys Asp Ser Ala Lys Glu Leu Gln Arg Ser Val Glu Phe Asp Arg
385                 390                 395                 400

Glu Phe Trp Lys Glu Asn Phe Phe Lys Ser Asp Glu Thr Glu Asp Leu
                405                 410                 415

Phe Leu Asn Met Glu His Glu Ser Leu Thr Leu Glu Lys Ile Lys Ile
            420                 425                 430

Gly Lys Lys His Gln Arg
        435


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Met Pro Lys Ser Gly Phe Thr Lys Pro Ile Gln Ser Glu Asn Ser Asp
1 5 10 15

Ser Asp Ser Asn Met Val Glu Lys Pro Tyr Gly Arg Lys Ser Lys Asp
20 25 30

Lys Ile Ala Ser Tyr Ser Lys Thr Pro Lys Ile Glu Arg Ser Asp Val
35 40 45

Ser Lys Glu Met Lys Glu Lys Ser Ser Met Lys Arg Lys Leu Pro Phe
50 55 60

Thr Ile Ser Pro Ser Arg Asn Glu Glu Arg Asp Ser Asp Thr Glu Lys
65 70 75 80

Glu Gly Pro Glu Lys Lys Lys Thr Lys Lys Glu Ala Gly Asn Lys Lys
85 90 95

Ser Thr Pro Val Ser Ile Leu Phe Gly Tyr Pro Leu Ser Glu Arg Lys
100 105 110

Gln Met Ala Leu Leu Met Gln Met Thr Ala Arg Asp Asn Ser Pro Asp
115 120 125

Ser Thr Pro Asn His Pro Ser Gln Thr Thr Pro Ala Gln Lys Lys Thr
130 135 140

Pro Ser Ser Ser Ser Arg Gln Lys Asp Lys Val Asn Lys Arg Asn Glu
145 150 155 160

Arg Gly Glu Thr Pro Leu His Met Ala Ala Ile Arg Gly Asp Val Lys
165 170 175

Gln Val Lys Glu Leu Ile Ser Leu Gly Ala Asn Val Asn Val Lys Asp
180 185 190

Phe Ala Gly Trp Thr Pro Leu His Glu Ala Cys Asn Val Gly Tyr Tyr
195 200 205

Asp Val Ala Lys Ile Leu Ile Ala Ala Gly Ala Asp Val Asn Thr Gln
210 215 220

```
Gly Leu Asp Asp Asp Thr Pro Leu His Asp Ser Ala Ser Ser Gly His
225                 230                 235                 240

Arg Asp Ile Val Lys Leu Leu Leu Arg His Gly Gly Asn Pro Phe Gln
                245                 250                 255

Ala Asn Lys His Gly Glu Arg Pro Val Asp Val Ala Glu Thr Glu Glu
            260                 265                 270

Leu Glu Leu Leu Leu Lys Arg Glu Val Pro Leu Ser Asp Asp Asp Glu
        275                 280                 285

Ser Tyr Thr Asp Ser Glu Glu Ala Gln Ser Val Asn Pro Ser Ser Val
    290                 295                 300

Asp Glu Asn Ile Asp Ser Glu Thr Glu Lys Asp Ser Leu Ile Cys Glu
305                 310                 315                 320

Ser Lys Gln Ile Leu Pro Ser Lys Thr Pro Leu Pro Ser Ala Leu Asp
                325                 330                 335

Glu Tyr Glu Phe Lys Asp Asp Asp Asp Glu Glu Ile Asn Lys Met Ile
            340                 345                 350

Asp Asp Arg His Ile Leu Arg Lys Glu Gln Arg Lys Glu Asn Glu Pro
        355                 360                 365

Glu Ala Glu Lys Thr His Leu Phe Ala Lys Gln Glu Lys Ala Phe Tyr
    370                 375                 380

Pro Lys Ser Phe Lys Ser Lys Lys Gln Lys Pro Ser Arg Val Leu Tyr
385                 390                 395                 400

Ser Ser Thr Glu Ser Ser Asp Glu Glu Ala Leu Gln Asn Lys Lys Ile
                405                 410                 415

Ser Thr Ser Cys Ser Val Ile Pro Glu Thr Ser Asn Ser Asp Met Gln
            420                 425                 430

Thr Lys Lys Glu Tyr Val Val Ser Gly Glu His Lys Gln Lys Gly Lys
        435                 440                 445
```

```
Val Lys Arg Lys Leu Lys Asn Gln Asn Lys Asn Lys Glu Asn Gln Glu
    450                 455                 460

Leu Lys Gln Glu Lys Glu Gly Lys Glu Asn Thr Arg Ile Thr Asn Leu
465                 470                 475                 480

Thr Val Asn Thr Gly Leu Asp Cys Ser Glu Lys Thr Arg Glu Glu Gly
                485                 490                 495

Asn Phe Arg Lys Ser Phe Ser Pro Lys Asp Asp Thr Ser Leu His Leu
            500                 505                 510

Phe His Ile Ser Thr Gly Lys Ser Pro Lys His Ser Cys Gly Leu Ser
        515                 520                 525

Glu Lys Gln Ser Thr Pro Leu Lys Gln Glu His Thr Lys Thr Cys Leu
    530                 535                 540

Ser Pro Gly Ser Ser Glu Met Ser Leu Gln Pro Asp Leu Val Arg Tyr
545                 550                 555                 560

Asp Asn Thr Glu Ser Glu Phe Leu Pro Glu Ser Ser Ser Val Lys Ser
                565                 570                 575

Cys Lys His Lys Glu Lys Ser Lys His Gln Lys Asp Phe His Leu Glu
            580                 585                 590

Phe Gly Glu Lys Ser Asn Ala Lys Ile Lys Asp Glu Asp His Ser Pro
        595                 600                 605

Thr Phe Glu Asn Ser Asp Cys Thr Leu Lys Lys Met Asp Lys Glu Gly
    610                 615                 620

Lys Thr Leu Lys Lys His Lys Leu Lys His Lys Glu Arg Glu Lys Glu
625                 630                 635                 640

Lys His Lys Lys Glu Ile Glu Gly Glu Lys Glu Lys Tyr Lys Thr Lys
                645                 650                 655

Asp Ser Ala Lys Glu Leu Gln Arg Ser Val Glu Phe Asp Arg Glu Phe
            660                 665                 670

Trp Lys Glu Asn Phe Phe Lys Ser Asp Glu Thr Glu Asp Leu Phe Leu
```

675 680 685

Asn Met Glu His Glu Ser Leu Thr Leu Glu Lys Lys Ser Lys Leu Glu
690 695 700

Lys Asn Ile Lys Asp Asp Lys Ser Thr Lys Glu Lys His Val Ser Lys
705 710 715 720

Glu Arg Asn Phe Lys Glu Glu Arg Asp Lys Ile Lys Lys Glu Ser Glu
725 730 735

Lys Ser Phe Arg Glu Glu Lys Ile Lys Asp Leu Lys Glu Glu Arg Glu
740 745 750

Asn Ile Pro Thr Asp Lys Asp Ser Glu Phe Thr Ser Leu Gly Met Ser
755 760 765

Ala Ile Glu Glu Ser Ile Gly Leu His Leu Val Glu Lys Glu Ile Asp
770 775 780

Ile Glu Lys Gln Glu Lys His Ile Lys Glu Ser Lys Glu Lys Pro Glu
785 790 795 800

Lys Arg Ser Gln Ile Lys Glu Lys Asp Ile Glu Lys Met Glu Arg Lys
805 810 815

Thr Phe Glu Lys Glu Lys Lys Ile Lys His Glu His Lys Ser Glu Lys
820 825 830

Asp Lys Leu Asp Leu Ser Glu Cys Val Asp Lys Ile Lys Glu Lys Asp
835 840 845

Lys Leu Tyr Ser His His Thr Glu Lys Cys His Lys Glu Gly Glu Lys
850 855 860

Ser Lys Asn Thr Ala Ala Ile Lys Lys Thr Asp Asp Arg Glu Lys Ser
865 870 875 880

Arg Glu Lys Met Asp Arg Lys His Asp Lys Glu Lys Pro Glu Lys Glu
885 890 895

Arg His Leu Ala Glu Ser Lys Glu Lys His Leu Met Glu Lys Lys Asn
900 905 910

```
Lys Gln Ser Asp Asn Ser Glu Tyr Ser Lys Ser Glu Lys Gly Lys Asn
        915                 920                 925

Lys Glu Lys Asp Arg Glu Leu Asp Lys Lys Glu Lys Ser Arg Asp Lys
    930                 935                 940

Glu Ser Ile Asn Ile Thr Asn Ser Lys His Ile Gln Glu Glu Lys Lys
945                 950                 955                 960

Ser Ser Ile Val Asp Gly Asn Lys Ala Gln His Glu Lys Pro Leu Ser
                965                 970                 975

Leu Lys Glu Lys Thr Lys Asp Glu Pro Leu Lys Thr Pro Asp Gly Lys
            980                 985                 990

Glu Lys Asp Lys Lys Asp Lys Asp  Ile Asp Arg Tyr Lys  Glu Arg
Asp
        995                 1000                1005

Lys His  Lys Asp Lys Ile Gln  Ile Asn Ser Leu Leu  Lys Leu Lys
    1010                1015                1020

Ser Glu  Ala Asp Lys Pro Lys  Pro Lys Ser Ser Pro  Ala Ser Lys
    1025                1030                1035

Asp Thr  Arg Pro Lys Glu Lys  Arg Leu Val Asn Asp  Asp Leu Met
    1040                1045                1050

Gln Thr  Ser Phe Glu Arg Met  Leu Ser Leu Lys Asp  Leu Glu Ile
    1055                1060                1065

Glu Gln  Trp His Lys Lys His  Lys Glu Lys Ile Lys  Gln Lys Glu
    1070                1075                1080

Lys Glu  Arg Leu Arg Asn Arg  Asn Cys Leu Glu Leu  Lys Ile Lys
    1085                1090                1095

Asp Lys  Glu Lys Thr Lys His  Thr Pro Thr Glu Ser  Lys Asn Lys
    1100                1105                1110

Glu Leu  Thr Arg Ser Lys Ser  Ser Glu Val Thr Asp  Ala Tyr Thr
    1115                1120                1125
```

```
Lys Glu  Lys Gln Pro Lys Asp  Ala Val Ser Asn Arg  Ser Gln Ser
    1130                1135                1140

Val Asp  Thr Lys Asn Val Met  Thr Leu Gly Lys Ser  Ser Phe Val
    1145                1150                1155

Ser Asp  Asn Ser Leu Asn Arg  Ser Pro Arg Ser Glu  Asn Glu Lys
    1160                1165                1170

Pro Gly  Leu Ser Ser Arg Ser  Val Ser Met Ile Ser  Val Ala Ser
    1175                1180                1185

Ser Glu  Asp Ser Cys His Thr  Thr Val Thr Thr Pro  Arg Pro Pro
    1190                1195                1200

Val Glu  Tyr Asp Ser Asp Phe  Met Leu Glu Ser Ser  Glu Ser Gln
    1205                1210                1215

Met Ser  Phe Ser Gln Ser Pro  Phe Leu Ser Ile Ala  Lys Ser Pro
    1220                1225                1230

Ala Leu  His Glu Arg Glu Leu  Asp Ser Leu Ala Asp  Leu Pro Glu
    1235                1240                1245

Arg Ile  Lys Pro Pro Tyr Ala  Asn Arg Leu Ser Thr  Ser His Leu
    1250                1255                1260

Arg Ser  Ser Ser Val Glu Asp  Val Lys Leu Ile Ile  Ser Glu Gly
    1265                1270                1275

Arg Pro  Thr Ile Glu Val Arg  Arg Cys Ser Met Pro  Ser Val Ile
    1280                1285                1290

Cys Glu  His Thr Lys Gln Phe  Gln Thr Ile Ser Glu  Glu Ser Asn
    1295                1300                1305

Gln Gly  Ser Leu Leu Thr Val  Pro Gly Asp Thr Ser  Pro Ser Pro
    1310                1315                1320

Lys Pro  Glu Val Phe Ser Asn  Val Pro Glu Arg Asp  Leu Ser Asn
    1325                1330                1335
```

```
Val Ser  Asn Ile His Ser Ser  Phe Ala Thr Ser Pro  Thr Gly Ala
    1340                1345                1350

Ser Asn  Ser Lys Tyr Val Ser  Ala Asp Arg Asn Leu  Ile Lys Asn
    1355                1360                1365

Thr Ala  Pro Val Asn Thr Val  Met Asp Ser Pro Val  His Leu Glu
    1370                1375                1380

Pro Ser  Ser Gln Val Gly Val  Ile Gln Asn Lys Ser  Trp Glu Met
    1385                1390                1395

Pro Val  Asp Arg Leu Glu Thr  Leu Ser Thr Arg Asp  Phe Ile Cys
    1400                1405                1410

Pro Asn  Ser Asn Ile Pro Asp  Gln Glu Ser Ser Leu  Gln Ser Phe
    1415                1420                1425

Cys Asn  Ser Glu Asn Lys Val  Leu Lys Glu Asn Ala  Asp Phe Leu
    1430                1435                1440

Ser Leu  Arg Gln Thr Glu Leu  Pro Gly Asn Ser Cys  Ala Gln Asp
    1445                1450                1455

Pro Ala  Ser Phe Met Pro Pro  Gln Gln Pro Cys Ser  Phe Pro Ser
    1460                1465                1470

Gln Ser  Leu Ser Asp Ala Glu  Ser Ile Ser Lys His  Met Ser Leu
    1475                1480                1485

Ser Tyr  Val Ala Asn Gln Glu  Pro Gly Ile Leu Gln  Gln Lys Asn
    1490                1495                1500

Ala Val  Gln Ile Ile Ser Ser  Ala Leu Asp Thr Asp  Asn Glu Ser
    1505                1510                1515

Thr Lys  Asp Thr Glu Asn Thr  Phe Val Leu Gly Asp  Val Gln Lys
    1520                1525                1530

Thr Asp  Ala Phe Val Pro Val  Tyr Ser Asp Ser Thr  Ile Gln Glu
    1535                1540                1545
```

Ala Ser Pro Asn Phe Glu Lys Ala Tyr Thr Leu Pro Val Leu Pro
1550 1555 1560

Ser Glu Lys Asp Phe Asn Gly Ser Asp Ala Ser Thr Gln Leu Asn
1565 1570 1575

Thr His Tyr Ala Phe Ser Lys Leu Thr Tyr Lys Ser Ser Ser Gly
1580 1585 1590

His Glu Val Glu Asn Ser Thr Thr Asp Thr Gln Val Ile Ser His
1595 1600 1605

Glu Lys Glu Asn Lys Leu Glu Ser Leu Val Leu Thr His Leu Ser
1610 1615 1620

Arg Cys Asp Ser Asp Leu Cys Glu Met Asn Ala Gly Met Pro Lys
1625 1630 1635

Gly Asn Leu Asn Glu Gln Asp Pro Lys His Cys Pro Glu Ser Glu
1640 1645 1650

Lys Cys Leu Leu Ser Ile Glu Asp Glu Glu Ser Gln Gln Ser Ile
1655 1660 1665

Leu Ser Ser Leu Glu Asn His Ser Gln Gln Ser Thr Gln Pro Glu
1670 1675 1680

Met His Lys Tyr Gly Gln Leu Val Lys Val Glu Leu Glu Glu Asn
1685 1690 1695

Ala Glu Asp Asp Lys Thr Glu Asn Gln Ile Pro Gln Arg Met Thr
1700 1705 1710

Arg Asn Lys Ala Asn Thr Met Ala Asn Gln Ser Lys Gln Ile Leu
1715 1720 1725

Ala Ser Cys Thr Leu Leu Ser Glu Lys Asp Ser Glu Ser Ser Ser
1730 1735 1740

Pro Arg Gly Arg Ile Arg Leu Thr Glu Asp Asp Asp Pro Gln Ile
1745 1750 1755

His His Pro Arg Lys Arg Lys Val Ser Arg Val Pro Gln Pro Val

```
    1760                1765                1770

Gln Val  Ser Pro Ser Leu Leu  Gln Ala Lys Glu Lys  Thr Gln Gln
    1775                1780                1785

Ser Leu  Ala Ala Ile Val Asp  Ser Leu Lys Leu Asp  Glu Ile Gln
    1790                1795                1800

Pro Tyr  Ser Ser Glu Arg Ala  Asn Pro Tyr Phe Glu  Tyr Leu His
    1805                1810                1815

Ile Arg  Lys Lys Ile Glu Glu  Lys Arg Lys Leu Leu  Cys Ser Val
    1820                1825                1830

Ile Pro  Gln Ala Pro Gln Tyr  Tyr Asp Glu Tyr Val  Thr Phe Asn
    1835                1840                1845

Gly Ser  Tyr Leu Leu Asp Gly  Asn Pro Leu Ser Lys  Ile Cys Ile
    1850                1855                1860

Pro Thr  Ile Thr Pro Pro Pro  Ser Leu Ser Asp Pro  Leu Lys Glu
    1865                1870                1875

Leu Phe  Arg Gln Gln Glu Val  Val Arg Met Lys Leu  Arg Leu Gln
    1880                1885                1890

His Ser  Ile Glu Arg Glu Lys  Leu Ile Val Ser Asn  Glu Gln Glu
    1895                1900                1905

Val Leu  Arg Val His Tyr Arg  Ala Ala Arg Thr Leu  Ala Asn Gln
    1910                1915                1920

Thr Leu  Pro Phe Ser Ala Cys  Thr Val Leu Leu Asp  Ala Glu Val
    1925                1930                1935

Tyr Asn  Val Pro Leu Asp Ser  Gln Ser Asp Asp Ser  Lys Thr Ser
    1940                1945                1950

Val Arg  Asp Arg Phe Asn Ala  Arg Gln Phe Met Ser  Trp Leu Gln
    1955                1960                1965

Asp Val  Asp Asp Lys Phe Asp  Lys Leu Lys Thr Cys  Leu Leu Met
    1970                1975                1980
```

```
Arg Gln  Gln His Glu Ala Ala  Ala Leu Asn Ala Val  Gln Arg Leu
    1985                 1990                 1995


Glu Trp  Gln Leu Lys Leu Gln  Glu Leu Asp Pro Ala  Thr Tyr Lys
    2000                 2005                 2010


Ser Ile  Ser Ile Tyr Glu Ile  Gln Glu Phe Tyr Val  Pro Leu Val
    2015                 2020                 2025


Asp Val  Asn Asp Asp Phe Glu  Leu Thr Pro Ile
    2030                 2035


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Met Pro Lys Ser Gly Phe Thr Lys Pro Ile Gln Ser Glu Asn Ser Asp
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Ser Asp Ser Asn Met Val Glu Lys Pro Tyr Gly Arg Lys Ser Lys Asp
            20                  25                  30


Lys Ile Ala Ser Tyr Ser Lys Thr Pro Lys Ile Glu Arg Ser Asp Val
        35                  40                  45


Ser Lys Glu Met Lys Glu Lys Ser Ser Met Lys Arg Lys Leu Pro Phe
    50                  55                  60
```

```
Thr Ile Ser Pro Ser Arg Asn Glu Glu Arg Asp Ser Asp Thr Glu Lys
65                  70                  75                  80

Glu Gly Pro Glu Lys Lys Lys Thr Lys Lys Glu Ala Gly Asn Lys Lys
                85                  90                  95

Ser Thr Pro Val Ser Ile Leu Phe Gly Tyr Pro Leu Ser Glu Arg Lys
            100                 105                 110

Gln Met Ala Leu Leu Met Gln Met Thr Ala Arg Asp Asn Asn Ser Thr
        115                 120                 125

Pro Asn His Pro Ser Gln Thr Thr Pro Ala Gln Lys Lys Thr Pro Ser
    130                 135                 140

Ser Ser Ser Arg Gln Lys Asp Lys Val Asn Lys Arg Asn Glu Arg Gly
145                 150                 155                 160

Glu Thr Pro Leu His Met Ala Ala Ile Arg Gly Asp Val Lys Gln Val
                165                 170                 175

Lys Glu Leu Ile Ser Leu Gly Ala Asn Val Asn Val Lys Asp Phe Ala
            180                 185                 190

Gly Trp Thr Pro Leu His Glu Ala Cys Asn Val Gly Tyr Tyr Asp Val
        195                 200                 205

Ala Lys Ile Leu Ile Ala Ala Gly Ala Asp Val Asn Thr Gln Gly Leu
    210                 215                 220

Asp Asp Asp Thr Pro Leu His Asp Ser Ala Ser Ser Gly His Arg Asp
225                 230                 235                 240

Ile Val Lys Leu Leu Leu Arg His Gly Gly Asn Pro Phe Gln Ala Asn
                245                 250                 255

Lys His Gly Glu Arg Pro Val Asp Val Ala Glu Thr Glu Glu Leu Glu
            260                 265                 270

Leu Leu Leu Lys Arg Glu Val Pro Leu Ser Asp Asp Asp Glu Ser Tyr
        275                 280                 285

Thr Asp Ser Glu Glu Ala Gln Ser Val Asn Pro Ser Ser Val Asp Glu
```

```
    290                 295                 300

Asn Ile Asp Ser Glu Thr
305                 310


<210> 5138
<211> 12
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1110; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD12; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 12; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000462312"

<400> 5138
Met Pro Lys Ser Gly Phe Thr Lys Pro Ile Gln Ser
1               5                   10


<210> 5139
<211> 82
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1110; "

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 12; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000462659"

<400> 5139
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```
Met Pro Lys Ser Gly Phe Thr Lys Pro Ile Gln Ser Glu Asn Ser Asp
1               5                   10                  15

Ser Asp Ser Asn Met Val Glu Lys Pro Tyr Gly Arg Lys Ser Lys Asp
            20                  25                  30

Lys Ile Ala Ser Tyr Ser Lys Thr Pro Lys Ile Glu Arg Ser Asp Val
        35                  40                  45

Ser Lys Glu Met Lys Glu Lys Ser Ser Met Lys Arg Lys Leu Pro Phe
    50                  55                  60

Thr Ile Ser Pro Ser Arg Asn Glu Glu Arg Asp Ser Asp Thr Glu Leu
65                  70                  75                  80

Thr Gly
```

<210> 5140
<211> 44
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ANKRD12; "

<220>
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<223> /note="Gene Name:
ankyrin repeat domain 12; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000464422"

<400> 5140

```
Met Pro Lys Ser Gly Phe Thr Lys Pro Ile Gln Ser Glu Asn Ser Asp
1               5                   10                  15

Ser Asp Ser Asn Met Val Glu Lys Pro Tyr Gly Arg Lys Ser Lys Asp
            20                  25                  30

Lys Ile Ala Ser Tyr Ser Lys Thr Pro Lys Ile Glu
        35                  40
```

<210> 5141
<211> 518
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1111; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD13D; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 13
family, member D; "

<220>
<221> source
<223> /note="Uniprot ID: Q6ZTN6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000310874"

<400> 5141

```
Met Val Gln Leu Val Leu Gln Tyr Arg Asp Tyr Gln Arg Ala Thr Gln
1               5                  10                  15

Arg Leu Ala Gly Ile Pro Glu Leu Leu Asn Lys Leu Arg Gln Ala Pro
            20                  25                  30

Asp Phe Tyr Val Glu Met Lys Trp Glu Phe Thr Ser Trp Val Pro Leu
        35                  40                  45

Val Ser Lys Met Cys Pro Ser Asp Val Tyr Arg Val Trp Lys Arg Gly
    50                  55                  60

Glu Ser Leu Arg Val Asp Thr Ser Leu Leu Gly Phe Glu His Met Thr
65                  70                  75                  80

Trp Gln Arg Gly Arg Arg Ser Phe Ile Phe Lys Gly Gln Glu Ala Gly
                85                  90                  95

Ala Leu Val Met Glu Val Asp His Asp Arg Gln Val Val His Val Glu
            100                 105                 110
```

```
Thr Leu Gly Leu Thr Leu Gln Glu Pro Glu Thr Leu Leu Ala Ala Met
        115                 120                 125

Arg Pro Ser Glu Glu His Val Ala Ser Arg Leu Thr Ser Pro Ile Val
    130                 135                 140

Ser Thr His Leu Asp Thr Arg Asn Val Ala Phe Glu Arg Asn Lys Cys
145                 150                 155                 160

Gly Ile Trp Gly Trp Arg Ser Glu Lys Met Glu Thr Val Ser Gly Tyr
                165                 170                 175

Glu Ala Lys Val Tyr Ser Ala Thr Asn Val Glu Leu Val Thr Arg Thr
            180                 185                 190

Arg Thr Glu His Leu Ser Asp Gln Asp Lys Ser Arg Ser Lys Ala Gly
        195                 200                 205

Lys Thr Pro Phe Gln Ser Phe Leu Gly Met Ala Gln Gln His Ser Ser
    210                 215                 220

His Thr Gly Ala Pro Val Gln Gln Ala Ala Ser Pro Thr Asn Pro Thr
225                 230                 235                 240

Ala Ile Ser Pro Glu Glu Tyr Phe Asp Pro Asn Phe Ser Leu Glu Ser
                245                 250                 255

Arg Asn Ile Gly Arg Pro Ile Glu Met Ser Ser Lys Val Gln Arg Phe
            260                 265                 270

Lys Ala Thr Leu Trp Leu Ser Glu Glu His Pro Leu Ser Leu Gly Asp
        275                 280                 285

Gln Val Thr Pro Ile Ile Asp Leu Met Ala Ile Ser Asn Ala His Phe
    290                 295                 300

Ala Lys Leu Arg Asp Phe Ile Thr Leu Arg Leu Pro Pro Gly Phe Pro
305                 310                 315                 320

Val Lys Ile Glu Ile Pro Leu Phe His Val Leu Asn Ala Arg Ile Thr
                325                 330                 335
```

```
Phe Ser Asn Leu Cys Gly Cys Asp Glu Pro Leu Ser Ser Val Trp Val
            340                 345                 350

Pro Ala Pro Ser Ser Ala Val Ala Ala Ser Gly Asn Pro Phe Pro Cys
        355                 360                 365

Glu Val Asp Pro Thr Val Phe Glu Val Pro Asn Gly Tyr Ser Val Leu
    370                 375                 380

Gly Met Glu Arg Asn Glu Pro Leu Arg Asp Glu Asp Asp Asp Leu Leu
385                 390                 395                 400

Gln Phe Ala Ile Gln Gln Ser Leu Leu Glu Ala Gly Thr Glu Ala Glu
                405                 410                 415

Gln Val Thr Val Trp Glu Ala Leu Thr Asn Thr Arg Pro Gly Ala Arg
            420                 425                 430

Pro Pro Pro Gln Ala Thr Val Tyr Glu Glu Gln Leu Gln Leu Glu Arg
        435                 440                 445

Ala Leu Gln Glu Ser Leu Gln Leu Ser Thr Glu Pro Arg Gly Pro Gly
    450                 455                 460

Ser Pro Pro Arg Thr Pro Pro Ala Pro Gly Pro Pro Ser Phe Glu Glu
465                 470                 475                 480

Gln Leu Arg Leu Ala Leu Glu Leu Ser Ser Arg Glu Gln Glu Glu Arg
                485                 490                 495

Glu Arg Arg Gly Gln Gln Glu Glu Glu Asp Leu Gln Arg Ile Leu Gln
            500                 505                 510

Leu Ser Leu Thr Glu His
        515
```

<210> 5142
<211> 518
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1111; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD13D; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 13
family, member D; "

<220>
<221> source
<223> /note="Uniprot ID: Q6ZTN6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000402616"

<400> 5142
Met Val Gln Leu Val Leu Gln Tyr Arg Asp Tyr Gln Arg Ala Thr Gln
1   5   10   15

Arg Leu Ala Gly Ile Pro Glu Leu Leu Asn Lys Leu Arg Gln Ala Pro
            20   25   30

Asp Phe Tyr Val Glu Met Lys Trp Glu Phe Thr Ser Trp Val Pro Leu
        35   40   45

Val Ser Lys Met Cys Pro Ser Asp Val Tyr Arg Val Trp Lys Arg Gly
    50   55   60

Glu Ser Leu Arg Val Asp Thr Ser Leu Leu Gly Phe Glu His Met Thr
65   70   75   80

Trp Gln Arg Gly Arg Arg Ser Phe Ile Phe Lys Gly Gln Glu Ala Gly
                85   90   95

Ala Leu Val Met Glu Val Asp His Asp Arg Gln Val Val His Val Glu
            100   105   110

Thr Leu Gly Leu Thr Leu Gln Glu Pro Glu Thr Leu Leu Ala Ala Met
        115   120   125

Arg Pro Ser Glu Glu His Val Ala Ser Arg Leu Thr Ser Pro Ile Val
    130   135   140

Ser Thr His Leu Asp Thr Arg Asn Val Ala Phe Glu Arg Asn Lys Cys
145   150   155   160

```
Gly Ile Trp Gly Trp Arg Ser Glu Lys Met Glu Thr Val Ser Gly Tyr
                165                 170                 175

Glu Ala Lys Val Tyr Ser Ala Thr Asn Val Glu Leu Val Thr Arg Thr
            180                 185                 190

Arg Thr Glu His Leu Ser Asp Gln Asp Lys Ser Arg Ser Lys Ala Gly
        195                 200                 205

Lys Thr Pro Phe Gln Ser Phe Leu Gly Met Ala Gln Gln His Ser Ser
    210                 215                 220

His Thr Gly Ala Pro Val Gln Gln Ala Ala Ser Pro Thr Asn Pro Thr
225                 230                 235                 240

Ala Ile Ser Pro Glu Glu Tyr Phe Asp Pro Asn Phe Ser Leu Glu Ser
                245                 250                 255

Arg Asn Ile Gly Arg Pro Ile Glu Met Ser Ser Lys Val Gln Arg Phe
            260                 265                 270

Lys Ala Thr Leu Trp Leu Ser Glu Glu His Pro Leu Ser Leu Gly Asp
        275                 280                 285

Gln Val Thr Pro Ile Ile Asp Leu Met Ala Ile Ser Asn Ala His Phe
    290                 295                 300

Ala Lys Leu Arg Asp Phe Ile Thr Leu Arg Leu Pro Pro Gly Phe Pro
305                 310                 315                 320

Val Lys Ile Glu Ile Pro Leu Phe His Val Leu Asn Ala Arg Ile Thr
                325                 330                 335

Phe Ser Asn Leu Cys Gly Cys Asp Glu Pro Leu Ser Ser Val Trp Val
            340                 345                 350

Pro Ala Pro Ser Ser Ala Val Ala Ala Ser Gly Asn Pro Phe Pro Cys
        355                 360                 365

Glu Val Asp Pro Thr Val Phe Glu Val Pro Asn Gly Tyr Ser Val Leu
    370                 375                 380
```

```
Gly Met Glu Arg Asn Glu Pro Leu Arg Asp Glu Asp Asp Asp Leu Leu
385                 390                 395                 400

Gln Phe Ala Ile Gln Gln Ser Leu Leu Glu Ala Gly Thr Glu Ala Glu
                405                 410                 415

Gln Val Thr Val Trp Glu Ala Leu Thr Asn Thr Arg Pro Gly Ala Arg
            420                 425                 430

Pro Pro Pro Gln Ala Thr Val Tyr Glu Glu Gln Leu Gln Leu Glu Arg
        435                 440                 445

Ala Leu Gln Glu Ser Leu Gln Leu Ser Thr Glu Pro Arg Gly Pro Gly
    450                 455                 460

Ser Pro Pro Arg Thr Pro Pro Ala Pro Gly Pro Pro Ser Phe Glu Glu
465                 470                 475                 480

Gln Leu Arg Leu Ala Leu Glu Leu Ser Ser Arg Glu Gln Glu Glu Arg
                485                 490                 495

Glu Arg Arg Gly Gln Gln Glu Glu Glu Asp Leu Gln Arg Ile Leu Gln
            500                 505                 510

Leu Ser Leu Thr Glu His
        515


<210> 5143
<211> 605
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1111; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD13D; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 13
      family, member D; "

<220>
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<221> source
<223> /note="Uniprot ID: Q6ZTN6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000427130"

<400> 5143
Met Ala Gly Pro Gly Pro Thr Phe Pro Leu His Arg Leu Val Trp Ala
1   5   10   15

Asn Arg His Arg Glu Leu Glu Ala Ala Leu His Ser His Gln His Asp
            20   25   30

Ile Glu Gln Glu Asp Pro Arg Gly Arg Thr Pro Leu Glu Leu Ala Val
        35   40   45

Ser Leu Gly Asn Leu Glu Ser Val Arg Val Leu Leu Arg His Asn Ala
    50   55   60

Asn Val Gly Lys Glu Asn Arg Gln Gly Trp Ala Val Leu Gln Glu Ala
65   70   75   80

Val Ser Thr Gly Asp Pro Glu Met Val Gln Leu Val Leu Gln Tyr Arg
                85   90   95

Asp Tyr Gln Arg Ala Thr Gln Arg Leu Ala Gly Ile Pro Glu Leu Leu
            100   105   110

Asn Lys Leu Arg Gln Ala Pro Asp Phe Tyr Val Glu Met Lys Trp Glu
        115   120   125

Phe Thr Ser Trp Val Pro Leu Val Ser Lys Met Cys Pro Ser Asp Val
    130   135   140

Tyr Arg Val Trp Lys Arg Gly Glu Ser Leu Arg Val Asp Thr Ser Leu
145   150   155   160

Leu Gly Phe Glu His Met Thr Trp Gln Arg Gly Arg Arg Ser Phe Ile
                165   170   175

Phe Lys Gly Gln Glu Ala Gly Ala Leu Val Met Glu Val Asp His Asp
            180   185   190

Arg Gln Val Val His Val Glu Thr Leu Gly Leu Thr Leu Gln Glu Pro

```
        195                 200                 205

Glu Thr Leu Leu Ala Ala Met Arg Pro Ser Glu Glu His Val Ala Ser
    210                 215                 220

Arg Leu Thr Ser Pro Ile Val Ser Thr His Leu Asp Thr Arg Asn Val
225                 230                 235                 240

Ala Phe Glu Arg Asn Lys Cys Gly Ile Trp Gly Trp Arg Ser Glu Lys
                245                 250                 255

Met Glu Thr Val Ser Gly Tyr Glu Ala Lys Val Tyr Ser Ala Thr Asn
            260                 265                 270

Val Glu Leu Val Thr Arg Thr Arg Thr Glu His Leu Ser Asp Gln Asp
        275                 280                 285

Lys Ser Arg Ser Lys Ala Gly Lys Thr Pro Phe Gln Ser Phe Leu Gly
    290                 295                 300

Met Ala Gln Gln His Ser Ser His Thr Gly Ala Pro Val Gln Gln Ala
305                 310                 315                 320

Ala Ser Pro Thr Asn Pro Thr Ala Ile Ser Pro Glu Glu Tyr Phe Asp
                325                 330                 335

Pro Asn Phe Ser Leu Glu Ser Arg Asn Ile Gly Arg Pro Ile Glu Met
            340                 345                 350

Ser Ser Lys Val Gln Arg Phe Lys Ala Thr Leu Trp Leu Ser Glu Glu
        355                 360                 365

His Pro Leu Ser Leu Gly Asp Gln Val Thr Pro Ile Ile Asp Leu Met
    370                 375                 380

Ala Ile Ser Asn Ala His Phe Ala Lys Leu Arg Asp Phe Ile Thr Leu
385                 390                 395                 400

Arg Leu Pro Pro Gly Phe Pro Val Lys Ile Glu Ile Pro Leu Phe His
                405                 410                 415

Val Leu Asn Ala Arg Ile Thr Phe Ser Asn Leu Cys Gly Cys Asp Glu
            420                 425                 430
```

```
Pro Leu Ser Ser Val Trp Val Pro Ala Pro Ser Ser Ala Val Ala Ala
        435                 440                 445

Ser Gly Asn Pro Phe Pro Cys Glu Val Asp Pro Thr Val Phe Glu Val
    450                 455                 460

Pro Asn Gly Tyr Ser Val Leu Gly Met Glu Arg Asn Glu Pro Leu Arg
465                 470                 475                 480

Asp Glu Asp Asp Asp Leu Leu Gln Phe Ala Ile Gln Gln Ser Leu Leu
                485                 490                 495

Glu Ala Gly Thr Glu Ala Glu Gln Val Thr Val Trp Glu Ala Leu Thr
            500                 505                 510

Asn Thr Arg Pro Gly Ala Arg Pro Pro Pro Gln Ala Thr Val Tyr Glu
        515                 520                 525

Glu Gln Leu Gln Leu Glu Arg Ala Leu Gln Glu Ser Leu Gln Leu Ser
    530                 535                 540

Thr Glu Pro Arg Gly Pro Gly Ser Pro Pro Arg Thr Pro Pro Ala Pro
545                 550                 555                 560

Gly Pro Pro Ser Phe Glu Glu Gln Leu Arg Leu Ala Leu Glu Leu Ser
                565                 570                 575

Ser Arg Glu Gln Glu Glu Arg Glu Arg Arg Gly Gln Gln Glu Glu Glu
            580                 585                 590

Asp Leu Gln Arg Ile Leu Gln Leu Ser Leu Thr Glu His
        595                 600                 605


<210> 5144
<211> 255
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1111; "

<220>
<221> source
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<223> /note="Gene Symbol: ANKRD13D; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 13
family, member D; "

<220>
<221> source
<223> /note="Uniprot ID: Q6ZTN6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000443977"

<400> 5144

```
Met Ser Cys Gly Arg Leu Gly Arg Phe Lys Ala Thr Leu Trp Leu Ser
1               5                  10                  15

Glu Glu His Pro Leu Ser Leu Gly Asp Gln Val Thr Pro Ile Ile Asp
            20                  25                  30

Leu Met Ala Ile Ser Asn Ala His Phe Ala Lys Leu Arg Asp Phe Ile
        35                  40                  45

Thr Leu Arg Leu Pro Pro Gly Phe Pro Val Lys Ile Glu Ile Pro Leu
    50                  55                  60

Phe His Val Leu Asn Ala Arg Ile Thr Phe Ser Asn Leu Cys Gly Cys
65                  70                  75                  80

Asp Glu Pro Leu Ser Ser Val Trp Val Pro Ala Pro Ser Ser Ala Val
                85                  90                  95

Ala Ala Ser Gly Asn Pro Phe Pro Cys Glu Val Asp Pro Thr Val Phe
            100                 105                 110

Glu Val Pro Asn Gly Tyr Ser Val Leu Gly Met Glu Arg Asn Glu Pro
        115                 120                 125

Leu Arg Asp Glu Asp Asp Asp Leu Leu Gln Phe Ala Ile Gln Gln Ser
    130                 135                 140

Leu Leu Glu Ala Gly Thr Glu Ala Glu Gln Val Thr Val Trp Glu Ala
145                 150                 155                 160
```

```
Leu Thr Asn Thr Arg Pro Gly Ala Arg Pro Pro Pro Gln Ala Thr Val
                165                 170                 175

Tyr Glu Glu Gln Leu Gln Leu Glu Arg Ala Leu Gln Glu Ser Leu Gln
            180                 185                 190

Leu Ser Thr Glu Pro Arg Gly Pro Gly Ser Pro Pro Arg Thr Pro Pro
        195                 200                 205

Ala Pro Gly Pro Pro Ser Phe Glu Glu Gln Leu Arg Leu Ala Leu Glu
    210                 215                 220

Leu Ser Ser Arg Glu Gln Glu Glu Arg Glu Arg Arg Gly Gln Gln Glu
225                 230                 235                 240

Glu Glu Asp Leu Gln Arg Ile Leu Gln Leu Ser Leu Thr Glu His
                245                 250                 255


<210> 5145
<211> 518
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1111; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD13D; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 13
      family, member D; "

<220>
<221> source
<223> /note="Uniprot ID:  Q6ZTN6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000444404"

<400> 5145
Met Val Gln Leu Val Leu Gln Tyr Arg Asp Tyr Gln Arg Ala Thr Gln
1               5                   10                  15

Arg Leu Ala Gly Ile Pro Glu Leu Leu Asn Lys Leu Arg Gln Ala Pro
```

```
            20                  25                  30

Asp Phe Tyr Val Glu Met Lys Trp Glu Phe Thr Ser Trp Val Pro Leu
        35                  40                  45

Val Ser Lys Met Cys Pro Ser Asp Val Tyr Arg Val Trp Lys Arg Gly
    50                  55                  60

Glu Ser Leu Arg Val Asp Thr Ser Leu Leu Gly Phe Glu His Met Thr
65                  70                  75                  80

Trp Gln Arg Gly Arg Arg Ser Phe Ile Phe Lys Gly Gln Glu Ala Gly
                85                  90                  95

Ala Leu Val Met Glu Val Asp His Asp Arg Gln Val Val His Val Glu
            100                 105                 110

Thr Leu Gly Leu Thr Leu Gln Glu Pro Glu Thr Leu Leu Ala Ala Met
        115                 120                 125

Arg Pro Ser Glu Glu His Val Ala Ser Arg Leu Thr Ser Pro Ile Val
    130                 135                 140

Ser Thr His Leu Asp Thr Arg Asn Val Ala Phe Glu Arg Asn Lys Cys
145                 150                 155                 160

Gly Ile Trp Gly Trp Arg Ser Glu Lys Met Glu Thr Val Ser Gly Tyr
                165                 170                 175

Glu Ala Lys Val Tyr Ser Ala Thr Asn Val Glu Leu Val Thr Arg Thr
            180                 185                 190

Arg Thr Glu His Leu Ser Asp Gln Asp Lys Ser Arg Ser Lys Ala Gly
        195                 200                 205

Lys Thr Pro Phe Gln Ser Phe Leu Gly Met Ala Gln Gln His Ser Ser
    210                 215                 220

His Thr Gly Ala Pro Val Gln Gln Ala Ala Ser Pro Thr Asn Pro Thr
225                 230                 235                 240

Ala Ile Ser Pro Glu Glu Tyr Phe Asp Pro Asn Phe Ser Leu Glu Ser
                245                 250                 255
```

```
Arg Asn Ile Gly Arg Pro Ile Glu Met Ser Ser Lys Val Gln Arg Phe
            260                 265                 270

Lys Ala Thr Leu Trp Leu Ser Glu Glu His Pro Leu Ser Leu Gly Asp
        275                 280                 285

Gln Val Thr Pro Ile Ile Asp Leu Met Ala Ile Ser Asn Ala His Phe
    290                 295                 300

Ala Lys Leu Arg Asp Phe Ile Thr Leu Arg Leu Pro Pro Gly Phe Pro
305                 310                 315                 320

Val Lys Ile Glu Ile Pro Leu Phe His Val Leu Asn Ala Arg Ile Thr
                325                 330                 335

Phe Ser Asn Leu Cys Gly Cys Asp Glu Pro Leu Ser Ser Val Trp Val
            340                 345                 350

Pro Ala Pro Ser Ser Ala Val Ala Ala Ser Gly Asn Pro Phe Pro Cys
        355                 360                 365

Glu Val Asp Pro Thr Val Phe Glu Val Pro Asn Gly Tyr Ser Val Leu
    370                 375                 380

Gly Met Glu Arg Asn Glu Pro Leu Arg Asp Glu Asp Asp Asp Leu Leu
385                 390                 395                 400

Gln Phe Ala Ile Gln Gln Ser Leu Leu Glu Ala Gly Thr Glu Ala Glu
                405                 410                 415

Gln Val Thr Val Trp Glu Ala Leu Thr Asn Thr Arg Pro Gly Ala Arg
            420                 425                 430

Pro Pro Pro Gln Ala Thr Val Tyr Glu Glu Gln Leu Gln Leu Glu Arg
        435                 440                 445

Ala Leu Gln Glu Ser Leu Gln Leu Ser Thr Glu Pro Arg Gly Pro Gly
    450                 455                 460

Ser Pro Pro Arg Thr Pro Pro Ala Pro Gly Pro Pro Ser Phe Glu Glu
465                 470                 475                 480
```

```
Gln Leu Arg Leu Ala Leu Glu Leu Ser Ser Arg Glu Gln Glu Glu Arg
                485                 490                 495


Glu Arg Arg Gly Gln Gln Glu Glu Glu Asp Leu Gln Arg Ile Leu Gln
            500                 505                 510


Leu Ser Leu Thr Glu His
        515


<210> 5146
<211> 32
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1111; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD13D; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 13
      family, member D; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000480227"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5146
Xaa Ala Ile Ser Pro Glu Glu Tyr Phe Asp Pro Asn Phe Ser Leu Glu
1               5                   10                  15


Ser Arg Asn Ile Gly Arg Pro Ile Glu Met Ser Ser Lys Val Gln Arg
            20                  25                  30


<210> 5147
<211> 109
<212> PRT
<213> Homo sapiens

<220>
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<221> source
<223> /note="Payload ID: 1111; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD13D; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 13
family, member D; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000482134"

<400> 5147
Met Val Gln Leu Val Leu Gln Tyr Arg Asp Tyr Gln Arg Ala Thr Gln
1 5 10 15

Arg Leu Ala Gly Ile Pro Glu Leu Leu Asn Lys Leu Arg Gln Ala Pro
20 25 30

Asp Phe Tyr Val Glu Met Lys Trp Glu Phe Thr Ser Trp Val Pro Leu
35 40 45

Val Ser Lys Met Cys Pro Ser Asp Val Tyr Arg Val Trp Lys Arg Gly
50 55 60

Glu Ser Leu Arg Val Asp Thr Ser Leu Leu Gly Phe Glu His Met Thr
65 70 75 80

Trp Gln Arg Gly Arg Arg Ser Phe Ile Phe Lys Gly Gln Glu Ala Gly
85 90 95

Ala Leu Val Met Glu Val Asp His Asp Arg Gln Val Val
100 105

<210> 5148
<211> 590
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1112; "

<220>
<221> source

<223> /note="Gene Symbol: ANKRD13A; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 13A; "

<220>
<221> source
<223> /note="Uniprot ID: Q8IZ07; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000261739"

<400> 5148
Met Ser Ser Ala Cys Asp Ala Gly Asp His Tyr Pro Leu His Leu Leu
1   5   10   15

Val Trp Lys Asn Asp Tyr Arg Gln Leu Glu Lys Glu Leu Gln Gly Gln
            20   25   30

Asn Val Glu Ala Val Asp Pro Arg Gly Arg Thr Leu Leu His Leu Ala
        35   40   45

Val Ser Leu Gly His Leu Glu Ser Ala Arg Val Leu Leu Arg His Lys
    50   55   60

Ala Asp Val Thr Lys Glu Asn Arg Gln Gly Trp Thr Val Leu His Glu
65   70   75   80

Ala Val Ser Thr Gly Asp Pro Glu Met Val Tyr Thr Val Leu Gln His
                85   90   95

Arg Asp Tyr His Asn Thr Ser Met Ala Leu Glu Gly Val Pro Glu Leu
            100   105   110

Leu Gln Lys Ile Leu Glu Ala Pro Asp Phe Tyr Val Gln Met Lys Trp
        115   120   125

Glu Phe Thr Ser Trp Val Pro Leu Val Ser Arg Ile Cys Pro Asn Asp
    130   135   140

Val Cys Arg Ile Trp Lys Ser Gly Ala Lys Leu Arg Val Asp Ile Thr
145   150   155   160

Leu Leu Gly Phe Glu Asn Met Ser Trp Ile Arg Gly Arg Arg Ser Phe

```
                165                 170                 175

Ile Phe Lys Gly Glu Asp Asn Trp Ala Glu Leu Met Glu Val Asn His
            180                 185                 190

Asp Asp Lys Val Val Thr Thr Glu Arg Phe Asp Leu Ser Gln Glu Met
        195                 200                 205

Glu Arg Leu Thr Leu Asp Leu Met Lys Pro Lys Ser Arg Glu Val Glu
    210                 215                 220

Arg Arg Leu Thr Ser Pro Val Ile Asn Thr Ser Leu Asp Thr Lys Asn
225                 230                 235                 240

Ile Ala Phe Glu Arg Thr Lys Ser Gly Phe Trp Gly Trp Arg Thr Asp
                245                 250                 255

Lys Ala Glu Val Val Asn Gly Tyr Glu Ala Lys Val Tyr Thr Val Asn
            260                 265                 270

Asn Val Asn Val Ile Thr Lys Ile Arg Thr Glu His Leu Thr Glu Glu
        275                 280                 285

Glu Lys Lys Arg Tyr Lys Ala Asp Arg Asn Pro Leu Glu Ser Leu Leu
    290                 295                 300

Gly Thr Val Glu His Gln Phe Gly Ala Gln Gly Asp Leu Thr Thr Glu
305                 310                 315                 320

Cys Ala Thr Ala Asn Asn Pro Thr Ala Ile Thr Pro Asp Glu Tyr Phe
                325                 330                 335

Asn Glu Glu Phe Asp Leu Lys Asp Arg Asp Ile Gly Arg Pro Lys Glu
            340                 345                 350

Leu Thr Ile Arg Thr Gln Lys Phe Lys Ala Met Leu Trp Met Cys Glu
        355                 360                 365

Glu Phe Pro Leu Ser Leu Val Glu Gln Val Ile Pro Ile Ile Asp Leu
    370                 375                 380

Met Ala Arg Thr Ser Ala His Phe Ala Arg Leu Arg Asp Phe Ile Lys
385                 390                 395                 400
```

```
Leu Glu Phe Pro Pro Gly Phe Pro Val Lys Ile Glu Ile Pro Leu Phe
                405                 410                 415

His Val Leu Asn Ala Arg Ile Thr Phe Gly Asn Val Asn Gly Cys Ser
            420                 425                 430

Thr Ala Glu Glu Ser Val Ser Gln Asn Val Glu Gly Thr Gln Ala Asp
        435                 440                 445

Ser Ala Ser His Ile Thr Asn Phe Glu Val Asp Gln Ser Val Phe Glu
    450                 455                 460

Ile Pro Glu Ser Tyr Tyr Val Gln Asp Asn Gly Arg Asn Val His Leu
465                 470                 475                 480

Gln Asp Glu Asp Tyr Glu Ile Met Gln Phe Ala Ile Gln Gln Ser Leu
                485                 490                 495

Leu Glu Ser Ser Arg Ser Gln Glu Leu Ser Gly Pro Ala Ser Asn Gly
            500                 505                 510

Gly Ile Ser Gln Thr Asn Thr Tyr Asp Ala Gln Tyr Glu Arg Ala Ile
        515                 520                 525

Gln Glu Ser Leu Leu Thr Ser Thr Glu Gly Leu Cys Pro Ser Ala Leu
    530                 535                 540

Ser Glu Thr Ser Arg Phe Asp Asn Asp Leu Gln Leu Ala Met Glu Leu
545                 550                 555                 560

Ser Ala Lys Glu Leu Glu Glu Trp Glu Leu Arg Leu Gln Glu Glu Glu
                565                 570                 575

Ala Glu Leu Gln Gln Val Leu Gln Leu Ser Leu Thr Asp Lys
            580                 585                 590
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<210> 5149
<211> 83
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1112; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD13A; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 13A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000447110"

<400> 5149
Leu Met Ala Arg Thr Ser Ala His Phe Ala Arg Leu Arg Asp Phe Ile
1 5 10 15

Lys Leu Glu Phe Pro Pro Gly Phe Pro Val Lys Ile Glu Ile Pro Leu
20 25 30

Phe His Val Leu Asn Ala Arg Ile Thr Phe Gly Asn Val Asn Gly Cys
35 40 45

Ser Thr Ala Glu Glu Ser Val Ser Gln Asn Val Glu Gly Thr Gln Ala
50 55 60

Asp Ser Gly Thr Phe Arg Thr Ser Phe Glu Trp Arg Asp Gln Pro Asp
65 70 75 80

Lys His Leu

<210> 5150
<211> 301
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1112; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD13A; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 13A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000449781"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5150
Xaa Ile Trp Lys Ser Gly Ala Lys Leu Arg Val Asp Ile Thr Leu Leu
1 5 10 15

Gly Phe Glu Asn Met Ser Trp Ile Arg Gly Arg Arg Ser Phe Ile Phe
20 25 30

Lys Gly Glu Asp Asn Trp Ala Glu Leu Met Glu Val Asn His Asp Asp
35 40 45

Lys Val Val Thr Thr Glu Arg Phe Asp Leu Ser Gln Glu Met Glu Arg
50 55 60

Leu Thr Leu Asp Leu Met Lys Pro Lys Ser Arg Glu Val Glu Arg Arg
65 70 75 80

Leu Thr Ser Pro Val Ile Asn Thr Ser Leu Asp Thr Lys Asn Ile Ala
85 90 95

Phe Glu Arg Thr Lys Ser Gly Phe Trp Gly Trp Arg Thr Asp Lys Ala
100 105 110

Glu Val Val Asn Gly Tyr Glu Ala Lys Val Tyr Thr Val Asn Asn Val
115 120 125

Asn Val Ile Thr Lys Ile Arg Thr Glu His Leu Thr Glu Glu Glu Lys
130 135 140

Lys Arg Tyr Lys Asp Arg Asn Pro Leu Glu Ser Leu Leu Gly Thr Val
145 150 155 160

Glu His Gln Phe Gly Ala Gln Gly Asp Leu Thr Thr Glu Cys Ala Thr
165 170 175

Ala Asn Asn Pro Thr Ala Ile Thr Pro Asp Glu Tyr Phe Asn Glu Glu

```
            180                 185                 190

Phe Asp Leu Lys Asp Arg Asp Ile Gly Arg Pro Lys Glu Leu Thr Ile
        195                 200                 205

Arg Thr Gln Lys Phe Lys Ala Met Leu Trp Met Cys Glu Glu Phe Pro
    210                 215                 220

Leu Ser Leu Val Glu Gln Val Ile Pro Ile Ile Asp Leu Met Ala Arg
225                 230                 235                 240

Thr Ser Ala His Phe Ala Arg Leu Arg Asp Phe Ile Lys Leu Glu Phe
                245                 250                 255

Pro Pro Gly Phe Pro Val Lys Ile Glu Ile Pro Leu Phe His Val Leu
            260                 265                 270

Asn Ala Arg Ile Thr Phe Gly Asn Val Asn Gly Cys Ser Thr Ala Glu
        275                 280                 285

Glu Ser Val Ser Gln Asn Val Glu Gly Thr Gln Ala Asp
    290                 295                 300


<210> 5151
<211> 173
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1112; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD13A; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 13A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000474172"

<400> 5151
Met Val Tyr Thr Val Leu Gln His Arg Asp Tyr His Asn Thr Ser Met
1               5                   10                  15
```

```
Ala Leu Glu Gly Val Pro Glu Leu Leu Gln Lys Ile Leu Glu Ala Pro
            20                  25                  30

Asp Phe Tyr Val Gln Met Lys Trp Glu Phe Thr Ser Trp Val Pro Leu
        35                  40                  45

Val Ser Arg Ile Cys Pro Asn Asp Val Cys Arg Ile Trp Lys Ser Gly
    50                  55                  60

Ala Lys Leu Arg Val Asp Ile Thr Leu Leu Gly Phe Glu Asn Met Ser
65                  70                  75                  80

Trp Ile Arg Gly Arg Arg Ser Phe Ile Phe Lys Gly Glu Asp Asn Trp
                85                  90                  95

Ala Glu Leu Met Glu Val Asn His Asp Asp Lys Val Val Thr Thr Glu
            100                 105                 110

Arg Phe Asp Leu Ser Gln Glu Met Glu Arg Leu Thr Leu Asp Leu Met
        115                 120                 125

Lys Pro Lys Ser Arg Glu Val Glu Arg Arg Leu Thr Ser Pro Val Ile
    130                 135                 140

Asn Thr Ser Leu Asp Thr Lys Asn Ile Ala Phe Glu Arg Val Phe Arg
145                 150                 155                 160

Val Leu Lys Leu Thr Leu Leu Gln Leu Thr Val Cys Ser
                165                 170
```

<210> 5152
<211> 173
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1112; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD13A; "

<220>
<221> source
<223> /note="Gene Name:

ankyrin repeat domain 13A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000474745"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5152

```
Xaa Pro Asp Glu Tyr Phe Asn Glu Glu Phe Asp Leu Lys Asp Arg Asp
1               5                  10                  15

Ile Gly Arg Pro Lys Glu Leu Thr Ile Arg Thr Gln Lys Phe Lys Ala
            20                  25                  30

Met Leu Trp Met Cys Glu Glu Phe Pro Leu Ser Leu Val Glu Gln Val
        35                  40                  45

Ile Pro Ile Ile Asp Leu Met Ala Arg Thr Ser Ala His Phe Ala Arg
    50                  55                  60

Leu Arg Asp Phe Ile Lys Leu Glu Phe Pro Pro Gly Phe Pro Val Lys
65                  70                  75                  80

Ile Glu Ile Pro Leu Phe His Val Leu Asn Ala Arg Ile Thr Phe Gly
                85                  90                  95

Asn Val Asn Gly Cys Ser Thr Ala Glu Glu Ser Val Ser Gln Asn Val
            100                 105                 110

Glu Gly Thr Gln Ala Asp Ser Ala Ser His Ile Thr Asn Phe Glu Val
        115                 120                 125

Asp Gln Ser Val Phe Glu Ile Pro Glu Ser Tyr Tyr Val Gln Asp Asn
    130                 135                 140

Gly Arg Asn Val His Leu Gln Asp Glu Asp Tyr Glu Ile Met Gln Phe
145                 150                 155                 160

Ala Ile Gln Gln Ile Leu Gln Leu Ser Leu Thr Asp Lys
                165                 170
```

<210> 5153
<211> 626
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1113; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD13B; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 13B; "

<220>
<221> source
<223> /note="Uniprot ID: Q86YJ7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000378328"

<400> 5153

Met	Ile	Pro	Ala	Asn	Ala	Ser	Ala	Arg	Lys	Gly	Pro	Glu	Gly	Lys	Tyr
1				5				10					15		
Pro	Leu	His	Tyr	Leu	Val	Trp	His	Asn	Arg	His	Arg	Glu	Leu	Glu	Lys
			20					25					30		
Glu	Val	Arg	Ala	Gly	Gln	Val	Asp	Ile	Glu	Gln	Leu	Asp	Pro	Arg	Gly
		35					40					45			
Arg	Thr	Pro	Leu	His	Leu	Ala	Thr	Thr	Leu	Gly	His	Leu	Glu	Cys	Ala
	50					55					60				
Arg	Val	Leu	Leu	Ala	His	Gly	Ala	Asp	Val	Gly	Arg	Glu	Asn	Arg	Ser
65					70					75					80
Gly	Trp	Thr	Val	Leu	Gln	Glu	Ala	Val	Ser	Thr	Arg	Asp	Leu	Glu	Leu
				85					90					95	
Val	Gln	Leu	Val	Leu	Arg	Tyr	Arg	Asp	Tyr	Gln	Arg	Val	Val	Lys	Arg
			100					105					110		
Leu	Ala	Gly	Ile	Pro	Val	Leu	Leu	Glu	Lys	Leu	Arg	Lys	Ala	Gln	Asp
		115					120					125			

```
Phe Tyr Val Glu Met Lys Trp Glu Phe Thr Ser Trp Val Pro Leu Val
    130                 135                 140

Ser Lys Ile Cys Pro Ser Asp Thr Tyr Lys Val Trp Lys Ser Gly Gln
145                 150                 155                 160

Asn Leu Arg Val Asp Thr Thr Leu Leu Gly Phe Asp His Met Thr Trp
                165                 170                 175

Gln Arg Gly Asn Arg Ser Phe Val Phe Arg Gly Gln Asp Thr Ser Ala
            180                 185                 190

Val Val Met Glu Ile Asp His Asp Arg Arg Val Val Tyr Thr Glu Thr
        195                 200                 205

Leu Ala Leu Ala Gly Gln Asp Arg Glu Leu Leu Leu Ala Ala Ala Gln
    210                 215                 220

Pro Thr Glu Glu Gln Val Leu Ser Arg Leu Thr Ala Pro Val Val Thr
225                 230                 235                 240

Thr Gln Leu Asp Thr Lys Asn Ile Ser Phe Glu Arg Asn Lys Thr Gly
                245                 250                 255

Ile Leu Gly Trp Arg Ser Glu Lys Thr Glu Met Val Asn Gly Tyr Glu
            260                 265                 270

Ala Lys Val Tyr Gly Ala Ser Asn Val Glu Leu Ile Thr Arg Thr Arg
        275                 280                 285

Thr Glu His Leu Ser Glu Gln His Lys Gly Lys Val Lys Gly Cys Lys
    290                 295                 300

Thr Pro Leu Gln Ser Phe Leu Gly Ile Ala Glu Gln His Gly Gly Pro
305                 310                 315                 320

Gln Asn Gly Thr Leu Ile Thr Gln Thr Leu Ser Gln Ala Asn Pro Thr
                325                 330                 335

Ala Ile Thr Ala Glu Glu Tyr Phe Asn Pro Asn Phe Glu Leu Gly Asn
            340                 345                 350
```

```
Arg Asp Met Gly Arg Pro Met Glu Leu Thr Thr Lys Thr Gln Lys Phe
        355                 360                 365

Lys Ala Lys Leu Trp Leu Cys Glu Glu His Pro Leu Ser Leu Cys Glu
    370                 375                 380

Gln Val Ala Pro Ile Ile Asp Leu Met Ala Val Ser Asn Ala Leu Phe
385                 390                 395                 400

Ala Lys Leu Arg Asp Phe Ile Thr Leu Arg Leu Pro Pro Gly Phe Pro
                405                 410                 415

Val Lys Ile Glu Ile Pro Ile Phe His Ile Leu Asn Ala Arg Ile Thr
            420                 425                 430

Phe Gly Asn Leu Asn Gly Cys Asp Glu Pro Val Pro Ser Val Arg Gly
        435                 440                 445

Ser Pro Ser Ser Glu Thr Pro Ser Pro Gly Ser Asp Ser Ser Ser Val
    450                 455                 460

Ser Ser Ser Ser Ser Thr Thr Ser Cys Arg Gly Cys Glu Ile Ser Pro
465                 470                 475                 480

Ala Leu Phe Glu Ala Pro Arg Gly Tyr Ser Met Met Gly Gly Gln Arg
                485                 490                 495

Glu Ala Ala Thr Arg Asp Asp Asp Asp Asp Leu Leu Gln Phe Ala Ile
            500                 505                 510

Gln Gln Ser Leu Leu Glu Ala Gly Ser Glu Tyr Asp Gln Val Thr Ile
        515                 520                 525

Trp Glu Ala Leu Thr Asn Ser Lys Pro Gly Thr His Pro Met Ser Tyr
    530                 535                 540

Glu Gly Arg Arg Gln Asp Arg Ser Ala Pro Pro Thr Pro Gln Arg Gln
545                 550                 555                 560

Pro Ala Pro Pro Ala Ser Val Pro Ser Pro Arg Pro Ser Ser Gly Pro
                565                 570                 575
```

```
Gly Ser Gly Gly His Val Phe Arg Ser Tyr Asp Glu Gln Leu Arg Leu
            580                 585                 590

Ala Met Glu Leu Ser Ala Gln Glu Gln Glu Glu Arg Arg Arg Arg Ala
        595                 600                 605

Arg Gln Glu Glu Glu Glu Leu Glu Arg Ile Leu Arg Leu Ser Leu Thr
    610                 615                 620

Glu Gln
625
```

<210> 5154
<211> 626
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1113; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD13B; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 13B; "

<220>
<221> source
<223> /note="Uniprot ID: Q86YJ7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431958"

<400> 5154

```
Met Ile Pro Ala Asn Ala Ser Ala Arg Lys Gly Pro Glu Gly Lys Tyr
1               5                  10                  15

Pro Leu His Tyr Leu Val Trp His Asn Arg His Arg Glu Leu Glu Lys
            20                  25                  30

Glu Val Arg Ala Gly Gln Val Asp Ile Glu Gln Leu Asp Pro Arg Gly
        35                  40                  45

Arg Thr Pro Leu His Leu Ala Thr Thr Leu Gly His Leu Glu Cys Ala
    50                  55                  60
```

```
Arg Val Leu Leu Ala His Gly Ala Asp Val Gly Arg Glu Asn Arg Ser
65                  70                  75                  80

Gly Trp Thr Val Leu Gln Glu Ala Val Ser Thr Arg Asp Leu Glu Leu
                85                  90                  95

Val Gln Leu Val Leu Arg Tyr Arg Asp Tyr Gln Arg Val Val Lys Arg
            100                 105                 110

Leu Ala Gly Ile Pro Val Leu Leu Glu Lys Leu Arg Lys Ala Gln Asp
        115                 120                 125

Phe Tyr Val Glu Met Lys Trp Glu Phe Thr Ser Trp Val Pro Leu Val
    130                 135                 140

Ser Lys Ile Cys Pro Ser Asp Thr Tyr Lys Val Trp Lys Ser Gly Gln
145                 150                 155                 160

Asn Leu Arg Val Asp Thr Thr Leu Leu Gly Phe Asp His Met Thr Trp
                165                 170                 175

Gln Arg Gly Asn Arg Ser Phe Val Phe Arg Gly Gln Asp Thr Ser Ala
            180                 185                 190

Val Val Met Glu Ile Asp His Asp Arg Arg Val Val Tyr Thr Glu Thr
        195                 200                 205

Leu Ala Leu Ala Gly Gln Asp Arg Glu Leu Leu Leu Ala Ala Ala Gln
    210                 215                 220

Pro Thr Glu Glu Gln Val Leu Ser Arg Leu Thr Ala Pro Val Val Thr
225                 230                 235                 240

Thr Gln Leu Asp Thr Lys Asn Ile Ser Phe Glu Arg Asn Lys Thr Gly
                245                 250                 255

Ile Leu Gly Trp Arg Ser Glu Lys Thr Glu Met Val Asn Gly Tyr Glu
            260                 265                 270

Ala Lys Val Tyr Gly Ala Ser Asn Val Glu Leu Ile Thr Arg Thr Arg
        275                 280                 285
```

```
Thr Glu His Leu Ser Glu Gln His Lys Gly Lys Val Lys Gly Cys Lys
    290                 295                 300

Thr Pro Leu Gln Ser Phe Leu Gly Ile Ala Glu Gln His Gly Gly Pro
305                 310                 315                 320

Gln Asn Gly Thr Leu Ile Thr Gln Thr Leu Ser Gln Ala Asn Pro Thr
                325                 330                 335

Ala Ile Thr Ala Glu Glu Tyr Phe Asn Pro Asn Phe Glu Leu Gly Asn
            340                 345                 350

Arg Asp Met Gly Arg Pro Met Glu Leu Thr Thr Lys Thr Gln Lys Phe
        355                 360                 365

Lys Ala Lys Leu Trp Leu Cys Glu Glu His Pro Leu Ser Leu Cys Glu
    370                 375                 380

Gln Val Ala Pro Ile Ile Asp Leu Met Ala Val Ser Asn Ala Leu Phe
385                 390                 395                 400

Ala Lys Leu Arg Asp Phe Ile Thr Leu Arg Leu Pro Pro Gly Phe Pro
                405                 410                 415

Val Lys Ile Glu Ile Pro Ile Phe His Ile Leu Asn Ala Arg Ile Thr
            420                 425                 430

Phe Gly Asn Leu Asn Gly Cys Asp Glu Pro Val Pro Ser Val Arg Gly
        435                 440                 445

Ser Pro Ser Ser Glu Thr Pro Ser Pro Gly Ser Asp Ser Ser Ser Val
    450                 455                 460

Ser Ser Ser Ser Ser Thr Thr Ser Cys Arg Gly Cys Glu Ile Ser Pro
465                 470                 475                 480

Ala Leu Phe Glu Ala Pro Arg Gly Tyr Ser Met Met Gly Gly Gln Arg
                485                 490                 495

Glu Ala Ala Thr Arg Asp Asp Asp Asp Asp Leu Leu Gln Phe Ala Ile
            500                 505                 510
```

```
Gln Gln Ser Leu Leu Glu Ala Gly Ser Glu Tyr Asp Gln Val Thr Ile
        515                 520                 525

Trp Glu Ala Leu Thr Asn Ser Lys Pro Gly Thr His Pro Met Ser Tyr
    530                 535                 540

Glu Gly Arg Arg Gln Asp Arg Ser Ala Pro Pro Thr Pro Gln Arg Gln
545                 550                 555                 560

Pro Ala Pro Pro Ala Ser Val Pro Ser Pro Arg Pro Ser Ser Gly Pro
                565                 570                 575

Gly Ser Gly Gly His Val Phe Arg Ser Tyr Asp Glu Gln Leu Arg Leu
            580                 585                 590

Ala Met Glu Leu Ser Ala Gln Glu Gln Glu Glu Arg Arg Arg Arg Ala
        595                 600                 605

Arg Gln Glu Glu Glu Glu Leu Glu Arg Ile Leu Arg Leu Ser Leu Thr
    610                 615                 620

Glu Gln
625
```

<210> 5155
<211> 128
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1113; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD13B; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 13B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000465708"

<400> 5155

```
Glu Pro Val Pro Ser Val Arg Gly Ser Pro Ser Ser Glu Thr Pro Ser
1               5                   10                  15
```

```
Pro Gly Ser Asp Ser Ser Ser Val Ser Ser Ser Ser Ser Thr Thr Ser
            20                  25                  30

Cys Arg Gly Cys Glu Ile Ser Pro Ala Leu Phe Glu Ala Pro Arg Gly
        35                  40                  45

Tyr Ser Met Met Gly Gly Gln Arg Glu Ala Ala Thr Arg Asp Asp Asp
    50                  55                  60

Asp Asp Leu Leu Gln Phe Ala Ile Gln Gln Ser Leu Leu Glu Ala Gly
65                  70                  75                  80

Ser Glu Tyr Asp Gln Val Thr Ile Trp Glu Ala Leu Thr Asn Ser Lys
                85                  90                  95

Pro Gly Thr His Pro Met Ser Tyr Glu Gly Arg Arg Gln Asp Arg Ser
            100                 105                 110

Val Pro Ala Gly Pro Glu Arg Ile Leu Arg Arg Gly Ser Cys Leu Pro
        115                 120                 125


<210> 5156
<211> 68
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1113; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD13B; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 13B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467078"

<400> 5156
Met Lys Trp Glu Phe Thr Ser Trp Val Pro Leu Val Ser Lys Ile Cys
1               5                   10                  15
```

```
Pro Ser Asp Thr Tyr Lys Val Trp Lys Ser Gly Gln Asn Leu Arg Val
            20                  25                  30

Asp Thr Thr Leu Leu Gly Phe Asp His Met Thr Trp Gln Arg Gly Asn
        35                  40                  45

Arg Ser Phe Val Phe Arg Gly Gln Asp Thr Ser Ala Val Val Met Glu
    50                  55                  60

Ile Asp His Asp
65
```

<210> 5157
<211> 626
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1113; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD13B; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 13B; "

<220>
<221> source
<223> /note="Uniprot ID: Q86YJ7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000481530"

<400> 5157

```
Met Ile Pro Ala Asn Ala Ser Ala Arg Lys Gly Pro Glu Gly Lys Tyr
1               5                   10                  15

Pro Leu His Tyr Leu Val Trp His Asn Arg His Arg Glu Leu Glu Lys
            20                  25                  30

Glu Val Arg Ala Gly Gln Val Asp Ile Glu Gln Leu Asp Pro Arg Gly
        35                  40                  45

Arg Thr Pro Leu His Leu Ala Thr Thr Leu Gly His Leu Glu Cys Ala
    50                  55                  60
```

```
Arg Val Leu Leu Ala His Gly Ala Asp Val Gly Arg Glu Asn Arg Ser
65                  70                  75                  80

Gly Trp Thr Val Leu Gln Glu Ala Val Ser Thr Arg Asp Leu Glu Leu
                85                  90                  95

Val Gln Leu Val Leu Arg Tyr Arg Asp Tyr Gln Arg Val Val Lys Arg
            100                 105                 110

Leu Ala Gly Ile Pro Val Leu Leu Glu Lys Leu Arg Lys Ala Gln Asp
        115                 120                 125

Phe Tyr Val Glu Met Lys Trp Glu Phe Thr Ser Trp Val Pro Leu Val
    130                 135                 140

Ser Lys Ile Cys Pro Ser Asp Thr Tyr Lys Val Trp Lys Ser Gly Gln
145                 150                 155                 160

Asn Leu Arg Val Asp Thr Thr Leu Leu Gly Phe Asp His Met Thr Trp
                165                 170                 175

Gln Arg Gly Asn Arg Ser Phe Val Phe Arg Gly Gln Asp Thr Ser Ala
            180                 185                 190

Val Val Met Glu Ile Asp His Asp Arg Arg Val Val Tyr Thr Glu Thr
        195                 200                 205

Leu Ala Leu Ala Gly Gln Asp Arg Glu Leu Leu Leu Ala Ala Ala Gln
    210                 215                 220

Pro Thr Glu Glu Gln Val Leu Ser Arg Leu Thr Ala Pro Val Val Thr
225                 230                 235                 240

Thr Gln Leu Asp Thr Lys Asn Ile Ser Phe Glu Arg Asn Lys Thr Gly
                245                 250                 255

Ile Leu Gly Trp Arg Ser Glu Lys Thr Glu Met Val Asn Gly Tyr Glu
            260                 265                 270

Ala Lys Val Tyr Gly Ala Ser Asn Val Glu Leu Ile Thr Arg Thr Arg
        275                 280                 285
```

```
Thr Glu His Leu Ser Glu Gln His Lys Gly Lys Val Lys Gly Cys Lys
    290                 295                 300

Thr Pro Leu Gln Ser Phe Leu Gly Ile Ala Glu Gln His Gly Gly Pro
305                 310                 315                 320

Gln Asn Gly Thr Leu Ile Thr Gln Thr Leu Ser Gln Ala Asn Pro Thr
                325                 330                 335

Ala Ile Thr Ala Glu Glu Tyr Phe Asn Pro Asn Phe Glu Leu Gly Asn
            340                 345                 350

Arg Asp Met Gly Arg Pro Met Glu Leu Thr Thr Lys Thr Gln Lys Phe
        355                 360                 365

Lys Ala Lys Leu Trp Leu Cys Glu Glu His Pro Leu Ser Leu Cys Glu
    370                 375                 380

Gln Val Ala Pro Ile Ile Asp Leu Met Ala Val Ser Asn Ala Leu Phe
385                 390                 395                 400

Ala Lys Leu Arg Asp Phe Ile Thr Leu Arg Leu Pro Pro Gly Phe Pro
                405                 410                 415

Val Lys Ile Glu Ile Pro Ile Phe His Ile Leu Asn Ala Arg Ile Thr
            420                 425                 430

Phe Gly Asn Leu Asn Gly Cys Asp Glu Pro Val Pro Ser Val Arg Gly
        435                 440                 445

Ser Pro Ser Ser Glu Thr Pro Ser Pro Gly Ser Asp Ser Ser Ser Val
    450                 455                 460

Ser Ser Ser Ser Ser Thr Thr Ser Cys Arg Gly Cys Glu Ile Ser Pro
465                 470                 475                 480

Ala Leu Phe Glu Ala Pro Arg Gly Tyr Ser Met Met Gly Gly Gln Arg
                485                 490                 495

Glu Ala Ala Thr Arg Asp Asp Asp Asp Asp Leu Leu Gln Phe Ala Ile
            500                 505                 510
```

```
Gln Gln Ser Leu Leu Glu Ala Gly Ser Glu Tyr Asp Gln Val Thr Ile
        515                 520                 525

Trp Glu Ala Leu Thr Asn Ser Lys Pro Gly Thr His Pro Met Ser Tyr
    530                 535                 540

Glu Gly Arg Arg Gln Asp Arg Ser Ala Pro Pro Thr Pro Gln Arg Gln
545                 550                 555                 560

Pro Ala Pro Pro Ala Ser Val Pro Ser Pro Arg Pro Ser Ser Gly Pro
                565                 570                 575

Gly Ser Gly Gly His Val Phe Arg Ser Tyr Asp Glu Gln Leu Arg Leu
            580                 585                 590

Ala Met Glu Leu Ser Ala Gln Glu Gln Glu Glu Arg Arg Arg Arg Ala
        595                 600                 605

Arg Gln Glu Glu Glu Glu Leu Glu Arg Ile Leu Arg Leu Ser Leu Thr
    610                 615                 620

Glu Gln
625
```

<210> 5158
<211> 506
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1114; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD13C; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 13C; "

<220>
<221> source
<223> /note="Uniprot ID: Q8N6S4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000262346"

<400> 5158
Met Thr Gly Glu Lys Ile Arg Ser Leu Arg Arg Asp His Lys Pro Ser
1 5 10 15

Lys Glu Glu Gly Asp Leu Leu Glu Pro Gly Asp Glu Glu Ala Ala Ala
20 25 30

Ala Leu Gly Gly Thr Phe Thr Arg Ser Arg Ile Gly Lys Gly Gly Lys
35 40 45

Ala Cys His Lys Ile Phe Ser Asn His His His Arg Leu Gln Leu Lys
50 55 60

Ala Ala Pro Ala Ser Ser Asn Pro Pro Gly Ala Pro Ala Leu Pro Leu
65 70 75 80

His Asn Ser Ser Val Thr Ala Asn Ser Gln Ser Pro Ala Leu Leu Ala
85 90 95

Gly Thr Asn Pro Val Ala Val Val Ala Asp Gly Gly Ser Cys Pro Ala
100 105 110

His Tyr Pro Val His Glu Cys Val Phe Lys Gly Asp Val Arg Arg Leu
115 120 125

Ser Ser Leu Ile Arg Thr His Asn Ile Gly Gln Lys Asp Asn His Gly
130 135 140

Asn Thr Pro Leu His Leu Ala Val Met Leu Gly Asn Lys Val Thr Ala
145 150 155 160

Leu Leu Arg Lys Leu Lys Gln Gln Ser Arg Glu Ser Val Glu Glu Lys
165 170 175

Arg Pro Arg Leu Leu Lys Ala Leu Lys Glu Leu Gly Asp Phe Tyr Leu
180 185 190

Glu Leu His Trp Asp Phe Gln Ser Trp Val Pro Leu Leu Ser Arg Ile
195 200 205

Leu Pro Ser Asp Ala Cys Lys Ile Tyr Lys Gln Gly Ile Asn Ile Arg
210 215 220

```
Leu Asp Thr Thr Leu Ile Asp Phe Thr Asp Met Lys Cys Gln Arg Gly
225                 230                 235                 240

Asp Leu Ser Phe Ile Phe Asn Gly Asp Ala Ala Pro Ser Glu Ser Phe
                245                 250                 255

Val Val Leu Asp Asn Glu Gln Lys Val Tyr Gln Arg Ile His His Glu
            260                 265                 270

Glu Ser Glu Met Glu Thr Glu Glu Glu Val Asp Ile Leu Met Ser Ser
        275                 280                 285

Asp Ile Tyr Ser Ala Thr Leu Ser Thr Lys Ser Ile Ser Phe Thr Arg
    290                 295                 300

Ala Gln Thr Gly Trp Leu Phe Arg Glu Asp Lys Thr Glu Arg Val Gly
305                 310                 315                 320

Asn Phe Leu Ala Asp Phe Tyr Leu Val Asn Gly Leu Val Leu Glu Ser
                325                 330                 335

Arg Lys Arg Arg Glu His Leu Ser Glu Glu Asp Ile Leu Arg Asn Lys
            340                 345                 350

Ala Ile Met Glu Ser Leu Ser Lys Gly Gly Asn Ile Met Glu Gln Asn
        355                 360                 365

Phe Glu Pro Ile Arg Arg Gln Ser Leu Thr Pro Pro Pro Gln Asn Thr
    370                 375                 380

Ile Thr Trp Glu Glu Tyr Ile Ser Ala Glu Asn Gly Lys Ala Pro His
385                 390                 395                 400

Leu Gly Arg Glu Leu Val Cys Lys Glu Ser Lys Lys Thr Phe Lys Ala
                405                 410                 415

Thr Ile Ala Met Ser Gln Glu Phe Pro Leu Gly Ile Glu Leu Leu Leu
            420                 425                 430

Asn Val Leu Glu Val Val Ala Pro Phe Lys His Phe Asn Lys Leu Arg
        435                 440                 445
```

```
Glu Phe Val Gln Met Lys Leu Pro Pro Gly Phe Pro Val Lys Leu Asp
    450                 455                 460

Ile Pro Val Phe Pro Thr Ile Thr Ala Thr Val Thr Phe Gln Glu Phe
465                 470                 475                 480

Arg Tyr Asp Glu Phe Asp Gly Ser Ile Phe Thr Ile Pro Asp Asp Tyr
                485                 490                 495

Lys Glu Asp Pro Ser Arg Phe Pro Asp Leu
            500                 505
```

<210> 5159
<211> 541
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1114; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD13C; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 13C; "

<220>
<221> source
<223> /note="Uniprot ID: Q8N6S4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000359982"

<400> 5159

```
Met Thr Gly Glu Lys Ile Arg Ser Leu Arg Arg Asp His Lys Pro Ser
1               5                   10                  15

Lys Glu Glu Gly Asp Leu Leu Glu Pro Gly Asp Glu Glu Ala Ala Ala
            20                  25                  30

Ala Leu Gly Gly Thr Phe Thr Arg Ser Arg Ile Gly Lys Gly Gly Lys
        35                  40                  45

Ala Cys His Lys Ile Phe Ser Asn His His His Arg Leu Gln Leu Lys
    50                  55                  60
```

```
Ala Ala Pro Ala Ser Ser Asn Pro Pro Gly Ala Pro Ala Leu Pro Leu
65                  70                  75                  80

His Asn Ser Ser Val Thr Ala Asn Ser Gln Ser Pro Ala Leu Leu Ala
                85                  90                  95

Gly Thr Asn Pro Val Ala Val Val Ala Asp Gly Gly Ser Cys Pro Ala
            100                 105                 110

His Tyr Pro Val His Glu Cys Val Phe Lys Gly Asp Val Arg Arg Leu
        115                 120                 125

Ser Ser Leu Ile Arg Thr His Asn Ile Gly Gln Lys Asp Asn His Gly
    130                 135                 140

Asn Thr Pro Leu His Leu Ala Val Met Leu Gly Asn Lys Glu Cys Ala
145                 150                 155                 160

His Leu Leu Leu Ala His Asn Ala Pro Val Lys Val Lys Asn Ala Gln
                165                 170                 175

Gly Trp Ser Pro Leu Ala Glu Ala Ile Ser Tyr Gly Asp Arg Gln Met
            180                 185                 190

Ile Thr Ala Leu Leu Arg Lys Leu Lys Gln Gln Ser Arg Glu Ser Val
        195                 200                 205

Glu Glu Lys Arg Pro Arg Leu Leu Lys Ala Leu Lys Glu Leu Gly Asp
    210                 215                 220

Phe Tyr Leu Glu Leu His Trp Asp Phe Gln Ser Trp Val Pro Leu Leu
225                 230                 235                 240

Ser Arg Ile Leu Pro Ser Asp Ala Cys Lys Ile Tyr Lys Gln Gly Ile
                245                 250                 255

Asn Ile Arg Leu Asp Thr Thr Leu Ile Asp Phe Thr Asp Met Lys Cys
            260                 265                 270

Gln Arg Gly Asp Leu Ser Phe Ile Phe Asn Gly Asp Ala Ala Pro Ser
        275                 280                 285
```

```
Glu Ser Phe Val Val Leu Asp Asn Glu Gln Lys Val Tyr Gln Arg Ile
    290                 295                 300

His His Glu Glu Ser Glu Met Glu Thr Glu Glu Glu Val Asp Ile Leu
305                 310                 315                 320

Met Ser Ser Asp Ile Tyr Ser Ala Thr Leu Ser Thr Lys Ser Ile Ser
                325                 330                 335

Phe Thr Arg Ala Gln Thr Gly Trp Leu Phe Arg Glu Asp Lys Thr Glu
            340                 345                 350

Arg Val Gly Asn Phe Leu Ala Asp Phe Tyr Leu Val Asn Gly Leu Val
        355                 360                 365

Leu Glu Ser Arg Lys Arg Arg Glu His Leu Ser Glu Glu Asp Ile Leu
    370                 375                 380

Arg Asn Lys Ala Ile Met Glu Ser Leu Ser Lys Gly Gly Asn Ile Met
385                 390                 395                 400

Glu Gln Asn Phe Glu Pro Ile Arg Arg Gln Ser Leu Thr Pro Pro Pro
                405                 410                 415

Gln Asn Thr Ile Thr Trp Glu Glu Tyr Ile Ser Ala Glu Asn Gly Lys
            420                 425                 430

Ala Pro His Leu Gly Arg Glu Leu Val Cys Lys Glu Ser Lys Lys Thr
        435                 440                 445

Phe Lys Ala Thr Ile Ala Met Ser Gln Glu Phe Pro Leu Gly Ile Glu
    450                 455                 460

Leu Leu Leu Asn Val Leu Glu Val Val Ala Pro Phe Lys His Phe Asn
465                 470                 475                 480

Lys Leu Arg Glu Phe Val Gln Met Lys Leu Pro Pro Gly Phe Pro Val
                485                 490                 495

Lys Leu Asp Ile Pro Val Phe Pro Thr Ile Thr Ala Thr Val Thr Phe
            500                 505                 510
```

```
Gln Glu Phe Arg Tyr Asp Glu Phe Asp Gly Ser Ile Phe Thr Ile Pro
        515                 520                 525


Asp Asp Tyr Lys Glu Asp Pro Ser Arg Phe Pro Asp Leu
    530                 535                 540


<210> 5160
<211> 304
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1115; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD16; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 16; "

<220>
<221> source
<223> /note="Uniprot ID:  Q6P6B7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000352361"

<400> 5160
Met Ala Gln Pro Gly Asp Pro Arg Arg Leu Cys Arg Leu Val Gln Glu
1               5                   10                  15


Gly Arg Leu Arg Ala Leu Lys Glu Glu Leu Gln Ala Ala Gly Gly Cys
            20                  25                  30


Pro Gly Pro Ala Gly Asp Thr Leu Leu His Cys Ala Ala Arg His Gly
        35                  40                  45


His Arg Asp Val Leu Ala Tyr Leu Ala Glu Ala Trp Gly Met Asp Ile
    50                  55                  60


Glu Ala Thr Asn Arg Asp Tyr Lys Arg Pro Leu His Glu Ala Ala Ser
65                  70                  75                  80


Met Gly His Arg Asp Cys Val Arg Tyr Leu Leu Gly Arg Gly Ala Ala
                85                  90                  95
```

```
Val Asp Cys Leu Lys Lys Ala Asp Trp Thr Pro Leu Met Met Ala Cys
            100                 105                 110

Thr Arg Lys Asn Leu Gly Val Ile Gln Glu Leu Val Glu His Gly Ala
        115                 120                 125

Asn Pro Leu Leu Lys Asn Lys Asp Gly Trp Asn Ser Phe His Ile Ala
    130                 135                 140

Ser Arg Glu Gly Asp Pro Leu Ile Leu Gln Tyr Leu Leu Thr Val Cys
145                 150                 155                 160

Pro Gly Ala Trp Lys Thr Glu Ser Lys Ile Arg Arg Thr Pro Leu His
                165                 170                 175

Thr Ala Ala Met His Gly His Leu Glu Ala Val Lys Val Leu Leu Lys
            180                 185                 190

Arg Cys Gln Tyr Glu Pro Asp Tyr Arg Asp Asn Cys Gly Val Thr Ala
        195                 200                 205

Leu Met Asp Ala Ile Gln Cys Gly His Ile Asp Val Ala Arg Leu Leu
    210                 215                 220

Leu Asp Glu His Gly Ala Cys Leu Ser Ala Glu Asp Ser Leu Gly Ala
225                 230                 235                 240

Gln Ala Leu His Arg Ala Ala Val Thr Gly Gln Asp Glu Ala Ile Arg
                245                 250                 255

Phe Leu Val Ser Glu Leu Gly Val Asp Val Asp Val Arg Ala Thr Ser
            260                 265                 270

Thr His Leu Thr Ala Leu His Tyr Ala Ala Lys Pro Cys Ile Trp Pro
        275                 280                 285

Val Gln Val Ser Thr Trp Pro Val Pro Ser Phe Ser Cys Ser Arg Asp
    290                 295                 300
```

<210> 5161
<211> 361
<212> PRT

<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1115; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD16; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 16; "

<220>
<221> source
<223> /note="Uniprot ID: Q6P6B7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000369434"

<400> 5161

```
Met Ala Gln Pro Gly Asp Pro Arg Arg Leu Cys Arg Leu Val Gln Glu
1               5                  10                  15

Gly Arg Leu Arg Ala Leu Lys Glu Glu Leu Gln Ala Ala Gly Gly Cys
            20                  25                  30

Pro Gly Pro Ala Gly Asp Thr Leu Leu His Cys Ala Ala Arg His Gly
        35                  40                  45

His Arg Asp Val Leu Ala Tyr Leu Ala Glu Ala Trp Gly Met Asp Ile
    50                  55                  60

Glu Ala Thr Asn Arg Asp Tyr Lys Arg Pro Leu His Glu Ala Ala Ser
65                  70                  75                  80

Met Gly His Arg Asp Cys Val Arg Tyr Leu Leu Gly Arg Gly Ala Ala
                85                  90                  95

Val Asp Cys Leu Lys Lys Ala Asp Trp Thr Pro Leu Met Met Ala Cys
            100                 105                 110

Thr Arg Lys Asn Leu Gly Val Ile Gln Glu Leu Val Glu His Gly Ala
        115                 120                 125

Asn Pro Leu Leu Lys Asn Lys Asp Gly Trp Asn Ser Phe His Ile Ala
```

```
    130                 135                 140

Ser Arg Glu Gly Asp Pro Leu Ile Leu Gln Tyr Leu Leu Thr Val Cys
145                 150                 155                 160

Pro Gly Ala Trp Lys Thr Glu Ser Lys Ile Arg Arg Thr Pro Leu His
                165                 170                 175

Thr Ala Ala Met His Gly His Leu Glu Ala Val Lys Val Leu Leu Lys
            180                 185                 190

Arg Cys Gln Tyr Glu Pro Asp Tyr Arg Asp Asn Cys Gly Val Thr Ala
        195                 200                 205

Leu Met Asp Ala Ile Gln Cys Gly His Ile Asp Val Ala Arg Leu Leu
    210                 215                 220

Leu Asp Glu His Gly Ala Cys Leu Ser Ala Glu Asp Ser Leu Gly Ala
225                 230                 235                 240

Gln Ala Leu His Arg Ala Ala Val Thr Gly Gln Asp Glu Ala Ile Arg
                245                 250                 255

Phe Leu Val Ser Glu Leu Gly Val Asp Val Asp Val Arg Ala Thr Ser
            260                 265                 270

Thr His Leu Thr Ala Leu His Tyr Ala Ala Lys Glu Gly His Thr Ser
        275                 280                 285

Thr Ile Gln Thr Leu Leu Ser Leu Gly Ala Asp Ile Asn Ser Lys Asp
    290                 295                 300

Glu Lys Asn Arg Ser Ala Leu His Leu Ala Cys Ala Gly Gln His Leu
305                 310                 315                 320

Ala Cys Ala Lys Phe Leu Leu Gln Ser Gly Leu Lys Asp Ser Glu Asp
                325                 330                 335

Ile Thr Gly Thr Leu Ala Gln Gln Leu Pro Arg Arg Ala Asp Val Leu
            340                 345                 350

Gln Gly Ser Gly His Ser Ala Met Thr
        355                 360
```

<210> 5162
<211> 361
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1115; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD16; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 16; "

<220>
<221> source
<223> /note="Uniprot ID: Q6P6B7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000369436"

<400> 5162
Met Ala Gln Pro Gly Asp Pro Arg Arg Leu Cys Arg Leu Val Gln Glu
1   5   10   15

Gly Arg Leu Arg Ala Leu Lys Glu Glu Leu Gln Ala Ala Gly Gly Cys
            20   25   30

Pro Gly Pro Ala Gly Asp Thr Leu Leu His Cys Ala Ala Arg His Gly
        35   40   45

His Arg Asp Val Leu Ala Tyr Leu Ala Glu Ala Trp Gly Met Asp Ile
    50   55   60

Glu Ala Thr Asn Arg Asp Tyr Lys Arg Pro Leu His Glu Ala Ala Ser
65   70   75   80

Met Gly His Arg Asp Cys Val Arg Tyr Leu Leu Gly Arg Gly Ala Ala
                85   90   95

Val Asp Cys Leu Lys Lys Ala Asp Trp Thr Pro Leu Met Met Ala Cys
            100   105   110

```
Thr Arg Lys Asn Leu Gly Val Ile Gln Glu Leu Val Glu His Gly Ala
        115                 120                 125

Asn Pro Leu Leu Lys Asn Lys Asp Gly Trp Asn Ser Phe His Ile Ala
    130                 135                 140

Ser Arg Glu Gly Asp Pro Leu Ile Leu Gln Tyr Leu Leu Thr Val Cys
145                 150                 155                 160

Pro Gly Ala Trp Lys Thr Glu Ser Lys Ile Arg Arg Thr Pro Leu His
                165                 170                 175

Thr Ala Ala Met His Gly His Leu Glu Ala Val Lys Val Leu Leu Lys
            180                 185                 190

Arg Cys Gln Tyr Glu Pro Asp Tyr Arg Asp Asn Cys Gly Val Thr Ala
        195                 200                 205

Leu Met Asp Ala Ile Gln Cys Gly His Ile Asp Val Ala Arg Leu Leu
    210                 215                 220

Leu Asp Glu His Gly Ala Cys Leu Ser Ala Glu Asp Ser Leu Gly Ala
225                 230                 235                 240

Gln Ala Leu His Arg Ala Ala Val Thr Gly Gln Asp Glu Ala Ile Arg
                245                 250                 255

Phe Leu Val Ser Glu Leu Gly Val Asp Val Asp Val Arg Ala Thr Ser
            260                 265                 270

Thr His Leu Thr Ala Leu His Tyr Ala Ala Lys Glu Gly His Thr Ser
        275                 280                 285

Thr Ile Gln Thr Leu Leu Ser Leu Gly Ala Asp Ile Asn Ser Lys Asp
    290                 295                 300

Glu Lys Asn Arg Ser Ala Leu His Leu Ala Cys Ala Gly Gln His Leu
305                 310                 315                 320

Ala Cys Ala Lys Phe Leu Leu Gln Ser Gly Leu Lys Asp Ser Glu Asp
                325                 330                 335

Ile Thr Gly Thr Leu Ala Gln Gln Leu Pro Arg Arg Ala Asp Val Leu
```

340 345 350

Gln Gly Ser Gly His Ser Ala Met Thr
355 360

<210> 5163
<211> 2352
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1116; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD17; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 17; "

<220>
<221> source
<223> /note="Uniprot ID: O75179; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000332265"

<400> 5163
Met Glu Lys Ala Thr Val Pro Val Ala Ala Ala Thr Ala Ala Glu Gly
1 5 10 15

Glu Gly Ser Pro Pro Ala Val Ala Ala Val Ala Gly Pro Pro Ala Ala
20 25 30

Ala Glu Val Gly Gly Gly Val Gly Gly Ser Ser Arg Ala Arg Ser Ala
35 40 45

Ser Ser Pro Arg Gly Met Val Arg Val Cys Asp Leu Leu Leu Lys Lys
50 55 60

Lys Pro Pro Gln Gln Gln His His Lys Ala Lys Arg Asn Arg Thr Cys
65 70 75 80

Arg Pro Pro Ser Ser Ser Glu Ser Ser Ser Asp Ser Asp Asn Ser Gly
85 90 95

```
Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Thr Ser
            100                 105                 110

Ser Asn Asn Ser Glu Glu Glu Glu Asp Asp Asp Asp Glu Glu Glu Glu
        115                 120                 125

Val Ser Glu Val Glu Ser Phe Ile Leu Asp Gln Asp Asp Leu Glu Asn
    130                 135                 140

Pro Met Leu Glu Thr Ala Ser Lys Leu Leu Leu Ser Gly Thr Ala Asp
145                 150                 155                 160

Gly Ala Asp Leu Arg Thr Val Asp Pro Glu Thr Gln Ala Arg Leu Glu
                165                 170                 175

Ala Leu Leu Glu Ala Ala Gly Ile Gly Lys Leu Ser Thr Ala Asp Gly
            180                 185                 190

Lys Ala Phe Ala Asp Pro Glu Val Leu Arg Arg Leu Thr Ser Ser Val
        195                 200                 205

Ser Cys Ala Leu Asp Glu Ala Ala Ala Ala Leu Thr Arg Met Arg Ala
    210                 215                 220

Glu Ser Thr Ala Asn Ala Gly Gln Ser Asp Asn Arg Ser Leu Ala Glu
225                 230                 235                 240

Ala Cys Ser Glu Gly Asp Val Asn Ala Val Arg Lys Leu Leu Ile Glu
                245                 250                 255

Gly Arg Ser Val Asn Glu His Thr Glu Glu Gly Glu Ser Leu Leu Cys
            260                 265                 270

Leu Ala Cys Ser Ala Gly Tyr Tyr Glu Leu Ala Gln Val Leu Leu Ala
        275                 280                 285

Met His Ala Asn Val Glu Asp Arg Gly Ile Lys Gly Asp Ile Thr Pro
    290                 295                 300

Leu Met Ala Ala Ala Asn Gly Gly His Val Lys Ile Val Lys Leu Leu
305                 310                 315                 320
```

```
Leu Ala His Lys Ala Asp Val Asn Ala Gln Ser Ser Thr Gly Asn Thr
                325                 330                 335

Ala Leu Thr Tyr Ala Cys Ala Gly Gly Tyr Val Asp Val Val Lys Val
            340                 345                 350

Leu Leu Glu Ser Gly Ala Ser Ile Glu Asp His Asn Glu Asn Gly His
        355                 360                 365

Thr Pro Leu Met Glu Ala Gly Ser Ala Gly His Val Glu Val Ala Arg
    370                 375                 380

Leu Leu Leu Glu Asn Gly Ala Gly Ile Asn Thr His Ser Asn Glu Phe
385                 390                 395                 400

Lys Glu Ser Ala Leu Thr Leu Ala Cys Tyr Lys Gly His Leu Glu Met
                405                 410                 415

Val Arg Phe Leu Leu Glu Ala Gly Ala Asp Gln Glu His Lys Thr Asp
            420                 425                 430

Glu Met His Thr Ala Leu Met Glu Ala Cys Met Asp Gly His Val Glu
        435                 440                 445

Val Ala Arg Leu Leu Leu Asp Ser Gly Ala Gln Val Asn Met Pro Ala
    450                 455                 460

Asp Ser Phe Glu Ser Pro Leu Thr Leu Ala Ala Cys Gly Gly His Val
465                 470                 475                 480

Glu Leu Ala Ala Leu Leu Ile Glu Arg Gly Ala Ser Leu Glu Glu Val
                485                 490                 495

Asn Asp Glu Gly Tyr Thr Pro Leu Met Glu Ala Ala Arg Glu Gly His
            500                 505                 510

Glu Glu Met Val Ala Leu Leu Leu Gly Gln Gly Ala Asn Ile Asn Ala
        515                 520                 525

Gln Thr Glu Glu Thr Gln Glu Thr Ala Leu Thr Leu Ala Cys Cys Gly
    530                 535                 540

Gly Phe Leu Glu Val Ala Asp Phe Leu Ile Lys Ala Gly Ala Asp Ile
```

545 550 555 560

Glu Leu Gly Cys Ser Thr Pro Leu Met Glu Ala Ala Gln Glu Gly His
565 570 575

Leu Glu Leu Val Lys Tyr Leu Leu Ala Ala Gly Ala Asn Val His Ala
580 585 590

Thr Thr Ala Thr Gly Asp Thr Ala Leu Thr Tyr Ala Cys Glu Asn Gly
595 600 605

His Thr Asp Val Ala Asp Val Leu Leu Gln Ala Gly Ala Asp Leu Glu
610 615 620

His Glu Ser Glu Gly Gly Arg Thr Pro Leu Met Lys Ala Ala Arg Ala
625 630 635 640

Gly His Val Cys Thr Val Gln Phe Leu Ile Ser Lys Gly Ala Asn Val
645 650 655

Asn Arg Thr Thr Ala Asn Asn Asp His Thr Val Leu Ser Leu Ala Cys
660 665 670

Ala Gly Gly His Leu Ala Val Val Glu Leu Leu Leu Ala His Gly Ala
675 680 685

Asp Pro Thr His Arg Leu Lys Asp Gly Ser Thr Met Leu Ile Glu Ala
690 695 700

Ala Lys Gly Gly His Thr Ser Val Val Cys Tyr Leu Leu Asp Tyr Pro
705 710 715 720

Asn Asn Leu Leu Ser Ala Pro Pro Pro Asp Val Thr Gln Leu Thr Pro
725 730 735

Pro Ser His Asp Leu Asn Arg Ala Pro Arg Val Pro Val Gln Ala Leu
740 745 750

Pro Met Val Val Pro Pro Gln Glu Pro Asp Lys Pro Pro Ala Asn Val
755 760 765

Ala Thr Thr Leu Pro Ile Arg Asn Lys Ala Val Ser Gly Arg Ala Ser
770 775 780

```
Ala Met Ser Asn Thr Pro Thr His Ser Ile Ala Ala Ser Ile Ser Gln
785                 790                 795                 800

Pro Gln Thr Pro Thr Pro Ser Pro Ile Ile Ser Pro Ser Ala Met Leu
                805                 810                 815

Pro Ile Tyr Pro Ala Ile Asp Ile Asp Ala Gln Thr Glu Ser Asn His
            820                 825                 830

Asp Thr Ala Leu Thr Leu Ala Cys Ala Gly Gly His Glu Glu Leu Val
        835                 840                 845

Gln Thr Leu Leu Glu Arg Gly Ala Ser Ile Glu His Arg Asp Lys Lys
    850                 855                 860

Gly Phe Thr Pro Leu Ile Leu Ala Ala Thr Ala Gly His Val Gly Val
865                 870                 875                 880

Val Glu Ile Leu Leu Asp Asn Gly Ala Asp Ile Glu Ala Gln Ser Glu
                885                 890                 895

Arg Thr Lys Asp Thr Pro Leu Ser Leu Ala Cys Ser Gly Gly Arg Gln
            900                 905                 910

Glu Val Val Glu Leu Leu Leu Ala Arg Gly Ala Asn Lys Glu His Arg
        915                 920                 925

Asn Val Ser Asp Tyr Thr Pro Leu Ser Leu Ala Ala Ser Gly Gly Tyr
    930                 935                 940

Val Asn Ile Ile Lys Ile Leu Leu Asn Ala Gly Ala Glu Ile Asn Ser
945                 950                 955                 960

Arg Thr Gly Ser Lys Leu Gly Ile Ser Pro Leu Met Leu Ala Ala Met
                965                 970                 975

Asn Gly His Thr Ala Ala Val Lys Leu Leu Leu Asp Met Gly Ser Asp
            980                 985                 990

Ile Asn Ala Gln Ile Glu Thr Asn  Arg Asn Thr Ala Leu  Thr Leu
Ala
        995                 1000                1005
```

```
Cys Phe  Gln Gly Arg Thr Glu  Val Val Ser Leu Leu  Leu Asp Arg
    1010                1015                1020

Lys Ala  Asn Val Glu His Arg  Ala Lys Thr Gly Leu  Thr Pro Leu
    1025                1030                1035

Met Glu  Ala Ala Ser Gly Gly  Tyr Ala Glu Val Gly  Arg Val Leu
    1040                1045                1050

Leu Asp  Lys Gly Ala Asp Val  Asn Ala Pro Pro Val  Pro Ser Ser
    1055                1060                1065

Arg Asp  Thr Ala Leu Thr Ile  Ala Ala Asp Lys Gly  His Tyr Lys
    1070                1075                1080

Phe Cys  Glu Leu Leu Ile Gly  Arg Gly Ala His Ile  Asp Val Arg
    1085                1090                1095

Asn Lys  Lys Gly Asn Thr Pro  Leu Trp Leu Ala Ala  Asn Gly Gly
    1100                1105                1110

His Leu  Asp Val Val Gln Leu  Leu Val Gln Ala Gly  Ala Asp Val
    1115                1120                1125

Asp Ala  Ala Asp Asn Arg Lys  Ile Thr Pro Leu Met  Ala Ala Phe
    1130                1135                1140

Arg Lys  Gly His Val Lys Val  Val Arg Tyr Leu Val  Lys Glu Val
    1145                1150                1155

Asn Gln  Phe Pro Ser Asp Ser  Glu Cys Met Arg Tyr  Ile Ala Thr
    1160                1165                1170

Ile Thr  Asp Lys Glu Met Leu  Lys Lys Cys His Leu  Cys Met Glu
    1175                1180                1185

Ser Ile  Val Gln Ala Lys Asp  Arg Gln Ala Ala Glu  Ala Asn Lys
    1190                1195                1200

Asn Ala  Ser Ile Leu Leu Glu  Glu Leu Asp Leu Glu  Lys Leu Arg
    1205                1210                1215
```

```
Glu Glu  Ser Arg Arg Leu Ala  Leu Ala Ala Lys Arg  Glu Lys Arg
    1220                 1225                 1230

Lys Glu  Lys Arg Arg Lys Lys  Lys Glu Glu Gln Arg  Arg Lys Leu
    1235                 1240                 1245

Glu Glu  Ile Glu Ala Lys Asn  Lys Glu Asn Phe Glu  Leu Gln Ala
    1250                 1255                 1260

Ala Gln  Glu Lys Glu Lys Leu  Lys Val Glu Asp Glu  Pro Glu Val
    1265                 1270                 1275

Leu Thr  Glu Pro Pro Ser Ala  Thr Thr Thr Thr Thr  Ile Gly Ile
    1280                 1285                 1290

Ser Ala  Thr Trp Thr Thr Leu  Ala Gly Ser His Gly  Lys Arg Asn
    1295                 1300                 1305

Asn Thr  Ile Thr Thr Thr Ser  Ser Lys Arg Lys Asn  Arg Lys Asn
    1310                 1315                 1320

Lys Ile  Thr Pro Glu Asn Val  Gln Ile Ile Phe Asp  Asp Pro Leu
    1325                 1330                 1335

Pro Ile  Ser Tyr Ser Gln Pro  Glu Lys Val Asn Gly  Glu Ser Lys
    1340                 1345                 1350

Ser Ser  Ser Thr Ser Glu Ser  Gly Asp Ser Asp Asn  Met Arg Ile
    1355                 1360                 1365

Ser Ser  Cys Ser Asp Glu Ser  Ser Asn Ser Asn Ser  Ser Arg Lys
    1370                 1375                 1380

Ser Asp  Asn His Ser Pro Ala  Val Val Thr Thr Thr  Val Ser Ser
    1385                 1390                 1395

Lys Lys  Gln Pro Ser Val Leu  Val Thr Phe Pro Lys  Glu Glu Arg
    1400                 1405                 1410

Lys Ser  Val Ser Gly Lys Ala  Ser Ile Lys Leu Ser  Glu Thr Ile
    1415                 1420                 1425
```

Ser Glu Gly Thr Ser Asn Ser Leu Ser Thr Cys Thr Lys Ser Gly
1430 1435 1440

Pro Ser Pro Leu Ser Ser Pro Asn Gly Lys Leu Thr Val Ala Ser
1445 1450 1455

Pro Lys Arg Gly Gln Lys Arg Glu Glu Gly Trp Lys Glu Val Val
1460 1465 1470

Arg Arg Ser Lys Lys Val Ser Val Pro Ser Thr Val Ile Ser Arg
1475 1480 1485

Val Ile Gly Arg Gly Gly Cys Asn Ile Asn Ala Ile Arg Glu Phe
1490 1495 1500

Thr Gly Ala His Ile Asp Ile Asp Lys Gln Lys Asp Lys Thr Gly
1505 1510 1515

Asp Arg Ile Ile Thr Ile Arg Gly Gly Thr Glu Ser Thr Arg Gln
1520 1525 1530

Ala Thr Gln Leu Ile Asn Ala Leu Ile Lys Asp Pro Asp Lys Glu
1535 1540 1545

Ile Asp Glu Leu Ile Pro Lys Asn Arg Leu Lys Ser Ser Ser Ala
1550 1555 1560

Asn Ser Lys Ile Gly Ser Ser Ala Pro Thr Thr Thr Ala Ala Asn
1565 1570 1575

Thr Ser Leu Met Gly Ile Lys Met Thr Thr Val Ala Leu Ser Ser
1580 1585 1590

Thr Ser Gln Thr Ala Thr Ala Leu Thr Val Pro Ala Ile Ser Ser
1595 1600 1605

Ala Ser Thr His Lys Thr Ile Lys Asn Pro Val Asn Asn Val Arg
1610 1615 1620

Pro Gly Phe Pro Val Ser Leu Pro Leu Ala Tyr Pro Pro Pro Gln
1625 1630 1635

Phe Ala His Ala Leu Leu Ala Ala Gln Thr Phe Gln Gln Ile Arg

1640 1645 1650

Pro Pro Arg Leu Pro Met Thr His Phe Gly Gly Thr Phe Pro Pro
1655 1660 1665

Ala Gln Ser Thr Trp Gly Pro Phe Pro Val Arg Pro Leu Ser Pro
1670 1675 1680

Ala Arg Ala Thr Asn Ser Pro Lys Pro His Met Val Pro Arg His
1685 1690 1695

Ser Asn Gln Asn Ser Ser Gly Ser Gln Val Asn Ser Ala Gly Ser
1700 1705 1710

Leu Thr Ser Ser Pro Thr Thr Thr Thr Ser Ser Ser Ala Ser Thr
1715 1720 1725

Val Pro Gly Thr Ser Thr Asn Gly Ser Pro Ser Ser Pro Ser Val
1730 1735 1740

Arg Arg Gln Leu Phe Val Thr Val Val Lys Thr Ser Asn Ala Thr
1745 1750 1755

Thr Thr Thr Val Thr Thr Thr Ala Ser Asn Asn Asn Thr Ala Pro
1760 1765 1770

Thr Asn Ala Thr Tyr Pro Met Pro Thr Ala Lys Glu His Tyr Pro
1775 1780 1785

Val Ser Ser Pro Ser Ser Pro Ser Pro Pro Ala Gln Pro Gly Gly
1790 1795 1800

Val Ser Arg Asn Ser Pro Leu Asp Cys Gly Ser Ala Ser Pro Asn
1805 1810 1815

Lys Val Ala Ser Ser Ser Glu Gln Glu Ala Gly Ser Pro Pro Val
1820 1825 1830

Val Glu Thr Thr Asn Thr Arg Pro Pro Asn Ser Ser Ser Ser Ser
1835 1840 1845

Gly Ser Ser Ser Ala His Ser Asn Gln Gln Gln Pro Pro Gly Ser
1850 1855 1860

```
Val Ser  Gln Glu Pro Arg Pro  Pro Leu Gln Gln Ser  Gln Val Pro
    1865                1870                1875

Pro Pro  Glu Val Arg Met Thr  Val Pro Pro Leu Ala  Thr Ser Ser
    1880                1885                1890

Ala Pro  Val Ala Val Pro Ser  Thr Ala Pro Val Thr  Tyr Pro Met
    1895                1900                1905

Pro Gln  Thr Pro Met Gly Cys  Pro Gln Pro Thr Pro  Lys Met Glu
    1910                1915                1920

Thr Pro  Ala Ile Arg Pro Pro  Pro His Gly Thr Thr  Ala Pro His
    1925                1930                1935

Lys Asn  Ser Ala Ser Val Gln  Asn Ser Ser Val Ala  Val Leu Ser
    1940                1945                1950

Val Asn  His Ile Lys Arg Pro  His Ser Val Pro Ser  Ser Val Gln
    1955                1960                1965

Leu Pro  Ser Thr Leu Ser Thr  Gln Ser Ala Cys Gln  Asn Ser Val
    1970                1975                1980

His Pro  Ala Asn Lys Pro Ile  Ala Pro Asn Phe Ser  Ala Pro Leu
    1985                1990                1995

Pro Phe  Gly Pro Phe Ser Thr  Leu Phe Glu Asn Ser  Pro Thr Ser
    2000                2005                2010

Ala His  Ala Phe Trp Gly Gly  Ser Val Val Ser Ser  Gln Ser Thr
    2015                2020                2025

Pro Glu  Ser Met Leu Ser Gly  Lys Ser Ser Tyr Leu  Pro Asn Ser
    2030                2035                2040

Asp Pro  Leu His Gln Ser Asp  Thr Ser Lys Ala Pro  Gly Phe Arg
    2045                2050                2055

Pro Pro  Leu Gln Arg Pro Ala  Pro Ser Pro Ser Gly  Ile Val Asn
    2060                2065                2070
```

Met Asp Ser Pro Tyr Gly Ser Val Thr Pro Ser Ser Thr His Leu
2075 2080 2085

Gly Asn Phe Ala Ser Asn Ile Ser Gly Gly Gln Met Tyr Gly Pro
2090 2095 2100

Gly Ala Pro Leu Gly Gly Ala Pro Ala Ala Ala Asn Phe Asn Arg
2105 2110 2115

Gln His Phe Ser Pro Leu Ser Leu Leu Thr Pro Cys Ser Ser Ala
2120 2125 2130

Ser Asn Asp Ser Ser Ala Gln Ser Val Ser Ser Gly Val Arg Ala
2135 2140 2145

Pro Ser Pro Ala Pro Ser Ser Val Pro Leu Gly Ser Glu Lys Pro
2150 2155 2160

Ser Asn Val Ser Gln Asp Arg Lys Val Pro Val Pro Ile Gly Thr
2165 2170 2175

Glu Arg Ser Ala Arg Ile Arg Gln Thr Gly Thr Ser Ala Pro Ser
2180 2185 2190

Val Ile Gly Ser Asn Leu Ser Thr Ser Val Gly His Ser Gly Ile
2195 2200 2205

Trp Ser Phe Glu Gly Ile Gly Gly Asn Gln Asp Lys Val Asp Trp
2210 2215 2220

Cys Asn Pro Gly Met Gly Asn Pro Met Ile His Arg Pro Met Ser
2225 2230 2235

Asp Pro Gly Val Phe Ser Gln His Gln Ala Met Glu Arg Asp Ser
2240 2245 2250

Thr Gly Ile Val Thr Pro Ser Gly Thr Phe His Gln His Val Pro
2255 2260 2265

Ala Gly Tyr Met Asp Phe Pro Lys Val Gly Gly Met Pro Phe Ser
2270 2275 2280

```
Val Tyr  Gly Asn Ala Met Ile  Pro Pro Val Ala Pro  Ile Pro Asp
    2285                2290                2295


Gly Ala  Gly Gly Pro Ile Phe  Asn Gly Pro His Ala  Ala Asp Pro
    2300                2305                2310


Ser Trp  Asn Ser Leu Ile Lys  Met Val Ser Ser Ser  Thr Glu Asn
    2315                2320                2325


Asn Gly  Pro Gln Thr Val Trp  Thr Gly Pro Trp Ala  Pro His Met
    2330                2335                2340


Asn Ser  Val His Met Asn Gln  Leu Gly
    2345                2350


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Glu Gly Ser Pro Pro Ala Val Ala Ala Val Ala Gly Pro Pro Ala Ala
            20                  25                  30


Ala Glu Val Gly Gly Gly Val Gly Gly Ser Ser Arg Ala Arg Ser Ala
        35                  40                  45
```

```
Ser Ser Pro Arg Gly Met Val Arg Val Cys Asp Leu Leu Leu Lys Lys
    50                  55                  60

Lys Pro Pro Gln Gln Gln His His Lys Ala Lys Arg Asn Arg Thr Cys
65                  70                  75                  80

Arg Pro Pro Ser Ser Ser Glu Ser Ser Ser Asp Ser Asp Asn Ser Gly
                85                  90                  95

Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Thr Ser
            100                 105                 110

Ser Asn Asn Ser Glu Glu Glu Glu Asp Asp Asp Asp Glu Glu Glu Glu
        115                 120                 125

Val Ser Glu Val Glu Ser Phe Ile Leu Asp Gln Asp Asp Leu Glu Asn
    130                 135                 140

Pro Met Leu Glu Thr Ala Ser Lys Leu Leu Leu Ser Gly Thr Ala Asp
145                 150                 155                 160

Gly Ala Asp Leu Arg Thr Val Asp Pro Glu Thr Gln Ala Arg Leu Glu
                165                 170                 175

Ala Leu Leu Glu Ala Ala Gly Ile Gly Lys Leu Ser Thr Ala Asp Gly
            180                 185                 190

Lys Ala Phe Ala Asp Pro Glu Val Leu Arg Arg Leu Thr Ser Ser Val
        195                 200                 205

Ser Cys Ala Leu Asp Glu Ala Ala Ala Ala Leu Thr Arg Met Arg Ala
    210                 215                 220

Glu Ser Thr Ala Asn Ala Gly Gln Ser Asp Asn Arg Ser Leu Ala Glu
225                 230                 235                 240

Ala Cys Ser Glu Gly Asp Val Asn Ala Val Arg Lys Leu Leu Ile Glu
                245                 250                 255

Gly Arg Ser Val Asn Glu His Thr Glu Glu Gly Glu Ser Leu Leu Cys
            260                 265                 270
```

```
Leu Ala Cys Ser Ala Gly Tyr Tyr Glu Leu Ala Gln Val Leu Leu Ala
        275                 280                 285

Met His Ala Asn Val Glu Asp Arg Gly Ile Lys Gly Asp Ile Thr Pro
    290                 295                 300

Leu Met Ala Ala Ala Asn Gly Gly His Val Lys Ile Val Lys Leu Leu
305                 310                 315                 320

Leu Ala His Lys Ala Asp Val Asn Ala Gln Ser Ser Thr Gly Asn Thr
                325                 330                 335

Ala Leu Thr Tyr Ala Cys Ala Gly Gly Tyr Val Asp Val Val Lys Val
            340                 345                 350

Leu Leu Glu Ser Gly Ala Ser Ile Glu Asp His Asn Glu Asn Gly His
        355                 360                 365

Thr Pro Leu Met Glu Ala Gly Ser Ala Gly His Val Glu Val Ala Arg
    370                 375                 380

Leu Leu Leu Glu Asn Gly Ala Gly Ile Asn Thr His Ser Asn Glu Phe
385                 390                 395                 400

Lys Glu Ser Ala Leu Thr Leu Ala Cys Tyr Lys Gly His Leu Glu Met
                405                 410                 415

Val Arg Phe Leu Leu Glu Ala Gly Ala Asp Gln Glu His Lys Thr Asp
            420                 425                 430

Glu Met His Thr Ala Leu Met Glu Ala Cys Met Asp Gly His Val Glu
        435                 440                 445

Val Ala Arg Leu Leu Leu Asp Ser Gly Ala Gln Val Asn Met Pro Ala
    450                 455                 460

Asp Ser Phe Glu Ser Pro Leu Thr Leu Ala Ala Cys Gly Gly His Val
465                 470                 475                 480

Glu Leu Ala Ala Leu Leu Ile Glu Arg Gly Ala Ser Leu Glu Glu Val
                485                 490                 495
```

```
Asn Asp Glu Gly Tyr Thr Pro Leu Met Glu Ala Ala Arg Glu Gly His
            500                 505                 510

Glu Glu Met Val Ala Leu Leu Leu Gly Gln Gly Ala Asn Ile Asn Ala
        515                 520                 525

Gln Thr Glu Glu Thr Gln Glu Thr Ala Leu Thr Leu Ala Cys Cys Gly
    530                 535                 540

Gly Phe Leu Glu Val Ala Asp Phe Leu Ile Lys Ala Gly Ala Asp Ile
545                 550                 555                 560

Glu Leu Gly Cys Ser Thr Pro Leu Met Glu Ala Ala Gln Glu Gly His
                565                 570                 575

Leu Glu Leu Val Lys Tyr Leu Leu Ala Ala Gly Ala Asn Val His Ala
            580                 585                 590

Thr Thr Ala Thr Gly Asp Thr Ala Leu Thr Tyr Ala Cys Glu Asn Gly
        595                 600                 605

His Thr Asp Val Ala Asp Val Leu Leu Gln Ala Gly Ala Asp Leu Glu
    610                 615                 620

His Glu Ser Glu Gly Gly Arg Thr Pro Leu Met Lys Ala Ala Arg Ala
625                 630                 635                 640

Gly His Val Cys Thr Val Gln Phe Leu Ile Ser Lys Gly Ala Asn Val
                645                 650                 655

Asn Arg Thr Thr Ala Asn Asn Asp His Thr Val Leu Ser Leu Ala Cys
            660                 665                 670

Ala Gly Gly His Leu Ala Val Val Glu Leu Leu Leu Ala His Gly Ala
        675                 680                 685

Asp Pro Thr His Arg Leu Lys Asp Gly Ser Thr Met Leu Ile Glu Ala
    690                 695                 700

Ala Lys Gly Gly His Thr Ser Val Val Cys Tyr Leu Leu Asp Tyr Pro
705                 710                 715                 720

Asn Asn Leu Leu Ser Ala Pro Pro Pro Asp Val Thr Gln Leu Thr Pro
```

```
                725                 730                 735

Pro Ser His Asp Leu Asn Arg Ala Pro Arg Val Pro Val Gln Ala Leu
            740                 745                 750

Pro Met Val Val Pro Pro Gln Glu Pro Asp Lys Pro Pro Ala Asn Val
        755                 760                 765

Ala Thr Thr Leu Pro Ile Arg Asn Lys Ala Ala Ser Lys Gln Lys Ser
    770                 775                 780

Ser Ser His Leu Pro Ala Asn Ser Gln Asp Val Gln Gly Tyr Ile Thr
785                 790                 795                 800

Asn Gln Ser Pro Glu Ser Ile Val Glu Glu Ala Gln Gly Lys Leu Thr
                805                 810                 815

Glu Leu Glu Gln Arg Ile Lys Glu Ala Ile Glu Lys Asn Ala Gln Leu
            820                 825                 830

Gln Ser Leu Glu Leu Ala His Ala Asp Gln Leu Thr Lys Glu Lys Ile
        835                 840                 845

Glu Glu Leu Asn Lys Thr Arg Glu Glu Gln Ile Gln Lys Lys Gln Lys
    850                 855                 860

Ile Leu Glu Glu Leu Gln Lys Val Glu Arg Glu Leu Gln Leu Lys Thr
865                 870                 875                 880

Gln Gln Gln Leu Lys Lys Gln Tyr Leu Glu Val Lys Ala Gln Arg Ile
                885                 890                 895

Gln Leu Gln Gln Gln Gln Gln Gln Ser Cys Gln His Leu Gly Leu Leu
            900                 905                 910

Thr Pro Val Gly Val Gly Glu Gln Leu Ser Glu Gly Asp Tyr Ala Arg
        915                 920                 925

Leu Gln Gln Val Asp Pro Val Leu Leu Lys Asp Glu Pro Gln Gln Thr
    930                 935                 940

Ala Ala Gln Met Gly Phe Ala Pro Ile Gln Pro Leu Ala Met Pro Gln
945                 950                 955                 960
```

```
Ala Leu Pro Leu Ala Ala Gly Pro Leu Pro Pro Gly Ser Ile Ala Asn
               965                 970                 975

Leu Thr Glu Leu Gln Gly Val Ile Val Gly Gln Pro Val Leu Gly Gln
           980                 985                 990

Ala Gln Leu Ala Gly Leu Gly Gln  Gly Ile Leu Thr Glu  Thr Gln
Gln
        995                1000                1005

Gly Leu  Met Val Ala Ser Pro  Ala Gln Thr Leu Asn  Asp Thr Leu
    1010                1015                1020

Asp Asp  Ile Met Ala Ala Val  Ser Gly Arg Ala Ser  Ala Met Ser
    1025                1030                1035

Asn Thr  Pro Thr His Ser Ile  Ala Ala Ser Ile Ser  Gln Pro Gln
    1040                1045                1050

Thr Pro  Thr Pro Ser Pro Ile  Ile Ser Pro Ser Ala  Met Leu Pro
    1055                1060                1065

Ile Tyr  Pro Ala Ile Asp Ile  Asp Ala Gln Thr Glu  Ser Asn His
    1070                1075                1080

Asp Thr  Ala Leu Thr Leu Ala  Cys Ala Gly Gly His  Glu Glu Leu
    1085                1090                1095

Val Gln  Thr Leu Leu Glu Arg  Gly Ala Ser Ile Glu  His Arg Asp
    1100                1105                1110

Lys Lys  Gly Phe Thr Pro Leu  Ile Leu Ala Ala Thr  Ala Gly His
    1115                1120                1125

Val Gly  Val Val Glu Ile Leu  Leu Asp Asn Gly Ala  Asp Ile Glu
    1130                1135                1140

Ala Gln  Ser Glu Arg Thr Lys  Asp Thr Pro Leu Ser  Leu Ala Cys
    1145                1150                1155

Ser Gly  Gly Arg Gln Glu Val  Val Glu Leu Leu Leu  Ala Arg Gly
    1160                1165                1170
```

```
Ala Asn  Lys Glu His Arg Asn  Val Ser Asp Tyr Thr  Pro Leu Ser
    1175                1180                1185

Leu Ala  Ala Ser Gly Gly Tyr  Val Asn Ile Ile Lys  Ile Leu Leu
    1190                1195                1200

Asn Ala  Gly Ala Glu Ile Asn  Ser Arg Thr Gly Ser  Lys Leu Gly
    1205                1210                1215

Ile Ser  Pro Leu Met Leu Ala  Ala Met Asn Gly His  Thr Ala Ala
    1220                1225                1230

Val Lys  Leu Leu Leu Asp Met  Gly Ser Asp Ile Asn  Ala Gln Ile
    1235                1240                1245

Glu Thr  Asn Arg Asn Thr Ala  Leu Thr Leu Ala Cys  Phe Gln Gly
    1250                1255                1260

Arg Thr  Glu Val Val Ser Leu  Leu Leu Asp Arg Lys  Ala Asn Val
    1265                1270                1275

Glu His  Arg Ala Lys Thr Gly  Leu Thr Pro Leu Met  Glu Ala Ala
    1280                1285                1290

Ser Gly  Gly Tyr Ala Glu Val  Gly Arg Val Leu Leu  Asp Lys Gly
    1295                1300                1305

Ala Asp  Val Asn Ala Pro Pro  Val Pro Ser Ser Arg  Asp Thr Ala
    1310                1315                1320

Leu Thr  Ile Ala Ala Asp Lys  Gly His Tyr Lys Phe  Cys Glu Leu
    1325                1330                1335

Leu Ile  Gly Arg Gly Ala His  Ile Asp Val Arg Asn  Lys Lys Gly
    1340                1345                1350

Asn Thr  Pro Leu Trp Leu Ala  Ala Asn Gly Gly His  Leu Asp Val
    1355                1360                1365

Val Gln  Leu Leu Val Gln Ala  Gly Ala Asp Val Asp  Ala Ala Asp
    1370                1375                1380
```

Asn Arg Lys Ile Thr Pro Leu Met Ala Ala Phe Arg Lys Gly His
1385 1390 1395

Val Lys Val Val Arg Tyr Leu Val Lys Glu Val Asn Gln Phe Pro
1400 1405 1410

Ser Asp Ser Glu Cys Met Arg Tyr Ile Ala Thr Ile Thr Asp Lys
1415 1420 1425

Glu Met Leu Lys Lys Cys His Leu Cys Met Glu Ser Ile Val Gln
1430 1435 1440

Ala Lys Asp Arg Gln Ala Ala Glu Ala Asn Lys Asn Ala Ser Ile
1445 1450 1455

Leu Leu Glu Glu Leu Asp Leu Glu Lys Leu Arg Glu Glu Ser Arg
1460 1465 1470

Arg Leu Ala Leu Ala Ala Lys Arg Glu Lys Arg Lys Glu Lys Arg
1475 1480 1485

Arg Lys Lys Lys Glu Glu Gln Arg Arg Lys Leu Glu Glu Ile Glu
1490 1495 1500

Ala Lys Asn Lys Glu Asn Phe Glu Leu Gln Ala Ala Gln Glu Lys
1505 1510 1515

Glu Lys Leu Lys Val Glu Asp Glu Pro Glu Val Leu Thr Glu Pro
1520 1525 1530

Pro Ser Ala Thr Thr Thr Thr Thr Ile Gly Ile Ser Ala Thr Trp
1535 1540 1545

Thr Thr Leu Ala Gly Ser His Gly Lys Arg Asn Asn Thr Ile Thr
1550 1555 1560

Thr Thr Ser Ser Lys Arg Lys Asn Arg Lys Asn Lys Ile Thr Pro
1565 1570 1575

Glu Asn Val Gln Ile Ile Phe Asp Asp Pro Leu Pro Ile Ser Tyr
1580 1585 1590

```
Ser Gln  Pro Glu Lys Val Asn  Gly Glu Ser Lys Ser  Ser Ser Thr
    1595                 1600                 1605

Ser Glu  Ser Gly Asp Ser Asp  Asn Met Arg Ile Ser  Ser Cys Ser
    1610                 1615                 1620

Asp Glu  Ser Ser Asn Ser Asn  Ser Ser Arg Lys Ser  Asp Asn His
    1625                 1630                 1635

Ser Pro  Ala Val Val Thr Thr  Thr Val Ser Ser Lys  Lys Gln Pro
    1640                 1645                 1650

Ser Val  Leu Val Thr Phe Pro  Lys Glu Glu Arg Lys  Ser Val Ser
    1655                 1660                 1665

Gly Lys  Ala Ser Ile Lys Leu  Ser Glu Thr Ile Ser  Glu Gly Thr
    1670                 1675                 1680

Ser Asn  Ser Leu Ser Thr Cys  Thr Lys Ser Gly Pro  Ser Pro Leu
    1685                 1690                 1695

Ser Ser  Pro Asn Gly Lys Leu  Thr Val Ala Ser Pro  Lys Arg Gly
    1700                 1705                 1710

Gln Lys  Arg Glu Glu Gly Trp  Lys Glu Val Val Arg  Arg Ser Lys
    1715                 1720                 1725

Lys Val  Ser Val Pro Ser Thr  Val Ile Ser Arg Val  Ile Gly Arg
    1730                 1735                 1740

Gly Gly  Cys Asn Ile Asn Ala  Ile Arg Glu Phe Thr  Gly Ala His
    1745                 1750                 1755

Ile Asp  Ile Asp Lys Gln Lys  Asp Lys Thr Gly Asp  Arg Ile Ile
    1760                 1765                 1770

Thr Ile  Arg Gly Gly Thr Glu  Ser Thr Arg Gln Ala  Thr Gln Leu
    1775                 1780                 1785

Ile Asn  Ala Leu Ile Lys Asp  Pro Asp Lys Glu Ile  Asp Glu Leu
    1790                 1795                 1800

Ile Pro  Lys Asn Arg Leu Lys  Ser Ser Ser Ala Asn  Ser Lys Ile
```

1805 1810 1815

Gly Ser Ser Ala Pro Thr Thr Thr Ala Ala Asn Thr Ser Leu Met
1820 1825 1830

Gly Ile Lys Met Thr Thr Val Ala Leu Ser Ser Thr Ser Gln Thr
1835 1840 1845

Ala Thr Ala Leu Thr Val Pro Ala Ile Ser Ser Ala Ser Thr His
1850 1855 1860

Lys Thr Ile Lys Asn Pro Val Asn Asn Val Arg Pro Gly Phe Pro
1865 1870 1875

Val Ser Leu Pro Leu Ala Tyr Pro Pro Pro Gln Phe Ala His Ala
1880 1885 1890

Leu Leu Ala Ala Gln Thr Phe Gln Gln Ile Arg Pro Pro Arg Leu
1895 1900 1905

Pro Met Thr His Phe Gly Gly Thr Phe Pro Pro Ala Gln Ser Thr
1910 1915 1920

Trp Gly Pro Phe Pro Val Arg Pro Leu Ser Pro Ala Arg Ala Thr
1925 1930 1935

Asn Ser Pro Lys Pro His Met Val Pro Arg His Ser Asn Gln Asn
1940 1945 1950

Ser Ser Gly Ser Gln Val Asn Ser Ala Gly Ser Leu Thr Ser Ser
1955 1960 1965

Pro Thr Thr Thr Thr Ser Ser Ser Ala Ser Thr Val Pro Gly Thr
1970 1975 1980

Ser Thr Asn Gly Ser Pro Ser Ser Pro Ser Val Arg Arg Gln Leu
1985 1990 1995

Phe Val Thr Val Val Lys Thr Ser Asn Ala Thr Thr Thr Thr Val
2000 2005 2010

Thr Thr Thr Ala Ser Asn Asn Asn Thr Ala Pro Thr Asn Ala Thr
2015 2020 2025

```
Tyr Pro  Met Pro Thr Ala Lys  Glu His Tyr Pro Val  Ser Ser Pro
    2030                2035                2040

Ser Ser  Pro Ser Pro Pro Ala  Gln Pro Gly Gly Val  Ser Arg Asn
    2045                2050                2055

Ser Pro  Leu Asp Cys Gly Ser  Ala Ser Pro Asn Lys  Val Ala Ser
    2060                2065                2070

Ser Ser  Glu Gln Glu Ala Gly  Ser Pro Pro Val Val  Glu Thr Thr
    2075                2080                2085

Asn Thr  Arg Pro Pro Asn Ser  Ser Ser Ser Ser Gly  Ser Ser Ser
    2090                2095                2100

Ala His  Ser Asn Gln Gln Gln  Pro Pro Gly Ser Val  Ser Gln Glu
    2105                2110                2115

Pro Arg  Pro Pro Leu Gln Gln  Ser Gln Val Pro Pro  Pro Glu Val
    2120                2125                2130

Arg Met  Thr Val Pro Pro Leu  Ala Thr Ser Ser Ala  Pro Val Ala
    2135                2140                2145

Val Pro  Ser Thr Ala Pro Val  Thr Tyr Pro Met Pro  Gln Thr Pro
    2150                2155                2160

Met Gly  Cys Pro Gln Pro Thr  Pro Lys Met Glu Thr  Pro Ala Ile
    2165                2170                2175

Arg Pro  Pro Pro His Gly Thr  Thr Ala Pro His Lys  Asn Ser Ala
    2180                2185                2190

Ser Val  Gln Asn Ser Ser Val  Ala Val Leu Ser Val  Asn His Ile
    2195                2200                2205

Lys Arg  Pro His Ser Val Pro  Ser Ser Val Gln Leu  Pro Ser Thr
    2210                2215                2220

Leu Ser  Thr Gln Ser Ala Cys  Gln Asn Ser Val His  Pro Ala Asn
    2225                2230                2235
```

```
Lys Pro  Ile Ala Pro Asn Phe  Ser Ala Pro Leu Pro  Phe Gly Pro
    2240                2245                2250

Phe Ser  Thr Leu Phe Glu Asn  Ser Pro Thr Ser Ala  His Ala Phe
    2255                2260                2265

Trp Gly  Gly Ser Val Val Ser  Ser Gln Ser Thr Pro  Glu Ser Met
    2270                2275                2280

Leu Ser  Gly Lys Ser Ser Tyr  Leu Pro Asn Ser Asp  Pro Leu His
    2285                2290                2295

Gln Ser  Asp Thr Ser Lys Ala  Pro Gly Phe Arg Pro  Pro Leu Gln
    2300                2305                2310

Arg Pro  Ala Pro Ser Pro Ser  Gly Ile Val Asn Met  Asp Ser Pro
    2315                2320                2325

Tyr Gly  Ser Val Thr Pro Ser  Ser Thr His Leu Gly  Asn Phe Ala
    2330                2335                2340

Ser Asn  Ile Ser Gly Gly Gln  Met Tyr Gly Pro Gly  Ala Pro Leu
    2345                2350                2355

Gly Gly  Ala Pro Ala Ala Ala  Asn Phe Asn Arg Gln  His Phe Ser
    2360                2365                2370

Pro Leu  Ser Leu Leu Thr Pro  Cys Ser Ser Ala Ser  Asn Asp Ser
    2375                2380                2385

Ser Ala  Gln Ser Val Ser Ser  Gly Val Arg Ala Pro  Ser Pro Ala
    2390                2395                2400

Pro Ser  Ser Val Pro Leu Gly  Ser Glu Lys Pro Ser  Asn Val Ser
    2405                2410                2415

Gln Asp  Arg Lys Val Pro Val  Pro Ile Gly Thr Glu  Arg Ser Ala
    2420                2425                2430

Arg Ile  Arg Gln Thr Gly Thr  Ser Ala Pro Ser Val  Ile Gly Ser
    2435                2440                2445
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Asn Leu  Ser Thr Ser Val Gly  His Ser Gly Ile Trp  Ser Phe Glu
    2450                2455                2460

Gly Ile  Gly Gly Asn Gln Asp  Lys Val Asp Trp Cys  Asn Pro Gly
    2465                2470                2475

Met Gly  Asn Pro Met Ile His  Arg Pro Met Ser Asp  Pro Gly Val
    2480                2485                2490

Phe Ser  Gln His Gln Ala Met  Glu Arg Asp Ser Thr  Gly Ile Val
    2495                2500                2505

Thr Pro  Ser Gly Thr Phe His  Gln His Val Pro Ala  Gly Tyr Met
    2510                2515                2520

Asp Phe  Pro Lys Val Gly Gly  Met Pro Phe Ser Val  Tyr Gly Asn
    2525                2530                2535

Ala Met  Ile Pro Pro Val Ala  Pro Ile Pro Asp Gly  Ala Gly Gly
    2540                2545                2550

Pro Ile  Phe Asn Gly Pro His  Ala Ala Asp Pro Ser  Trp Asn Ser
    2555                2560                2565

Leu Ile  Lys Met Val Ser Ser  Ser Thr Glu Asn Asn  Gly Pro Gln
    2570                2575                2580

Thr Val  Trp Thr Gly Pro Trp  Ala Pro His Met Asn  Ser Val His
    2585                2590                2595

Met Asn  Gln Leu Gly
    2600


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Met Val Glu Thr Ala Ala Glu Met Glu Ala Tyr Val Leu Glu Asp Ile
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Leu Glu Val Glu Ser Phe Ile Leu Asp Gln Asp Asp Leu Glu Asn Pro
            20                  25                  30

Met Leu Glu Thr Ala Ser Lys Leu Leu Leu Ser Gly Thr Ala Asp Gly
        35                  40                  45

Ala Asp Leu Arg Thr Val Asp Pro Glu Thr Gln Ala Arg Leu Glu Ala
    50                  55                  60

Leu Leu Glu Ala Ala Gly Ile Gly Lys Leu Ser Thr Ala Asp Gly Lys
65                  70                  75                  80

Ala Phe Ala Asp Pro Glu Val Leu Arg Arg Leu Thr Ser Ser Val Ser
                85                  90                  95

Cys Ala Leu Asp Glu Ala Ala Ala Ala Leu Thr Arg Met Arg Ala Glu
            100                 105                 110

Ser Thr Ala Asn Ala Gly Gln Ser Asp Asn Arg Ser Leu Ala Glu Ala
        115                 120                 125

Cys Ser Glu Gly Asp Val Asn Ala Val Arg Lys Leu Leu Ile Glu Gly
    130                 135                 140

Arg Ser Val Asn Glu His Thr Glu Glu Gly Glu Ser Leu Leu Cys Leu
145                 150                 155                 160

Ala Cys Ser Ala Gly Tyr Tyr Glu Leu Ala Gln Val Leu Leu Ala Met
                165                 170                 175
```

```
His Ala Asn Val Glu Asp Arg Gly Ile Lys Gly Asp Ile Thr Pro Leu
            180                 185                 190

Met Ala Ala Ala Asn Gly Gly His Val Lys Ile Val Lys Leu Leu Leu
        195                 200                 205

Ala His Lys Ala Asp Val Asn Ala Gln Ser Ser Thr Gly Asn Thr Ala
    210                 215                 220

Leu Thr Tyr Ala Cys Ala Gly Gly Tyr Val Asp Val Val Lys Val Leu
225                 230                 235                 240

Leu Glu Ser Gly Ala Ser Ile Glu Asp His Asn Glu Asn Gly His Thr
                245                 250                 255

Pro Leu Met Glu Ala Gly Ser Ala Gly His Val Glu Val Ala Arg Leu
            260                 265                 270

Leu Leu Glu Asn Gly Ala Gly Ile Asn Thr His Ser Asn Glu Phe Lys
        275                 280                 285

Glu Ser Ala Leu Thr Leu Ala Cys Tyr Lys Gly His Leu Glu Met Val
    290                 295                 300

Arg Phe Leu Leu Glu Ala Gly Ala Asp Gln Glu His Lys Thr Asp Glu
305                 310                 315                 320

Met His Thr Ala Leu Met Glu Ala Cys Met Asp Gly His Val Glu Val
                325                 330                 335

Ala Arg Leu Leu Leu Asp Ser Gly Ala Gln Val Asn Met Pro Ala Asp
            340                 345                 350

Ser Phe Glu Ser Pro Leu Thr Leu Ala Ala Cys Gly Gly His Val Glu
        355                 360                 365

Leu Ala Ala Leu Leu Ile Glu Arg Gly Ala Ser Leu Glu Glu Val Asn
    370                 375                 380

Asp Glu Gly Tyr Thr Pro Leu Met Glu Ala Ala Arg Glu Gly His Glu
385                 390                 395                 400
```

```
Glu Met Val Ala Leu Leu Leu Gly Gln Gly Ala Asn Ile Asn Ala Gln
                405                 410                 415

Thr Glu Glu Thr Gln Glu Thr Ala Leu Thr Leu Ala Cys Cys Gly Gly
            420                 425                 430

Phe Leu Glu Val Ala Asp Phe Leu Ile Lys Ala Gly Ala Asp Ile Glu
        435                 440                 445

Leu Gly Cys Ser Thr Pro Leu Met Glu Ala Ala Gln Glu Gly His Leu
    450                 455                 460

Glu Leu Val Lys Tyr Leu Leu Ala Ala Gly Ala Asn Val His Ala Thr
465                 470                 475                 480

Thr Ala Thr Gly Asp Thr Ala Leu Thr Tyr Ala Cys Glu Asn Gly His
                485                 490                 495

Thr Asp Val Ala Asp Val Leu Leu Gln Ala Gly Ala Asp Leu Glu His
            500                 505                 510

Glu Ser Glu Gly Gly Arg Thr Pro Leu Met Lys Ala Ala Arg Ala Gly
        515                 520                 525

His Val Cys Thr Val Gln Phe Leu Ile Ser Lys Gly Ala Asn Val Asn
    530                 535                 540

Arg Thr Thr Ala Asn Asn Asp His Thr Val Leu Ser Leu Ala Cys Ala
545                 550                 555                 560

Gly Gly His Leu Ala Val Val Glu Leu Leu Leu Ala His Gly Ala Asp
                565                 570                 575

Pro Thr His Arg Leu Lys Asp Gly Ser Thr Met Leu Ile Glu Ala Ala
            580                 585                 590

Lys Gly Gly His Thr Ser Val Val Cys Tyr Leu Leu Asp Tyr Pro Asn
        595                 600                 605

Asn Leu Leu Ser Ala Pro Pro Pro Asp Val Thr Gln Leu Thr Pro Pro
    610                 615                 620

Ser His Asp Leu Asn Arg Ala Pro Arg Val Pro Val Gln Ala Leu Pro
```

625 630 635 640

Met Val Val Pro Pro Gln Glu Pro Asp Lys Pro Pro Ala Asn Val Ala
645 650 655

Thr Thr Leu Pro Ile Arg Asn Lys Ala Ala Ser Lys Gln Lys Ser Ser
660 665 670

Ser His Leu Pro Ala Asn Ser Gln Asp Val Gln Gly Tyr Ile Thr Asn
675 680 685

Gln Ser Pro Glu Ser Ile Val Glu Glu Ala Gln Gly Lys Leu Thr Glu
690 695 700

Leu Glu Gln Arg Ile Lys Glu Ala Ile Glu Lys Asn Ala Gln Leu Gln
705 710 715 720

Ser Leu Glu Leu Ala His Ala Asp Gln Leu Thr Lys Glu Lys Ile Glu
725 730 735

Glu Leu Asn Lys Thr Arg Glu Glu Gln Ile Gln Lys Lys Gln Lys Ile
740 745 750

Leu Glu Glu Leu Gln Lys Val Glu Arg Glu Leu Gln Leu Lys Thr Gln
755 760 765

Gln Gln Leu Lys Lys Gln Tyr Leu Glu Val Lys Ala Gln Arg Ile Gln
770 775 780

Leu Gln Gln Gln Gln Gln Gln Ser Cys Gln His Leu Gly Leu Leu Thr
785 790 795 800

Pro Val Gly Val Gly Glu Gln Leu Ser Glu Gly Asp Tyr Ala Arg Leu
805 810 815

Gln Gln Val Asp Pro Val Leu Leu Lys Asp Glu Pro Gln Gln Thr Ala
820 825 830

Ala Gln Met Gly Phe Ala Pro Ile Gln Pro Leu Ala Met Pro Gln Ala
835 840 845

Leu Pro Leu Ala Ala Gly Pro Leu Pro Pro Gly Ser Ile Ala Asn Leu
850 855 860

```
Thr Glu Leu Gln Gly Val Ile Val Gly Gln Pro Val Leu Gly Gln Ala
865                 870                 875                 880

Gln Leu Ala Gly Leu Gly Gln Gly Ile Leu Thr Glu Thr Gln Gln Gly
                885                 890                 895

Leu Met Val Ala Ser Pro Ala Gln Thr Leu Asn Asp Thr Leu Asp Asp
            900                 905                 910

Ile Met Ala Ala Val Ser Gly Arg Ala Ser Ala Met Ser Asn Thr Pro
        915                 920                 925

Thr His Ser Ile Ala Ala Ser Ile Ser Gln Pro Gln Thr Pro Thr Pro
    930                 935                 940

Ser Pro Ile Ile Ser Pro Ser Ala Met Leu Pro Ile Tyr Pro Ala Ile
945                 950                 955                 960

Asp Ile Asp Ala Gln Thr Glu Ser Asn His Asp Thr Ala Leu Thr Leu
                965                 970                 975

Ala Cys Ala Gly Gly His Glu Glu Leu Val Gln Thr Leu Leu Glu Arg
            980                 985                 990

Gly Ala Ser Ile Glu His Arg Asp  Lys Lys Gly Phe Thr  Pro Leu
Ile
        995                 1000                1005

Leu Ala  Ala Thr Ala Gly His  Val Gly Val Val Glu  Ile Leu Leu
    1010                1015                1020

Asp Asn  Gly Ala Asp Ile Glu  Ala Gln Ser Glu Arg  Thr Lys Asp
    1025                1030                1035

Thr Pro  Leu Ser Leu Ala Cys  Ser Gly Gly Arg Gln  Glu Val Val
    1040                1045                1050

Glu Leu  Leu Leu Ala Arg Gly  Ala Asn Lys Glu His  Arg Asn Val
    1055                1060                1065

Ser Asp  Tyr Thr Pro Leu Ser  Leu Ala Ala Ser Gly  Gly Tyr Val
    1070                1075                1080
```

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Asn Ile  Ile Lys Ile Leu Leu  Asn Ala Gly Ala Glu  Ile Asn Ser
    1085                1090                1095

Arg Thr  Gly Ser Lys Leu Gly  Ile Ser Pro Leu Met  Leu Ala Ala
    1100                1105                1110

Met Asn  Gly His Thr Ala Ala  Val Lys Leu Leu Leu  Asp Met Gly
    1115                1120                1125

Ser Asp  Ile Asn Ala Gln Ile  Glu Thr Asn Arg Asn  Thr Ala Leu
    1130                1135                1140

Thr Leu  Ala Cys Phe Gln Gly  Arg Thr Glu Val Val  Ser Leu Leu
    1145                1150                1155

Leu Asp  Arg Lys Ala Asn Val  Glu His Arg Ala Lys  Thr Gly Leu
    1160                1165                1170

Thr Pro  Leu Met Glu Ala Ala  Ser Gly Gly Tyr Ala  Glu Val Gly
    1175                1180                1185

Arg Val  Leu Leu Asp Lys Gly  Ala Asp Val Asn Ala  Pro Pro Val
    1190                1195                1200

Pro Ser  Ser Arg Asp Thr Ala  Leu Thr Ile Ala Ala  Asp Lys Gly
    1205                1210                1215

His Tyr  Lys Phe Cys Glu Leu  Leu Ile Gly Arg Gly  Ala His Ile
    1220                1225                1230

Asp Val  Arg Asn Lys Lys Gly  Asn Thr Pro Leu Trp  Leu Ala Ala
    1235                1240                1245

Asn Gly  Gly His Leu Asp Val  Val Gln Leu Leu Val  Gln Ala Gly
    1250                1255                1260

Ala Asp  Val Asp Ala Ala Asp  Asn Arg Lys Ile Thr  Pro Leu Met
    1265                1270                1275

Ala Ala  Phe Arg Lys Gly His  Val Lys Val Val Arg  Tyr Leu Val
    1280                1285                1290
```

```
Lys Glu  Val Asn Gln Phe Pro  Ser Asp Ser Glu Cys  Met Arg Tyr
    1295                1300                1305

Ile Ala  Thr Ile Thr Asp Lys  Glu Met Leu Lys Lys  Cys His Leu
    1310                1315                1320

Cys Met  Glu Ser Ile Val Gln  Ala Lys Asp Arg Gln  Ala Ala Glu
    1325                1330                1335

Ala Asn  Lys Asn Ala Ser Ile  Leu Leu Glu Glu Leu  Asp Leu Glu
    1340                1345                1350

Lys Leu  Arg Glu Glu Ser Arg  Arg Leu Ala Leu Ala  Ala Lys Arg
    1355                1360                1365

Glu Lys  Arg Lys Glu Lys Arg  Arg Lys Lys Lys Glu  Glu Gln Arg
    1370                1375                1380

Arg Lys  Leu Glu Glu Ile Glu  Ala Lys Asn Lys Glu  Asn Phe Glu
    1385                1390                1395

Leu Gln  Ala Ala Gln Glu Lys  Glu Lys Leu Lys Val  Glu Asp Glu
    1400                1405                1410

Pro Glu  Val Leu Thr Glu Pro  Pro Ser Ala Thr Thr  Thr Thr Thr
    1415                1420                1425

Ile Gly  Ile Ser Ala Thr Trp  Thr Thr Leu Ala Gly  Ser His Gly
    1430                1435                1440

Lys Arg  Asn Asn Thr Ile Thr  Thr Thr Ser Ser Lys  Arg Lys Asn
    1445                1450                1455

Arg Lys  Asn Lys Ile Thr Pro  Glu Asn Val Gln Ile  Ile Phe Asp
    1460                1465                1470

Asp Pro  Leu Pro Ile Ser Tyr  Ser Gln Pro Glu Lys  Val Asn Gly
    1475                1480                1485

Glu Ser  Lys Ser Ser Ser Thr  Ser Glu Ser Gly Asp  Ser Asp Asn
    1490                1495                1500
```

Met Arg Ile Ser Ser Cys Ser Asp Glu Ser Ser Asn Ser Asn Ser
1505 1510 1515

Ser Arg Lys Ser Asp Asn His Ser Pro Ala Val Val Thr Thr Thr
1520 1525 1530

Val Ser Ser Lys Lys Gln Pro Ser Val Leu Val Thr Phe Pro Lys
1535 1540 1545

Glu Glu Arg Lys Ser Val Ser Gly Lys Ala Ser Ile Lys Leu Ser
1550 1555 1560

Glu Thr Ile Ser Glu Gly Thr Ser Asn Ser Leu Ser Thr Cys Thr
1565 1570 1575

Lys Ser Gly Pro Ser Pro Leu Ser Ser Pro Asn Gly Lys Leu Thr
1580 1585 1590

Val Ala Ser Pro Lys Arg Gly Gln Lys Arg Glu Glu Gly Trp Lys
1595 1600 1605

Glu Val Val Arg Arg Ser Lys Lys Val Ser Val Pro Ser Thr Val
1610 1615 1620

Ile Ser Arg Val Ile Gly Arg Gly Gly Cys Asn Ile Asn Ala Ile
1625 1630 1635

Arg Glu Phe Thr Gly Ala His Ile Asp Ile Asp Lys Gln Lys Asp
1640 1645 1650

Lys Thr Gly Asp Arg Ile Ile Thr Ile Arg Gly Gly Thr Glu Ser
1655 1660 1665

Thr Arg Gln Ala Thr Gln Leu Ile Asn Ala Leu Ile Lys Asp Pro
1670 1675 1680

Asp Lys Glu Ile Asp Glu Leu Ile Pro Lys Asn Arg Leu Lys Ser
1685 1690 1695

Ser Ser Ala Asn Ser Lys Ile Gly Ser Ser Ala Pro Thr Thr Thr
1700 1705 1710

Ala Ala Asn Thr Ser Leu Met Gly Ile Lys Met Thr Thr Val Ala

1715 1720 1725

Leu Ser Ser Thr Ser Gln Thr Ala Thr Ala Leu Thr Val Pro Ala
1730 1735 1740

Ile Ser Ser Ala Ser Thr His Lys Thr Ile Lys Asn Pro Val Asn
1745 1750 1755

Asn Val Arg Pro Gly Phe Pro Val Ser Leu Pro Leu Ala Tyr Pro
1760 1765 1770

Pro Pro Gln Phe Ala His Ala Leu Leu Ala Ala Gln Thr Phe Gln
1775 1780 1785

Gln Ile Arg Pro Pro Arg Leu Pro Met Thr His Phe Gly Gly Thr
1790 1795 1800

Phe Pro Pro Ala Gln Ser Thr Trp Gly Pro Phe Pro Val Arg Pro
1805 1810 1815

Leu Ser Pro Ala Arg Ala Thr Asn Ser Pro Lys Pro His Met Val
1820 1825 1830

Pro Arg His Ser Asn Gln Asn Ser Ser Gly Ser Gln Val Asn Ser
1835 1840 1845

Ala Gly Ser Leu Thr Ser Ser Pro Thr Thr Thr Thr Ser Ser Ser
1850 1855 1860

Ala Ser Thr Val Pro Gly Thr Ser Thr Asn Gly Ser Pro Ser Ser
1865 1870 1875

Pro Ser Val Arg Arg Gln Leu Phe Val Thr Val Val Lys Thr Ser
1880 1885 1890

Asn Ala Thr Thr Thr Thr Val Thr Thr Thr Ala Ser Asn Asn Asn
1895 1900 1905

Thr Ala Pro Thr Asn Ala Thr Tyr Pro Met Pro Thr Ala Lys Glu
1910 1915 1920

His Tyr Pro Val Ser Ser Pro Ser Ser Pro Ser Pro Pro Ala Gln
1925 1930 1935

```
Pro Gly  Gly Val Ser Arg Asn  Ser Pro Leu Asp Cys  Gly Ser Ala
    1940                1945                1950

Ser Pro  Asn Lys Val Ala Ser  Ser Ser Glu Gln Glu  Ala Gly Ser
    1955                1960                1965

Pro Pro  Val Val Glu Thr Thr  Asn Thr Arg Pro Pro  Asn Ser Ser
    1970                1975                1980

Ser Ser  Ser Gly Ser Ser Ser  Ala His Ser Asn Gln  Gln Gln Pro
    1985                1990                1995

Pro Gly  Ser Val Ser Gln Glu  Pro Arg Pro Pro Leu  Gln Gln Ser
    2000                2005                2010

Gln Val  Pro Pro Pro Glu Val  Arg Met Thr Val Pro  Pro Leu Ala
    2015                2020                2025

Thr Ser  Ser Ala Pro Val Ala  Val Pro Ser Thr Ala  Pro Val Thr
    2030                2035                2040

Tyr Pro  Met Pro Gln Thr Pro  Met Gly Cys Pro Gln  Pro Thr Pro
    2045                2050                2055

Lys Met  Glu Thr Pro Ala Ile  Arg Pro Pro Pro His  Gly Thr Thr
    2060                2065                2070

Ala Pro  His Lys Asn Ser Ala  Ser Val Gln Asn Ser  Ser Val Ala
    2075                2080                2085

Val Leu  Ser Val Asn His Ile  Lys Arg Pro His Ser  Val Pro Ser
    2090                2095                2100

Ser Val  Gln Leu Pro Ser Thr  Leu Ser Thr Gln Ser  Ala Cys Gln
    2105                2110                2115

Asn Ser  Val His Pro Ala Asn  Lys Pro Ile Ala Pro  Asn Phe Ser
    2120                2125                2130

Ala Pro  Leu Pro Phe Gly Pro  Phe Ser Thr Leu Phe  Glu Asn Ser
    2135                2140                2145
```

Pro Thr Ser Ala His Ala Phe Trp Gly Gly Ser Val Val Ser Ser
2150 2155 2160

Gln Ser Thr Pro Glu Ser Met Leu Ser Gly Lys Ser Ser Tyr Leu
2165 2170 2175

Pro Asn Ser Asp Pro Leu His Gln Ser Asp Thr Ser Lys Ala Pro
2180 2185 2190

Gly Phe Arg Pro Pro Leu Gln Arg Pro Ala Pro Ser Pro Ser Gly
2195 2200 2205

Ile Val Asn Met Asp Ser Pro Tyr Gly Ser Val Thr Pro Ser Ser
2210 2215 2220

Thr His Leu Gly Asn Phe Ala Ser Asn Ile Ser Gly Gly Gln Met
2225 2230 2235

Tyr Gly Pro Gly Ala Pro Leu Gly Gly Ala Pro Ala Ala Ala Asn
2240 2245 2250

Phe Asn Arg Gln His Phe Ser Pro Leu Ser Leu Leu Thr Pro Cys
2255 2260 2265

Ser Ser Ala Ser Asn Asp Ser Ser Ala Gln Ser Val Ser Ser Gly
2270 2275 2280

Val Arg Ala Pro Ser Pro Ala Pro Ser Ser Val Pro Leu Gly Ser
2285 2290 2295

Glu Lys Pro Ser Asn Val Ser Gln Asp Arg Lys Val Pro Val Pro
2300 2305 2310

Ile Gly Thr Glu Arg Ser Ala Arg Ile Arg Gln Thr Gly Thr Ser
2315 2320 2325

Ala Pro Ser Val Ile Gly Ser Asn Leu Ser Thr Ser Val Gly His
2330 2335 2340

Ser Gly Ile Trp Ser Phe Glu Gly Ile Gly Gly Asn Gln Asp Lys
2345 2350 2355

```
Val Asp  Trp Cys Asn Pro Gly  Met Gly Asn Pro Met  Ile His Arg
    2360                2365                2370

Pro Met  Ser Asp Pro Gly Val  Phe Ser Gln His Gln  Ala Met Glu
    2375                2380                2385

Arg Asp  Ser Thr Gly Ile Val  Thr Pro Ser Gly Thr  Phe His Gln
    2390                2395                2400

His Val  Pro Ala Gly Tyr Met  Asp Phe Pro Lys Val  Gly Gly Met
    2405                2410                2415

Pro Phe  Ser Val Tyr Gly Asn  Ala Met Ile Pro Pro  Val Ala Pro
    2420                2425                2430

Ile Pro  Asp Gly Ala Gly Gly  Pro Ile Phe Asn Gly  Pro His Ala
    2435                2440                2445

Ala Asp  Pro Ser Trp Asn Ser  Leu Ile Lys Met Val  Ser Ser Ser
    2450                2455                2460

Thr Glu  Asn Asn Gly Pro Gln  Thr Val Trp Thr Gly  Pro Trp Ala
    2465                2470                2475

Pro His  Met Asn Ser Val His  Met Asn Gln Leu Gly
    2480                2485                2490


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<211> 862
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      ankyrin repeat domain 17; "

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<400> 5166
Met Glu Lys Ala Thr Val Pro Val Ala Ala Ala Thr Ala Ala Glu Gly
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Glu Gly Ser Pro Pro Ala Val Ala Ala Val Ala Gly Pro Pro Ala Ala
20 25 30

Ala Glu Val Gly Gly Gly Val Gly Gly Ser Ser Arg Ala Arg Ser Ala
35 40 45

Ser Ser Pro Arg Gly Met Val Arg Val Cys Asp Leu Leu Leu Lys Lys
50 55 60

Lys Pro Pro Gln Gln Gln His His Lys Ala Lys Arg Asn Arg Thr Cys
65 70 75 80

Arg Pro Pro Ser Ser Ser Glu Ser Ser Ser Asp Ser Asp Asn Ser Gly
85 90 95

Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Thr Ser
100 105 110

Ser Asn Asn Ser Glu Glu Glu Glu Asp Asp Asp Asp Glu Glu Glu Glu
115 120 125

Pro Asp Lys Pro Pro Ala Asn Val Ala Thr Thr Leu Pro Ile Arg Asn
130 135 140

Lys Ala Ala Ser Lys Gln Lys Ser Ser Ser His Leu Pro Ala Asn Ser
145 150 155 160

Gln Asp Val Gln Gly Tyr Ile Thr Asn Gln Ser Pro Glu Ser Ile Val
165 170 175

Glu Glu Ala Gln Gly Lys Leu Thr Glu Leu Glu Gln Arg Ile Lys Glu
180 185 190

Ala Ile Glu Lys Asn Ala Gln Leu Gln Ser Leu Glu Leu Ala His Ala
195 200 205

Asp Gln Leu Thr Lys Glu Lys Ile Glu Glu Leu Asn Lys Thr Arg Glu
210 215 220

```
Glu Gln Ile Gln Lys Lys Gln Lys Ile Leu Glu Glu Leu Gln Lys Val
225                 230                 235                 240

Glu Arg Glu Leu Gln Leu Lys Thr Gln Gln Gln Leu Lys Lys Gln Tyr
                245                 250                 255

Leu Glu Val Lys Ala Gln Arg Ile Gln Leu Gln Gln Gln Gln Gln Gln
            260                 265                 270

Ser Cys Gln His Leu Gly Leu Leu Thr Pro Val Gly Val Gly Glu Gln
        275                 280                 285

Leu Ser Glu Gly Asp Tyr Ala Arg Leu Gln Gln Val Asp Pro Val Leu
    290                 295                 300

Leu Lys Asp Glu Pro Gln Gln Thr Ala Ala Gln Met Gly Phe Ala Pro
305                 310                 315                 320

Ile Gln Pro Leu Ala Met Pro Gln Ala Leu Pro Leu Ala Ala Gly Pro
                325                 330                 335

Leu Pro Pro Gly Ser Ile Ala Asn Leu Thr Glu Leu Gln Gly Val Ile
            340                 345                 350

Val Gly Gln Pro Val Leu Gly Gln Ala Gln Leu Ala Gly Leu Gly Gln
        355                 360                 365

Gly Ile Leu Thr Glu Thr Gln Gln Gly Leu Met Val Ala Ser Pro Ala
    370                 375                 380

Gln Thr Leu Asn Asp Thr Leu Asp Asp Ile Met Ala Val Ser Gly Arg
385                 390                 395                 400

Ala Ser Ala Met Ser Asn Thr Pro Thr His Ser Ile Ala Ala Ser Ile
                405                 410                 415

Ser Gln Pro Gln Thr Pro Thr Pro Ser Pro Ile Ile Ser Pro Ser Ala
            420                 425                 430

Met Leu Pro Ile Tyr Pro Ala Ile Asp Ile Asp Ala Gln Thr Glu Ser
        435                 440                 445
```

```
Asn His Asp Thr Ala Leu Thr Leu Ala Cys Ala Gly Gly His Glu Glu
    450                 455                 460

Leu Val Gln Thr Leu Leu Glu Arg Gly Ala Ser Ile Glu His Arg Asp
465                 470                 475                 480

Lys Lys Gly Phe Thr Pro Leu Ile Leu Ala Ala Thr Ala Gly His Val
                485                 490                 495

Gly Val Val Glu Ile Leu Leu Asp Asn Gly Ala Asp Ile Glu Ala Gln
            500                 505                 510

Ser Glu Arg Thr Lys Asp Thr Pro Leu Ser Leu Ala Cys Ser Gly Gly
        515                 520                 525

Arg Gln Glu Val Val Glu Leu Leu Leu Ala Arg Gly Ala Asn Lys Glu
    530                 535                 540

His Arg Asn Val Ser Asp Tyr Thr Pro Leu Ser Leu Ala Ala Ser Gly
545                 550                 555                 560

Gly Tyr Val Asn Ile Ile Lys Ile Leu Leu Asn Ala Gly Ala Glu Ile
                565                 570                 575

Asn Ser Arg Thr Gly Ser Lys Leu Gly Ile Ser Pro Leu Met Leu Ala
            580                 585                 590

Ala Met Asn Gly His Thr Ala Ala Val Lys Leu Leu Leu Asp Met Gly
        595                 600                 605

Ser Asp Ile Asn Ala Gln Ile Glu Thr Asn Arg Asn Thr Ala Leu Thr
    610                 615                 620

Leu Ala Cys Phe Gln Gly Arg Thr Glu Val Val Ser Leu Leu Leu Asp
625                 630                 635                 640

Arg Lys Ala Asn Val Glu His Arg Ala Lys Thr Gly Leu Thr Pro Leu
                645                 650                 655

Met Glu Ala Ala Ser Gly Gly Tyr Ala Glu Val Gly Arg Val Leu Leu
            660                 665                 670

Asp Lys Gly Ala Asp Val Asn Ala Pro Pro Val Pro Ser Ser Arg Asp
```

675 680 685

Thr Ala Leu Thr Ile Ala Ala Asp Lys Gly His Tyr Lys Phe Cys Glu
690 695 700

Leu Leu Ile Gly Arg Gly Ala His Ile Asp Val Arg Asn Lys Lys Gly
705 710 715 720

Asn Thr Pro Leu Trp Leu Ala Ala Asn Gly Gly His Leu Asp Val Val
725 730 735

Gln Leu Leu Val Gln Ala Gly Ala Asp Val Asp Ala Ala Asp Asn Arg
740 745 750

Lys Ile Thr Pro Leu Met Ala Ala Phe Arg Lys Gly His Val Lys Val
755 760 765

Val Arg Tyr Leu Val Lys Glu Val Asn Gln Phe Pro Ser Asp Ser Glu
770 775 780

Cys Met Arg Tyr Ile Ala Thr Ile Thr Asp Lys Glu Met Leu Lys Lys
785 790 795 800

Cys His Leu Cys Met Glu Ser Ile Val Gln Ala Lys Asp Arg Gln Ala
805 810 815

Ala Glu Ala Asn Lys Asn Ala Ser Ile Leu Leu Glu Glu Leu Asp Leu
820 825 830

Glu Lys Leu Arg Glu Glu Ser Arg Arg Leu Ala Leu Ala Ala Lys Arg
835 840 845

Glu Lys Arg Lys Glu Lys Arg Arg Lys Lys Lys Glu Glu Gln
850 855 860

<210> 5167
<211> 2487
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ankyrin repeat domain 17; "

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<222> (1)..(1)
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<400> 5167
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1 5 10 15

Val Glu Ser Phe Ile Leu Asp Gln Asp Asp Leu Glu Asn Pro Met Leu
20 25 30

Glu Thr Ala Ser Lys Leu Leu Leu Ser Gly Thr Ala Asp Gly Ala Asp
35 40 45

Leu Arg Thr Val Asp Pro Glu Thr Gln Ala Arg Leu Glu Ala Leu Leu
50 55 60

Glu Ala Ala Gly Ile Gly Lys Leu Ser Thr Ala Asp Gly Lys Ala Phe
65 70 75 80

Ala Asp Pro Glu Val Leu Arg Arg Leu Thr Ser Ser Val Ser Cys Ala
85 90 95

Leu Asp Glu Ala Ala Ala Ala Leu Thr Arg Met Arg Ala Glu Ser Thr
100 105 110

Ala Asn Ala Gly Gln Ser Asp Asn Arg Ser Leu Ala Glu Ala Cys Ser
115 120 125

Glu Gly Asp Val Asn Ala Val Arg Lys Leu Leu Ile Glu Gly Arg Ser
130 135 140

Val Asn Glu His Thr Glu Glu Gly Glu Ser Leu Leu Cys Leu Ala Cys
145 150 155 160

Ser Ala Gly Tyr Tyr Glu Leu Ala Gln Val Leu Leu Ala Met His Ala
165 170 175

Asn Val Glu Asp Arg Gly Ile Lys Gly Asp Ile Thr Pro Leu Met Ala
180 185 190

Ala Ala Asn Gly Gly His Val Lys Ile Val Lys Leu Leu Leu Ala His
195 200 205

Lys Ala Asp Val Asn Ala Gln Ser Ser Thr Gly Asn Thr Ala Leu Thr
210 215 220

Tyr Ala Cys Ala Gly Gly Tyr Val Asp Val Val Lys Val Leu Leu Glu
225 230 235 240

Ser Gly Ala Ser Ile Glu Asp His Asn Glu Asn Gly His Thr Pro Leu
245 250 255

Met Glu Ala Gly Ser Ala Gly His Val Glu Val Ala Arg Leu Leu Leu
260 265 270

Glu Asn Gly Ala Gly Ile Asn Thr His Ser Asn Glu Phe Lys Glu Ser
275 280 285

Ala Leu Thr Leu Ala Cys Tyr Lys Gly His Leu Glu Met Val Arg Phe
290 295 300

Leu Leu Glu Ala Gly Ala Asp Gln Glu His Lys Thr Asp Glu Met His
305 310 315 320

Thr Ala Leu Met Glu Ala Cys Met Asp Gly His Val Glu Val Ala Arg
325 330 335

Leu Leu Leu Asp Ser Gly Ala Gln Val Asn Met Pro Ala Asp Ser Phe
340 345 350

Glu Ser Pro Leu Thr Leu Ala Ala Cys Gly Gly His Val Glu Leu Ala
355 360 365

Ala Leu Leu Ile Glu Arg Gly Ala Ser Leu Glu Glu Val Asn Asp Glu
370 375 380

```
Gly Tyr Thr Pro Leu Met Glu Ala Ala Arg Glu Gly His Glu Glu Met
385                 390                 395                 400

Val Ala Leu Leu Leu Gly Gln Gly Ala Asn Ile Asn Ala Gln Thr Glu
                405                 410                 415

Glu Thr Gln Glu Thr Ala Leu Thr Leu Ala Cys Cys Gly Gly Phe Leu
            420                 425                 430

Glu Val Ala Asp Phe Leu Ile Lys Ala Gly Ala Asp Ile Glu Leu Gly
        435                 440                 445

Cys Ser Thr Pro Leu Met Glu Ala Ala Gln Glu Gly His Leu Glu Leu
    450                 455                 460

Val Lys Tyr Leu Leu Ala Ala Gly Ala Asn Val His Ala Thr Thr Ala
465                 470                 475                 480

Thr Gly Asp Thr Ala Leu Thr Tyr Ala Cys Glu Asn Gly His Thr Asp
                485                 490                 495

Val Ala Asp Val Leu Leu Gln Ala Gly Ala Asp Leu Glu His Glu Ser
            500                 505                 510

Glu Gly Gly Arg Thr Pro Leu Met Lys Ala Ala Arg Ala Gly His Val
        515                 520                 525

Cys Thr Val Gln Phe Leu Ile Ser Lys Gly Ala Asn Val Asn Arg Thr
    530                 535                 540

Thr Ala Asn Asn Asp His Thr Val Leu Ser Leu Ala Cys Ala Gly Gly
545                 550                 555                 560

His Leu Ala Val Val Glu Leu Leu Leu Ala His Gly Ala Asp Pro Thr
                565                 570                 575

His Arg Leu Lys Asp Gly Ser Thr Met Leu Ile Glu Ala Ala Lys Gly
            580                 585                 590

Gly His Thr Ser Val Val Cys Tyr Leu Leu Asp Tyr Pro Asn Asn Leu
        595                 600                 605
```

```
Leu Ser Ala Pro Pro Pro Asp Val Thr Gln Leu Thr Pro Pro Ser His
    610                 615                 620

Asp Leu Asn Arg Ala Pro Arg Val Pro Val Gln Ala Leu Pro Met Val
625                 630                 635                 640

Val Pro Pro Gln Glu Pro Asp Lys Pro Pro Ala Asn Val Ala Thr Thr
                645                 650                 655

Leu Pro Ile Arg Asn Lys Ala Ala Ser Lys Gln Lys Ser Ser Ser His
            660                 665                 670

Leu Pro Ala Asn Ser Gln Asp Val Gln Gly Tyr Ile Thr Asn Gln Ser
        675                 680                 685

Pro Glu Ser Ile Val Glu Glu Ala Gln Gly Lys Leu Thr Glu Leu Glu
    690                 695                 700

Gln Arg Ile Lys Glu Ala Ile Glu Lys Asn Ala Gln Leu Gln Ser Leu
705                 710                 715                 720

Glu Leu Ala His Ala Asp Gln Leu Thr Lys Glu Lys Ile Glu Glu Leu
                725                 730                 735

Asn Lys Thr Arg Glu Glu Gln Ile Gln Lys Lys Gln Lys Ile Leu Glu
            740                 745                 750

Glu Leu Gln Lys Val Glu Arg Glu Leu Gln Leu Lys Thr Gln Gln Gln
        755                 760                 765

Leu Lys Lys Gln Tyr Leu Glu Val Lys Ala Gln Arg Ile Gln Leu Gln
    770                 775                 780

Gln Gln Gln Gln Gln Ser Cys Gln His Leu Gly Leu Leu Thr Pro Val
785                 790                 795                 800

Gly Val Gly Glu Gln Leu Ser Glu Gly Asp Tyr Ala Arg Leu Gln Gln
                805                 810                 815

Val Asp Pro Val Leu Leu Lys Asp Glu Pro Gln Gln Thr Ala Ala Gln
            820                 825                 830

Met Gly Phe Ala Pro Ile Gln Pro Leu Ala Met Pro Gln Ala Leu Pro
```

```
        835                 840                 845

Leu Ala Ala Gly Pro Leu Pro Pro Gly Ser Ile Ala Asn Leu Thr Glu
    850                 855                 860

Leu Gln Gly Val Ile Val Gly Gln Pro Val Leu Gly Gln Ala Gln Leu
865                 870                 875                 880

Ala Gly Leu Gly Gln Gly Ile Leu Thr Glu Thr Gln Gln Gly Leu Met
                885                 890                 895

Val Ala Ser Pro Ala Gln Thr Leu Asn Asp Thr Leu Asp Asp Ile Met
            900                 905                 910

Ala Val Ser Gly Arg Ala Ser Ala Met Ser Asn Thr Pro Thr His Ser
        915                 920                 925

Ile Ala Ala Ser Ile Ser Gln Pro Gln Thr Pro Thr Pro Ser Pro Ile
    930                 935                 940

Ile Ser Pro Ser Ala Met Leu Pro Ile Tyr Pro Ala Ile Asp Ile Asp
945                 950                 955                 960

Ala Gln Thr Glu Ser Asn His Asp Thr Ala Leu Thr Leu Ala Cys Ala
                965                 970                 975

Gly Gly His Glu Glu Leu Val Gln Thr Leu Leu Glu Arg Gly Ala Ser
            980                 985                 990

Ile Glu His Arg Asp Lys Lys Gly  Phe Thr Pro Leu Ile  Leu Ala
Ala
        995                 1000                1005

Thr Ala  Gly His Val Gly Val  Val Glu Ile Leu Leu  Asp Asn Gly
    1010                1015                1020

Ala Asp  Ile Glu Ala Gln Ser  Glu Arg Thr Lys Asp  Thr Pro Leu
    1025                1030                1035

Ser Leu  Ala Cys Ser Gly Gly  Arg Gln Glu Val Val  Glu Leu Leu
    1040                1045                1050

Leu Ala  Arg Gly Ala Asn Lys  Glu His Arg Asn Val  Ser Asp Tyr
```

1055 1060 1065

Thr Pro Leu Ser Leu Ala Ala Ser Gly Gly Tyr Val Asn Ile Ile
1070 1075 1080

Lys Ile Leu Leu Asn Ala Gly Ala Glu Ile Asn Ser Arg Thr Gly
1085 1090 1095

Ser Lys Leu Gly Ile Ser Pro Leu Met Leu Ala Ala Met Asn Gly
1100 1105 1110

His Thr Ala Ala Val Lys Leu Leu Leu Asp Met Gly Ser Asp Ile
1115 1120 1125

Asn Ala Gln Ile Glu Thr Asn Arg Asn Thr Ala Leu Thr Leu Ala
1130 1135 1140

Cys Phe Gln Gly Arg Thr Glu Val Val Ser Leu Leu Leu Asp Arg
1145 1150 1155

Lys Ala Asn Val Glu His Arg Ala Lys Thr Gly Leu Thr Pro Leu
1160 1165 1170

Met Glu Ala Ala Ser Gly Gly Tyr Ala Glu Val Gly Arg Val Leu
1175 1180 1185

Leu Asp Lys Gly Ala Asp Val Asn Ala Pro Pro Val Pro Ser Ser
1190 1195 1200

Arg Asp Thr Ala Leu Thr Ile Ala Ala Asp Lys Gly His Tyr Lys
1205 1210 1215

Phe Cys Glu Leu Leu Ile Gly Arg Gly Ala His Ile Asp Val Arg
1220 1225 1230

Asn Lys Lys Gly Asn Thr Pro Leu Trp Leu Ala Ala Asn Gly Gly
1235 1240 1245

His Leu Asp Val Val Gln Leu Leu Val Gln Ala Gly Ala Asp Val
1250 1255 1260

Asp Ala Ala Asp Asn Arg Lys Ile Thr Pro Leu Met Ala Ala Phe
1265 1270 1275

```
Arg Lys  Gly His Val Lys Val  Val Arg Tyr Leu Val  Lys Glu Val
    1280                 1285                 1290

Asn Gln  Phe Pro Ser Asp Ser  Glu Cys Met Arg Tyr  Ile Ala Thr
    1295                 1300                 1305

Ile Thr  Asp Lys Glu Met Leu  Lys Lys Cys His Leu  Cys Met Glu
    1310                 1315                 1320

Ser Ile  Val Gln Ala Lys Asp  Arg Gln Ala Ala Glu  Ala Asn Lys
    1325                 1330                 1335

Asn Ala  Ser Ile Leu Leu Glu  Glu Leu Asp Leu Glu  Lys Leu Arg
    1340                 1345                 1350

Glu Glu  Ser Arg Arg Leu Ala  Leu Ala Ala Lys Arg  Glu Lys Arg
    1355                 1360                 1365

Lys Glu  Lys Arg Arg Lys Lys  Lys Glu Glu Gln Arg  Arg Lys Leu
    1370                 1375                 1380

Glu Glu  Ile Glu Ala Lys Asn  Lys Glu Asn Phe Glu  Leu Gln Ala
    1385                 1390                 1395

Ala Gln  Glu Lys Glu Lys Leu  Lys Val Glu Asp Glu  Pro Glu Val
    1400                 1405                 1410

Leu Thr  Glu Pro Pro Ser Ala  Thr Thr Thr Thr Thr  Ile Gly Ile
    1415                 1420                 1425

Ser Ala  Thr Trp Thr Thr Leu  Ala Gly Ser His Gly  Lys Arg Asn
    1430                 1435                 1440

Asn Thr  Ile Thr Thr Thr Ser  Ser Lys Arg Lys Asn  Arg Lys Asn
    1445                 1450                 1455

Lys Ile  Thr Pro Glu Asn Val  Gln Ile Ile Phe Asp  Asp Pro Leu
    1460                 1465                 1470

Pro Ile  Ser Tyr Ser Gln Pro  Glu Lys Val Asn Gly  Glu Ser Lys
    1475                 1480                 1485
```

Ser Ser Ser Thr Ser Glu Ser Gly Asp Ser Asp Asn Met Arg Ile
1490 1495 1500

Ser Ser Cys Ser Asp Glu Ser Ser Asn Ser Asn Ser Ser Arg Lys
1505 1510 1515

Ser Asp Asn His Ser Pro Ala Val Val Thr Thr Thr Val Ser Ser
1520 1525 1530

Lys Lys Gln Pro Ser Val Leu Val Thr Phe Pro Lys Glu Glu Arg
1535 1540 1545

Lys Ser Val Ser Gly Lys Ala Ser Ile Lys Leu Ser Glu Thr Ile
1550 1555 1560

Ser Glu Gly Thr Ser Asn Ser Leu Ser Thr Cys Thr Lys Ser Gly
1565 1570 1575

Pro Ser Pro Leu Ser Ser Pro Asn Gly Lys Leu Thr Val Ala Ser
1580 1585 1590

Pro Lys Arg Gly Gln Lys Arg Glu Glu Gly Trp Lys Glu Val Val
1595 1600 1605

Arg Arg Ser Lys Lys Val Ser Val Pro Ser Thr Val Ile Ser Arg
1610 1615 1620

Val Ile Gly Arg Gly Gly Cys Asn Ile Asn Ala Ile Arg Glu Phe
1625 1630 1635

Thr Gly Ala His Ile Asp Ile Asp Lys Gln Lys Asp Lys Thr Gly
1640 1645 1650

Asp Arg Ile Ile Thr Ile Arg Gly Gly Thr Glu Ser Thr Arg Gln
1655 1660 1665

Ala Thr Gln Leu Ile Asn Ala Leu Ile Lys Asp Pro Asp Lys Glu
1670 1675 1680

Ile Asp Glu Leu Ile Pro Lys Asn Arg Leu Lys Ser Ser Ser Ala
1685 1690 1695

Asn Ser Lys Ile Gly Ser Ser Ala Pro Thr Thr Thr Ala Ala Asn
1700 1705 1710

Thr Ser Leu Met Gly Ile Lys Met Thr Thr Val Ala Leu Ser Ser
1715 1720 1725

Thr Ser Gln Thr Ala Thr Ala Leu Thr Val Pro Ala Ile Ser Ser
1730 1735 1740

Ala Ser Thr His Lys Thr Ile Lys Asn Pro Val Asn Asn Val Arg
1745 1750 1755

Pro Gly Phe Pro Val Ser Leu Pro Leu Ala Tyr Pro Pro Pro Gln
1760 1765 1770

Phe Ala His Ala Leu Leu Ala Ala Gln Thr Phe Gln Gln Ile Arg
1775 1780 1785

Pro Pro Arg Leu Pro Met Thr His Phe Gly Gly Thr Phe Pro Pro
1790 1795 1800

Ala Gln Ser Thr Trp Gly Pro Phe Pro Val Arg Pro Leu Ser Pro
1805 1810 1815

Ala Arg Ala Thr Asn Ser Pro Lys Pro His Met Val Pro Arg His
1820 1825 1830

Ser Asn Gln Asn Ser Ser Gly Ser Gln Val Asn Ser Ala Gly Ser
1835 1840 1845

Leu Thr Ser Ser Pro Thr Thr Thr Thr Ser Ser Ser Ala Ser Thr
1850 1855 1860

Val Pro Gly Thr Ser Thr Asn Gly Ser Pro Ser Ser Pro Ser Val
1865 1870 1875

Arg Arg Gln Leu Phe Val Thr Val Val Lys Thr Ser Asn Ala Thr
1880 1885 1890

Thr Thr Thr Val Thr Thr Thr Ala Ser Asn Asn Asn Thr Ala Pro
1895 1900 1905

Thr Asn Ala Thr Tyr Pro Met Pro Thr Ala Lys Glu His Tyr Pro

1910 1915 1920

Val Ser Ser Pro Ser Ser Pro Ser Pro Pro Ala Gln Pro Gly Gly
1925 1930 1935

Val Ser Arg Asn Ser Pro Leu Asp Cys Gly Ser Ala Ser Pro Asn
1940 1945 1950

Lys Val Ala Ser Ser Ser Glu Gln Glu Ala Gly Ser Pro Pro Val
1955 1960 1965

Val Glu Thr Thr Asn Thr Arg Pro Pro Asn Ser Ser Ser Ser Ser
1970 1975 1980

Gly Ser Ser Ser Ala His Ser Asn Gln Gln Gln Pro Pro Gly Ser
1985 1990 1995

Val Ser Gln Glu Pro Arg Pro Pro Leu Gln Gln Ser Gln Val Pro
2000 2005 2010

Pro Pro Glu Val Arg Met Thr Val Pro Pro Leu Ala Thr Ser Ser
2015 2020 2025

Ala Pro Val Ala Val Pro Ser Thr Ala Pro Val Thr Tyr Pro Met
2030 2035 2040

Pro Gln Thr Pro Met Gly Cys Pro Gln Pro Thr Pro Lys Met Glu
2045 2050 2055

Thr Pro Ala Ile Arg Pro Pro Pro His Gly Thr Thr Ala Pro His
2060 2065 2070

Lys Asn Ser Ala Ser Val Gln Asn Ser Ser Val Ala Val Leu Ser
2075 2080 2085

Val Asn His Ile Lys Arg Pro His Ser Val Pro Ser Ser Val Gln
2090 2095 2100

Leu Pro Ser Thr Leu Ser Thr Gln Ser Ala Cys Gln Asn Ser Val
2105 2110 2115

His Pro Ala Asn Lys Pro Ile Ala Pro Asn Phe Ser Ala Pro Leu
2120 2125 2130

```
Pro Phe  Gly Pro Phe Ser Thr  Leu Phe Glu Asn Ser  Pro Thr Ser
    2135                2140                2145

Ala His  Ala Phe Trp Gly Gly  Ser Val Val Ser Ser  Gln Ser Thr
    2150                2155                2160

Pro Glu  Ser Met Leu Ser Gly  Lys Ser Ser Tyr Leu  Pro Asn Ser
    2165                2170                2175

Asp Pro  Leu His Gln Ser Asp  Thr Ser Lys Ala Pro  Gly Phe Arg
    2180                2185                2190

Pro Pro  Leu Gln Arg Pro Ala  Pro Ser Pro Ser Gly  Ile Val Asn
    2195                2200                2205

Met Asp  Ser Pro Tyr Gly Ser  Val Thr Pro Ser Ser  Thr His Leu
    2210                2215                2220

Gly Asn  Phe Ala Ser Asn Ile  Ser Gly Gly Gln Met  Tyr Gly Pro
    2225                2230                2235

Gly Ala  Pro Leu Gly Gly Ala  Pro Ala Ala Ala Asn  Phe Asn Arg
    2240                2245                2250

Gln His  Phe Ser Pro Leu Ser  Leu Leu Thr Pro Cys  Ser Ser Ala
    2255                2260                2265

Ser Asn  Asp Ser Ser Ala Gln  Ser Val Ser Ser Gly  Val Arg Ala
    2270                2275                2280

Pro Ser  Pro Ala Pro Ser Ser  Val Pro Leu Gly Ser  Glu Lys Pro
    2285                2290                2295

Ser Asn  Val Ser Gln Asp Arg  Lys Val Pro Val Pro  Ile Gly Thr
    2300                2305                2310

Glu Arg  Ser Ala Arg Ile Arg  Gln Thr Gly Thr Ser  Ala Pro Ser
    2315                2320                2325

Val Ile  Gly Ser Asn Leu Ser  Thr Ser Val Gly His  Ser Gly Ile
    2330                2335                2340
```

```
Trp Ser  Phe Glu Gly Ile Gly  Gly Asn Gln Asp Lys  Val Asp Trp
    2345                2350                2355

Cys Asn  Pro Gly Met Gly Asn  Pro Met Ile His Arg  Pro Met Ser
    2360                2365                2370

Asp Pro  Gly Val Phe Ser Gln  His Gln Ala Met Glu  Arg Asp Ser
    2375                2380                2385

Thr Gly  Ile Val Thr Pro Ser  Gly Thr Phe His Gln  His Val Pro
    2390                2395                2400

Ala Gly  Tyr Met Asp Phe Pro  Lys Val Gly Gly Met  Pro Phe Ser
    2405                2410                2415

Val Tyr  Gly Asn Ala Met Ile  Pro Pro Val Ala Pro  Ile Pro Asp
    2420                2425                2430

Gly Ala  Gly Gly Pro Ile Phe  Asn Gly Pro His Ala  Ala Asp Pro
    2435                2440                2445

Ser Trp  Asn Ser Leu Ile Lys  Met Val Ser Ser Ser  Thr Glu Asn
    2450                2455                2460

Asn Gly  Pro Gln Thr Val Trp  Thr Gly Pro Trp Ala  Pro His Met
    2465                2470                2475

Asn Ser  Val His Met Asn Gln  Leu Gly
    2480                2485


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ankyrin repeat domain 18A; "

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Met Arg Lys Leu Phe Ser Phe Gly Arg Arg Leu Gly Gln Ala Leu Leu
1               5                  10                  15

Ser Ser Met Asp Gln Glu Tyr Ala Gly Pro Gly Tyr Asp Ile Arg Asp
            20                  25                  30

Trp Glu Leu Arg Lys Ile His Arg Ala Ala Ile Lys Gly Asp Ala Ala
        35                  40                  45

Glu Val Glu Arg Cys Leu Thr Arg Arg Phe Arg Asp Leu Asp Ala Arg
    50                  55                  60

Asp Arg Lys Asp Arg Thr Val Leu His Leu Ala Cys Ala His Gly Arg
65                  70                  75                  80

Val Gln Val Val Thr Leu Leu Leu His Arg Arg Cys Gln Ile Asp Ile
                85                  90                  95

Cys Asp Arg Leu Asn Arg Thr Pro Leu Met Lys Ala Val His Ser Gln
            100                 105                 110

Glu Glu Ala Cys Ala Ile Val Leu Leu Glu Cys Gly Ala Asn Pro Asn
        115                 120                 125

Ile Glu Asp Ile Tyr Gly Asn Thr Ala Leu His Tyr Ala Val Tyr Asn
    130                 135                 140

Lys Gly Thr Ser Leu Ala Glu Arg Leu Leu Ser His His Ala Asn Ile
145                 150                 155                 160

Glu Ala Leu Asn Lys Glu Gly Asn Thr Pro Leu Leu Phe Ala Ile Asn
                165                 170                 175

Ser Arg Arg Gln His Met Val Glu Phe Leu Leu Lys Asn Gln Ala Asn
            180                 185                 190
```

```
Ile His Ala Val Asp Asn Phe Lys Arg Thr Ala Leu Ile Leu Ala Val
        195                 200                 205

Gln His Asn Leu Ser Ser Ile Val Thr Leu Leu Leu Gln Gln Asn Ile
    210                 215                 220

Arg Ile Ser Ser Gln Asp Met Phe Gly Gln Thr Ala Glu Asp Tyr Ala
225                 230                 235                 240

Leu Cys Ser Asp Leu Arg Ser Ile Arg Gln Gln Ile Leu Glu His Lys
                245                 250                 255

Asn Lys Met Leu Lys Asn His Leu Arg Asn Asp Asn Gln Glu Thr Ala
            260                 265                 270

Ala Met Lys Pro Ala Asn Leu Lys Lys Arg Lys Glu Arg Ala Lys Ala
        275                 280                 285

Glu His Asn Leu Lys Val Ala Ser Glu Glu Lys Gln Glu Arg Leu Gln
    290                 295                 300

Arg Ser Glu Asn Lys Gln Pro Gln Asp Ser Gln Ser Tyr Gly Lys Lys
305                 310                 315                 320

Lys Asp Ala Met Tyr Gly Asn Phe Met Leu Lys Lys Asp Ile Ala Met
                325                 330                 335

Leu Lys Glu Glu Leu Tyr Ala Ile Lys Asn Asp Ser Leu Arg Lys Glu
            340                 345                 350

Lys Lys Tyr Ile Gln Glu Ile Lys Ser Ile Thr Glu Ile Asn Ala Asn
        355                 360                 365

Phe Glu Lys Ser Val Arg Leu Asn Glu Lys Met Ile Thr Lys Thr Val
    370                 375                 380

Ala Arg Tyr Ser Gln Gln Leu Asn Asp Leu Lys Ala Glu Asn Ala Arg
385                 390                 395                 400

Leu Asn Ser Glu Leu Glu Lys Glu Lys His Asn Lys Glu Arg Leu Glu
                405                 410                 415
```

```
Ala Glu Val Glu Ser Leu His Ser Ser Leu Ala Thr Ala Ile Asn Glu
            420                 425                 430

Tyr Asn Glu Ile Val Glu Arg Lys Asp Leu Glu Leu Val Leu Trp Arg
        435                 440                 445

Ala Asp Asp Val Ser Arg His Glu Lys Met Gly Ser Asn Ile Ser Gln
    450                 455                 460

Leu Thr Asp Lys Asn Glu Leu Leu Thr Glu Gln Val His Lys Ala Arg
465                 470                 475                 480

Val Lys Phe Asn Thr Leu Lys Gly Lys Leu Arg Glu Thr Arg Asp Ala
                485                 490                 495

Leu Arg Glu Lys Thr Leu Ala Leu Gly Ser Val Gln Leu Asp Leu Arg
            500                 505                 510

Gln Ala Gln His Arg Ile Lys Glu Met Lys Gln Met His Pro Asn Gly
        515                 520                 525

Glu Ala Lys Glu Ser Gln Ser Ile Gly Lys Gln Asn Ser Leu Glu Glu
    530                 535                 540

Arg Ile Arg Gln Gln Glu Leu Glu Asn Leu Leu Leu Glu Arg Gln Leu
545                 550                 555                 560

Glu Asp Ala Arg Lys Glu Gly Asp Asn Lys Glu Ile Val Ile Asn Ile
                565                 570                 575

His Arg Asp Cys Leu Glu Asn Gly Lys Glu Asp Leu Leu Glu Glu Arg
            580                 585                 590

Asn Lys Glu Leu Met Lys Glu Tyr Asn Tyr Leu Lys Glu Lys Leu Leu
        595                 600                 605

Gln Cys Glu Lys Glu Lys Ala Glu Arg Glu Val Ile Val Arg Glu Phe
    610                 615                 620

Gln Glu Glu Leu Val Asp His Leu Lys Thr Phe Ser Ile Ser Glu Ser
625                 630                 635                 640
```

```
Pro Leu Glu Gly Thr Ser His Cys His Ile Asn Leu Asn Glu Thr Trp
                645                 650                 655

Thr Ser Lys Lys Lys Leu Phe Gln Val Glu Ile Gln Pro Glu Glu Lys
            660                 665                 670

His Glu Glu Phe Arg Lys Leu Phe Glu Leu Ile Ser Leu Leu Asn Tyr
        675                 680                 685

Thr Ala Asp Gln Ile Arg Lys Lys Asn Arg Glu Leu Glu Glu Glu Ala
    690                 695                 700

Thr Gly Tyr Lys Lys Cys Leu Glu Met Thr Ile Asn Met Leu Asn Ala
705                 710                 715                 720

Phe Ala Asn Glu Asp Phe Ser Cys His Gly Asp Leu Asn Thr Asp Gln
                725                 730                 735

Leu Lys Met Asp Ile Leu Phe Lys Lys Leu Lys Gln Lys Phe Asn Asp
            740                 745                 750

Leu Val Ala Glu Lys Glu Ala Val Ser Ser Glu Cys Val Asn Leu Ala
        755                 760                 765

Lys Asp Asn Glu Val Leu His Gln Glu Leu Leu Ser Met Arg Asn Val
    770                 775                 780

Gln Glu Lys Cys Glu Lys Leu Glu Lys Asp Lys Lys Met Leu Glu Glu
785                 790                 795                 800

Glu Val Leu Asn Leu Lys Thr His Met Glu Lys Asp Met Val Glu Leu
                805                 810                 815

Gly Lys Leu Gln Glu Tyr Lys Ser Glu Leu Asp Glu Arg Ala Val Gln
            820                 825                 830

Glu Ile Glu Lys Leu Glu Glu Ile His Leu Gln Lys Gln Ala Glu Tyr
        835                 840                 845

Glu Lys Gln Leu Glu Gln Leu Asn Lys Asp Asn Thr Ala Ser Leu Lys
    850                 855                 860

Lys Lys Glu Leu Thr Leu Lys Asp Val Glu Cys Lys Phe Ser Lys Met
```

865 870 875 880

Lys Thr Ala Tyr Glu Glu Val Thr Thr Glu Leu Glu Glu Phe Lys Glu
885 890 895

Ala Phe Ala Gly Ala Val Lys Ala Asn Asn Ser Met Ser Lys Lys Leu
900 905 910

Met Lys Ser Asp Lys Lys Ile Ala Val Ile Ser Thr Lys Leu Phe Thr
915 920 925

Glu Lys Gln Arg Met Lys Tyr Phe Leu Ser Thr Leu Pro Thr Arg Pro
930 935 940

Glu Pro Glu Leu Pro Cys Val Glu Asn Leu Asn Ser Ile Glu Leu Asn
945 950 955 960

Arg Lys Tyr Ile Pro Lys Thr Ala Ile Arg Ile Pro Thr Ser Asn Pro
965 970 975

Gln Thr Ser Asn Asn Cys Lys Asn Phe Leu Thr Glu Val Leu Leu Cys
980 985 990

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<212> PRT
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Glu Lys Glu Lys Ala Glu Arg Glu Val Ile Val Arg Glu Phe Gln Glu
1 5 10 15

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Glu Leu Val Asp His Leu Lys Thr Phe Ser Ile Ser Glu Ser Pro Leu
            20                  25                  30

Glu Gly Thr Ser His Cys His Ile Asn Leu Asn Glu Thr Trp Thr Ser
        35                  40                  45

Lys Lys Lys Leu Phe Gln Val Glu Ile Gln Pro Glu Glu Lys His Glu
    50                  55                  60

Glu Phe Arg Lys Leu Phe Glu Leu Ile Ser Leu Leu Asn Tyr Thr Ala
65                  70                  75                  80

Asp Gln Ile Arg Lys Lys Asn Arg Glu Leu Glu Glu Glu Ala Thr Gly
                85                  90                  95

Tyr Lys Lys Cys Leu Glu Met Thr Ile Asn Met Leu Asn Ala Phe Ala
            100                 105                 110

Asn Glu Asp Phe Ser Cys His Gly Asp Leu Asn Thr Asp Gln Leu Lys
        115                 120                 125

Met Asp Ile Leu Phe Lys Lys Leu Lys Gln Lys Phe Asn Asp Leu Val
    130                 135                 140

Ala Glu Lys Glu Ala Val Ser Ser Glu Cys Val Asn Leu Ala Lys Asp
145                 150                 155                 160

Asn Glu Val Leu His Gln Glu Leu Leu Ser Met Arg Asn Val Gln Glu
                165                 170                 175

Lys Cys Glu Lys Leu Glu Lys Asp Lys Lys Met Leu Glu Glu Glu Val
            180                 185                 190

Leu Asn Leu Lys Thr His Met Glu Lys Asp Met Val Glu Leu Gly Lys
        195                 200                 205

Leu Gln Glu Tyr Lys Ser Glu Leu Asp Glu Arg Ala Val Gln Glu Ile
    210                 215                 220

Glu Lys Leu Glu Glu Ile His Leu Gln Lys Gln Ala Glu Tyr Glu Lys
225                 230                 235                 240
```

```
Gln Leu Glu Gln Leu Asn Lys Asp Asn Thr Ala Ser Leu Lys Lys Lys
                245                 250                 255

Glu Leu Thr Leu Lys Asp Val Glu Cys Lys Phe Ser Lys Met Lys Thr
            260                 265                 270

Ala Tyr Glu Glu Val Thr Thr Glu Leu Glu Glu Phe Lys Glu Ala Phe
        275                 280                 285

Ala Gly Ala Val Lys Ala Asn Asn Ser Met Ser Lys Lys Leu Met Lys
    290                 295                 300

Ser Asp Lys Lys Ile Ala Val Ile Ser Thr Lys Leu Phe Thr Glu Lys
305                 310                 315                 320

Gln Arg Met Lys Tyr Phe Leu Ser Thr Leu Pro Thr Arg Pro Glu Pro
                325                 330                 335

Glu Leu Pro Cys Val Glu Asn Leu Asn Ser Ile Glu Leu Asn Arg Lys
            340                 345                 350

Tyr Ile Pro Lys Thr Ala Ile Arg Ile Pro Thr Ser Asn Pro Gln Thr
        355                 360                 365

Ser Asn Asn Cys Lys Asn Phe Leu Thr Glu Met Glu Leu Asp Arg Val
    370                 375                 380

Glu Gln Ile Ile Thr Gly Thr Lys Lys Ser Met Leu Pro Lys Cys Ile
385                 390                 395                 400

Asn
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Met Arg Lys Leu Leu Ser Phe Gly Arg Arg Leu Gly Gln Ala Leu Leu
1 5 10 15

Ser Ser Met Asp Gln Glu Tyr Ala Gly Arg Gly Tyr His Ile Arg Asp
20 25 30

Trp Glu Leu Arg Lys Ile His Arg Ala Ala Ile Lys Gly Asp Ala Ala
35 40 45

Glu Val Glu His Cys Leu Thr Arg Arg Phe Arg Asp Leu Asp Val Arg
50 55 60

Asp Arg Lys Asp Arg Thr Val Leu His Leu Ala Cys Ala His Gly Arg
65 70 75 80

Val Gln Val Val Thr Leu Leu Leu Asp Arg Lys Cys Gln Ile Asn Ile
85 90 95

Cys Asp Arg Leu Asn Arg Thr Pro Leu Met Lys Ala Val His Cys Gln
100 105 110

Glu Glu Ala Cys Ala Ile Ile Leu Leu Lys Arg Gly Ala Asn Pro Asn
115 120 125

Ile Lys Asp Ile Tyr Gly Asn Thr Ala Leu His Tyr Ala Val Tyr Asn
130 135 140

Glu Gly Thr Ser Leu Ala Glu Arg Leu Leu Ser His His Ala Asn Ile
145 150 155 160

Glu Ala Leu Asn Lys Glu Gly Asn Thr Pro Leu Leu Phe Ala Ile Asn
165 170 175

```
Ser Arg Arg Gln His Met Val Glu Phe Leu Leu Lys Asn Gln Ala Asn
            180                 185                 190

Ile His Ala Val Asp Asn Phe Lys Arg Thr Ala Leu Ile Leu Ala Val
        195                 200                 205

Gln His Asn Leu Ser Ser Ile Val Thr Leu Leu Leu Gln Gln Asn Ile
    210                 215                 220

His Ile Ser Ser Gln Asp Met Phe Gly Gln Thr Ala Glu Asp Tyr Ala
225                 230                 235                 240

Phe Cys Cys Asp Leu Arg Ser Ile Gln Gln Gln Ile Leu Glu His Lys
                245                 250                 255

Asn Lys Met Leu Lys Asn His Leu Arg Asn Asp Asn Gln Glu Thr Ala
            260                 265                 270

Ala Met Lys Pro Glu Asn Leu Lys Lys Arg Lys Lys Arg Lys Lys Leu
        275                 280                 285

Lys Lys Arg Lys Glu Gly Ala Lys Ala Glu His Asn Leu Lys Val Ala
    290                 295                 300

Ser Glu Glu Lys Gln Glu Arg Leu Glu Arg Ser Glu Asn Lys Gln Pro
305                 310                 315                 320

Gln Asp Ser Gln Ser Tyr Gly Lys Lys Lys Asp Glu Met Phe Gly Asn
                325                 330                 335

Phe Met Leu Lys Arg Asp Ile Ala Met Leu Lys Glu Glu Leu Tyr Ala
            340                 345                 350

Ile Lys Asn Asp Ser Leu Arg Lys Glu Lys Lys Tyr Ile Gln Glu Ile
        355                 360                 365

Lys Ser Ile Thr Glu Ile Asn Ala Asn Phe Glu Lys Ser Val Arg Leu
    370                 375                 380

Asn Glu Glu Met Ile Thr Lys Lys Val Ala Gln Tyr Ser Gln Gln Leu
385                 390                 395                 400
```

```
Asn Asp Leu Lys Ala Glu Asn Ala Arg Leu Asn Ser Lys Leu Glu Lys
                405                 410                 415

Glu Lys His Asn Lys Glu Arg Leu Glu Ala Glu Val Glu Ser Leu His
            420                 425                 430

Ser Asn Leu Ala Thr Ala Ile Asn Glu Tyr Asn Glu Ile Leu Glu Arg
        435                 440                 445

Lys Asp Leu Glu Leu Val Leu Trp Arg Ala Asp Asp Val Ser Arg His
    450                 455                 460

Glu Thr Met Gly Ser Asn Ile Ser Gln Leu Thr Asp Lys Asn Glu Leu
465                 470                 475                 480

Leu Thr Glu Gln Val His Lys Ala Arg Val Lys Phe Asn Thr Leu Lys
                485                 490                 495

Gly Lys Leu Arg Glu Thr Arg Asp Ala Leu Arg Glu Lys Thr Leu Ala
            500                 505                 510

Leu Glu Ser Val Gln Leu Asp Leu Lys Gln Ala Gln His Arg Ile Lys
        515                 520                 525

Glu Met Lys Gln Met His Pro Asn Gly Glu Ala Lys Glu Ser Gln Ser
    530                 535                 540

Ile Gly Lys Gln Asn Ser Ser Glu Glu Arg Ile Arg Gln Arg Glu Leu
545                 550                 555                 560

Glu Asn Leu Leu Leu Glu Arg Gln Leu Glu Asp Ala Arg Lys Glu Gly
                565                 570                 575

Asp Asn Lys Glu Ile Val Ile Asn Ile His Arg Asp Cys Leu Glu Asn
            580                 585                 590

Gly Lys Glu Asp Leu Leu Glu Glu Arg Asn Lys Glu Leu Met Asn Glu
        595                 600                 605

Tyr Asn Tyr Leu Lys Glu Lys Leu Leu Gln Tyr Glu Lys Glu Lys Ala
    610                 615                 620

Glu Arg Glu Val Ile Val Arg Glu Phe Gln Glu Glu Leu Val Asp His
```

625 630 635 640

Leu Lys Lys Phe Ser Met Ser Glu Ser Pro Leu Glu Gly Thr Ser His
645 650 655

Cys His Ile Asn Leu Asp Glu Thr Trp Thr Ser Lys Lys Lys Leu Phe
660 665 670

Gln Val Glu Ile Gln Pro Glu Glu Lys His Glu Glu Phe Arg Lys Val
675 680 685

Phe Glu Leu Ile Ser Leu Leu Asn Tyr Thr Ala Asp Gln Ile Arg Lys
690 695 700

Lys Asn Arg Glu Leu Glu Glu Glu Ala Thr Gly Tyr Lys Lys Cys Leu
705 710 715 720

Glu Met Thr Ile Asn Met Leu Asn Ala Phe Ala Asn Glu Asp Phe Ser
725 730 735

Cys His Gly Asp Leu Asn Thr Asp Gln Leu Lys Met Asp Ile Leu Phe
740 745 750

Lys Lys Leu Lys Gln Lys Phe Asp Asp Leu Met Ala Glu Lys Glu Ala
755 760 765

Val Ser Ser Lys Cys Val Asn Leu Ala Lys Asp Asn Glu Val Leu His
770 775 780

Gln Glu Leu Leu Ser Met Gly Lys Val Gln Glu Lys Cys Glu Lys Leu
785 790 795 800

Glu Lys Asp Lys Lys Met Leu Glu Glu Lys Val Leu Asn Leu Lys Thr
805 810 815

His Met Glu Lys Asp Met Val Glu Leu Gly Lys Val Gln Glu Tyr Lys
820 825 830

Ser Glu Leu Asp Glu Arg Ala Met Gln Ala Ile Glu Lys Leu Glu Glu
835 840 845

Ile His Leu Gln Lys Gln Ala Glu Tyr Glu Lys Gln Leu Glu Gln Leu
850 855 860

```
Asn Lys Asp Asn Thr Ala Ser Leu Lys Lys Lys Glu Leu Thr Leu Lys
865                 870                 875                 880

Asp Val Glu Cys Lys Phe Ser Lys Met Lys Thr Ala Tyr Glu Asp Val
                885                 890                 895

Thr Thr Glu Leu Glu Glu Tyr Lys Glu Ala Phe Ala Val Ala Leu Lys
            900                 905                 910

Ala Asn Ser Ser Met Ser Glu Lys Ile Thr Lys Ser Asp Lys Lys Ile
        915                 920                 925

Ala Val Ile Ser Thr Lys Leu Phe Met Glu Lys Glu Arg Met Glu Tyr
    930                 935                 940

Phe Leu Ser Thr Leu Pro Met Arg Pro Asp Pro Glu Leu Pro Cys Val
945                 950                 955                 960

Glu Asn Leu Asn Ser Ile Glu Leu Asn Arg Lys Tyr Ile Pro Lys Met
                965                 970                 975

Ala Ile Arg Ile Pro Thr Ser Asn Pro Gln Thr Ser Asn Asn Cys Lys
            980                 985                 990

Asn Ser Leu Thr Glu Leu Leu Leu  Arg Trp Ala Leu Ala  Pro Ile
Tyr
        995                 1000                1005

Phe Leu  Leu
    1010


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<400> 5171

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Glu Lys Glu Lys Ala Glu Arg Glu Val Ile Val Arg Glu Phe Gln Glu
1               5                  10                  15

Glu Leu Val Asp His Leu Lys Lys Phe Ser Met Ser Glu Ser Pro Leu
            20                  25                  30

Glu Gly Thr Ser His Cys His Ile Asn Leu Asp Glu Thr Trp Thr Ser
        35                  40                  45

Lys Lys Lys Leu Phe Gln Val Glu Ile Gln Pro Glu Glu Lys His Glu
    50                  55                  60

Glu Phe Arg Lys Val Phe Glu Leu Ile Ser Leu Leu Asn Tyr Thr Ala
65                  70                  75                  80

Asp Gln Ile Arg Lys Lys Asn Arg Glu Leu Glu Glu Glu Ala Thr Gly
                85                  90                  95

Tyr Lys Lys Cys Leu Glu Met Thr Ile Asn Met Leu Asn Ala Phe Ala
            100                 105                 110

Asn Glu Asp Phe Ser Cys His Gly Asp Leu Asn Thr Asp Gln Leu Lys
        115                 120                 125

Met Asp Ile Leu Phe Lys Lys Leu Lys Gln Lys Phe Asp Asp Leu Met
    130                 135                 140

Ala Glu Lys Glu Ala Val Ser Ser Lys Cys Val Asn Leu Ala Lys Asp
145                 150                 155                 160

Asn Glu Val Leu His Gln Glu Leu Leu Ser Met Gly Lys Val Gln Glu
                165                 170                 175

Lys Cys Glu Lys Leu Glu Lys Asp Lys Lys Met Leu Glu Glu Lys Val
            180                 185                 190
```

```
Leu Asn Leu Lys Thr His Met Glu Lys Asp Met Val Glu Leu Gly Lys
        195                 200                 205

Val Gln Glu Tyr Lys Ser Glu Leu Asp Glu Arg Ala Met Gln Ala Ile
    210                 215                 220

Glu Lys Leu Glu Glu Ile His Leu Gln Lys Gln Ala Glu Tyr Glu Lys
225                 230                 235                 240

Gln Leu Glu Gln Leu Asn Lys Asp Asn Thr Ala Ser Leu Lys Lys Lys
                245                 250                 255

Glu Leu Thr Leu Lys Asp Val Glu Cys Lys Phe Ser Lys Met Lys Thr
            260                 265                 270

Ala Tyr Glu Asp Val Thr Thr Glu Leu Glu Glu Tyr Lys Glu Ala Phe
        275                 280                 285

Ala Val Ala Leu Lys Ala Asn Ser Ser Met Ser Glu Lys Ile Thr Lys
    290                 295                 300

Ser Asp Lys Lys Ile Ala Val Ile Ser Thr Lys Leu Phe Met Glu Lys
305                 310                 315                 320

Glu Arg Met Glu Tyr Phe Leu Ser Thr Leu Pro Met Arg Pro Asp Pro
                325                 330                 335

Glu Leu Pro Cys Val Glu Asn Leu Asn Ser Ile Glu Leu Asn Arg Lys
            340                 345                 350

Tyr Ile Pro Lys Met Ala Ile Arg Ile Pro Thr Ser Asn Pro Gln Thr
        355                 360                 365

Ser Asn Asn Cys Lys Asn Ser Leu Thr Glu Met Glu Leu Asp Cys Ala
    370                 375                 380

Glu Gln Ile Ile Thr Glu Thr Lys Lys Ser Met Leu Pro Lys Cys Ile
385                 390                 395                 400

Asn
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<210> 5172

<211> 160
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1118; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD18B; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 18B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000473566"

<400> 5172

Lys	Gln	Ala	Glu	Tyr	Glu	Lys	Gln	Leu	Glu	Gln	Leu	Asn	Lys	Asp	Asn
1				5					10						15

Thr	Ala	Ser	Leu	Lys	Lys	Lys	Glu	Leu	Thr	Leu	Lys	Asp	Val	Glu	Cys
			20					25					30		

Lys	Phe	Ser	Lys	Met	Lys	Thr	Ala	Tyr	Glu	Asp	Val	Thr	Thr	Glu	Leu
		35					40					45			

Glu	Glu	Tyr	Lys	Glu	Ala	Phe	Ala	Val	Ala	Leu	Lys	Ala	Asn	Ser	Ser
	50					55					60				

Met	Ser	Glu	Lys	Ile	Thr	Lys	Ser	Asp	Lys	Lys	Ile	Ala	Val	Ile	Ser
65					70					75					80

Thr	Lys	Leu	Phe	Met	Glu	Lys	Glu	Arg	Met	Glu	Tyr	Phe	Leu	Ser	Thr
				85					90					95	

Leu	Pro	Met	Arg	Pro	Asp	Pro	Glu	Leu	Pro	Cys	Val	Glu	Asn	Leu	Asn
			100					105					110		

Ser	Ile	Glu	Leu	Asn	Arg	Lys	Tyr	Ile	Pro	Lys	Met	Ala	Ile	Arg	Ile
		115					120					125			

Pro	Thr	Ser	Asn	Pro	Gln	Thr	Ser	Asn	Asn	Cys	Lys	Asn	Ser	Leu	Thr
	130					135					140				

```
Glu Val Ser Tyr Met Thr Ile Ser Leu Leu Gly Phe Ile Ser Leu Ile
145                 150                 155                 160


<210> 5173
<211> 75
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1118; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD18B; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 18B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000474332"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5173
Xaa Gln Ile Leu Glu His Lys Asn Lys Met Leu Lys Asn His Leu Arg
1               5                   10                  15


Asn Asp Asn Gln Glu Thr Ala Ala Met Lys Pro Glu Asn Leu Lys Lys
            20                  25                  30


Arg Lys Lys Arg Lys Lys Leu Lys Lys Arg Lys Glu Gly Ala Lys Glu
        35                  40                  45


His Asn Leu Lys Val Ala Ser Glu Glu Lys Gln Glu Arg Leu Glu Arg
    50                  55                  60


Ser Glu Asn Lys Gln Pro Gln Asp Ser Gln Ser
65                  70                  75


<210> 5174
<211> 327
<212> PRT
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<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1119; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD2; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 2 (stretch responsive muscle); "

<220>
<221> source
<223> /note="Uniprot ID: Q9GZV1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000298808"

<400> 5174

```
Met Ala Lys Ala Pro Ser Trp Ala Gly Val Gly Ala Leu Ala Tyr Lys
1               5                  10                  15

Ala Pro Glu Ala Leu Trp Pro Ala Glu Ala Val Met Asp Gly Thr Met
            20                  25                  30

Glu Asp Ser Glu Ala Val Gln Arg Ala Thr Ala Leu Ile Glu Gln Arg
        35                  40                  45

Leu Ala Gln Glu Glu Glu Asn Glu Lys Leu Arg Gly Asp Ala Arg Gln
    50                  55                  60

Lys Leu Pro Met Asp Leu Leu Val Leu Glu Asp Glu Lys His His Gly
65                  70                  75                  80

Ala Gln Ser Ala Ala Leu Gln Lys Val Lys Gly Gln Glu Arg Val Arg
                85                  90                  95

Lys Thr Ser Leu Asp Leu Arg Arg Glu Ile Ile Asp Val Gly Gly Ile
            100                 105                 110

Gln Asn Leu Ile Glu Leu Arg Lys Lys Arg Lys Gln Lys Lys Arg Asp
        115                 120                 125

Ala Leu Ala Ala Ser His Glu Pro Pro Pro Glu Pro Glu Glu Ile Thr
```

130 135 140

Gly Pro Val Asp Glu Glu Thr Phe Leu Lys Ala Ala Val Glu Gly Lys
145 150 155 160

Met Lys Val Ile Glu Lys Phe Leu Ala Asp Gly Gly Ser Ala Asp Thr
165 170 175

Cys Asp Gln Phe Arg Arg Thr Ala Leu His Arg Ala Ser Leu Glu Gly
180 185 190

His Met Glu Ile Leu Glu Lys Leu Leu Asp Asn Gly Ala Thr Val Asp
195 200 205

Phe Gln Asp Arg Leu Asp Cys Thr Ala Met His Trp Ala Cys Arg Gly
210 215 220

Gly His Leu Glu Val Val Lys Leu Leu Gln Ser His Gly Ala Asp Thr
225 230 235 240

Asn Val Arg Asp Lys Glu Gly Asp Thr Ala Leu His Asp Ala Val Arg
245 250 255

Leu Asn Arg Tyr Lys Ile Ile Lys Leu Leu Leu Leu His Gly Ala Asp
260 265 270

Met Met Thr Lys Asn Leu Ala Gly Lys Thr Pro Thr Asp Leu Val Gln
275 280 285

Leu Trp Gln Ala Asp Thr Arg His Ala Leu Glu His Pro Glu Pro Gly
290 295 300

Ala Glu His Asn Gly Leu Glu Gly Pro Asn Asp Ser Gly Arg Glu Thr
305 310 315 320

Pro Gln Pro Val Pro Ala Gln
325

<210> 5175
<211> 360
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1119; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD2; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 2 (stretch responsive muscle); "

<220>
<221> source
<223> /note="Uniprot ID: Q9GZV1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000306163"

<400> 5175

```
Met Ala Lys Ala Pro Ser Trp Ala Gly Val Gly Ala Leu Ala Tyr Lys
1               5                  10                  15

Ala Pro Glu Ala Leu Trp Pro Ala Glu Ala Val Met Asp Gly Thr Met
            20                  25                  30

Glu Asp Ser Glu Ala Val Gln Arg Ala Thr Ala Leu Ile Glu Gln Arg
        35                  40                  45

Leu Ala Gln Glu Glu Glu Asn Glu Lys Leu Arg Gly Asp Ala Arg Gln
    50                  55                  60

Lys Leu Pro Met Asp Leu Leu Val Leu Glu Asp Glu Lys His His Gly
65                  70                  75                  80

Ala Gln Ser Ala Ala Leu Gln Lys Val Lys Gly Gln Glu Arg Val Arg
                85                  90                  95

Lys Thr Ser Leu Asp Leu Arg Arg Glu Ile Ile Asp Val Gly Gly Ile
            100                 105                 110

Gln Asn Leu Ile Glu Leu Arg Lys Lys Arg Lys Gln Lys Lys Arg Asp
        115                 120                 125

Ala Leu Ala Ala Ser His Glu Pro Pro Pro Glu Pro Glu Glu Ile Thr
    130                 135                 140
```

Gly Pro Val Asp Glu Glu Thr Phe Leu Lys Ala Ala Val Glu Gly Lys
145 150 155 160

Met Lys Val Ile Glu Lys Phe Leu Ala Asp Gly Gly Ser Ala Asp Thr
165 170 175

Cys Asp Gln Phe Arg Arg Thr Ala Leu His Arg Ala Ser Leu Glu Gly
180 185 190

His Met Glu Ile Leu Glu Lys Leu Leu Asp Asn Gly Ala Thr Val Asp
195 200 205

Phe Gln Asp Arg Leu Asp Cys Thr Ala Met His Trp Ala Cys Arg Gly
210 215 220

Gly His Leu Glu Val Val Lys Leu Leu Gln Ser His Gly Ala Asp Thr
225 230 235 240

Asn Val Arg Asp Lys Leu Leu Ser Thr Pro Leu His Val Ala Val Arg
245 250 255

Thr Gly Gln Val Glu Ile Val Glu His Phe Leu Ser Leu Gly Leu Glu
260 265 270

Ile Asn Ala Arg Asp Arg Glu Gly Asp Thr Ala Leu His Asp Ala Val
275 280 285

Arg Leu Asn Arg Tyr Lys Ile Ile Lys Leu Leu Leu Leu His Gly Ala
290 295 300

Asp Met Met Thr Lys Asn Leu Ala Gly Lys Thr Pro Thr Asp Leu Val
305 310 315 320

Gln Leu Trp Gln Ala Asp Thr Arg His Ala Leu Glu His Pro Glu Pro
325 330 335

Gly Ala Glu His Asn Gly Leu Glu Gly Pro Asn Asp Ser Gly Arg Glu
340 345 350

Thr Pro Gln Pro Val Pro Ala Gln
355 360

<210> 5176

<211> 333
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1119; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD2; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 2 (stretch responsive muscle); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000359689"

<400> 5176

```
Met Asp Gly Thr Met Glu Asp Ser Glu Ala Val Gln Arg Ala Thr Ala
1               5                  10                  15

Leu Ile Glu Gln Arg Leu Ala Gln Glu Glu Glu Asn Glu Lys Leu Arg
            20                  25                  30

Gly Asp Ala Arg Gln Lys Leu Pro Met Asp Leu Leu Val Leu Glu Asp
        35                  40                  45

Glu Lys His His Gly Ala Gln Ser Ala Ala Leu Gln Lys Val Lys Gly
    50                  55                  60

Gln Glu Arg Val Arg Lys Thr Ser Leu Asp Leu Arg Arg Glu Ile Ile
65                  70                  75                  80

Asp Val Gly Gly Ile Gln Asn Leu Ile Glu Leu Arg Lys Lys Arg Lys
                85                  90                  95

Gln Lys Lys Arg Asp Ala Leu Ala Ala Ser His Glu Pro Pro Pro Glu
            100                 105                 110

Pro Glu Glu Ile Thr Gly Pro Val Asp Glu Glu Thr Phe Leu Lys Ala
        115                 120                 125

Ala Val Glu Gly Lys Met Lys Val Ile Glu Lys Phe Leu Ala Asp Gly
    130                 135                 140
```

```
Gly Ser Ala Asp Thr Cys Asp Gln Phe Arg Arg Thr Ala Leu His Arg
145                 150                 155                 160

Ala Ser Leu Glu Gly His Met Glu Ile Leu Glu Lys Leu Leu Asp Asn
                165                 170                 175

Gly Ala Thr Val Asp Phe Gln Asp Arg Leu Asp Cys Thr Ala Met His
            180                 185                 190

Trp Ala Cys Arg Gly Gly His Leu Glu Val Val Lys Leu Leu Gln Ser
        195                 200                 205

His Gly Ala Asp Thr Asn Val Arg Asp Lys Leu Leu Ser Thr Pro Leu
    210                 215                 220

His Val Ala Val Arg Thr Gly Gln Val Glu Ile Val Glu His Phe Leu
225                 230                 235                 240

Ser Leu Gly Leu Glu Ile Asn Ala Arg Asp Arg Glu Gly Asp Thr Ala
                245                 250                 255

Leu His Asp Ala Val Arg Leu Asn Arg Tyr Lys Ile Ile Lys Leu Leu
            260                 265                 270

Leu Leu His Gly Ala Asp Met Met Thr Lys Asn Leu Ala Gly Lys Thr
        275                 280                 285

Pro Thr Asp Leu Val Gln Leu Trp Gln Ala Asp Thr Arg His Ala Leu
    290                 295                 300

Glu His Pro Glu Pro Gly Ala Glu His Asn Gly Leu Glu Gly Pro Asn
305                 310                 315                 320

Asp Ser Gly Arg Glu Thr Pro Gln Pro Val Pro Ala Gln
                325                 330
```

<210> 5177
<211> 300
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1119; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD2; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 2 (stretch responsive muscle); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000403114"

<400> 5177

```
Met Asp Gly Thr Met Glu Asp Ser Glu Ala Val Gln Arg Ala Thr Ala
1               5                  10                  15

Leu Ile Glu Gln Arg Leu Ala Gln Glu Glu Glu Asn Glu Lys Leu Arg
            20                  25                  30

Gly Asp Ala Arg Gln Lys Leu Pro Met Asp Leu Leu Val Leu Glu Asp
        35                  40                  45

Glu Lys His His Gly Ala Gln Ser Ala Ala Leu Gln Lys Val Lys Gly
    50                  55                  60

Gln Glu Arg Val Arg Lys Thr Ser Leu Asp Leu Arg Arg Glu Ile Ile
65                  70                  75                  80

Asp Val Gly Gly Ile Gln Asn Leu Ile Glu Leu Arg Lys Lys Arg Lys
                85                  90                  95

Gln Lys Lys Arg Asp Ala Leu Ala Ala Ser His Glu Pro Pro Pro Glu
            100                 105                 110

Pro Glu Glu Ile Thr Gly Pro Val Asp Glu Glu Thr Phe Leu Lys Ala
        115                 120                 125

Ala Val Glu Gly Lys Met Lys Val Ile Glu Lys Phe Leu Ala Asp Gly
    130                 135                 140

Gly Ser Ala Asp Thr Cys Asp Gln Phe Arg Arg Thr Ala Leu His Arg
145                 150                 155                 160

Ala Ser Leu Glu Gly His Met Glu Ile Leu Glu Lys Leu Leu Asp Asn
                165                 170                 175
```

```
Gly Ala Thr Val Asp Phe Gln Asp Arg Leu Asp Cys Thr Ala Met His
            180                 185                 190

Trp Ala Cys Arg Gly Gly His Leu Glu Val Val Lys Leu Leu Gln Ser
        195                 200                 205

His Gly Ala Asp Thr Asn Val Arg Asp Lys Glu Gly Asp Thr Ala Leu
    210                 215                 220

His Asp Ala Val Arg Leu Asn Arg Tyr Lys Ile Ile Lys Leu Leu Leu
225                 230                 235                 240

Leu His Gly Ala Asp Met Met Thr Lys Asn Leu Ala Gly Lys Thr Pro
                245                 250                 255

Thr Asp Leu Val Gln Leu Trp Gln Ala Asp Thr Arg His Ala Leu Glu
            260                 265                 270

His Pro Glu Pro Gly Ala Glu His Asn Gly Leu Glu Gly Pro Asn Asp
        275                 280                 285

Ser Gly Arg Glu Thr Pro Gln Pro Val Pro Ala Gln
    290                 295                 300


<210> 5178
<211> 823
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1120; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD20A1; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 20
      family, member A1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q5TYW2; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000477695"

<400> 5178
Met Lys Leu Phe Gly Phe Gly Ser Arg Arg Gly Gln Thr Ala Gln Gly
1   5   10   15

Ser Ile Asp His Val Tyr Thr Gly Ser Gly Tyr Arg Ile Arg Asp Ser
            20   25   30

Glu Leu Gln Lys Ile His Arg Ala Ala Val Lys Gly Asp Ala Ala Glu
        35   40   45

Val Glu Arg Cys Leu Ala Arg Arg Ser Gly Asp Leu Asp Ala Leu Asp
    50   55   60

Lys Gln His Arg Thr Ala Leu His Leu Ala Cys Thr Ser Gly His Val
65   70   75   80

Gln Val Val Thr Leu Leu Val Asn Arg Lys Cys Gln Ile Asp Val Cys
                85   90   95

Asp Lys Glu Asn Arg Thr Pro Leu Ile Gln Ala Val His Cys Gln Glu
            100   105   110

Glu Ala Cys Ala Val Ile Leu Leu Glu His Gly Ala Asn Pro Asn Leu
        115   120   125

Lys Asp Ile Tyr Gly Asn Thr Ala Leu His Tyr Ala Val Tyr Ser Glu
    130   135   140

Ser Thr Ser Leu Ala Glu Lys Leu Leu Ser His Gly Ala His Ile Glu
145   150   155   160

Ala Leu Asp Lys Asp Asn Asn Thr Pro Leu Leu Phe Ala Ile Ile Cys
                165   170   175

Lys Lys Glu Lys Met Val Glu Phe Leu Leu Lys Lys Lys Ala Ser Ser
            180   185   190

His Ala Val Asp Arg Leu Arg Arg Ser Ala Leu Met Leu Ala Val Tyr
        195   200   205

```
Tyr Asp Ser Pro Gly Ile Val Asn Ile Leu Leu Lys Gln Asn Ile Asp
    210                 215                 220

Val Phe Ala Gln Asp Met Cys Gly Arg Asp Ala Glu Asp Tyr Ala Ile
225                 230                 235                 240

Ser His His Leu Thr Lys Ile Gln Gln Gln Ile Leu Glu His Lys Lys
                245                 250                 255

Lys Ile Leu Lys Lys Glu Lys Ser Asp Val Gly Ser Ser Asp Glu Ser
            260                 265                 270

Ala Val Ser Ile Phe His Glu Leu Arg Val Asp Ser Leu Pro Ala Ser
        275                 280                 285

Asp Asp Lys Asp Leu Asn Val Ala Thr Lys Gln Cys Val Pro Glu Lys
    290                 295                 300

Val Ser Glu Pro Leu Pro Gly Ser Ser His Glu Lys Gly Asn Arg Ile
305                 310                 315                 320

Val Asn Gly Gln Gly Glu Gly Pro Pro Ala Lys His Pro Ser Leu Lys
                325                 330                 335

Pro Ser Thr Glu Val Glu Asp Pro Ala Val Lys Gly Ala Val Gln Arg
            340                 345                 350

Lys Asn Val Gln Thr Leu Arg Ala Glu Gln Ala Leu Pro Val Ala Ser
        355                 360                 365

Glu Glu Glu Gln Glu Arg His Glu Arg Ser Glu Lys Lys Gln Pro Gln
    370                 375                 380

Val Lys Glu Gly Asn Asn Thr Asn Lys Ser Glu Lys Ile Gln Leu Ser
385                 390                 395                 400

Glu Asn Ile Cys Asp Ser Thr Ser Ser Ala Ala Ala Gly Arg Leu Thr
                405                 410                 415

Gln Gln Arg Lys Ile Gly Lys Thr Tyr Pro Gln Gln Phe Pro Lys Lys
            420                 425                 430

Leu Lys Glu Glu His Asp Arg Cys Thr Leu Lys Gln Glu Asn Glu Glu
```

```
        435                 440                 445

Lys Thr Asn Val Asn Met Leu Tyr Lys Lys Asn Arg Glu Glu Leu Glu
    450                 455                 460

Arg Lys Glu Lys Gln Tyr Lys Lys Glu Val Glu Ala Lys Gln Leu Glu
465                 470                 475                 480

Pro Thr Val Gln Ser Leu Glu Met Lys Ser Lys Thr Ala Arg Asn Thr
                485                 490                 495

Pro Asn Trp Asp Phe His Asn His Glu Glu Met Lys Gly Leu Met Asp
            500                 505                 510

Glu Asn Cys Ile Leu Lys Ala Asp Ile Ala Ile Leu Arg Gln Glu Ile
        515                 520                 525

Cys Thr Met Lys Asn Asp Asn Leu Glu Lys Glu Asn Lys Tyr Leu Lys
    530                 535                 540

Asp Ile Lys Ile Val Lys Glu Thr Asn Ala Ala Leu Glu Lys Tyr Ile
545                 550                 555                 560

Lys Leu Asn Glu Glu Met Ile Thr Glu Thr Ala Phe Arg Tyr Gln Gln
                565                 570                 575

Glu Leu Asn Asp Leu Lys Ala Glu Asn Thr Arg Leu Asn Ala Glu Leu
            580                 585                 590

Leu Lys Glu Lys Glu Ser Lys Lys Arg Leu Glu Ala Asp Ile Glu Ser
        595                 600                 605

Tyr Gln Ser Arg Leu Ala Ala Ala Ile Ser Lys His Ser Glu Ser Val
    610                 615                 620

Lys Thr Glu Arg Asn Leu Lys Leu Ala Leu Glu Arg Thr Arg Asp Val
625                 630                 635                 640

Ser Val Gln Val Glu Met Ser Ser Ala Ile Ser Lys Val Lys Ala Glu
                645                 650                 655

Asn Glu Phe Leu Thr Glu Gln Leu Ser Glu Thr Gln Ile Lys Phe Asn
            660                 665                 670
```

```
Ala Leu Lys Asp Lys Phe Arg Lys Thr Arg Asp Ser Leu Arg Lys Lys
        675                 680                 685

Ser Leu Ala Leu Glu Thr Val Gln Asn Asp Leu Ser Gln Thr Gln Gln
    690                 695                 700

Gln Thr Gln Glu Met Lys Glu Met Tyr Gln Asn Ala Glu Ala Lys Val
705                 710                 715                 720

Asn Asn Ser Thr Gly Lys Trp Asn Cys Val Glu Glu Arg Ile Cys His
                725                 730                 735

Leu Gln Arg Glu Asn Ala Trp Leu Val Gln Gln Leu Asp Asp Val His
            740                 745                 750

Gln Lys Glu Asp His Lys Glu Ile Val Thr Asn Ile Gln Arg Gly Phe
        755                 760                 765

Ile Glu Ser Gly Lys Lys Asp Leu Val Leu Glu Glu Lys Ser Lys Lys
    770                 775                 780

Leu Met Asn Glu Cys Asp His Leu Lys Glu Ser Leu Phe Gln Tyr Glu
785                 790                 795                 800

Arg Glu Lys Thr Glu Gly Val Val Ser Ile Lys Glu Asp Lys Tyr Phe
                805                 810                 815

Gln Thr Ser Arg Lys Thr Ile
            820


<210> 5179
<211> 185
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1120; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD20A1; "

<220>
<221> source
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<223> /note="Gene Name:
ankyrin repeat domain 20
family, member A1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000481217"

<400> 5179

```
Met Lys Leu Phe Gly Phe Gly Ser Arg Arg Gly Gln Thr Ala Gln Gly
1               5                  10                  15

Ser Ile Asp His Val Tyr Thr Gly Ser Gly Tyr Arg Ile Arg Asp Ser
            20                  25                  30

Glu Leu Gln Lys Ile His Arg Ala Ala Val Lys Gly Asp Ala Ala Glu
        35                  40                  45

Val Glu Arg Cys Leu Ala Arg Arg Ser Gly Asp Leu Asp Ala Leu Asp
    50                  55                  60

Lys Gln His Arg Thr Ala Leu His Leu Ala Cys Thr Ser Gly His Val
65                  70                  75                  80

Gln Val Val Thr Leu Leu Val Asn Arg Lys Cys Gln Ile Asp Val Cys
                85                  90                  95

Asp Lys Glu Asn Arg Thr Pro Leu Ile Gln Ala Val His Cys Gln Glu
            100                 105                 110

Glu Ala Cys Ala Val Ile Leu Leu Glu His Gly Ala Asn Pro Asn Leu
        115                 120                 125

Lys Asp Ile Tyr Gly Asn Thr Ala Leu His Tyr Ala Val Tyr Ser Glu
    130                 135                 140

Ser Thr Ser Leu Ala Glu Lys Leu Leu Ser His Gly Ala His Ile Glu
145                 150                 155                 160

Ala Leu Asp Lys Gln Cys Val Pro Glu Lys Val Ser Glu Pro Leu Pro
                165                 170                 175

Gly Ser Ser His Glu Lys Gly Asn Arg
            180                 185
```

<210> 5180
<211> 95
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1120; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD20A1; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 20
family, member A1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000483923"

<400> 5180
Met Lys Leu Phe Gly Phe Gly Ser Arg Arg Gly Gln Thr Ala Gln Gly
1 5 10 15

Ser Ile Asp His Val Tyr Thr Gly Ser Gly Tyr Arg Ile Arg Asp Ser
20 25 30

Glu Leu Gln Lys Ile His Arg Ala Ala Val Lys Gly Asp Ala Ala Glu
35 40 45

Val Glu Arg Cys Leu Ala Arg Arg Ser Gly Asp Leu Asp Ala Leu Asp
50 55 60

Lys Gln His Arg Glu Phe Phe Gln Ile Lys Ser Ser Asn Thr Leu Lys
65 70 75 80

Val Gly Lys Val Pro Phe Ser Arg Ser Thr Ser Tyr Leu Tyr Thr
85 90 95

<210> 5181
<211> 823
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1121; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD20A2; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 20
family, member A2; "

<220>
<221> source
<223> /note="Uniprot ID: Q5SQ80; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000366826"

<400> 5181
Met Lys Leu Phe Gly Phe Gly Ser Arg Arg Gly Gln Thr Ala Gln Gly
1   5   10   15

Ser Ile Asp His Val Tyr Thr Gly Ser Gly Tyr Arg Ile Arg Asp Ser
            20   25   30

Glu Leu Gln Lys Ile His Arg Ala Ala Val Lys Gly Asp Ala Ala Glu
        35   40   45

Val Glu Arg Cys Leu Ala Arg Arg Ser Gly Asp Leu Asp Ala Leu Asp
    50   55   60

Lys Gln His Arg Thr Ala Leu His Leu Ala Cys Ala Ser Gly His Val
65   70   75   80

Gln Val Val Thr Leu Leu Val Asn Arg Lys Cys Gln Ile Asp Val Cys
                85   90   95

Asp Lys Glu Asn Arg Thr Pro Leu Ile Gln Ala Val His Cys Gln Glu
            100   105   110

Glu Ala Cys Ala Val Ile Leu Leu Glu His Gly Ala Asn Pro Asn Leu
        115   120   125

Lys Asp Ile Tyr Gly Asn Thr Ala Leu His Tyr Ala Val Tyr Ser Glu
    130   135   140

Ser Thr Ser Leu Ala Glu Lys Leu Leu Ser His Gly Ala His Ile Glu
145   150   155   160

```
Ala Leu Asp Lys Asp Asn Asn Thr Pro Leu Leu Phe Ala Ile Ile Cys
                165                 170                 175

Lys Lys Glu Lys Met Val Glu Phe Leu Leu Lys Arg Lys Ala Ser Ser
            180                 185                 190

His Ala Val Asp Arg Leu Arg Arg Ser Ala Leu Met Leu Ala Val Tyr
        195                 200                 205

Tyr Asp Ser Pro Gly Ile Val Asn Ile Leu Leu Lys Gln Asn Ile Asp
    210                 215                 220

Val Phe Ala Gln Asp Met Cys Gly Arg Asp Ala Glu Asp Tyr Ala Ile
225                 230                 235                 240

Ser His His Leu Thr Lys Ile Gln Gln Gln Ile Leu Glu His Lys Lys
                245                 250                 255

Lys Ile Leu Lys Lys Glu Lys Ser Asp Val Gly Ser Ser Asp Glu Ser
            260                 265                 270

Ala Val Ser Ile Phe His Glu Leu Arg Val Asp Ser Leu Pro Ala Ser
        275                 280                 285

Asp Asp Lys Asp Leu Asn Val Ala Thr Lys Gln Cys Val Pro Glu Lys
    290                 295                 300

Val Ser Glu Pro Leu Pro Gly Ser Ser His Glu Lys Gly Asn Arg Ile
305                 310                 315                 320

Val Asn Gly Gln Gly Glu Gly Pro Pro Ala Lys His Pro Ser Leu Lys
                325                 330                 335

Pro Ser Thr Glu Val Glu Asp Pro Ala Val Lys Gly Ala Val Gln Arg
            340                 345                 350

Lys Asn Val Gln Thr Leu Arg Ala Glu Gln Ala Leu Pro Val Ala Ser
        355                 360                 365

Glu Glu Glu Gln Glu Arg His Glu Arg Ser Glu Lys Lys Gln Pro Gln
    370                 375                 380
```

```
Val Lys Glu Gly Asn Asn Thr Asn Lys Ser Glu Lys Ile Gln Leu Ser
385                 390                 395                 400

Glu Asn Ile Cys Asp Ser Thr Ser Ser Ala Ala Ala Gly Arg Leu Thr
                405                 410                 415

Gln Gln Arg Lys Ile Gly Lys Thr Tyr Pro Gln Gln Phe Pro Lys Lys
            420                 425                 430

Leu Lys Glu Glu His Asp Arg Cys Thr Leu Lys Gln Glu Asn Glu Glu
        435                 440                 445

Lys Thr Asn Val Asn Met Leu Tyr Lys Lys Asn Arg Glu Glu Leu Glu
    450                 455                 460

Arg Lys Glu Lys Gln Tyr Lys Lys Glu Val Glu Ala Lys Gln Leu Glu
465                 470                 475                 480

Pro Thr Val Gln Ser Leu Glu Met Lys Ser Lys Thr Ala Arg Asn Thr
                485                 490                 495

Pro Asn Arg Asp Phe His Asn His Glu Glu Met Lys Gly Leu Met Asp
            500                 505                 510

Glu Asn Cys Ile Leu Lys Ala Asp Ile Ala Ile Leu Arg Gln Glu Ile
        515                 520                 525

Cys Thr Met Lys Asn Asp Asn Leu Glu Lys Glu Asn Lys Tyr Leu Lys
    530                 535                 540

Asp Ile Lys Ile Val Lys Glu Thr Asn Ala Ala Leu Glu Lys Tyr Ile
545                 550                 555                 560

Lys Leu Asn Glu Glu Met Ile Thr Glu Thr Ala Phe Arg Tyr Gln Gln
                565                 570                 575

Glu Leu Asn Asp Leu Lys Ala Glu Asn Thr Arg Leu Asn Ala Glu Leu
            580                 585                 590

Leu Lys Glu Lys Glu Ser Lys Lys Arg Leu Glu Ala Asp Ile Glu Ser
        595                 600                 605
```

```
Tyr Gln Ser Arg Leu Ala Ala Ala Ile Ser Lys His Ser Glu Ser Val
    610                 615                 620

Lys Thr Glu Arg Asn Leu Lys Leu Ala Leu Glu Arg Thr Arg Asp Val
625                 630                 635                 640

Ser Val Gln Val Glu Met Ser Ser Ala Ile Ser Lys Val Lys Asp Glu
                645                 650                 655

Asn Glu Phe Leu Thr Glu Gln Leu Ser Glu Thr Gln Ile Lys Phe Asn
            660                 665                 670

Ala Leu Lys Asp Lys Phe Arg Lys Thr Arg Asp Ser Leu Arg Lys Lys
        675                 680                 685

Ser Leu Ala Leu Glu Thr Val Gln Asn Asp Leu Ser Gln Thr Gln Gln
    690                 695                 700

Gln Thr Gln Glu Met Lys Glu Met Tyr Gln Asn Ala Glu Ala Lys Val
705                 710                 715                 720

Asn Asn Ser Thr Gly Lys Trp Asn Cys Val Glu Glu Arg Ile Cys His
                725                 730                 735

Leu Gln Arg Glu Asn Ala Trp Leu Val Gln Gln Leu Asp Asp Val His
            740                 745                 750

Gln Lys Glu Asp His Lys Glu Ile Val Thr Asn Ile Gln Arg Gly Phe
        755                 760                 765

Ile Glu Ser Gly Lys Lys Asp Leu Val Leu Glu Glu Lys Ser Lys Lys
    770                 775                 780

Leu Met Asn Glu Cys Asp His Leu Lys Glu Ser Leu Phe Gln Tyr Glu
785                 790                 795                 800

Arg Glu Lys Thr Glu Gly Val Val Ser Ile Lys Glu Asp Lys Tyr Phe
                805                 810                 815

Gln Thr Ser Arg Lys Lys Ile
            820
```

<210> 5182

<211> 142
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1121; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD20A2; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 20
family, member A2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000484370"

<400> 5182

```
Met Lys Leu Phe Gly Phe Gly Ser Arg Arg Gly Gln Thr Ala Gln Gly
1               5                  10                  15

Ser Ile Asp His Val Tyr Thr Gly Ser Gly Tyr Arg Ile Arg Asp Ser
            20                  25                  30

Glu Leu Gln Lys Ile His Arg Ala Ala Val Lys Gly Asp Ala Ala Glu
        35                  40                  45

Val Glu Arg Cys Leu Ala Arg Arg Ser Gly Asp Leu Asp Ala Leu Asp
    50                  55                  60

Lys Gln His Arg Leu Ser Ile Ala Arg Lys Arg Leu Val Pro Leu Phe
65                  70                  75                  80

Cys Trp Asn Met Ala Pro Ile Gln Thr Leu Arg Ile Ser Thr Ala Thr
                85                  90                  95

Leu Leu Ser Ile Met Pro Cys Ile Val Arg Ala Pro His Trp Gln Lys
            100                 105                 110

Asn Cys Phe Pro Met Val His Ile Leu Lys His Trp Thr Arg Tyr Arg
        115                 120                 125

Ser Ile Asn Phe Leu Ser Lys Ile Phe Val Leu Thr Leu Thr
    130                 135                 140
```

<210> 5183
<211> 95
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1122; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD20A3; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 20
family, member A3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000481596"

<400> 5183
Met Lys Leu Phe Gly Phe Gly Ser Arg Arg Gly Gln Thr Ala Gln Gly
1 5 10 15

Ser Ile Asp His Val Tyr Thr Gly Ser Gly Tyr Arg Ile Arg Asp Ser
20 25 30

Glu Leu Gln Lys Ile His Arg Ala Ala Val Lys Gly Asp Ala Ala Glu
35 40 45

Val Glu Arg Cys Leu Ala Arg Arg Ser Gly Asp Leu Asp Ala Leu Asp
50 55 60

Lys Gln His Arg Lys Phe Phe Gln Ile Lys Ser Ser Asn Thr Leu Lys
65 70 75 80

Val Gly Lys Val Pro Phe Ser Arg Ser Thr Ser Tyr Leu Tyr Thr
85 90 95

<210> 5184
<211> 823
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1122; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD20A3; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 20
family, member A3; "

<220>
<221> source
<223> /note="Uniprot ID: Q5VUR7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000482325"

<400> 5184

```
Met Lys Leu Phe Gly Phe Gly Ser Arg Arg Gly Gln Thr Ala Gln Gly
1               5                  10                  15


Ser Ile Asp His Val Tyr Thr Gly Ser Gly Tyr Arg Ile Arg Asp Ser
            20                  25                  30


Glu Leu Gln Lys Ile His Arg Ala Ala Val Lys Gly Asp Ala Ala Glu
        35                  40                  45


Val Glu Arg Cys Leu Ala Arg Arg Ser Gly Asp Leu Asp Ala Leu Asp
    50                  55                  60


Lys Gln His Arg Thr Ala Leu His Leu Ala Cys Ala Ser Gly His Val
65                  70                  75                  80


Gln Val Val Thr Leu Leu Val Asn Arg Lys Cys Gln Ile Asp Val Cys
                85                  90                  95


Asp Lys Glu Asn Arg Thr Pro Leu Ile Gln Ala Val His Cys Gln Glu
            100                 105                 110


Glu Ala Cys Ala Val Ile Leu Leu Glu His Gly Ala Asn Pro Asn Leu
        115                 120                 125


Lys Asp Ile Tyr Gly Asn Thr Ala Leu His Tyr Ala Val Tyr Ser Glu
    130                 135                 140
```

```
Ser Thr Ser Leu Ala Glu Lys Leu Leu Ser His Gly Ala His Ile Glu
145                 150                 155                 160

Ala Leu Asp Lys Asp Asn Asn Thr Pro Leu Leu Phe Ala Ile Ile Cys
                165                 170                 175

Lys Lys Glu Lys Met Val Glu Phe Leu Leu Lys Arg Lys Ala Ser Ser
            180                 185                 190

His Ala Val Asp Arg Leu Arg Arg Ser Ala Leu Met Leu Ala Val Tyr
        195                 200                 205

Tyr Asp Ser Pro Gly Ile Val Asn Ile Leu Leu Lys Gln Asn Ile Asp
    210                 215                 220

Val Phe Ala Gln Asp Met Cys Gly Arg Asp Ala Glu Asp Tyr Ala Ile
225                 230                 235                 240

Ser His His Leu Thr Lys Ile Gln Gln Gln Ile Leu Glu His Lys Lys
                245                 250                 255

Lys Ile Leu Lys Lys Glu Lys Ser Asp Val Gly Ser Ser Asp Glu Ser
            260                 265                 270

Ala Val Ser Ile Phe His Glu Leu Arg Val Asp Ser Leu Pro Ala Ser
        275                 280                 285

Asp Asp Lys Asp Leu Asn Val Ala Thr Lys Gln Cys Val Pro Glu Lys
    290                 295                 300

Val Ser Glu Pro Leu Pro Gly Ser Ser His Glu Lys Gly Asn Arg Ile
305                 310                 315                 320

Val Asn Gly Gln Gly Glu Gly Pro Pro Ala Lys His Pro Ser Leu Lys
                325                 330                 335

Pro Ser Thr Glu Val Glu Asp Pro Ala Val Lys Gly Ala Val Gln Arg
            340                 345                 350

Lys Asn Val Gln Thr Leu Arg Ala Glu Gln Ala Leu Pro Val Ala Ser
        355                 360                 365

Glu Glu Glu Gln Glu Arg His Glu Arg Ser Glu Lys Lys Gln Pro Gln
```

```
    370                 375                 380

Val Lys Glu Gly Asn Asn Thr Asn Lys Ser Glu Lys Ile Gln Leu Ser
385                 390                 395                 400

Glu Asn Ile Cys Asp Ser Thr Ser Ser Ala Ala Ala Gly Arg Leu Thr
                405                 410                 415

Gln Gln Arg Lys Ile Gly Lys Thr Tyr Pro Gln Gln Phe Pro Lys Lys
            420                 425                 430

Leu Lys Glu Glu His Asp Arg Cys Thr Leu Lys Gln Glu Asn Glu Glu
        435                 440                 445

Lys Thr Asn Val Asn Met Leu Tyr Lys Lys Asn Arg Glu Glu Leu Glu
    450                 455                 460

Arg Lys Glu Lys Gln Tyr Lys Lys Glu Val Glu Ala Lys Gln Leu Glu
465                 470                 475                 480

Pro Thr Val Gln Ser Leu Glu Met Lys Ser Lys Thr Ala Arg Asn Thr
                485                 490                 495

Pro Asn Arg Asp Phe His Asn His Glu Glu Met Lys Gly Leu Met Asp
            500                 505                 510

Glu Asn Cys Ile Leu Lys Ala Asp Ile Ala Ile Leu Arg Gln Glu Ile
        515                 520                 525

Cys Thr Met Lys Asn Asp Asn Leu Glu Lys Glu Asn Lys Tyr Leu Lys
    530                 535                 540

Asp Ile Lys Ile Val Lys Glu Thr Asn Ala Ala Leu Glu Lys Tyr Ile
545                 550                 555                 560

Lys Leu Asn Glu Glu Met Ile Thr Glu Thr Ala Phe Arg Tyr Gln Gln
                565                 570                 575

Glu Leu Asn Tyr Leu Lys Ala Glu Asn Thr Arg Leu Asn Ala Glu Leu
            580                 585                 590

Leu Lys Glu Lys Glu Ser Lys Lys Arg Leu Glu Ala Asp Ile Glu Ser
        595                 600                 605
```

```
Tyr Gln Ser Arg Leu Ala Ala Ala Ile Ser Lys His Ser Glu Ser Val
    610                 615                 620

Lys Thr Glu Arg Asn Leu Lys Leu Ala Leu Glu Arg Thr Arg Asp Val
625                 630                 635                 640

Ser Val Gln Val Glu Met Ser Ser Ala Ile Ser Lys Val Lys Asp Glu
                645                 650                 655

Asn Glu Phe Leu Thr Glu Gln Leu Ser Glu Thr Gln Ile Lys Phe Asn
            660                 665                 670

Ala Leu Lys Asp Lys Phe Arg Lys Thr Arg Asp Ser Leu Arg Lys Lys
        675                 680                 685

Ser Leu Ala Leu Glu Thr Val Gln Asn Asp Leu Ser Gln Thr Gln Gln
    690                 695                 700

Gln Thr Gln Glu Met Lys Glu Met Tyr Gln Asn Ala Glu Ala Lys Val
705                 710                 715                 720

Asn Asn Ser Thr Gly Lys Trp Asn Cys Val Glu Glu Arg Ile Cys His
                725                 730                 735

Leu Gln Arg Glu Asn Ala Trp Leu Val Gln Gln Leu Asp Asp Val His
            740                 745                 750

Gln Lys Glu Asp His Lys Glu Ile Val Thr Asn Ile Gln Arg Gly Phe
        755                 760                 765

Ile Glu Ser Gly Lys Lys Asp Leu Val Leu Glu Glu Lys Ser Lys Lys
    770                 775                 780

Leu Met Asn Glu Cys Asp His Leu Lys Glu Ser Leu Phe Gln Tyr Glu
785                 790                 795                 800

Arg Glu Lys Thr Glu Gly Val Val Ser Ile Lys Glu Asp Lys Tyr Phe
                805                 810                 815

Gln Thr Ser Arg Lys Thr Ile
            820
```

<210> 5185
<211> 823
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1123; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD20A4; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 20
family, member A4; "

<220>
<221> source
<223> /note="Uniprot ID: Q4UJ75; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000349891"

<400> 5185

```
Met Lys Leu Phe Gly Phe Gly Ser Arg Arg Gly Gln Thr Ala Gln Gly
1               5                  10                  15

Ser Ile Asp His Val Tyr Thr Gly Ser Gly Tyr Arg Ile Arg Asp Ser
            20                  25                  30

Glu Leu Gln Lys Ile His Arg Ala Ala Val Lys Gly Asp Ala Ala Glu
        35                  40                  45

Val Glu Arg Cys Leu Ala Arg Arg Ser Gly Glu Leu Asp Ala Leu Asp
    50                  55                  60

Lys Gln His Arg Thr Ala Leu His Leu Ala Cys Ala Ser Gly His Val
65                  70                  75                  80

Gln Val Val Thr Leu Leu Val Asn Arg Lys Cys Gln Ile Asp Val Cys
                85                  90                  95

Asp Lys Glu Asn Arg Thr Pro Leu Ile Gln Ala Val His Cys Gln Glu
            100                 105                 110
```

```
Glu Ala Cys Ala Val Ile Leu Leu Glu His Gly Ala Asn Pro Asn Leu
        115                 120                 125

Lys Asp Ile Tyr Gly Asn Thr Ala Leu His Tyr Ala Val Tyr Ser Glu
    130                 135                 140

Ser Thr Ser Leu Ala Glu Lys Leu Leu Ser His Gly Ala His Ile Glu
145                 150                 155                 160

Ala Leu Asp Lys Asp Asn Asn Thr Pro Leu Leu Phe Ala Ile Ile Cys
                165                 170                 175

Lys Lys Glu Lys Met Val Glu Phe Leu Leu Lys Lys Lys Ala Ser Ser
            180                 185                 190

His Ala Val Asp Arg Leu Arg Arg Ser Ala Leu Met Leu Ala Val Tyr
        195                 200                 205

Tyr Asp Ser Pro Gly Ile Val Asn Ile Leu Leu Lys Gln Asn Ile Asp
    210                 215                 220

Val Phe Ala Gln Asp Met Cys Gly Arg Asp Ala Glu Asp Tyr Ala Ile
225                 230                 235                 240

Ser His His Leu Thr Lys Ile Gln Gln Gln Ile Leu Glu His Lys Lys
                245                 250                 255

Lys Ile Leu Lys Lys Glu Lys Ser Asp Val Gly Ser Ser Asp Glu Ser
            260                 265                 270

Ala Val Ser Ile Phe His Glu Leu Arg Val Asp Ser Leu Pro Ala Ser
        275                 280                 285

Asp Asp Lys Asp Leu Asn Val Ala Thr Lys Gln Cys Val Pro Glu Lys
    290                 295                 300

Val Ser Glu Pro Leu Pro Gly Ser Ser His Glu Lys Gly Asn Arg Ile
305                 310                 315                 320

Val Asn Gly Gln Gly Glu Gly Pro Pro Ala Lys His Pro Ser Leu Lys
                325                 330                 335

Pro Ser Thr Glu Val Glu Asp Pro Ala Val Lys Gly Ala Val Gln Arg
```

```
            340                 345                 350

Lys Asn Val Gln Thr Leu Arg Ala Glu Gln Ala Leu Pro Val Ala Ser
        355                 360                 365

Glu Glu Glu Gln Gln Arg His Glu Arg Ser Glu Lys Lys Gln Pro Gln
    370                 375                 380

Val Lys Glu Gly Asn Asn Thr Asn Lys Ser Glu Lys Ile Gln Leu Ser
385                 390                 395                 400

Glu Asn Ile Cys Asp Ser Thr Ser Ser Ala Ala Ala Gly Arg Leu Thr
                405                 410                 415

Gln Gln Arg Lys Ile Gly Lys Thr Tyr Pro Gln Gln Phe Pro Lys Lys
            420                 425                 430

Leu Lys Glu Glu His Asp Arg Cys Thr Leu Lys Gln Glu Asn Glu Glu
        435                 440                 445

Lys Thr Asn Val Asn Met Leu Tyr Lys Lys Asn Arg Glu Glu Leu Glu
    450                 455                 460

Arg Lys Glu Lys Gln Tyr Lys Lys Glu Val Glu Ala Lys Gln Leu Glu
465                 470                 475                 480

Pro Thr Val Gln Ser Leu Glu Met Lys Ser Lys Thr Ala Arg Asn Thr
                485                 490                 495

Pro Asn Trp Asp Phe His Asn His Glu Glu Met Lys Gly Leu Met Asp
            500                 505                 510

Glu Asn Cys Ile Leu Lys Ala Asp Ile Ala Ile Leu Arg Gln Glu Ile
        515                 520                 525

Cys Thr Met Lys Asn Asp Asn Leu Glu Lys Glu Asn Lys Tyr Leu Lys
    530                 535                 540

Asp Ile Lys Ile Val Lys Glu Thr Asn Ala Ala Leu Glu Lys Tyr Ile
545                 550                 555                 560

Lys Leu Asn Glu Glu Met Ile Thr Glu Thr Ala Phe Arg Tyr Gln Gln
                565                 570                 575
```

```
Glu Leu Asn Asp Leu Lys Ala Glu Asn Thr Arg Leu Asn Ala Glu Leu
            580                 585                 590

Leu Lys Glu Lys Glu Ser Lys Lys Arg Leu Glu Ala Asp Ile Glu Ser
        595                 600                 605

Tyr Gln Ser Arg Leu Ala Ala Ala Ile Ser Lys His Ser Glu Ser Val
    610                 615                 620

Lys Thr Glu Arg Asn Leu Lys Leu Ala Leu Glu Arg Thr Gln Asp Val
625                 630                 635                 640

Ser Val Gln Val Glu Met Ser Ser Ala Ile Ser Lys Val Lys Asp Glu
                645                 650                 655

Asn Glu Phe Leu Thr Glu Gln Leu Ser Glu Thr Gln Ile Lys Phe Asn
            660                 665                 670

Ala Leu Lys Asp Lys Phe Arg Lys Thr Arg Asp Ser Leu Arg Lys Lys
        675                 680                 685

Ser Leu Ala Leu Glu Thr Val Gln Asn Asn Leu Ser Gln Thr Gln Gln
    690                 695                 700

Gln Thr Gln Glu Met Lys Glu Met Tyr Gln Asn Ala Glu Ala Lys Val
705                 710                 715                 720

Asn Asn Ser Thr Gly Lys Trp Asn Cys Val Glu Glu Arg Ile Cys His
                725                 730                 735

Leu Gln Arg Glu Asn Ala Trp Leu Val Gln Gln Leu Asp Asp Val His
            740                 745                 750

Gln Lys Glu Asp His Lys Glu Ile Val Thr Asn Ile Gln Arg Gly Phe
        755                 760                 765

Ile Glu Ser Gly Lys Lys Asp Phe Val Leu Glu Glu Lys Ser Lys Lys
    770                 775                 780

Leu Met Asn Glu Cys Asp His Leu Lys Glu Ser Leu Phe Gln Tyr Glu
785                 790                 795                 800
```

```
Arg Glu Lys Thr Glu Val Val Val Ser Ile Lys Glu Asp Lys Tyr Phe
                805                 810                 815

Gln Thr Ser Arg Lys Lys Ile
            820
```

<210> 5186
<211> 142
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 20
family, member A4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000478208"

<400> 5186

```
Met Lys Leu Phe Gly Phe Gly Ser Arg Arg Gly Gln Thr Ala Gln Gly
1               5                  10                  15

Ser Ile Asp His Val Tyr Thr Gly Ser Gly Tyr Arg Ile Arg Asp Ser
            20                  25                  30

Glu Leu Gln Lys Ile His Arg Ala Ala Val Lys Gly Asp Ala Ala Glu
        35                  40                  45

Val Glu Arg Cys Leu Ala Arg Arg Ser Gly Glu Leu Asp Ala Leu Asp
    50                  55                  60

Lys Gln His Arg Leu Ser Ile Ala Arg Lys Arg Leu Val Pro Leu Phe
65                  70                  75                  80

Cys Trp Asn Met Ala Pro Ile Gln Thr Leu Arg Ile Ser Thr Ala Thr
                85                  90                  95
```

```
Leu Leu Ser Ile Met Pro Cys Ile Val Arg Ala Pro His Trp Gln Lys
            100                 105                 110

Asn Cys Phe Pro Met Val His Ile Leu Lys His Trp Thr Arg Tyr Arg
        115                 120                 125

Ser Ile Asn Phe Leu Ser Lys Ile Phe Val Leu Thr Leu Thr
    130                 135                 140
```

<210> 5187
<211> 191
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1124; "

<220>
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<223> /note="Gene Symbol: ANKRD22; "

<220>
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<223> /note="Gene Name:
ankyrin repeat domain 22; "

<220>
<221> source
<223> /note="Uniprot ID: Q5VYY1; "

<220>
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<223> /note="ENSP ID: ENSP00000360998"

<400> 5187

```
Met Gly Ile Leu Tyr Ser Glu Pro Ile Cys Gln Ala Ala Tyr Gln Asn
1               5                   10                  15

Asp Phe Gly Gln Val Trp Arg Trp Val Lys Glu Asp Ser Ser Tyr Ala
            20                  25                  30

Asn Val Gln Asp Gly Phe Asn Gly Asp Thr Pro Leu Ile Cys Ala Cys
        35                  40                  45

Arg Arg Gly His Val Arg Ile Val Ser Phe Leu Leu Arg Arg Asn Ala
    50                  55                  60

Asn Val Asn Leu Lys Asn Gln Lys Glu Arg Thr Cys Leu His Tyr Ala
65                  70                  75                  80
```

```
Val Lys Lys Lys Phe Thr Phe Ile Asp Tyr Leu Leu Ile Ile Leu Leu
                85                  90                  95

Met Pro Val Leu Leu Ile Gly Tyr Phe Leu Met Val Ser Lys Thr Lys
            100                 105                 110

Gln Asn Glu Ala Leu Val Arg Met Leu Leu Asp Ala Gly Val Glu Val
        115                 120                 125

Asn Ala Thr Asp Cys Tyr Gly Cys Thr Ala Leu His Tyr Ala Cys Glu
    130                 135                 140

Met Lys Asn Gln Ser Leu Ile Pro Leu Leu Leu Glu Ala Arg Ala Asp
145                 150                 155                 160

Pro Thr Ile Lys Asn Lys His Gly Glu Ser Ser Leu Asp Ile Ala Arg
                165                 170                 175

Arg Leu Lys Phe Ser Gln Ile Glu Leu Met Leu Arg Lys Ala Leu
            180                 185                 190
```

<210> 5188
<211> 305
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1125; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD23; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 23; "

<220>
<221> source
<223> /note="Uniprot ID: Q86SG2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000321679"

<400> 5188

```
Met Asp Phe Ile Ser Ile Gln Gln Leu Val Ser Gly Glu Arg Val Glu
1               5                  10                  15

Gly Lys Val Leu Gly Phe Gly His Gly Val Pro Asp Pro Gly Ala Trp
            20                  25                  30

Pro Ser Asp Trp Arg Arg Gly Pro Gln Glu Ala Val Ala Arg Glu Lys
        35                  40                  45

Leu Lys Leu Glu Glu Glu Lys Lys Lys Lys Leu Glu Arg Phe Asn Ser
    50                  55                  60

Thr Arg Phe Asn Leu Asp Asn Leu Ala Asp Leu Glu Asn Leu Val Gln
65                  70                  75                  80

Arg Arg Lys Lys Arg Leu Arg His Arg Val Pro Pro Arg Lys Pro Glu
                85                  90                  95

Pro Leu Val Lys Pro Gln Ser Gln Ala Gln Val Glu Pro Val Gly Leu
            100                 105                 110

Glu Met Phe Leu Lys Ala Ala Ala Glu Asn Gln Glu Tyr Leu Ile Asp
        115                 120                 125

Lys Tyr Leu Thr Asp Gly Gly Asp Pro Asn Ala His Asp Lys Leu His
    130                 135                 140

Arg Thr Ala Leu His Trp Ala Cys Leu Lys Gly His Ser Gln Leu Val
145                 150                 155                 160

Asn Lys Leu Leu Val Ala Gly Ala Thr Val Asp Ala Arg Asp Leu Leu
                165                 170                 175

Asp Arg Thr Pro Val Phe Trp Ala Cys Arg Gly Gly His Leu Val Ile
            180                 185                 190

Leu Lys Gln Leu Leu Asn Gln Gly Ala Arg Val Asn Ala Arg Asp Lys
        195                 200                 205

Ile Gly Ser Thr Pro Leu His Val Ala Val Arg Thr Arg His Pro Asp
    210                 215                 220

Cys Leu Glu His Leu Ile Glu Cys Gly Ala His Leu Asn Ala Gln Asp
```

225 230 235 240

Lys Glu Gly Asp Thr Ala Leu His Glu Ala Val Arg His Gly Ser Tyr
245 250 255

Lys Ala Met Lys Leu Leu Leu Leu Tyr Gly Ala Glu Leu Gly Val Arg
260 265 270

Asn Ala Ala Ser Val Thr Pro Val Gln Leu Ala Arg Asp Trp Gln Arg
275 280 285

Gly Ile Arg Glu Ala Leu Gln Ala His Val Ala His Pro Arg Thr Arg
290 295 300

Cys
305

<210> 5189
<211> 263
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1125; "

<220>
<221> source
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<220>
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<220>
<221> source
<223> /note="Uniprot ID: Q86SG2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000333108"

<400> 5189
Met Asp Phe Ile Ser Ile Gln Gln Leu Val Ser Gly Glu Arg Val Glu
1 5 10 15

Gly Lys Val Leu Gly Phe Gly His Gly Val Pro Asp Pro Gly Ala Trp
20 25 30

```
Pro Ser Asp Trp Arg Arg Gly Pro Gln Glu Ala Val Ala Arg Glu Lys
        35                  40                  45

Leu Lys Leu Glu Glu Glu Lys Lys Lys Lys Leu Glu Arg Phe Asn Ser
    50                  55                  60

Thr Arg Phe Asn Leu Asp Asn Leu Ala Asp Leu Glu Asn Leu Val Gln
65                  70                  75                  80

Arg Arg Lys Lys Arg Leu Arg His Arg Val Pro Pro Arg Lys Pro Glu
                85                  90                  95

Pro Leu Val Lys Leu His Arg Thr Ala Leu His Trp Ala Cys Leu Lys
            100                 105                 110

Gly His Ser Gln Leu Val Asn Lys Leu Leu Val Ala Gly Ala Thr Val
        115                 120                 125

Asp Ala Arg Asp Leu Leu Asp Arg Thr Pro Val Phe Trp Ala Cys Arg
    130                 135                 140

Gly Gly His Leu Val Ile Leu Lys Gln Leu Leu Asn Gln Gly Ala Arg
145                 150                 155                 160

Val Asn Ala Arg Asp Lys Ile Gly Ser Thr Pro Leu His Val Ala Val
                165                 170                 175

Arg Thr Arg His Pro Asp Cys Leu Glu His Leu Ile Glu Cys Gly Ala
            180                 185                 190

His Leu Asn Ala Gln Asp Lys Glu Gly Asp Thr Ala Leu His Glu Ala
        195                 200                 205

Val Arg His Gly Ser Tyr Lys Ala Met Lys Leu Leu Leu Leu Tyr Gly
    210                 215                 220

Ala Glu Leu Gly Val Arg Asn Ala Ala Ser Val Thr Pro Val Gln Leu
225                 230                 235                 240

Ala Arg Asp Trp Gln Arg Gly Ile Arg Glu Ala Leu Gln Ala His Val
                245                 250                 255
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Ala His Pro Arg Thr Arg Cys
260

<210> 5190
<211> 305
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1125; "

<220>
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<223> /note="Gene Symbol: ANKRD23; "

<220>
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ankyrin repeat domain 23; "

<220>
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<223> /note="Uniprot ID: Q86SG2; "

<220>
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<400> 5190
Met Asp Phe Ile Ser Ile Gln Gln Leu Val Ser Gly Glu Arg Val Glu
1 5 10 15

Gly Lys Val Leu Gly Phe Gly His Gly Val Pro Asp Pro Gly Ala Trp
20 25 30

Pro Ser Asp Trp Arg Arg Gly Pro Gln Glu Ala Val Ala Arg Glu Lys
35 40 45

Leu Lys Leu Glu Glu Glu Lys Lys Lys Lys Leu Glu Arg Phe Asn Ser
50 55 60

Thr Arg Phe Asn Leu Asp Asn Leu Ala Asp Leu Glu Asn Leu Val Gln
65 70 75 80

Arg Arg Lys Lys Arg Leu Arg His Arg Val Pro Pro Arg Lys Pro Glu
85 90 95

Pro Leu Val Lys Pro Gln Ser Gln Ala Gln Val Glu Pro Val Gly Leu
100 105 110

```
Glu Met Phe Leu Lys Ala Ala Ala Glu Asn Gln Glu Tyr Leu Ile Asp
        115                 120                 125

Lys Tyr Leu Thr Asp Gly Gly Asp Pro Asn Ala His Asp Lys Leu His
    130                 135                 140

Arg Thr Ala Leu His Trp Ala Cys Leu Lys Gly His Ser Gln Leu Val
145                 150                 155                 160

Asn Lys Leu Leu Val Ala Gly Ala Thr Val Asp Ala Arg Asp Leu Leu
                165                 170                 175

Asp Arg Thr Pro Val Phe Trp Ala Cys Arg Gly Gly His Leu Val Ile
            180                 185                 190

Leu Lys Gln Leu Leu Asn Gln Gly Ala Arg Val Asn Ala Arg Asp Lys
        195                 200                 205

Ile Gly Ser Thr Pro Leu His Val Ala Val Arg Thr Arg His Pro Asp
    210                 215                 220

Cys Leu Glu His Leu Ile Glu Cys Gly Ala His Leu Asn Ala Gln Asp
225                 230                 235                 240

Lys Glu Gly Asp Thr Ala Leu His Glu Ala Val Arg His Gly Ser Tyr
                245                 250                 255

Lys Ala Met Lys Leu Leu Leu Leu Tyr Gly Ala Glu Leu Gly Val Arg
            260                 265                 270

Asn Ala Ala Ser Val Thr Pro Val Gln Leu Ala Arg Asp Trp Gln Arg
        275                 280                 285

Gly Ile Arg Glu Ala Leu Gln Ala His Val Ala His Pro Arg Thr Arg
    290                 295                 300

Cys
305
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<210> 5191
<211> 1236
<212> PRT

<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1126; "

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<223> /note="Gene Symbol: ANKRD24; "

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<223> /note="Gene Name:
ankyrin repeat domain 24; "

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<223> /note="Uniprot ID: Q8TF21; "

<220>
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<223> /note="ENSP ID: ENSP00000262970"

<400> 5191

```
Met Gln Pro Ala Ala Cys Ala Gly Glu Gly Ala Gly Pro Pro Ala Pro
1               5                  10                  15

Arg Pro Pro His Pro Pro Gly Asp Lys Val Arg Arg Gly Arg Gly Gly
            20                  25                  30

Ala Pro Ser Leu Ser Pro Gln Pro Pro Ala Pro Tyr Leu Gly Leu Pro
        35                  40                  45

Ile Pro Ser Arg Gly Gly Gly Gly Trp Arg Gly Gly Gln Gly Gly Gly
    50                  55                  60

Gly Gly Thr Arg Glu Gly Gly Thr Gly Arg Ala Gly Gly Ala Gly Ser
65                  70                  75                  80

Ser Gly Ser Ala Gln Pro Arg Pro Pro Ala Ala Pro Arg Gly Pro Ser
                85                  90                  95

Arg Pro Ser Gly Arg Arg Leu Leu Leu Glu Pro Arg Ala Pro Pro Ala
            100                 105                 110

Pro Arg Ala Pro Asp Ala Met Lys Gln Leu Cys Leu Cys Ala Ala Ala
        115                 120                 125

Ser Phe Ala Ser Gln Asp Trp Gly Lys Ser Asp Glu Arg Leu Leu Gln
```

```
    130                 135                 140

Ala Val Glu Asn Asn Asp Ala Pro Arg Val Ala Ala Leu Ile Ala Arg
145                 150                 155                 160

Lys Gly Leu Val Pro Thr Lys Leu Asp Pro Glu Gly Lys Ser Ala Phe
                165                 170                 175

His Leu Ala Ala Met Arg Gly Ala Ala Ser Cys Leu Glu Val Met Ile
            180                 185                 190

Ala His Gly Ser Asn Val Met Ser Ala Asp Gly Ala Gly Tyr Asn Ala
        195                 200                 205

Leu His Leu Ala Ala Lys Tyr Gly His Pro Gln Cys Leu Lys Gln Leu
    210                 215                 220

Leu Gln Ala Ser Cys Val Val Asp Val Val Asp Ser Ser Gly Trp Thr
225                 230                 235                 240

Ala Leu His His Ala Ala Ala Gly Gly Cys Leu Ser Cys Ser Glu Val
                245                 250                 255

Leu Cys Ser Phe Lys Ala His Leu Asn Pro Gln Asp Arg Ser Gly Ala
            260                 265                 270

Thr Pro Leu Ile Ile Ala Ala Gln Met Cys His Thr Asp Leu Cys Arg
        275                 280                 285

Leu Leu Leu Gln Gln Gly Ala Ala Ala Asn Asp Gln Asp Leu Gln Gly
    290                 295                 300

Arg Thr Ala Leu Met Leu Ala Cys Glu Gly Ala Ser Pro Glu Thr Val
305                 310                 315                 320

Glu Val Leu Leu Gln Gly Gly Ala Gln Pro Gly Ile Thr Asp Ala Leu
                325                 330                 335

Gly Gln Asp Ala Ala His Tyr Gly Ala Leu Ala Gly Asp Lys Leu Ile
            340                 345                 350

Leu His Leu Leu Gln Glu Ala Ala Gln Arg Pro Ser Pro Pro Ser Ala
        355                 360                 365
```

```
Leu Thr Glu Asp Asp Ser Gly Glu Ala Ser Ser Gln Asn Ser Met Ser
    370                 375                 380

Ser His Gly Lys Gln Gly Ala Pro Lys Lys Arg Lys Ala Pro Pro Pro
385                 390                 395                 400

Pro Ala Ser Ile Pro Met Pro Asp Asp Arg Asp Ala Tyr Glu Glu Ile
                405                 410                 415

Val Arg Leu Arg Gln Glu Arg Gly Arg Leu Leu Gln Lys Ile Arg Gly
            420                 425                 430

Leu Glu Gln His Lys Glu Arg Arg Gln Gln Glu Ser Pro Glu Ala Ser
        435                 440                 445

Ser Leu His Ile Leu Glu Arg Gln Val Gln Glu Leu Gln Gln Leu Leu
    450                 455                 460

Val Glu Arg Gln Glu Glu Lys Glu Ser Leu Gly Arg Glu Val Glu Ser
465                 470                 475                 480

Leu Gln Ser Arg Leu Ser Leu Leu Glu Asn Glu Arg Glu Asn Thr Ser
                485                 490                 495

Tyr Asp Val Thr Thr Leu Gln Asp Glu Glu Gly Glu Leu Pro Asp Leu
            500                 505                 510

Pro Gly Ala Glu Val Leu Leu Ser Arg Gln Leu Ser Pro Ser Ala Gln
        515                 520                 525

Glu His Leu Ala Ser Leu Gln Glu Gln Val Ala Val Leu Thr Arg Gln
    530                 535                 540

Asn Gln Glu Leu Met Glu Lys Val Gln Ile Leu Glu Asn Phe Glu Lys
545                 550                 555                 560

Asp Glu Thr Gln Met Glu Val Glu Ala Leu Ala Glu Val Ile Pro Leu
                565                 570                 575

Ala Leu Tyr Asp Ser Leu Arg Ala Glu Phe Asp Gln Leu Arg Arg Gln
            580                 585                 590
```

```
His Ala Glu Ala Leu Gln Ala Leu Arg Gln Gln Glu Thr Arg Glu Val
        595                 600                 605

Pro Arg Glu Glu Gly Ala Ala Cys Gly Glu Ser Glu Val Ala Gly Ala
    610                 615                 620

Thr Ala Thr Lys Asn Gly Pro Thr His Met Glu Leu Asn Gly Ser Val
625                 630                 635                 640

Ala Pro Glu Thr Lys Val Asn Gly Ala Glu Thr Ile Asp Glu Glu Ala
                645                 650                 655

Ala Gly Asp Glu Thr Met Glu Ala Arg Thr Met Glu Ala Glu Ala Thr
            660                 665                 670

Gly Ala Glu Ala Thr Gly Ala Glu Ala Thr Gly Ala Lys Val Thr Glu
        675                 680                 685

Thr Lys Pro Thr Gly Ala Glu Val Arg Glu Met Glu Thr Thr Glu Glu
    690                 695                 700

Glu Ala Asn Met Glu Thr Lys Pro Thr Gly Ala Gln Ala Thr Asp Thr
705                 710                 715                 720

Glu Thr Thr Gly Val Glu Ala Met Gly Val Glu Ala Thr Lys Thr Lys
                725                 730                 735

Ala Glu Glu Ala Glu Met Gln Ala Tyr Gly Val Gly Ala Gly Gln Ala
            740                 745                 750

Glu Pro Pro Val Thr Gly Thr Thr Asn Met Glu Ala Thr Gly Ser Arg
        755                 760                 765

Ala Thr Gly Met Glu Ser Thr Gly Val Ser Ala Thr Gly Val Glu Asn
    770                 775                 780

Pro Gly Val Glu Ala Thr Val Pro Gly Ile Ser Ala Gly Pro Ile Leu
785                 790                 795                 800

His Pro Gly Ala Ala Glu Ala Ser Glu Lys Leu Gln Val Glu Leu Glu
                805                 810                 815
```

```
Thr Arg Ile Arg Gly Leu Glu Glu Ala Leu Arg Gln Arg Glu Arg Glu
            820                 825                 830

Ala Ala Ala Glu Leu Glu Ala Ala Leu Gly Lys Cys Glu Ala Ala Glu
        835                 840                 845

Ala Glu Ala Gly Arg Leu Arg Glu Arg Val Arg Glu Ala Glu Gly Ser
    850                 855                 860

Gly Ala Ser Gly Gly Gly Gly Gly Asp Thr Thr Gln Leu Arg Ala Ala
865                 870                 875                 880

Leu Glu Gln Ala Arg Glu Asp Leu Arg Asp Arg Asp Ser Arg Leu Arg
                885                 890                 895

Glu Leu Glu Ala Ala Ser Ala Cys Leu Asp Glu Ala Arg Ala Ser Arg
            900                 905                 910

Leu Leu Ala Glu Glu Glu Ala Arg Gly Leu Arg Ala Glu Leu Ala Gln
        915                 920                 925

Arg Glu Glu Ala Arg Leu Glu Gln Ser Arg Glu Leu Glu Val Leu Arg
    930                 935                 940

Glu Gln Leu Ala Thr Ala Arg Ala Thr Gly Glu Gln Gln Arg Thr Ala
945                 950                 955                 960

Ala Ala Glu Leu Gly Arg Ala Arg Asp Ala Ala Glu Ala Arg Val Ala
                965                 970                 975

Glu Leu Pro Ala Ala Cys Glu Glu Ala Arg Gln Gly Leu Ala Glu Leu
            980                 985                 990

Arg Glu Ala Ser Glu Ala Leu Arg  Gln Ser Val Val Pro  Ala Ser
Glu
        995                 1000                1005

His Arg  Arg Leu Gln Glu Glu  Ala Leu Glu Leu Arg  Gly Arg Ala
    1010                1015                1020

Ala Ser  Leu Glu Gln Glu Val  Val Ala Thr Gly Lys  Glu Ala Ala
    1025                1030                1035
```

```
Arg Leu  Arg Ala Glu Leu Glu  Arg Glu Arg Val Cys  Ser Val Ala
    1040                1045                1050

Leu Ser  Glu His Glu Arg Ile  Val Gly Thr Leu Gln  Ala Asn Val
    1055                1060                1065

Ala Gln  Leu Glu Gly Gln Leu  Glu Glu Leu Gly Arg  Arg His Glu
    1070                1075                1080

Lys Thr  Ser Ala Glu Val Phe  Gln Val Gln Arg Glu  Ala Leu Phe
    1085                1090                1095

Met Lys  Ser Glu Arg His Ala  Ala Glu Ala Gln Leu  Ala Thr Ala
    1100                1105                1110

Glu Gln  Gln Leu Arg Gly Leu  Arg Thr Glu Ala Glu  Arg Ala Arg
    1115                1120                1125

Gln Ala  Gln Ser Arg Ala Gln  Glu Ala Leu Asp Lys  Ala Lys Glu
    1130                1135                1140

Lys Asp  Lys Lys Ile Thr Glu  Leu Ser Lys Glu Val  Phe Asn Leu
    1145                1150                1155

Lys Glu  Ala Leu Lys Glu Gln  Pro Ala Ala Leu Ala  Thr Pro Glu
    1160                1165                1170

Val Glu  Ala Leu Arg Asp Gln  Val Lys Asp Leu Gln  Gln Gln Leu
    1175                1180                1185

Gln Glu  Ala Ala Arg Asp His  Ser Ser Val Val Ala  Leu Tyr Arg
    1190                1195                1200

Ser His  Leu Leu Tyr Ala Ile  Gln Gly Gln Met Asp  Glu Asp Val
    1205                1210                1215

Gln Arg  Ile Leu Ser Gln Ile  Leu Gln Met Gln Arg  Leu Gln Ala
    1220                1225                1230

Gln Gly  Arg
    1235
```

<210> 5192

<211> 1146
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1126; "

<220>
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ankyrin repeat domain 24; "

<220>
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<223> /note="Uniprot ID: Q8TF21; "

<220>
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<223> /note="ENSP ID: ENSP00000321731"

<400> 5192

```
Met Lys Thr Leu Arg Ala Arg Phe Lys Lys Thr Glu Leu Arg Leu Ser
1               5                   10                  15

Pro Thr Asp Leu Gly Ser Cys Pro Pro Cys Gly Pro Cys Pro Ile Pro
            20                  25                  30

Lys Pro Ala Ala Arg Gly Arg Arg Gln Ser Gln Asp Trp Gly Lys Ser
        35                  40                  45

Asp Glu Arg Leu Leu Gln Ala Val Glu Asn Asn Asp Ala Pro Arg Val
    50                  55                  60

Ala Ala Leu Ile Ala Arg Lys Gly Leu Val Pro Thr Lys Leu Asp Pro
65                  70                  75                  80

Glu Gly Lys Ser Ala Phe His Leu Ala Ala Met Arg Gly Ala Ala Ser
                85                  90                  95

Cys Leu Glu Val Met Ile Ala His Gly Ser Asn Val Met Ser Ala Asp
            100                 105                 110

Gly Ala Gly Tyr Asn Ala Leu His Leu Ala Ala Lys Tyr Gly His Pro
        115                 120                 125
```

```
Gln Cys Leu Lys Gln Leu Leu Gln Ala Ser Cys Val Val Asp Val Val
    130                 135                 140

Asp Ser Ser Gly Trp Thr Ala Leu His His Ala Ala Ala Gly Gly Cys
145                 150                 155                 160

Leu Ser Cys Ser Glu Val Leu Cys Ser Phe Lys Ala His Leu Asn Pro
                165                 170                 175

Gln Asp Arg Ser Gly Ala Thr Pro Leu Ile Ile Ala Ala Gln Met Cys
            180                 185                 190

His Thr Asp Leu Cys Arg Leu Leu Leu Gln Gln Gly Ala Ala Ala Asn
        195                 200                 205

Asp Gln Asp Leu Gln Gly Arg Thr Ala Leu Met Leu Ala Cys Glu Gly
    210                 215                 220

Ala Ser Pro Glu Thr Val Glu Val Leu Leu Gln Gly Gly Ala Gln Pro
225                 230                 235                 240

Gly Ile Thr Asp Ala Leu Gly Gln Asp Ala Ala His Tyr Gly Ala Leu
                245                 250                 255

Ala Gly Asp Lys Leu Ile Leu His Leu Leu Gln Glu Ala Ala Gln Arg
            260                 265                 270

Pro Ser Pro Pro Ser Ala Leu Thr Glu Asp Asp Ser Gly Glu Ala Ser
        275                 280                 285

Ser Gln Asn Ser Met Ser Ser His Gly Lys Gln Gly Ala Pro Lys Lys
    290                 295                 300

Arg Lys Ala Pro Pro Pro Pro Ala Ser Ile Pro Met Pro Asp Asp Arg
305                 310                 315                 320

Asp Ala Tyr Glu Glu Ile Val Arg Leu Arg Gln Glu Arg Gly Arg Leu
                325                 330                 335

Leu Gln Lys Ile Arg Gly Leu Glu Gln His Lys Glu Arg Arg Gln Gln
            340                 345                 350
```

```
Glu Ser Pro Glu Ala Ser Ser Leu His Ile Leu Glu Arg Gln Val Gln
        355                 360                 365

Glu Leu Gln Gln Leu Leu Val Glu Arg Gln Glu Glu Lys Glu Ser Leu
    370                 375                 380

Gly Arg Glu Val Glu Ser Leu Gln Ser Arg Leu Ser Leu Leu Glu Asn
385                 390                 395                 400

Glu Arg Glu Asn Thr Ser Tyr Asp Val Thr Thr Leu Gln Asp Glu Glu
                405                 410                 415

Gly Glu Leu Pro Asp Leu Pro Gly Ala Glu Val Leu Leu Ser Arg Gln
            420                 425                 430

Leu Ser Pro Ser Ala Gln Glu His Leu Ala Ser Leu Gln Glu Gln Val
        435                 440                 445

Ala Val Leu Thr Arg Gln Asn Gln Glu Leu Met Glu Lys Val Gln Ile
    450                 455                 460

Leu Glu Asn Phe Glu Lys Asp Glu Thr Gln Met Glu Val Glu Ala Leu
465                 470                 475                 480

Ala Glu Val Ile Pro Leu Ala Leu Tyr Asp Ser Leu Arg Ala Glu Phe
                485                 490                 495

Asp Gln Leu Arg Arg Gln His Ala Glu Ala Leu Gln Ala Leu Arg Gln
            500                 505                 510

Gln Glu Thr Arg Glu Val Pro Arg Glu Glu Gly Ala Ala Cys Gly Glu
        515                 520                 525

Ser Glu Val Ala Gly Ala Thr Ala Thr Lys Asn Gly Pro Thr His Met
    530                 535                 540

Glu Leu Asn Gly Ser Val Ala Pro Glu Thr Lys Val Asn Gly Ala Glu
545                 550                 555                 560

Thr Ile Asp Glu Glu Ala Ala Gly Asp Glu Thr Met Glu Ala Arg Thr
                565                 570                 575

Met Glu Ala Glu Ala Thr Gly Ala Glu Ala Thr Gly Ala Glu Ala Thr
```

580 585 590

Gly Ala Lys Val Thr Glu Thr Lys Pro Thr Gly Ala Glu Val Arg Glu
595 600 605

Met Glu Thr Thr Glu Glu Glu Ala Asn Met Glu Thr Lys Pro Thr Gly
610 615 620

Ala Gln Ala Thr Asp Thr Glu Thr Thr Gly Val Glu Ala Met Gly Val
625 630 635 640

Glu Ala Thr Lys Thr Lys Ala Glu Glu Ala Glu Met Gln Ala Tyr Gly
645 650 655

Val Gly Ala Gly Gln Ala Glu Pro Pro Val Thr Gly Thr Thr Asn Met
660 665 670

Glu Ala Thr Gly Ser Arg Ala Thr Gly Met Glu Ser Thr Gly Val Ser
675 680 685

Ala Thr Gly Val Glu Asn Pro Gly Val Glu Ala Thr Val Pro Gly Ile
690 695 700

Ser Ala Gly Pro Ile Leu His Pro Gly Ala Ala Glu Ala Ser Glu Lys
705 710 715 720

Leu Gln Val Glu Leu Glu Thr Arg Ile Arg Gly Leu Glu Glu Ala Leu
725 730 735

Arg Gln Arg Glu Arg Glu Ala Ala Ala Glu Leu Glu Ala Ala Leu Gly
740 745 750

Lys Cys Glu Ala Ala Glu Ala Glu Ala Gly Arg Leu Arg Glu Arg Val
755 760 765

Arg Glu Ala Glu Gly Ser Gly Ala Ser Gly Gly Gly Gly Gly Asp Thr
770 775 780

Thr Gln Leu Arg Ala Ala Leu Glu Gln Ala Arg Glu Asp Leu Arg Asp
785 790 795 800

Arg Asp Ser Arg Leu Arg Glu Leu Glu Ala Ala Ser Ala Cys Leu Asp
805 810 815

```
Glu Ala Arg Ala Ser Arg Leu Leu Ala Glu Glu Glu Ala Arg Gly Leu
            820                 825                 830

Arg Ala Glu Leu Ala Gln Arg Glu Glu Ala Arg Leu Glu Gln Ser Arg
        835                 840                 845

Glu Leu Glu Val Leu Arg Glu Gln Leu Ala Thr Ala Arg Ala Thr Gly
    850                 855                 860

Glu Gln Gln Arg Thr Ala Ala Ala Glu Leu Gly Arg Ala Arg Asp Ala
865                 870                 875                 880

Ala Glu Ala Arg Val Ala Glu Leu Pro Ala Ala Cys Glu Glu Ala Arg
                885                 890                 895

Gln Gly Leu Ala Glu Leu Arg Glu Ala Ser Glu Ala Leu Arg Gln Ser
            900                 905                 910

Val Val Pro Ala Ser Glu His Arg Arg Leu Gln Glu Glu Ala Leu Glu
        915                 920                 925

Leu Arg Gly Arg Ala Ala Ser Leu Glu Gln Glu Val Val Ala Thr Gly
    930                 935                 940

Lys Glu Ala Ala Arg Leu Arg Ala Glu Leu Glu Arg Glu Arg Val Cys
945                 950                 955                 960

Ser Val Ala Leu Ser Glu His Glu Arg Ile Val Gly Thr Leu Gln Ala
                965                 970                 975

Asn Val Ala Gln Leu Glu Gly Gln Leu Glu Glu Leu Gly Arg Arg His
            980                 985                 990

Glu Lys Thr Ser Ala Glu Val Phe  Gln Val Gln Arg Glu  Ala Leu
Phe
        995                 1000                1005

Met Lys  Ser Glu Arg His Ala  Ala Glu Ala Gln Leu  Ala Thr Ala
    1010                1015                1020

Glu Gln  Gln Leu Arg Gly Leu  Arg Thr Glu Ala Glu  Arg Ala Arg
    1025                1030                1035
```

```
Gln Ala  Gln Ser Arg Ala Gln  Glu Ala Leu Asp Lys  Ala Lys Glu
    1040                1045                1050

Lys Asp  Lys Lys Ile Thr Glu  Leu Ser Lys Glu Val  Phe Asn Leu
    1055                1060                1065

Lys Glu  Ala Leu Lys Glu Gln  Pro Ala Ala Leu Ala  Thr Pro Glu
    1070                1075                1080

Val Glu  Ala Leu Arg Asp Gln  Val Lys Asp Leu Gln  Gln Gln Leu
    1085                1090                1095

Gln Glu  Ala Ala Arg Asp His  Ser Ser Val Val Ala  Leu Tyr Arg
    1100                1105                1110

Ser His  Leu Leu Tyr Ala Ile  Gln Gly Gln Met Asp  Glu Asp Val
    1115                1120                1125

Gln Arg  Ile Leu Ser Gln Ile  Leu Gln Met Gln Arg  Leu Gln Ala
    1130                1135                1140

Gln Gly  Arg
    1145


<210> 5193
<211> 839
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1126; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD24; "

<220>
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<223> /note="Gene Name:
      ankyrin repeat domain 24; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000470227"

<400> 5193
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Met Lys Thr Leu Arg Ala Arg Phe Lys Lys Thr Glu Ser Gln Asp Trp
1               5                  10                  15

Gly Lys Ser Asp Glu Arg Leu Leu Gln Ala Val Glu Asn Asn Asp Ala
            20                  25                  30

Pro Arg Val Ala Ala Leu Ile Ala Arg Lys Gly Leu Val Pro Thr Lys
        35                  40                  45

Leu Asp Pro Glu Gly Lys Ser Ala Phe His Leu Ala Ala Met Arg Gly
    50                  55                  60

Ala Ala Ser Cys Leu Glu Val Met Ile Ala His Gly Ser Asn Val Met
65                  70                  75                  80

Ser Ala Asp Gly Ala Gly Tyr Asn Ala Leu His Leu Ala Ala Lys Tyr
                85                  90                  95

Gly His Pro Gln Cys Leu Lys Gln Leu Leu Gln Ala Ser Cys Val Val
            100                 105                 110

Asp Val Val Asp Ser Ser Gly Trp Thr Ala Leu His His Ala Ala Ala
        115                 120                 125

Gly Gly Cys Leu Ser Cys Ser Glu Val Leu Cys Ser Phe Lys Ala His
    130                 135                 140

Leu Asn Pro Gln Asp Arg Ser Gly Ala Thr Pro Leu Ile Ile Ala Ala
145                 150                 155                 160

Gln Met Cys His Thr Asp Leu Cys Arg Leu Leu Leu Gln Gln Gly Ala
                165                 170                 175

Ala Ala Asn Asp Gln Asp Leu Gln Gly Arg Thr Ala Leu Met Leu Ala
            180                 185                 190

Cys Glu Gly Ala Ser Pro Glu Thr Val Glu Val Leu Leu Gln Gly Gly
        195                 200                 205

Ala Gln Pro Gly Ile Thr Asp Ala Leu Gly Gln Asp Ala Ala His Tyr
    210                 215                 220

Gly Ala Leu Ala Gly Asp Lys Leu Ile Leu His Leu Leu Gln Glu Ala
```

225 230 235 240

Ala Gln Arg Pro Ser Pro Pro Ser Ala Leu Thr Glu Asp Asp Ser Gly
245 250 255

Glu Ala Ser Ser Gln Asn Ser Met Ser Ser His Gly Lys Gln Gly Ala
260 265 270

Pro Lys Lys Arg Lys Ala Pro Pro Pro Pro Ala Ser Ile Pro Met Pro
275 280 285

Asp Asp Arg Asp Ala Tyr Glu Glu Ile Val Arg Leu Arg Gln Glu Arg
290 295 300

Gly Arg Leu Leu Gln Lys Ile Arg Gly Leu Glu Gln His Lys Glu Arg
305 310 315 320

Arg Gln Gln Glu Ser Pro Glu Ala Ser Ser Leu His Ile Leu Glu Arg
325 330 335

Gln Val Gln Glu Leu Gln Gln Leu Leu Val Glu Arg Gln Glu Glu Lys
340 345 350

Glu Ser Leu Gly Arg Glu Val Glu Ser Leu Gln Ser Arg Leu Ser Leu
355 360 365

Leu Glu Asn Glu Arg Glu Asn Thr Ser Tyr Asp Val Thr Thr Leu Gln
370 375 380

Asp Glu Glu Gly Glu Leu Pro Asp Leu Pro Gly Ala Glu Val Leu Leu
385 390 395 400

Ser Arg Gln Leu Ser Pro Ser Ala Gln Glu His Leu Ala Ser Leu Gln
405 410 415

Glu Gln Val Ala Val Leu Thr Arg Gln Asn Gln Glu Leu Met Glu Lys
420 425 430

Val Gln Ile Leu Glu Asn Phe Glu Lys Asp Glu Thr Gln Met Glu Val
435 440 445

Glu Ala Leu Ala Glu Val Ile Pro Leu Ala Leu Tyr Asp Ser Leu Arg
450 455 460

```
Ala Glu Phe Asp Gln Leu Arg Arg Gln His Ala Glu Ala Leu Gln Ala
465                 470                 475                 480

Leu Arg Gln Gln Glu Thr Arg Glu Val Pro Arg Glu Glu Gly Ala Ala
                485                 490                 495

Cys Gly Glu Ser Glu Val Ala Gly Ala Thr Ala Thr Lys Asn Gly Pro
            500                 505                 510

Thr His Met Glu Leu Asn Gly Ser Val Ala Pro Glu Thr Lys Val Asn
        515                 520                 525

Gly Ala Glu Thr Ile Asp Glu Glu Ala Ala Gly Asp Glu Thr Met Glu
    530                 535                 540

Ala Arg Thr Met Glu Ala Glu Ala Thr Gly Ala Glu Ala Thr Gly Ala
545                 550                 555                 560

Glu Ala Thr Gly Ala Lys Val Thr Glu Thr Lys Pro Thr Gly Ala Glu
                565                 570                 575

Val Arg Glu Met Glu Thr Thr Glu Glu Glu Ala Asn Met Glu Thr Lys
            580                 585                 590

Pro Thr Gly Ala Gln Ala Thr Asp Thr Glu Thr Thr Gly Val Glu Ala
        595                 600                 605

Met Gly Val Glu Ala Thr Lys Thr Lys Ala Glu Glu Ala Glu Met Gln
    610                 615                 620

Ala Tyr Gly Val Gly Ala Gly Gln Ala Glu Pro Pro Val Thr Gly Thr
625                 630                 635                 640

Thr Asn Met Glu Ala Thr Gly Ser Arg Ala Thr Gly Met Glu Ser Thr
                645                 650                 655

Gly Val Ser Ala Thr Gly Val Glu Asn Pro Gly Val Glu Ala Thr Val
            660                 665                 670

Pro Gly Ile Ser Ala Gly Pro Ile Leu His Pro Gly Ala Ala Glu Ala
        675                 680                 685
```

```
Ser Glu Lys Leu Gln Val Glu Leu Glu Thr Arg Ile Arg Gly Leu Glu
    690                 695                 700

Glu Ala Leu Arg Gln Arg Glu Arg Glu Ala Ala Ala Glu Leu Glu Ala
705                 710                 715                 720

Ala Leu Gly Lys Cys Glu Ala Ala Glu Ala Glu Ala Gly Arg Leu Arg
                725                 730                 735

Glu Arg Val Arg Glu Ala Glu Gly Ser Gly Ala Ser Gly Gly Gly Gly
            740                 745                 750

Gly Asp Thr Thr Gln Leu Arg Ala Ala Leu Glu Gln Ala Arg Glu Asp
        755                 760                 765

Leu Arg Asp Arg Asp Ser Arg Leu Arg Glu Leu Glu Ala Ala Ser Ala
    770                 775                 780

Cys Leu Asp Glu Ala Arg Ala Ser Arg Leu Leu Ala Glu Glu Glu Ala
785                 790                 795                 800

Arg Gly Leu Arg Ala Glu Leu Ala Gln Arg Glu Glu Ala Arg Leu Glu
                805                 810                 815

Gln Ser Arg Glu Leu Glu Val Leu Arg Glu Gln Leu Ala Thr Ala Arg
            820                 825                 830

Ala Thr Gly Glu Gln Gln Arg
        835


<210> 5194
<211> 1146
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ANKRD24; "

<220>
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<223> /note="Gene Name:
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ankyrin repeat domain 24; "

<220>
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<223> /note="Uniprot ID: Q8TF21; "

<220>
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<223> /note="ENSP ID: ENSP00000471252"

<400> 5194

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Met Lys Thr Leu Arg Ala Arg Phe Lys Lys Thr Glu Leu Arg Leu Ser
1               5                  10                  15

Pro Thr Asp Leu Gly Ser Cys Pro Pro Cys Gly Pro Cys Pro Ile Pro
            20                  25                  30

Lys Pro Ala Ala Arg Gly Arg Arg Gln Ser Gln Asp Trp Gly Lys Ser
        35                  40                  45

Asp Glu Arg Leu Leu Gln Ala Val Glu Asn Asn Asp Ala Pro Arg Val
    50                  55                  60

Ala Ala Leu Ile Ala Arg Lys Gly Leu Val Pro Thr Lys Leu Asp Pro
65                  70                  75                  80

Glu Gly Lys Ser Ala Phe His Leu Ala Ala Met Arg Gly Ala Ala Ser
                85                  90                  95

Cys Leu Glu Val Met Ile Ala His Gly Ser Asn Val Met Ser Ala Asp
            100                 105                 110

Gly Ala Gly Tyr Asn Ala Leu His Leu Ala Ala Lys Tyr Gly His Pro
        115                 120                 125

Gln Cys Leu Lys Gln Leu Leu Gln Ala Ser Cys Val Val Asp Val Val
    130                 135                 140

Asp Ser Ser Gly Trp Thr Ala Leu His His Ala Ala Ala Gly Gly Cys
145                 150                 155                 160

Leu Ser Cys Ser Glu Val Leu Cys Ser Phe Lys Ala His Leu Asn Pro
                165                 170                 175

Gln Asp Arg Ser Gly Ala Thr Pro Leu Ile Ile Ala Ala Gln Met Cys
            180                 185                 190
```

```
His Thr Asp Leu Cys Arg Leu Leu Leu Gln Gln Gly Ala Ala Ala Asn
        195                 200                 205

Asp Gln Asp Leu Gln Gly Arg Thr Ala Leu Met Leu Ala Cys Glu Gly
    210                 215                 220

Ala Ser Pro Glu Thr Val Glu Val Leu Leu Gln Gly Gly Ala Gln Pro
225                 230                 235                 240

Gly Ile Thr Asp Ala Leu Gly Gln Asp Ala Ala His Tyr Gly Ala Leu
                245                 250                 255

Ala Gly Asp Lys Leu Ile Leu His Leu Leu Gln Glu Ala Ala Gln Arg
            260                 265                 270

Pro Ser Pro Pro Ser Ala Leu Thr Glu Asp Asp Ser Gly Glu Ala Ser
        275                 280                 285

Ser Gln Asn Ser Met Ser Ser His Gly Lys Gln Gly Ala Pro Lys Lys
    290                 295                 300

Arg Lys Ala Pro Pro Pro Pro Ala Ser Ile Pro Met Pro Asp Asp Arg
305                 310                 315                 320

Asp Ala Tyr Glu Glu Ile Val Arg Leu Arg Gln Glu Arg Gly Arg Leu
                325                 330                 335

Leu Gln Lys Ile Arg Gly Leu Glu Gln His Lys Glu Arg Arg Gln Gln
            340                 345                 350

Glu Ser Pro Glu Ala Ser Ser Leu His Ile Leu Glu Arg Gln Val Gln
        355                 360                 365

Glu Leu Gln Gln Leu Leu Val Glu Arg Gln Glu Glu Lys Glu Ser Leu
    370                 375                 380

Gly Arg Glu Val Glu Ser Leu Gln Ser Arg Leu Ser Leu Leu Glu Asn
385                 390                 395                 400

Glu Arg Glu Asn Thr Ser Tyr Asp Val Thr Thr Leu Gln Asp Glu Glu
                405                 410                 415
```

```
Gly Glu Leu Pro Asp Leu Pro Gly Ala Glu Val Leu Leu Ser Arg Gln
            420                 425                 430

Leu Ser Pro Ser Ala Gln Glu His Leu Ala Ser Leu Gln Glu Gln Val
        435                 440                 445

Ala Val Leu Thr Arg Gln Asn Gln Glu Leu Met Glu Lys Val Gln Ile
    450                 455                 460

Leu Glu Asn Phe Glu Lys Asp Glu Thr Gln Met Glu Val Glu Ala Leu
465                 470                 475                 480

Ala Glu Val Ile Pro Leu Ala Leu Tyr Asp Ser Leu Arg Ala Glu Phe
                485                 490                 495

Asp Gln Leu Arg Arg Gln His Ala Glu Ala Leu Gln Ala Leu Arg Gln
            500                 505                 510

Gln Glu Thr Arg Glu Val Pro Arg Glu Glu Gly Ala Ala Cys Gly Glu
        515                 520                 525

Ser Glu Val Ala Gly Ala Thr Ala Thr Lys Asn Gly Pro Thr His Met
    530                 535                 540

Glu Leu Asn Gly Ser Val Ala Pro Glu Thr Lys Val Asn Gly Ala Glu
545                 550                 555                 560

Thr Ile Asp Glu Glu Ala Ala Gly Asp Glu Thr Met Glu Ala Arg Thr
                565                 570                 575

Met Glu Ala Glu Ala Thr Gly Ala Glu Ala Thr Gly Ala Glu Ala Thr
            580                 585                 590

Gly Ala Lys Val Thr Glu Thr Lys Pro Thr Gly Ala Glu Val Arg Glu
        595                 600                 605

Met Glu Thr Thr Glu Glu Glu Ala Asn Met Glu Thr Lys Pro Thr Gly
    610                 615                 620

Ala Gln Ala Thr Asp Thr Glu Thr Thr Gly Val Glu Ala Met Gly Val
625                 630                 635                 640
```

```
Glu Ala Thr Lys Thr Lys Ala Glu Glu Ala Glu Met Gln Ala Tyr Gly
                645                 650                 655

Val Gly Ala Gly Gln Ala Glu Pro Pro Val Thr Gly Thr Thr Asn Met
            660                 665                 670

Glu Ala Thr Gly Ser Arg Ala Thr Gly Met Glu Ser Thr Gly Val Ser
        675                 680                 685

Ala Thr Gly Val Glu Asn Pro Gly Val Glu Ala Thr Val Pro Gly Ile
    690                 695                 700

Ser Ala Gly Pro Ile Leu His Pro Gly Ala Ala Glu Ala Ser Glu Lys
705                 710                 715                 720

Leu Gln Val Glu Leu Glu Thr Arg Ile Arg Gly Leu Glu Glu Ala Leu
                725                 730                 735

Arg Gln Arg Glu Arg Glu Ala Ala Ala Glu Leu Glu Ala Ala Leu Gly
            740                 745                 750

Lys Cys Glu Ala Ala Glu Ala Glu Ala Gly Arg Leu Arg Glu Arg Val
        755                 760                 765

Arg Glu Ala Glu Gly Ser Gly Ala Ser Gly Gly Gly Gly Gly Asp Thr
    770                 775                 780

Thr Gln Leu Arg Ala Ala Leu Glu Gln Ala Arg Glu Asp Leu Arg Asp
785                 790                 795                 800

Arg Asp Ser Arg Leu Arg Glu Leu Glu Ala Ala Ser Ala Cys Leu Asp
                805                 810                 815

Glu Ala Arg Ala Ser Arg Leu Leu Ala Glu Glu Glu Ala Arg Gly Leu
            820                 825                 830

Arg Ala Glu Leu Ala Gln Arg Glu Glu Ala Arg Leu Glu Gln Ser Arg
        835                 840                 845

Glu Leu Glu Val Leu Arg Glu Gln Leu Ala Thr Ala Arg Ala Thr Gly
    850                 855                 860

Glu Gln Gln Arg Thr Ala Ala Ala Glu Leu Gly Arg Ala Arg Asp Ala
```

865 870 875 880

Ala Glu Ala Arg Val Ala Glu Leu Pro Ala Ala Cys Glu Glu Ala Arg
885 890 895

Gln Gly Leu Ala Glu Leu Arg Glu Ala Ser Glu Ala Leu Arg Gln Ser
900 905 910

Val Val Pro Ala Ser Glu His Arg Arg Leu Gln Glu Glu Ala Leu Glu
915 920 925

Leu Arg Gly Arg Ala Ala Ser Leu Glu Gln Glu Val Val Ala Thr Gly
930 935 940

Lys Glu Ala Ala Arg Leu Arg Ala Glu Leu Glu Arg Glu Arg Val Cys
945 950 955 960

Ser Val Ala Leu Ser Glu His Glu Arg Ile Val Gly Thr Leu Gln Ala
965 970 975

Asn Val Ala Gln Leu Glu Gly Gln Leu Glu Glu Leu Gly Arg Arg His
980 985 990

Glu Lys Thr Ser Ala Glu Val Phe Gln Val Gln Arg Glu Ala Leu
Phe
995 1000 1005

Met Lys Ser Glu Arg His Ala Ala Glu Ala Gln Leu Ala Thr Ala
1010 1015 1020

Glu Gln Gln Leu Arg Gly Leu Arg Thr Glu Ala Glu Arg Ala Arg
1025 1030 1035

Gln Ala Gln Ser Arg Ala Gln Glu Ala Leu Asp Lys Ala Lys Glu
1040 1045 1050

Lys Asp Lys Lys Ile Thr Glu Leu Ser Lys Glu Val Phe Asn Leu
1055 1060 1065

Lys Glu Ala Leu Lys Glu Gln Pro Ala Ala Leu Ala Thr Pro Glu
1070 1075 1080

Val Glu Ala Leu Arg Asp Gln Val Lys Asp Leu Gln Gln Gln Leu

```
    1085                1090                1095

Gln Glu  Ala Ala Arg Asp His  Ser Ser Val Val Ala  Leu Tyr Arg
    1100                1105                1110

Ser His  Leu Leu Tyr Ala Ile  Gln Gly Gln Met Asp  Glu Asp Val
    1115                1120                1125

Gln Arg  Ile Leu Ser Gln Ile  Leu Gln Met Gln Arg  Leu Gln Ala
    1130                1135                1140

Gln Gly  Arg
    1145


<210> 5195
<211> 163
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1126; "

<220>
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<223> /note="Gene Symbol: ANKRD24; "

<220>
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      ankyrin repeat domain 24; "

<220>
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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 5195
Xaa Pro Arg Gly Pro Ser Arg Pro Ser Gly Arg Arg Leu Leu Leu Glu
1               5                   10                  15

Pro Arg Ala Pro Pro Ala Pro Arg Ala Pro Asp Ala Met Lys Gln Leu
            20                  25                  30

Cys Leu Cys Ala Ala Ala Ser Phe Ala Ser Gln Asp Trp Gly Lys Ser
```

```
        35                  40                  45

Asp Glu Arg Leu Leu Gln Ala Val Glu Asn Asn Asp Ala Pro Arg Val
    50                  55                  60

Ala Ala Leu Ile Ala Arg Lys Gly Leu Val Pro Thr Lys Leu Asp Pro
65                  70                  75                  80

Glu Gly Lys Ser Ala Phe His Leu Ala Ala Met Arg Gly Ala Ala Ser
                85                  90                  95

Cys Leu Glu Val Met Ile Ala His Gly Ser Asn Val Met Ser Ala Asp
            100                 105                 110

Gly Ala Gly Tyr Asn Ala Leu His Leu Ala Ala Lys Tyr Gly His Pro
        115                 120                 125

Gln Cys Leu Lys Gln Leu Leu Gln Arg Gln Gly Leu Thr Val Leu Ala
    130                 135                 140

Gln Arg Leu Val Ala Val Ser Pro Ala Gln Arg Cys Ser Ala Pro Leu
145                 150                 155                 160

Arg His Ile
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<210> 5196
<211> 1710
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1127; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD26; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 26; "

<220>
<221> source
<223> /note="Uniprot ID: Q9UPS8; "

<220>
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<400> 5196
Met Lys Lys Ile Phe Ser Lys Lys Gly Glu Ser Pro Leu Gly Ser Phe
1 5 10 15

Ala Arg Arg Gln Arg Ser Ser Ala Gly Gly Gly Gly Glu Pro Gly Glu
20 25 30

Gly Ala Tyr Ser Gln Pro Gly Tyr His Val Arg Asp Arg Asp Leu Gly
35 40 45

Lys Ile His Lys Ala Ala Ser Ala Gly Asn Val Ala Lys Val Gln Gln
50 55 60

Ile Leu Leu Leu Arg Lys Asn Gly Leu Asn Asp Arg Asp Lys Met Asn
65 70 75 80

Arg Thr Ala Leu His Leu Ala Cys Ala Asn Gly His Pro Glu Val Val
85 90 95

Thr Leu Leu Val Asp Arg Lys Cys Gln Leu Asn Val Cys Asp Asn Glu
100 105 110

Asn Arg Thr Ala Leu Met Lys Ala Val Gln Cys Gln Glu Glu Lys Cys
115 120 125

Ala Thr Ile Leu Leu Glu His Gly Ala Asp Pro Asn Leu Ala Asp Val
130 135 140

His Gly Asn Thr Ala Leu His Tyr Ala Val Tyr Asn Glu Asp Ile Ser
145 150 155 160

Val Ala Thr Lys Leu Leu Leu Tyr Asp Ala Asn Ile Glu Ala Lys Asn
165 170 175

Lys Asp Asp Leu Thr Pro Leu Leu Leu Ala Val Ser Gly Lys Lys Gln
180 185 190

Gln Met Val Glu Phe Leu Ile Lys Lys Lys Ala Asn Val Asn Ala Val
195 200 205

```
Asp Lys Leu Glu Ser Ser His Gln Leu Ile Ser Glu Tyr Lys Glu Glu
    210                 215                 220

Arg Ile Pro Lys His Ser Ser Gln Asn Ser Asn Ser Val Asp Glu Ser
225                 230                 235                 240

Ser Glu Asp Ser Leu Ser Arg Leu Ser Gly Lys Pro Gly Val Asp Asp
                245                 250                 255

Ser Trp Pro Thr Ser Asp Asp Glu Asp Leu Asn Phe Asp Thr Lys Asn
            260                 265                 270

Val Pro Lys Pro Ser Leu Ala Lys Leu Met Thr Ala Ser Gln Gln Ser
        275                 280                 285

Arg Lys Asn Leu Glu Ala Thr Tyr Gly Thr Val Arg Thr Gly Asn Arg
    290                 295                 300

Thr Leu Phe Glu Asp Arg Asp Ser Asp Ser Gln Asp Glu Val Val Val
305                 310                 315                 320

Glu Ser Leu Pro Thr Thr Ser Ile Lys Val Gln Cys Phe Ser His Pro
                325                 330                 335

Thr Tyr Gln Ser Pro Asp Leu Leu Pro Lys Pro Ser His Lys Ser Leu
            340                 345                 350

Ala Asn Pro Gly Leu Met Lys Glu Glu Pro Thr Lys Pro Gly Ile Ala
        355                 360                 365

Lys Lys Glu Asn Gly Ile Asp Ile Ile Glu Ser Ala Pro Leu Glu Gln
    370                 375                 380

Thr Asn Asn Asp Asn Leu Thr Tyr Val Asp Glu Val His Lys Asn Asn
385                 390                 395                 400

Arg Ser Asp Met Met Ser Ala Leu Gly Leu Gly Gln Glu Glu Asp Ile
                405                 410                 415

Glu Ser Pro Trp Asp Ser Glu Ser Ile Ser Glu Asn Phe Pro Gln Lys
            420                 425                 430

Tyr Val Asp Pro Leu Ala Gly Ala Ala Asp Gly Lys Glu Lys Asn Ile
```

435 440 445

Gly Asn Glu Gln Ala Glu Asp Val Phe Tyr Ile Pro Ser Cys Met Ser
450 455 460

Gly Ser Arg Asn Phe Lys Met Ala Lys Leu Glu Asp Thr Arg Asn Val
465 470 475 480

Gly Met Pro Val Ala His Met Glu Ser Pro Glu Arg Tyr Leu His Leu
485 490 495

Lys Pro Thr Ile Glu Met Lys Asp Ser Val Pro Asn Lys Ala Gly Gly
500 505 510

Met Lys Asp Val Gln Thr Ser Lys Ala Ala Glu His Asp Leu Glu Val
515 520 525

Ala Ser Glu Glu Glu Gln Glu Arg Glu Gly Ser Glu Asn Asn Gln Pro
530 535 540

Gln Val Glu Glu Glu Arg Lys Lys His Arg Asn Asn Glu Met Glu Val
545 550 555 560

Ser Ala Asn Ile His Asp Gly Ala Thr Asp Asp Ala Glu Asp Asp Asp
565 570 575

Asp Asp Asp Gly Leu Ile Gln Lys Arg Lys Ser Gly Glu Thr Asp His
580 585 590

Gln Gln Phe Pro Arg Lys Glu Asn Lys Glu Tyr Ala Ser Ser Gly Pro
595 600 605

Ala Leu Gln Met Lys Glu Val Lys Ser Thr Glu Lys Glu Lys Arg Thr
610 615 620

Ser Lys Glu Ser Val Asn Ser Pro Val Phe Gly Lys Ala Ser Leu Leu
625 630 635 640

Thr Gly Gly Leu Leu Gln Val Asp Asp Asp Ser Ser Leu Ser Glu Ile
645 650 655

Asp Glu Asp Glu Gly Arg Pro Thr Lys Lys Thr Ser Asn Glu Lys Asn
660 665 670

```
Lys Val Lys Asn Gln Ile Gln Ser Met Asp Asp Val Asp Asp Leu Thr
        675                 680                 685

Gln Ser Ser Glu Thr Ala Ser Glu Asp Cys Glu Leu Pro His Ser Ser
    690                 695                 700

Tyr Lys Asn Phe Met Leu Leu Ile Glu Gln Leu Gly Met Glu Cys Lys
705                 710                 715                 720

Asp Ser Val Ser Leu Leu Lys Ile Gln Asp Ala Ala Leu Ser Cys Glu
                725                 730                 735

Arg Leu Leu Glu Leu Lys Lys Asn His Cys Glu Leu Leu Thr Val Lys
            740                 745                 750

Ile Lys Lys Met Glu Asp Lys Val Asn Val Leu Gln Arg Glu Leu Ser
        755                 760                 765

Glu Thr Lys Glu Ile Lys Ser Gln Leu Glu His Gln Lys Val Glu Trp
    770                 775                 780

Glu Arg Glu Leu Cys Ser Leu Arg Phe Ser Leu Asn Gln Glu Glu Glu
785                 790                 795                 800

Lys Arg Arg Asn Ala Asp Thr Leu Tyr Glu Lys Ile Arg Glu Gln Leu
                805                 810                 815

Arg Arg Lys Glu Glu Gln Tyr Arg Lys Glu Val Glu Val Lys Gln Gln
            820                 825                 830

Leu Glu Leu Ser Leu Gln Thr Leu Glu Met Glu Leu Arg Thr Val Lys
        835                 840                 845

Ser Asn Leu Asn Gln Val Val Gln Glu Arg Asn Asp Ala Gln Arg Gln
    850                 855                 860

Leu Ser Arg Glu Gln Asn Ala Arg Met Leu Gln Asp Gly Ile Leu Thr
865                 870                 875                 880

Asn His Leu Ser Lys Gln Lys Glu Ile Glu Met Ala Gln Lys Lys Met
                885                 890                 895
```

```
Asn Ser Glu Asn Ser His Ser His Glu Glu Glu Lys Asp Leu Ser His
            900                 905                 910

Lys Asn Ser Met Leu Gln Glu Glu Ile Ala Met Leu Arg Leu Glu Ile
        915                 920                 925

Asp Thr Ile Lys Asn Gln Asn Gln Glu Lys Glu Lys Lys Cys Phe Glu
    930                 935                 940

Asp Leu Lys Ile Val Lys Glu Lys Asn Glu Asp Leu Gln Lys Thr Ile
945                 950                 955                 960

Lys Gln Asn Glu Glu Thr Leu Thr Gln Thr Ile Ser Gln Tyr Asn Gly
                965                 970                 975

Arg Leu Ser Val Leu Thr Ala Glu Asn Ala Met Leu Asn Ser Lys Leu
            980                 985                 990

Glu Asn Glu Lys Gln Ser Lys Glu  Arg Leu Glu Ala Glu  Val Glu
Ser
        995                 1000                1005

Tyr His  Ser Arg Leu Ala Ala  Ala Ile His Asp Arg  Asp Gln Ser
    1010                1015                1020

Glu Thr  Ser Lys Arg Glu Leu  Glu Leu Ala Phe Gln  Arg Ala Arg
    1025                1030                1035

Asp Glu  Cys Ser Arg Leu Gln  Asp Lys Met Asn Phe  Asp Val Ser
    1040                1045                1050

Asn Leu  Lys Asp Asn Asn Glu  Ile Leu Ser Gln Gln  Leu Phe Lys
    1055                1060                1065

Thr Glu  Ser Lys Leu Asn Ser  Leu Glu Ile Glu Phe  His His Thr
    1070                1075                1080

Arg Asp  Ala Leu Arg Glu Lys  Thr Leu Gly Leu Glu  Arg Val Gln
    1085                1090                1095

Lys Asp  Leu Ser Gln Thr Gln  Cys Gln Met Lys Glu  Met Glu Gln
    1100                1105                1110
```

```
Lys Tyr  Gln Asn Glu Gln Val  Lys Val Asn Lys Tyr  Ile Gly Lys
    1115                1120                1125

Gln Glu  Ser Val Glu Glu Arg  Leu Ser Gln Leu Gln  Ser Glu Asn
    1130                1135                1140

Met Leu  Leu Arg Gln Gln Leu  Asp Asp Ala His Asn  Lys Ala Asp
    1145                1150                1155

Asn Lys  Glu Lys Thr Val Ile  Asn Ile Gln Asp Gln  Phe His Ala
    1160                1165                1170

Ile Val  Gln Lys Leu Gln Ala  Glu Ser Glu Lys Gln  Ser Leu Leu
    1175                1180                1185

Leu Glu  Glu Arg Asn Lys Glu  Leu Ile Ser Glu Cys  Asn His Leu
    1190                1195                1200

Lys Glu  Arg Gln Tyr Gln Tyr  Glu Asn Glu Lys Ala  Glu Arg Glu
    1205                1210                1215

Val Val  Val Arg Gln Leu Gln  Gln Glu Leu Ala Asp  Thr Leu Lys
    1220                1225                1230

Lys Gln  Ser Met Ser Glu Ala  Ser Leu Glu Val Thr  Ser Arg Tyr
    1235                1240                1245

Arg Ile  Asn Leu Glu Asp Glu  Thr Gln Asp Leu Lys  Lys Lys Leu
    1250                1255                1260

Gly Gln  Ile Arg Asn Gln Leu  Gln Glu Ala Gln Asp  Arg His Thr
    1265                1270                1275

Glu Ala  Val Arg Cys Ala Glu  Lys Met Gln Asp His  Lys Gln Lys
    1280                1285                1290

Leu Glu  Lys Asp Asn Ala Lys  Leu Lys Val Thr Val  Lys Lys Gln
    1295                1300                1305

Met Asp  Lys Ile Glu Glu Leu  Gln Lys Asn Leu Leu  Asn Ala Asn
    1310                1315                1320
```

Leu Ser Glu Asp Glu Lys Glu Gln Leu Lys Lys Leu Met Glu Leu
1325 1330 1335

Lys Gln Ser Leu Glu Cys Asn Leu Asp Gln Glu Met Lys Lys Asn
1340 1345 1350

Val Glu Leu Glu Arg Glu Ile Thr Gly Phe Lys Asn Leu Leu Lys
1355 1360 1365

Met Thr Arg Lys Lys Leu Asn Glu Tyr Glu Asn Gly Glu Phe Ser
1370 1375 1380

Phe His Gly Asp Leu Lys Thr Ser Gln Phe Glu Met Asp Ile Gln
1385 1390 1395

Ile Asn Lys Leu Lys His Lys Ile Asp Asp Leu Thr Ala Glu Leu
1400 1405 1410

Glu Thr Ala Gly Ser Lys Cys Leu His Leu Asp Thr Lys Asn Gln
1415 1420 1425

Ile Leu Gln Glu Glu Leu Leu Ser Met Lys Thr Val Gln Lys Lys
1430 1435 1440

Cys Glu Lys Leu Gln Lys Asn Lys Lys Lys Leu Glu Gln Glu Val
1445 1450 1455

Ile Asn Leu Arg Ser His Ile Glu Arg Asn Met Val Glu Leu Gly
1460 1465 1470

Gln Val Lys Gln Tyr Lys Gln Glu Ile Glu Glu Arg Ala Arg Gln
1475 1480 1485

Glu Ile Ala Glu Lys Leu Lys Glu Val Asn Leu Phe Leu Gln Ala
1490 1495 1500

Gln Ala Ala Ser Gln Glu Asn Leu Glu Gln Phe Arg Glu Asn Asn
1505 1510 1515

Phe Ala Ser Met Lys Ser Gln Met Glu Leu Arg Ile Lys Asp Leu
1520 1525 1530

Glu Ser Glu Leu Ser Lys Ile Lys Thr Ser Gln Glu Asp Phe Asn

```
    1535                1540                1545

Lys Thr  Glu Leu Glu Lys Tyr  Lys Gln Leu Tyr Leu  Glu Glu Leu
    1550                1555                1560

Lys Val  Arg Lys Ser Leu Ser  Ser Lys Leu Thr Lys  Thr Asn Glu
    1565                1570                1575

Arg Leu  Ala Glu Val Asn Thr  Lys Leu Leu Val Glu  Lys Gln Gln
    1580                1585                1590

Ser Arg  Ser Leu Phe Thr Thr  Leu Thr Thr Arg Pro  Val Met Glu
    1595                1600                1605

Pro Pro  Cys Val Gly Asn Leu  Asn Asn Ser Leu Asp  Leu Asn Arg
    1610                1615                1620

Lys Leu  Ile Pro Arg Glu Asn  Leu Val Ile Ser Thr  Ser Asn Pro
    1625                1630                1635

Arg Ala  Ser Asn Asn Ser Met  Glu Asn Tyr Leu Ser  Lys Met Gln
    1640                1645                1650

Gln Glu  Leu Glu Lys Asn Ile  Thr Arg Glu Leu Lys  Glu Ala Ala
    1655                1660                1665

Ala Glu  Leu Glu Ser Gly Ser  Ile Ala Ser Pro Leu  Gly Ser Thr
    1670                1675                1680

Asp Glu  Ser Asn Leu Asn Gln  Asp Leu Val Trp Lys  Ala Ser Arg
    1685                1690                1695

Glu Tyr  Val Gln Val Leu Lys  Lys Asn Tyr Met Ile
    1700                1705                1710


<210> 5197
<211> 213
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
ankyrin repeat domain 26; "

<220>
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<223> /note="ENSP ID: ENSP00000394152"

<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 5197
Xaa Phe Arg Glu Asn Asn Phe Ala Ser Met Lys Ser Gln Met Glu Leu
1 5 10 15

Arg Ile Lys Asp Leu Glu Ser Glu Leu Ser Lys Ile Lys Thr Ser Gln
20 25 30

Glu Asp Phe Asn Lys Thr Glu Leu Glu Lys Tyr Lys Gln Leu Tyr Leu
35 40 45

Glu Glu Leu Lys Val Arg Lys Ser Leu Ser Ser Lys Leu Thr Lys Thr
50 55 60

Asn Glu Arg Leu Ala Glu Val Asn Thr Lys Leu Leu Val Glu Lys Gln
65 70 75 80

Gln Ser Arg Ser Leu Phe Thr Thr Leu Thr Thr Arg Pro Val Met Glu
85 90 95

Pro Pro Cys Val Gly Asn Leu Asn Asn Ser Leu Asp Leu Asn Arg Lys
100 105 110

Leu Ile Pro Arg Glu Asn Leu Val Ile Ser Thr Ser Asn Pro Arg Ala
115 120 125

Ser Asn Asn Ser Met Glu Asn Tyr Leu Ser Lys Met Gln Gln Glu Leu
130 135 140

Glu Lys Asn Ile Thr Arg Glu Leu Lys Glu Ala Ala Ala Glu Leu Glu
145 150 155 160

```
Ser Gly Ser Ile Ala Ser Pro Leu Gly Ser Thr Asp Glu Ser Asn Leu
                165                 170                 175

Asn Gln Asp Leu Val Trp Lys Ala Ser Arg Glu Tyr Gly Pro Ser Asp
            180                 185                 190

Glu Thr Pro His Asp Tyr Val Leu Met Thr Asp Gln Cys Leu Thr Ser
        195                 200                 205

Arg Thr Asp Leu Gln
    210


<210> 5198
<211> 1726
<212> PRT
<213> Homo sapiens

<220>
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<220>
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      ankyrin repeat domain 26; "

<220>
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<223> /note="ENSP ID: ENSP00000405112"

<400> 5198
Met Lys Lys Ile Phe Ser Lys Lys Gly Glu Ser Pro Leu Gly Ser Phe
1               5                   10                  15

Ala Arg Arg Gln Arg Ser Ser Ala Gly Gly Gly Gly Glu Pro Gly Glu
            20                  25                  30

Gly Ala Tyr Ser Gln Pro Gly Tyr His Val Arg Asp Arg Asp Leu Gly
        35                  40                  45

Lys Ile His Lys Ala Ala Ser Ala Gly Asn Val Ala Lys Val Gln Gln
    50                  55                  60
```

```
Ile Leu Leu Leu Arg Lys Asn Gly Leu Asn Asp Arg Asp Lys Met Asn
65                  70                  75                  80

Arg Thr Ala Leu His Leu Ala Cys Ala Asn Gly His Pro Glu Val Val
                85                  90                  95

Thr Leu Leu Val Asp Arg Lys Cys Gln Leu Asn Val Cys Asp Asn Glu
            100                 105                 110

Asn Arg Thr Ala Leu Met Lys Ala Val Gln Cys Gln Glu Glu Lys Cys
        115                 120                 125

Ala Thr Ile Leu Leu Glu His Gly Ala Asp Pro Asn Leu Ala Asp Val
    130                 135                 140

His Gly Asn Thr Ala Leu His Tyr Ala Val Tyr Asn Glu Asp Ile Ser
145                 150                 155                 160

Val Ala Thr Lys Leu Leu Leu Tyr Asp Ala Asn Ile Glu Ala Lys Asn
                165                 170                 175

Lys Asp Asp Leu Thr Pro Leu Leu Leu Ala Val Ser Gly Lys Lys Gln
            180                 185                 190

Gln Met Val Glu Phe Leu Ile Lys Lys Lys Ala Asn Val Asn Ala Val
        195                 200                 205

Asp Lys Leu Glu Ser Ser His Gln Leu Ile Ser Glu Tyr Lys Glu Glu
    210                 215                 220

Arg Ile Pro Lys His Ser Ser Gln Asn Ser Asn Ser Val Asp Glu Ser
225                 230                 235                 240

Ser Glu Asp Ser Leu Ser Ser Leu Phe Tyr Phe Ile Phe Phe Glu Thr
                245                 250                 255

Lys Ser Cys Thr Val Ala Gln Ala Gly Val Leu Gln His Asp Leu Ser
            260                 265                 270

Ser Leu Gln Ser Leu Leu Pro Gly Phe Thr Gln Phe Phe Cys Leu His
        275                 280                 285

Leu Pro Ser Ser Trp Asp His Arg Leu Ser Gly Lys Pro Gly Val Asp
```

```
    290                 295                 300

Asp Ser Trp Pro Thr Ser Asp Asp Glu Asp Leu Asn Phe Asp Thr Lys
305                 310                 315                 320

Asn Val Pro Lys Pro Ser Leu Ala Lys Leu Met Thr Ala Ser Gln Gln
                325                 330                 335

Ser Arg Lys Asn Leu Glu Ala Thr Tyr Gly Thr Val Arg Thr Gly Asn
            340                 345                 350

Arg Thr Leu Phe Glu Asp Arg Asp Ser Asp Ser Gln Asp Glu Val Val
        355                 360                 365

Val Glu Ser Leu Pro Thr Thr Ser Ile Lys Val Gln Cys Phe Ser His
    370                 375                 380

Pro Thr Tyr Gln Ser Pro Asp Leu Leu Pro Lys Pro Ser His Lys Ser
385                 390                 395                 400

Leu Ala Asn Pro Gly Leu Met Lys Glu Glu Pro Thr Lys Pro Gly Ile
                405                 410                 415

Ala Lys Lys Glu Asn Gly Ile Asp Ile Ile Glu Ser Ala Pro Leu Glu
            420                 425                 430

Gln Thr Asn Asn Asp Asn Leu Thr Tyr Val Asp Glu Val His Lys Asn
        435                 440                 445

Asn Arg Ser Asp Met Met Ser Ala Leu Gly Leu Gly Gln Glu Glu Asp
    450                 455                 460

Ile Glu Ser Pro Trp Asp Ser Glu Ser Ile Ser Glu Asn Phe Pro Gln
465                 470                 475                 480

Lys Tyr Val Asp Pro Leu Ala Gly Ala Ala Asp Gly Lys Glu Lys Asn
                485                 490                 495

Ile Gly Asn Glu Gln Ala Glu Glu Ser Pro Glu Arg Tyr Leu His Leu
            500                 505                 510

Lys Pro Thr Ile Glu Met Lys Asp Ser Val Pro Asn Lys Ala Gly Gly
        515                 520                 525
```

```
Met Lys Asp Val Gln Thr Ser Lys Ala Ala Glu His Asp Leu Glu Val
    530                 535                 540

Ala Ser Glu Glu Glu Gln Glu Arg Glu Gly Ser Glu Asn Asn Gln Pro
545                 550                 555                 560

Gln Val Glu Glu Glu Arg Lys Lys His Arg Asn Asn Glu Met Glu Val
                565                 570                 575

Ser Ala Asn Ile His Asp Gly Ala Thr Asp Asp Ala Glu Asp Asp Asp
            580                 585                 590

Asp Asp Asp Gly Leu Ile Gln Lys Arg Lys Ser Gly Glu Thr Asp His
        595                 600                 605

Gln Gln Phe Pro Arg Lys Glu Asn Lys Glu Tyr Ala Ser Ser Gly Pro
    610                 615                 620

Ala Leu Gln Met Lys Glu Val Lys Ser Thr Glu Lys Glu Lys Arg Thr
625                 630                 635                 640

Ser Lys Glu Ser Val Asn Ser Pro Val Phe Gly Lys Ala Ser Leu Leu
                645                 650                 655

Thr Gly Gly Leu Leu Gln Val Asp Asp Asp Ser Ser Leu Ser Glu Ile
            660                 665                 670

Asp Glu Asp Glu Gly Arg Pro Thr Lys Lys Thr Ser Asn Glu Lys Asn
        675                 680                 685

Lys Val Lys Asn Gln Ile Gln Ser Met Asp Asp Val Asp Asp Leu Thr
    690                 695                 700

Gln Ser Ser Glu Thr Ala Ser Glu Asp Cys Glu Leu Pro His Ser Ser
705                 710                 715                 720

Tyr Lys Asn Phe Met Leu Leu Ile Glu Gln Leu Gly Met Glu Cys Lys
                725                 730                 735

Asp Ser Val Ser Leu Leu Lys Ile Gln Asp Ala Ala Leu Ser Cys Glu
            740                 745                 750
```

```
Arg Leu Leu Glu Leu Lys Lys Asn His Cys Glu Leu Leu Thr Val Lys
        755                 760                 765

Ile Lys Lys Met Glu Asp Lys Val Asn Val Leu Gln Arg Glu Leu Ser
    770                 775                 780

Glu Thr Lys Glu Ile Lys Ser Gln Leu Glu His Gln Lys Val Glu Trp
785                 790                 795                 800

Glu Arg Glu Leu Cys Ser Leu Arg Phe Ser Leu Asn Gln Glu Glu Glu
                805                 810                 815

Lys Arg Arg Asn Ala Asp Thr Leu Tyr Glu Lys Ile Arg Glu Gln Leu
            820                 825                 830

Arg Arg Lys Glu Glu Gln Tyr Arg Lys Glu Val Glu Val Lys Gln Gln
        835                 840                 845

Leu Glu Leu Ser Leu Gln Thr Leu Glu Met Glu Leu Arg Thr Val Lys
    850                 855                 860

Ser Asn Leu Asn Gln Val Val Gln Glu Arg Asn Asp Ala Gln Arg Gln
865                 870                 875                 880

Leu Ser Arg Glu Gln Asn Ala Arg Met Leu Gln Asp Gly Ile Leu Thr
                885                 890                 895

Asn His Leu Ser Lys Gln Lys Glu Ile Glu Met Ala Gln Lys Lys Met
            900                 905                 910

Asn Ser Glu Asn Ser His Ser His Glu Glu Glu Lys Asp Leu Ser His
        915                 920                 925

Lys Asn Ser Met Leu Gln Glu Glu Ile Ala Met Leu Arg Leu Glu Ile
    930                 935                 940

Asp Thr Ile Lys Asn Gln Asn Gln Glu Lys Glu Lys Lys Cys Phe Glu
945                 950                 955                 960

Asp Leu Lys Ile Val Lys Glu Lys Asn Glu Asp Leu Gln Lys Thr Ile
                965                 970                 975
```

```
Lys Gln Asn Glu Glu Thr Leu Thr Gln Thr Ile Ser Gln Tyr Asn Gly
            980                 985                 990

Arg Leu Ser Val Leu Thr Ala Glu  Asn Ala Met Leu Asn  Ser Lys
Leu
        995                1000                1005

Glu Asn  Glu Lys Gln Ser Lys  Glu Arg Leu Glu Ala  Glu Val Glu
    1010                1015                1020

Ser Tyr  His Ser Arg Leu Ala  Ala Ala Ile His Asp  Arg Asp Gln
    1025                1030                1035

Ser Glu  Thr Ser Lys Arg Glu  Leu Glu Leu Ala Phe  Gln Arg Ala
    1040                1045                1050

Arg Asp  Glu Cys Ser Arg Leu  Gln Asp Lys Met Asn  Phe Asp Val
    1055                1060                1065

Ser Asn  Leu Lys Asp Asn Asn  Glu Ile Leu Ser Gln  Gln Leu Phe
    1070                1075                1080

Lys Thr  Glu Ser Lys Leu Asn  Ser Leu Glu Ile Glu  Phe His His
    1085                1090                1095

Thr Arg  Asp Ala Leu Arg Glu  Lys Thr Leu Gly Leu  Glu Arg Val
    1100                1105                1110

Gln Lys  Asp Leu Ser Gln Thr  Gln Cys Gln Met Lys  Glu Met Glu
    1115                1120                1125

Gln Lys  Tyr Gln Asn Glu Gln  Val Lys Val Asn Lys  Tyr Ile Gly
    1130                1135                1140

Lys Gln  Glu Ser Val Glu Glu  Arg Leu Ser Gln Leu  Gln Ser Glu
    1145                1150                1155

Asn Met  Leu Leu Arg Gln Gln  Leu Asp Asp Ala His  Asn Lys Ala
    1160                1165                1170

Asp Asn  Lys Glu Lys Thr Val  Ile Asn Ile Gln Asp  Gln Phe His
    1175                1180                1185
```

```
Ala Ile  Val Gln Lys Leu Gln  Ala Glu Ser Glu Lys  Gln Ser Leu
    1190                1195                1200

Leu Leu  Glu Glu Arg Asn Lys  Glu Leu Ile Ser Glu  Cys Asn His
    1205                1210                1215

Leu Lys  Glu Arg Gln Tyr Gln  Tyr Glu Asn Glu Lys  Ala Glu Arg
    1220                1225                1230

Glu Val  Val Val Arg Gln Leu  Gln Gln Glu Leu Ala  Asp Thr Leu
    1235                1240                1245

Lys Lys  Gln Ser Met Ser Glu  Ala Ser Leu Glu Val  Thr Ser Arg
    1250                1255                1260

Tyr Arg  Ile Asn Leu Glu Asp  Glu Thr Gln Asp Leu  Lys Lys Lys
    1265                1270                1275

Leu Gly  Gln Ile Arg Asn Gln  Leu Gln Glu Ala Gln  Asp Arg His
    1280                1285                1290

Thr Glu  Ala Val Arg Cys Ala  Glu Lys Met Gln Asp  His Lys Gln
    1295                1300                1305

Lys Leu  Glu Lys Asp Asn Ala  Lys Leu Lys Val Thr  Val Lys Lys
    1310                1315                1320

Gln Met  Asp Lys Ile Glu Glu  Leu Gln Lys Asn Leu  Leu Asn Ala
    1325                1330                1335

Asn Leu  Ser Glu Asp Glu Lys  Glu Gln Leu Lys Lys  Leu Met Glu
    1340                1345                1350

Leu Lys  Gln Ser Leu Glu Cys  Asn Leu Asp Gln Glu  Met Lys Lys
    1355                1360                1365

Asn Val  Glu Leu Glu Arg Glu  Ile Thr Gly Phe Lys  Asn Leu Leu
    1370                1375                1380

Lys Met  Thr Arg Lys Lys Leu  Asn Glu Tyr Glu Asn  Gly Glu Phe
    1385                1390                1395

Ser Phe  His Gly Asp Leu Lys  Thr Ser Gln Phe Glu  Met Asp Ile
```

1400 1405 1410

Gln Ile Asn Lys Leu Lys His Lys Ile Asp Asp Leu Thr Ala Glu
1415 1420 1425

Leu Glu Thr Ala Gly Ser Lys Cys Leu His Leu Asp Thr Lys Asn
1430 1435 1440

Gln Ile Leu Gln Glu Glu Leu Leu Ser Met Lys Thr Val Gln Lys
1445 1450 1455

Lys Cys Glu Lys Leu Gln Lys Asn Lys Lys Lys Leu Glu Gln Glu
1460 1465 1470

Val Ile Asn Leu Arg Ser His Ile Glu Arg Asn Met Val Glu Leu
1475 1480 1485

Gly Gln Val Lys Gln Tyr Lys Gln Glu Ile Glu Glu Arg Ala Arg
1490 1495 1500

Gln Glu Ile Ala Glu Lys Leu Lys Glu Val Asn Leu Phe Leu Gln
1505 1510 1515

Ala Gln Ala Ala Ser Gln Glu Asn Leu Glu Gln Phe Arg Glu Asn
1520 1525 1530

Asn Phe Ala Ser Met Lys Ser Gln Met Glu Leu Arg Ile Lys Asp
1535 1540 1545

Leu Glu Ser Glu Leu Ser Lys Ile Lys Thr Ser Gln Glu Asp Phe
1550 1555 1560

Asn Lys Thr Glu Leu Glu Lys Tyr Lys Gln Leu Tyr Leu Glu Glu
1565 1570 1575

Leu Lys Val Arg Lys Ser Leu Ser Ser Lys Leu Thr Lys Thr Asn
1580 1585 1590

Glu Arg Leu Ala Glu Val Asn Thr Lys Leu Leu Val Glu Lys Gln
1595 1600 1605

Gln Ser Arg Ser Leu Phe Thr Thr Leu Thr Thr Arg Pro Val Met
1610 1615 1620

```
Glu Pro  Pro Cys Val Gly Asn  Leu Asn Asn Ser Leu  Asp Leu Asn
    1625                1630                1635

Arg Lys  Leu Ile Pro Arg Glu  Asn Leu Val Ile Ser  Thr Ser Asn
    1640                1645                1650

Pro Arg  Ala Ser Asn Asn Ser  Met Glu Asn Tyr Leu  Ser Lys Met
    1655                1660                1665

Gln Gln  Glu Leu Glu Lys Asn  Ile Thr Arg Glu Leu  Lys Glu Ala
    1670                1675                1680

Ala Ala  Glu Leu Glu Ser Gly  Ser Ile Ala Ser Pro  Leu Gly Ser
    1685                1690                1695

Thr Asp  Glu Ser Asn Leu Asn  Gln Asp Leu Val Trp  Lys Ala Ser
    1700                1705                1710

Arg Glu  Tyr Val Gln Val Leu  Lys Lys Asn Tyr Met  Ile
    1715                1720                1725


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Met Ala Leu Tyr Asp Glu Asp Leu Leu Lys Asn Pro Phe Tyr Leu Ala
1               5                  10                  15

Leu Gln Lys Cys Arg Pro Asp Leu Cys Ser Lys Val Ala Gln Ile His
            20                  25                  30

Gly Ile Val Leu Val Pro Cys Lys Gly Ser Leu Ser Ser Ser Ile Gln
        35                  40                  45

Ser Thr Cys Gln Phe Glu Ser Tyr Ile Leu Ile Pro Val Glu Glu His
    50                  55                  60

Phe Gln Thr Leu Asn Gly Lys Asp Val Phe Ile Gln Gly Asn Arg Ile
65                  70                  75                  80

Lys Leu Gly Ala Gly Phe Ala Cys Leu Leu Ser Val Pro Ile Leu Phe
                85                  90                  95

Glu Glu Thr Phe Tyr Asn Glu Lys Glu Glu Ser Phe Ser Ile Leu Cys
            100                 105                 110

Ile Ala His Pro Leu Glu Lys Arg Glu Ser Ser Glu Glu Pro Leu Ala
        115                 120                 125

Pro Ser Asp Pro Phe Ser Leu Lys Thr Ile Glu Asp Val Arg Glu Phe
    130                 135                 140

Leu Gly Arg His Ser Glu Arg Phe Asp Arg Asn Ile Ala Ser Phe His
145                 150                 155                 160

Arg Thr Phe Arg Glu Cys Glu Arg Lys Ser Leu Arg His His Ile Asp
                165                 170                 175

Ser Ala Asn Ala Leu Tyr Thr Lys Cys Leu Gln Gln Leu Leu Arg Asp
            180                 185                 190

Ser His Leu Lys Met Leu Ala Lys Gln Glu Ala Gln Met Asn Leu Met
        195                 200                 205

Lys Gln Ala Val Glu Ile Tyr Val His His Glu Ile Tyr Asn Leu Ile
    210                 215                 220

Phe Lys Tyr Val Gly Thr Met Glu Ala Ser Glu Asp Ala Ala Phe Asn
```

225 230 235 240

Lys Ile Thr Arg Ser Leu Gln Asp Leu Gln Gln Lys Asp Ile Gly Val
245 250 255

Lys Pro Glu Phe Ser Phe Asn Ile Pro Arg Ala Lys Arg Glu Leu Ala
260 265 270

Gln Leu Asn Lys Cys Thr Ser Pro Gln Gln Lys Leu Val Cys Leu Arg
275 280 285

Lys Val Val Gln Leu Ile Thr Gln Ser Pro Ser Gln Arg Val Asn Leu
290 295 300

Glu Thr Met Cys Ala Asp Asp Leu Leu Ser Val Leu Leu Tyr Leu Leu
305 310 315 320

Val Lys Thr Glu Ile Pro Asn Trp Met Ala Asn Leu Ser Tyr Ile Lys
325 330 335

Asn Phe Arg Phe Ser Ser Leu Ala Lys Asp Glu Leu Gly Tyr Cys Leu
340 345 350

Thr Ser Phe Glu Ala Ala Ile Glu Tyr Ile Arg Gln Gly Ser Leu Ser
355 360 365

Ala Lys Pro Pro Glu Ser Glu Gly Phe Gly Asp Arg Leu Phe Leu Lys
370 375 380

Gln Arg Met Ser Leu Leu Ser Gln Met Thr Ser Ser Pro Thr Asp Cys
385 390 395 400

Leu Phe Lys His Ile Ala Ser Gly Asn Gln Lys Glu Val Glu Arg Leu
405 410 415

Leu Ser Gln Glu Asp His Asp Lys Asp Thr Val Gln Lys Met Cys His
420 425 430

Pro Leu Cys Phe Cys Asp Asp Cys Glu Lys Leu Val Ser Gly Arg Leu
435 440 445

Asn Asp Pro Ser Val Val Thr Pro Phe Ser Arg Asp Asp Arg Gly His
450 455 460

```
Thr Pro Leu His Val Ala Ala Val Cys Gly Gln Ala Ser Leu Ile Asp
465                 470                 475                 480

Leu Leu Val Ser Lys Gly Ala Met Val Asn Ala Thr Asp Tyr His Gly
                485                 490                 495

Ala Thr Pro Leu His Leu Ala Cys Gln Lys Gly Tyr Gln Ser Val Thr
            500                 505                 510

Leu Leu Leu Leu His Tyr Lys Ala Ser Ala Glu Val Gln Asp Asn Asn
        515                 520                 525

Gly Asn Thr Pro Leu His Leu Ala Cys Thr Tyr Gly His Glu Asp Cys
    530                 535                 540

Val Lys Ala Leu Val Tyr Tyr Asp Val Glu Ser Cys Arg Leu Asp Ile
545                 550                 555                 560

Gly Asn Glu Lys Gly Asp Thr Pro Leu His Ile Ala Ala Arg Trp Gly
                565                 570                 575

Tyr Gln Gly Val Ile Glu Thr Leu Leu Gln Asn Gly Ala Ser Thr Glu
            580                 585                 590

Ile Gln Asn Arg Leu Lys Glu Thr Pro Leu Lys Cys Ala Leu Asn Ser
        595                 600                 605

Lys Ile Leu Ser Val Met Glu Ala Tyr His Leu Ser Phe Glu Arg Arg
    610                 615                 620

Gln Lys Ser Ser Glu Ala Pro Val Gln Ser Pro Gln Arg Ser Val Asp
625                 630                 635                 640

Ser Ile Ser Gln Glu Ser Ser Thr Ser Ser Phe Ser Ser Met Ser Ala
                645                 650                 655

Ser Ser Arg Gln Glu Glu Thr Lys Lys Asp Tyr Arg Glu Val Glu Lys
            660                 665                 670

Leu Leu Arg Ala Val Ala Asp Gly Asp Leu Glu Met Val Arg Tyr Leu
        675                 680                 685
```

```
Leu Glu Trp Thr Glu Glu Asp Leu Glu Asp Ala Glu Asp Thr Val Ser
    690                 695                 700

Ala Ala Asp Pro Glu Phe Cys His Pro Leu Cys Gln Cys Pro Lys Cys
705                 710                 715                 720

Ala Pro Ala Gln Lys Arg Leu Ala Lys Val Pro Ala Ser Gly Leu Gly
                725                 730                 735

Val Asn Val Thr Ser Gln Asp Gly Ser Ser Pro Leu His Val Ala Ala
            740                 745                 750

Leu His Gly Arg Ala Asp Leu Ile Pro Leu Leu Leu Lys His Gly Ala
        755                 760                 765

Asn Ala Gly Ala Arg Asn Ala Asp Gln Ala Val Pro Leu His Leu Ala
    770                 775                 780

Cys Gln Gln Gly His Phe Gln Val Val Lys Cys Leu Leu Asp Ser Asn
785                 790                 795                 800

Ala Lys Pro Asn Lys Lys Asp Leu Ser Gly Asn Thr Pro Leu Ile Tyr
                805                 810                 815

Ala Cys Ser Gly Gly His His Glu Leu Val Ala Leu Leu Leu Gln His
            820                 825                 830

Gly Ala Ser Ile Asn Ala Ser Asn Asn Lys Gly Asn Thr Ala Leu His
        835                 840                 845

Glu Ala Val Ile Glu Lys His Val Phe Val Val Glu Leu Leu Leu Leu
    850                 855                 860

His Gly Ala Ser Val Gln Val Leu Asn Lys Arg Gln Arg Thr Ala Val
865                 870                 875                 880

Asp Cys Ala Glu Gln Asn Ser Lys Ile Met Glu Leu Leu Gln Val Val
                885                 890                 895

Pro Ser Cys Val Ala Ser Leu Asp Asp Val Ala Glu Thr Asp Arg Lys
            900                 905                 910
```

```
Glu Tyr Val Thr Val Lys Ile Arg Lys Lys Trp Asn Ser Lys Leu Tyr
        915                 920                 925

Asp Leu Pro Asp Glu Pro Phe Thr Arg Gln Phe Tyr Phe Val His Ser
    930                 935                 940

Ala Gly Gln Phe Lys Gly Lys Thr Ser Arg Glu Ile Met Ala Arg Asp
945                 950                 955                 960

Arg Ser Val Pro Asn Leu Thr Glu Gly Ser Leu His Glu Pro Gly Arg
                965                 970                 975

Gln Ser Val Thr Leu Arg Gln Asn Asn Leu Pro Ala Gln Ser Gly Ser
            980                 985                 990

His Ala Ala Glu Lys Gly Asn Ser  Asp Trp Pro Glu Arg  Pro Gly
Leu
        995                 1000                1005

Thr Gln  Thr Gly Pro Gly His  Arg Arg Met Leu Arg  Arg His Thr
    1010                1015                1020

Val Glu  Asp Ala Val Val Ser  Gln Gly Pro Glu Ala  Ala Gly Pro
    1025                1030                1035

Leu Ser  Thr Pro Gln Glu Val  Ser Ala Ser Arg Ser
    1040                1045                1050


<210> 5200
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<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1128; "

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<220>
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<223> /note="ENSP ID: ENSP00000464751"

<400> 5200
Met Cys Ala Asp Asp Leu Leu Ser Val Leu Leu Tyr Leu Leu Val Lys
1 5 10 15

Thr Glu Ile Pro Asn Trp Met Ala Asn Leu Ser Tyr Ile Lys Asn Phe
20 25 30

Arg Phe Ser Ser Leu Ala Lys Asp Glu Leu Gly Tyr Cys Leu Thr Ser
35 40 45

Phe Glu Ala Ala Ile Glu Tyr Ile Arg Gln Gly Ser Leu Ser Ala Lys
50 55 60

Pro Pro Glu Ser Glu Gly Phe Gly Asp Arg Leu Phe Leu Lys Gln Arg
65 70 75 80

Met Ser Leu Leu Ser Gln Met Thr Ser Ser Pro Thr Asp Cys Leu Phe
85 90 95

Lys His Ile Ala Ser Gly Asn Gln Lys Glu Val Glu Arg Leu Leu Ser
100 105 110

Gln Glu Asp His Asp Lys Asp Thr Val Gln Lys Met Cys His Pro Leu
115 120 125

Cys Phe Cys Asp Asp Cys Glu Lys Leu Val Ser Gly Arg Leu Asn Asp
130 135 140

Pro Ser Val Val Thr Pro Phe Ser Arg Asp Asp Arg Gly His Thr Pro
145 150 155 160

Leu His Val Ala Ala Val Cys Gly Gln Ala Ser Leu Ile Asp
165 170

<210> 5201
<211> 75
<212> PRT
<213> Homo sapiens

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<220>
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<400> 5201
Met Ala Leu Tyr Asp Glu Asp Leu Leu Lys Asn Pro Phe Tyr Leu Ala
1 5 10 15

Leu Gln Lys Cys Arg Pro Asp Leu Cys Ser Lys Val Ala Gln Ile His
20 25 30

Gly Ile Val Leu Val Pro Cys Lys Gly Ser Leu Ser Ser Ser Ile Gln
35 40 45

Ser Thr Cys Gln Phe Glu Ser Tyr Ile Leu Ile Pro Val Glu Glu His
50 55 60

Phe Gln Thr Leu Asn Gly Lys Asp Val Phe Ile
65 70 75

<210> 5202
<211> 389
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<400> 5202
Met Ala Leu Tyr Asp Glu Asp Leu Leu Lys Asn Pro Phe Tyr Leu Ala

```
1               5                   10                  15

Leu Gln Lys Cys Arg Pro Asp Leu Cys Ser Lys Val Ala Gln Ile His
            20                  25                  30

Gly Ile Val Leu Val Pro Cys Lys Gly Ser Leu Ser Ser Ser Ile Gln
        35                  40                  45

Ser Thr Cys Gln Phe Glu Ser Tyr Ile Leu Ile Pro Val Glu Glu His
    50                  55                  60

Phe Gln Thr Leu Asn Gly Lys Asp Val Phe Ile Gln Gly Asn Arg Ile
65                  70                  75                  80

Lys Leu Gly Ala Gly Phe Ala Cys Leu Leu Ser Val Pro Ile Leu Phe
                85                  90                  95

Glu Glu Thr Phe Tyr Asn Glu Lys Glu Glu Ser Phe Ser Ile Leu Cys
            100                 105                 110

Ile Ala His Pro Leu Glu Lys Arg Glu Ser Ser Glu Glu Pro Leu Ala
        115                 120                 125

Pro Ser Asp Pro Phe Ser Leu Lys Thr Ile Glu Asp Val Arg Glu Phe
    130                 135                 140

Leu Gly Arg His Ser Glu Arg Phe Asp Arg Asn Ile Ala Ser Phe His
145                 150                 155                 160

Arg Thr Phe Arg Glu Cys Glu Arg Lys Ser Leu Arg His His Ile Asp
                165                 170                 175

Ser Ala Asn Ala Leu Tyr Thr Lys Cys Leu Gln Gln Leu Leu Arg Asp
            180                 185                 190

Ser His Leu Lys Met Leu Ala Lys Gln Glu Ala Gln Met Asn Leu Met
        195                 200                 205

Lys Gln Ala Val Glu Ile Tyr Val His His Glu Ile Tyr Asn Leu Ile
    210                 215                 220

Phe Lys Tyr Val Gly Thr Met Glu Ala Ser Glu Asp Ala Ala Phe Asn
225                 230                 235                 240
```

```
Lys Ile Thr Arg Ser Leu Gln Asp Leu Gln Gln Lys Asp Ile Gly Val
                245                 250                 255

Lys Pro Glu Phe Ser Phe Asn Ile Pro Arg Ala Lys Arg Glu Leu Ala
            260                 265                 270

Gln Leu Asn Lys Cys Thr Ser Pro Gln Gln Lys Leu Val Cys Leu Arg
        275                 280                 285

Lys Val Val Gln Leu Ile Thr Gln Ser Pro Ser Gln Arg Val Asn Leu
    290                 295                 300

Glu Thr Met Cys Ala Asp Asp Leu Leu Ser Val Leu Leu Tyr Leu Leu
305                 310                 315                 320

Val Lys Thr Glu Ile Pro Asn Trp Met Ala Asn Leu Ser Tyr Ile Lys
                325                 330                 335

Asn Phe Arg Phe Ser Ser Leu Ala Lys Asp Glu Leu Gly Tyr Cys Leu
            340                 345                 350

Thr Ser Phe Glu Ala Ala Ile Glu Tyr Ile Arg Gln Gly Ser Leu Ser
        355                 360                 365

Ala Lys Pro Pro Val Arg Ser His Pro Cys Pro Gly Leu Pro Leu Trp
    370                 375                 380

Ala Ser Trp Phe Pro
385
```

<210> 5203
<211> 82
<212> PRT
<213> Homo sapiens

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<220>
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<223> /note="ENSP ID: ENSP00000466905"

<400> 5203
Met Ala Leu Tyr Asp Glu Asp Leu Leu Lys Asn Pro Phe Tyr Leu Ala
1 5 10 15

Leu Gln Lys Cys Arg Pro Asp Leu Cys Ser Lys Val Ala Gln Ile His
20 25 30

Gly Ile Val Leu Val Pro Cys Lys Gly Ser Leu Ser Ser Ser Ile Gln
35 40 45

Ser Thr Cys Gln Phe Glu Ser Tyr Ile Leu Ile Pro Val Glu Glu His
50 55 60

Phe Gln Thr Leu Asn Gly Lys Lys Ser Leu Trp His Pro Gln Ile Pro
65 70 75 80

Phe Pro

<210> 5204
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<212> PRT
<213> Homo sapiens

<220>
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<400> 5204
Met Glu Ala Ser Glu Asp Ala Ala Phe Asn Lys Ile Thr Arg Ser Leu
1 5 10 15

```
Gln Asp Leu Gln Gln Lys Asp Ile Gly Val Lys Pro Glu Phe
            20                  25                  30


<210> 5205
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<212> PRT
<213> Homo sapiens

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<220>
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<400> 5205
Met Ala Leu Tyr Asp Glu Asp Leu Leu Lys Asn Pro Phe Tyr Leu Ala
1               5                   10                  15


Leu Gln Lys Cys Arg Pro Asp Leu Cys Ser Lys Val Ala Gln Ile His
            20                  25                  30


Gly Ile Val Leu Val Pro Cys Lys Gly Ser Leu Ser Ser Ser Ile Gln
        35                  40                  45


Ser Thr Cys Gln Phe Glu Ser Tyr Ile Leu Ile Pro Val Glu Glu His
    50                  55                  60


Phe Gln Thr Leu Asn Gly Lys Asp Val Phe Ile Gln Gly Asn Arg Ile
65                  70                  75                  80


Lys Leu Gly Ala Gly Phe Ala Cys Leu Leu Ser Val Pro Ile Leu Phe
                85                  90                  95


Glu Glu Thr Phe Tyr Asn Glu Lys Glu Glu Ser Phe Ser Ile Leu Cys
            100                 105                 110
```

```
Ile Ala His Pro Leu Glu Lys Arg Glu Ser Ser Glu Pro Leu Ala Pro
        115                 120                 125

Ser Asp Pro Phe Ser Leu Lys Thr Ile Glu Asp Val Arg Glu Phe Leu
    130                 135                 140

Gly Arg His Ser Glu Arg
145                 150


<210> 5206
<211> 174
<212> PRT
<213> Homo sapiens

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<220>
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<400> 5206
Met Ala Leu Tyr Asp Glu Asp Leu Leu Lys Asn Pro Phe Tyr Leu Ala
1               5                   10                  15

Leu Gln Lys Cys Arg Pro Asp Leu Cys Ser Lys Val Ala Gln Ile His
            20                  25                  30

Gly Ile Val Leu Val Pro Cys Lys Gly Ser Leu Ser Ser Ser Ile Gln
        35                  40                  45

Ser Thr Cys Gln Phe Glu Ser Tyr Ile Leu Ile Pro Val Glu Glu His
    50                  55                  60

Phe Gln Thr Leu Asn Gly Lys Asp Val Phe Ile Gln Gly Asn Arg Ile
65                  70                  75                  80

Lys Leu Gly Ala Gly Phe Ala Cys Leu Leu Ser Val Pro Ile Leu Phe
                85                  90                  95
```

```
Glu Glu Thr Phe Tyr Asn Glu Lys Glu Glu Ser Phe Ser Ile Leu Cys
            100                 105                 110

Ile Ala His Pro Leu Glu Lys Arg Glu Ser Ser Glu Glu Pro Leu Ala
        115                 120                 125

Pro Ser Asp Pro Phe Ser Leu Lys Thr Ile Glu Asp Val Arg Glu Phe
    130                 135                 140

Leu Gly Arg His Ser Glu Arg Phe Asp Arg Asn Ile Ala Ser Phe His
145                 150                 155                 160

Arg Thr Phe Arg Glu Cys Glu Arg Lys Ser Ser Val Thr Thr
                165                 170


<210> 5207
<211> 899
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Uniprot ID:  O15084; "

<220>
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<400> 5207
Met Val Lys Leu Leu Leu Ser Arg Gly Ala Asn Ile Asn Ala Phe Asp
1               5                   10                  15

Lys Lys Asp Arg Arg Ala Ile His Trp Ala Ala Tyr Met Gly His Ile
            20                  25                  30
```

```
Glu Val Val Lys Leu Leu Val Ser His Gly Ala Glu Val Thr Cys Lys
        35                  40                  45

Asp Lys Lys Ser Tyr Thr Pro Leu His Ala Ala Ala Ser Ser Gly Met
    50                  55                  60

Ile Ser Val Val Lys Tyr Leu Leu Asp Leu Gly Val Asp Met Asn Glu
65                  70                  75                  80

Pro Asn Ala Tyr Gly Asn Thr Pro Leu His Val Ala Cys Tyr Asn Gly
                85                  90                  95

Gln Asp Val Val Val Asn Glu Leu Ile Asp Cys Gly Ala Ile Val Asn
            100                 105                 110

Gln Lys Asn Glu Lys Gly Phe Thr Pro Leu His Phe Ala Ala Ala Ser
        115                 120                 125

Thr His Gly Ala Leu Cys Leu Glu Leu Leu Val Gly Asn Gly Ala Asp
    130                 135                 140

Val Asn Met Lys Ser Lys Asp Gly Lys Thr Pro Leu His Met Thr Ala
145                 150                 155                 160

Leu His Gly Arg Phe Ser Arg Ser Gln Thr Ile Ile Gln Ser Gly Ala
                165                 170                 175

Val Ile Asp Cys Glu Asp Lys Asn Gly Asn Thr Pro Leu His Ile Ala
            180                 185                 190

Ala Arg Tyr Gly His Glu Leu Leu Ile Asn Thr Leu Ile Thr Ser Gly
        195                 200                 205

Ala Asp Thr Ala Lys Arg Gly Ile His Gly Met Phe Pro Leu His Leu
    210                 215                 220

Ala Ala Leu Ser Gly Phe Ser Asp Cys Cys Arg Lys Leu Leu Ser Ser
225                 230                 235                 240

Gly Phe Asp Ile Asp Thr Pro Asp Asp Phe Gly Arg Thr Cys Leu His
                245                 250                 255

Ala Ala Ala Ala Gly Gly Asn Leu Glu Cys Leu Asn Leu Leu Leu Asn
```

```
            260                 265                 270

Thr Gly Ala Asp Phe Asn Lys Lys Asp Lys Phe Gly Arg Ser Pro Leu
        275                 280                 285

His Tyr Ala Ala Ala Asn Cys Asn Tyr Gln Cys Leu Phe Ala Leu Val
    290                 295                 300

Gly Ser Gly Ala Ser Val Asn Asp Leu Asp Glu Arg Gly Cys Thr Pro
305                 310                 315                 320

Leu His Tyr Ala Ala Thr Ser Asp Thr Asp Gly Lys Cys Leu Glu Tyr
                325                 330                 335

Leu Leu Arg Asn Asp Ala Asn Pro Gly Ile Arg Asp Lys Gln Gly Tyr
            340                 345                 350

Asn Ala Val His Tyr Ser Ala Ala Tyr Gly His Arg Leu Cys Leu Gln
        355                 360                 365

Leu Ile Ala Ser Glu Thr Pro Leu Asp Val Leu Met Glu Thr Ser Gly
    370                 375                 380

Thr Asp Met Leu Ser Asp Ser Asp Asn Arg Ala Thr Ile Ser Pro Leu
385                 390                 395                 400

His Leu Ala Ala Tyr His Gly His His Gln Ala Leu Glu Val Leu Val
                405                 410                 415

Gln Ser Leu Leu Asp Leu Asp Val Arg Asn Ser Ser Gly Arg Thr Pro
            420                 425                 430

Leu Asp Leu Ala Ala Phe Lys Gly His Val Glu Cys Val Asp Val Leu
        435                 440                 445

Ile Asn Gln Gly Ala Ser Ile Leu Val Lys Asp Tyr Ile Leu Lys Arg
    450                 455                 460

Thr Pro Ile His Ala Ala Ala Thr Asn Gly His Ser Glu Cys Leu Arg
465                 470                 475                 480

Leu Leu Ile Gly Asn Ala Glu Pro Gln Asn Ala Val Asp Ile Gln Asp
                485                 490                 495
```

Gly Asn Gly Gln Thr Pro Leu Met Leu Ser Val Leu Asn Gly His Thr
500 505 510

Asp Cys Val Tyr Ser Leu Leu Asn Lys Gly Ala Asn Val Asp Ala Lys
515 520 525

Asp Lys Trp Gly Arg Thr Ala Leu His Arg Gly Ala Val Thr Gly His
530 535 540

Glu Glu Cys Val Asp Ala Leu Leu Gln His Gly Ala Lys Cys Leu Leu
545 550 555 560

Arg Asp Ser Arg Gly Arg Thr Pro Ile His Leu Ser Ala Ala Cys Gly
565 570 575

His Ile Gly Val Leu Gly Ala Leu Leu Gln Ser Ala Ala Ser Met Asp
580 585 590

Ala Asn Pro Ala Thr Ala Asp Asn His Gly Tyr Thr Ala Leu His Trp
595 600 605

Ala Cys Tyr Asn Gly His Glu Thr Cys Val Glu Leu Leu Leu Glu Gln
610 615 620

Glu Val Phe Gln Lys Thr Glu Gly Asn Ala Phe Ser Pro Leu His Cys
625 630 635 640

Ala Val Ile Asn Asp Asn Glu Gly Ala Ala Glu Met Leu Ile Asp Thr
645 650 655

Leu Gly Ala Ser Ile Val Asn Ala Thr Asp Ser Lys Gly Arg Thr Pro
660 665 670

Leu His Ala Ala Ala Phe Thr Asp His Val Glu Cys Leu Gln Leu Leu
675 680 685

Leu Ser His Asn Ala Gln Val Asn Ser Val Asp Ser Thr Gly Lys Thr
690 695 700

Pro Leu Met Met Ala Ala Glu Asn Gly Gln Thr Asn Thr Val Glu Met
705 710 715 720

```
Leu Val Ser Ser Ala Ser Ala Glu Leu Thr Leu Gln Asp Asn Ser Lys
                725                 730                 735

Asn Thr Ala Leu His Leu Ala Cys Ser Lys Gly His Glu Thr Ser Ala
            740                 745                 750

Leu Leu Ile Leu Glu Lys Ile Thr Asp Arg Asn Leu Ile Asn Ala Thr
        755                 760                 765

Asn Ala Ala Leu Gln Thr Pro Leu His Val Ala Ala Arg Asn Gly Leu
    770                 775                 780

Thr Met Val Val Gln Glu Leu Leu Gly Lys Gly Ala Ser Val Leu Ala
785                 790                 795                 800

Val Asp Glu Asn Gly Tyr Thr Pro Ala Leu Ala Cys Ala Pro Asn Lys
                805                 810                 815

Asp Val Ala Asp Cys Leu Ala Leu Ile Leu Ala Thr Met Met Pro Val
            820                 825                 830

Ser Ser Ser Ser Pro Leu Ser Ser Leu Thr Phe Asn Ala Ile Asn Arg
        835                 840                 845

Tyr Thr Asn Thr Ser Lys Thr Val Ser Phe Glu Ala Leu Pro Ile Met
    850                 855                 860

Arg Asn Glu Pro Ser Ser Tyr Cys Ser Phe Asn Asn Ile Gly Gly Glu
865                 870                 875                 880

Gln Glu Tyr Leu Tyr Thr Asp Val Asp Glu Leu Asn Asp Ser Asp Ser
                885                 890                 895

Glu Thr Tyr
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<210> 5208
<211> 1053
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
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<400> 5208
Met Ala Phe Leu Lys Leu Arg Asp Gln Pro Ser Leu Val Gln Ala Ile
1   5   10   15

Phe Asn Gly Asp Pro Asp Glu Val Arg Ala Leu Ile Phe Lys Lys Glu
            20   25   30

Asp Val Asn Phe Gln Asp Asn Glu Lys Arg Thr Pro Leu His Ala Ala
        35   40   45

Ala Tyr Leu Gly Asp Ala Glu Ile Ile Glu Leu Leu Ile Leu Ser Gly
    50   55   60

Ala Arg Val Asn Ala Lys Asp Ser Lys Trp Leu Thr Pro Leu His Arg
65   70   75   80

Ala Val Ala Ser Cys Ser Glu Glu Ala Val Gln Val Leu Leu Lys His
                85   90   95

Ser Ala Asp Val Asn Ala Arg Asp Lys Asn Trp Gln Thr Pro Leu His
            100   105   110

Ile Ala Ala Ala Asn Lys Ala Val Lys Cys Ala Glu Ala Leu Val Pro
        115   120   125

Leu Leu Ser Asn Val Asn Val Ser Asp Arg Ala Gly Arg Thr Ala Leu
    130   135   140

His His Ala Ala Phe Ser Gly His Gly Glu Met Val Lys Leu Leu Leu
145   150   155   160

```
Ser Arg Gly Ala Asn Ile Asn Ala Phe Asp Lys Lys Asp Arg Arg Ala
                165                 170                 175

Ile His Trp Ala Ala Tyr Met Gly His Ile Glu Val Val Lys Leu Leu
            180                 185                 190

Val Ser His Gly Ala Glu Val Thr Cys Lys Asp Lys Lys Ser Tyr Thr
        195                 200                 205

Pro Leu His Ala Ala Ala Ser Ser Gly Met Ile Ser Val Val Lys Tyr
    210                 215                 220

Leu Leu Asp Leu Gly Val Asp Met Asn Glu Pro Asn Ala Tyr Gly Asn
225                 230                 235                 240

Thr Pro Leu His Val Ala Cys Tyr Asn Gly Gln Asp Val Val Val Asn
                245                 250                 255

Glu Leu Ile Asp Cys Gly Ala Ile Val Asn Gln Lys Asn Glu Lys Gly
            260                 265                 270

Phe Thr Pro Leu His Phe Ala Ala Ala Ser Thr His Gly Ala Leu Cys
        275                 280                 285

Leu Glu Leu Leu Val Gly Asn Gly Ala Asp Val Asn Met Lys Ser Lys
    290                 295                 300

Asp Gly Lys Thr Pro Leu His Met Thr Ala Leu His Gly Arg Phe Ser
305                 310                 315                 320

Arg Ser Gln Thr Ile Ile Gln Ser Gly Ala Val Ile Asp Cys Glu Asp
                325                 330                 335

Lys Asn Gly Asn Thr Pro Leu His Ile Ala Ala Arg Tyr Gly His Glu
            340                 345                 350

Leu Leu Ile Asn Thr Leu Ile Thr Ser Gly Ala Asp Thr Ala Lys Arg
        355                 360                 365

Gly Ile His Gly Met Phe Pro Leu His Leu Ala Ala Leu Ser Gly Phe
    370                 375                 380
```

```
Ser Asp Cys Cys Arg Lys Leu Leu Ser Ser Gly Phe Asp Ile Asp Thr
385                 390                 395                 400

Pro Asp Asp Phe Gly Arg Thr Cys Leu His Ala Ala Ala Ala Gly Gly
                405                 410                 415

Asn Leu Glu Cys Leu Asn Leu Leu Leu Asn Thr Gly Ala Asp Phe Asn
            420                 425                 430

Lys Lys Asp Lys Phe Gly Arg Ser Pro Leu His Tyr Ala Ala Ala Asn
        435                 440                 445

Cys Asn Tyr Gln Cys Leu Phe Ala Leu Val Gly Ser Gly Ala Ser Val
    450                 455                 460

Asn Asp Leu Asp Glu Arg Gly Cys Thr Pro Leu His Tyr Ala Ala Thr
465                 470                 475                 480

Ser Asp Thr Asp Gly Lys Cys Leu Glu Tyr Leu Leu Arg Asn Asp Ala
                485                 490                 495

Asn Pro Gly Ile Arg Asp Lys Gln Gly Tyr Asn Ala Val His Tyr Ser
            500                 505                 510

Ala Ala Tyr Gly His Arg Leu Cys Leu Gln Leu Ile Ala Ser Glu Thr
        515                 520                 525

Pro Leu Asp Val Leu Met Glu Thr Ser Gly Thr Asp Met Leu Ser Asp
    530                 535                 540

Ser Asp Asn Arg Ala Thr Ile Ser Pro Leu His Leu Ala Ala Tyr His
545                 550                 555                 560

Gly His His Gln Ala Leu Glu Val Leu Val Gln Ser Leu Leu Asp Leu
                565                 570                 575

Asp Val Arg Asn Ser Ser Gly Arg Thr Pro Leu Asp Leu Ala Ala Phe
            580                 585                 590

Lys Gly His Val Glu Cys Val Asp Val Leu Ile Asn Gln Gly Ala Ser
        595                 600                 605
```

```
Ile Leu Val Lys Asp Tyr Ile Leu Lys Arg Thr Pro Ile His Ala Ala
    610                 615                 620

Ala Thr Asn Gly His Ser Glu Cys Leu Arg Leu Leu Ile Gly Asn Ala
625                 630                 635                 640

Glu Pro Gln Asn Ala Val Asp Ile Gln Asp Gly Asn Gly Gln Thr Pro
                645                 650                 655

Leu Met Leu Ser Val Leu Asn Gly His Thr Asp Cys Val Tyr Ser Leu
            660                 665                 670

Leu Asn Lys Gly Ala Asn Val Asp Ala Lys Asp Lys Trp Gly Arg Thr
        675                 680                 685

Ala Leu His Arg Gly Ala Val Thr Gly His Glu Glu Cys Val Asp Ala
    690                 695                 700

Leu Leu Gln His Gly Ala Lys Cys Leu Leu Arg Asp Ser Arg Gly Arg
705                 710                 715                 720

Thr Pro Ile His Leu Ser Ala Ala Cys Gly His Ile Gly Val Leu Gly
                725                 730                 735

Ala Leu Leu Gln Ser Ala Ala Ser Met Asp Ala Asn Pro Ala Thr Ala
            740                 745                 750

Asp Asn His Gly Tyr Thr Ala Leu His Trp Ala Cys Tyr Asn Gly His
        755                 760                 765

Glu Thr Cys Val Glu Leu Leu Leu Glu Gln Glu Val Phe Gln Lys Thr
    770                 775                 780

Glu Gly Asn Ala Phe Ser Pro Leu His Cys Ala Val Ile Asn Asp Asn
785                 790                 795                 800

Glu Gly Ala Ala Glu Met Leu Ile Asp Thr Leu Gly Ala Ser Ile Val
                805                 810                 815

Asn Ala Thr Asp Ser Lys Gly Arg Thr Pro Leu His Ala Ala Ala Phe
            820                 825                 830

Thr Asp His Val Glu Cys Leu Gln Leu Leu Leu Ser His Asn Ala Gln
```

835 840 845

Val Asn Ser Val Asp Ser Thr Gly Lys Thr Pro Leu Met Met Ala Ala
850 855 860

Glu Asn Gly Gln Thr Asn Thr Val Glu Met Leu Val Ser Ser Ala Ser
865 870 875 880

Ala Glu Leu Thr Leu Gln Asp Asn Ser Lys Asn Thr Ala Leu His Leu
885 890 895

Ala Cys Ser Lys Gly His Glu Thr Ser Ala Leu Leu Ile Leu Glu Lys
900 905 910

Ile Thr Asp Arg Asn Leu Ile Asn Ala Thr Asn Ala Ala Leu Gln Thr
915 920 925

Pro Leu His Val Ala Ala Arg Asn Gly Leu Thr Met Val Val Gln Glu
930 935 940

Leu Leu Gly Lys Gly Ala Ser Val Leu Ala Val Asp Glu Asn Gly Tyr
945 950 955 960

Thr Pro Ala Leu Ala Cys Ala Pro Asn Lys Asp Val Ala Asp Cys Leu
965 970 975

Ala Leu Ile Leu Ala Thr Met Met Pro Val Ser Ser Ser Ser Pro Leu
980 985 990

Ser Ser Leu Thr Phe Asn Ala Ile Asn Arg Tyr Thr Asn Thr Ser
Lys
995 1000 1005

Thr Val Ser Phe Glu Ala Leu Pro Ile Met Arg Asn Glu Pro Ser
1010 1015 1020

Ser Tyr Cys Ser Phe Asn Asn Ile Gly Gly Glu Gln Glu Tyr Leu
1025 1030 1035

Tyr Thr Asp Val Asp Glu Leu Asn Asp Ser Asp Ser Glu Thr Tyr
1040 1045 1050

<210> 5209

<211> 14
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ANKRD28; "

<220>
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ankyrin repeat domain 28; "

<220>
<221> source
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<400> 5209
Met Ala Phe Leu Lys Leu Arg Asp Gln Ala Cys Asp Trp Asn
1 5 10

<210> 5210
<211> 722
<212> PRT
<213> Homo sapiens

<220>
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<400> 5210
Met Leu Thr Phe Arg Thr Met Lys Ser Glu Pro His Cys Thr Pro Gln
1 5 10 15

Leu Thr Leu Glu Met Gln Lys Ser Leu Asn Phe Leu Phe Tyr Leu Glu
20 25 30

```
Ala Val Gln Val Leu Leu Lys His Ser Ala Asp Val Asn Ala Arg Asp
        35                  40                  45

Lys Asn Trp Gln Thr Pro Leu His Ile Ala Ala Ala Asn Lys Ala Val
    50                  55                  60

Lys Cys Ala Glu Ala Leu Val Pro Leu Leu Ser Asn Val Asn Val Ser
65                  70                  75                  80

Asp Arg Ala Gly Arg Thr Ala Leu His His Ala Ala Phe Ser Gly His
                85                  90                  95

Gly Glu Met Val Lys Leu Leu Leu Ser Arg Gly Ala Asn Ile Asn Ala
            100                 105                 110

Phe Asp Lys Lys Asp Arg Arg Ala Ile His Trp Ala Ala Tyr Met Gly
        115                 120                 125

His Ile Glu Val Val Lys Leu Leu Val Ser His Gly Ala Glu Val Thr
    130                 135                 140

Cys Lys Asp Lys Lys Ser Tyr Thr Pro Leu His Ala Ala Ala Ser Ser
145                 150                 155                 160

Gly Met Ile Ser Val Val Lys Tyr Leu Leu Asp Leu Gly Val Asp Met
                165                 170                 175

Asn Glu Pro Asn Ala Tyr Gly Asn Thr Pro Leu His Val Ala Cys Tyr
            180                 185                 190

Asn Gly Gln Asp Val Val Val Asn Glu Leu Ile Asp Cys Gly Ala Ile
        195                 200                 205

Val Asn Gln Lys Asn Glu Lys Gly Phe Thr Pro Leu His Phe Ala Ala
    210                 215                 220

Ala Ser Thr His Gly Ala Leu Cys Leu Glu Leu Leu Val Gly Asn Gly
225                 230                 235                 240

Ala Asp Val Asn Met Lys Ser Lys Asp Gly Lys Thr Pro Leu His Met
                245                 250                 255

Thr Ala Leu His Gly Arg Phe Ser Arg Ser Gln Thr Ile Ile Gln Ser
```

```
            260                 265                 270

Gly Ala Val Ile Asp Cys Glu Asp Lys Asn Gly Asn Thr Pro Leu His
        275                 280                 285

Ile Ala Ala Arg Tyr Gly His Glu Leu Leu Ile Asn Thr Leu Ile Thr
    290                 295                 300

Ser Gly Ala Asp Thr Ala Lys Arg Gly Ile His Gly Met Phe Pro Leu
305                 310                 315                 320

His Leu Ala Ala Leu Ser Gly Phe Ser Asp Cys Cys Arg Lys Leu Leu
                325                 330                 335

Ser Ser Gly Phe Asp Ile Asp Thr Pro Asp Asp Phe Gly Arg Thr Cys
            340                 345                 350

Leu His Ala Ala Ala Ala Gly Gly Asn Leu Glu Cys Leu Asn Leu Leu
        355                 360                 365

Leu Asn Thr Gly Ala Asp Phe Asn Lys Lys Asp Lys Phe Gly Arg Ser
    370                 375                 380

Pro Leu His Tyr Ala Ala Ala Asn Cys Asn Tyr Gln Cys Leu Phe Ala
385                 390                 395                 400

Leu Val Gly Ser Gly Ala Ser Val Asn Asp Leu Asp Glu Arg Gly Cys
                405                 410                 415

Thr Pro Leu His Tyr Ala Ala Thr Ser Asp Thr Asp Gly Lys Cys Leu
            420                 425                 430

Glu Tyr Leu Leu Arg Asn Asp Ala Asn Pro Gly Ile Arg Asp Lys Gln
        435                 440                 445

Gly Tyr Asn Ala Val His Tyr Ser Ala Ala Tyr Gly His Arg Leu Cys
    450                 455                 460

Leu Gln Leu Ile Ala Ser Glu Thr Pro Leu Asp Val Leu Met Glu Thr
465                 470                 475                 480

Ser Gly Thr Asp Met Leu Ser Asp Ser Asp Asn Arg Ala Thr Ile Ser
                485                 490                 495
```

```
Pro Leu His Leu Ala Ala Tyr His Gly His His Gln Ala Leu Glu Val
            500                 505                 510

Leu Val Gln Ser Leu Leu Asp Leu Asp Val Arg Asn Ser Ser Gly Arg
        515                 520                 525

Thr Pro Leu Asp Leu Ala Ala Phe Lys Gly His Val Glu Cys Val Asp
    530                 535                 540

Val Leu Ile Asn Gln Gly Ala Ser Ile Leu Val Lys Asp Tyr Ile Leu
545                 550                 555                 560

Lys Arg Thr Pro Ile His Ala Ala Ala Thr Asn Gly His Ser Glu Cys
                565                 570                 575

Leu Arg Leu Leu Ile Gly Asn Ala Glu Pro Gln Asn Ala Val Asp Ile
            580                 585                 590

Gln Asp Gly Asn Gly Gln Thr Pro Leu Met Leu Ser Val Leu Asn Gly
        595                 600                 605

His Thr Asp Cys Val Tyr Ser Leu Leu Asn Lys Gly Ala Asn Val Asp
    610                 615                 620

Ala Lys Asp Lys Trp Gly Arg Thr Ala Leu His Arg Gly Ala Val Thr
625                 630                 635                 640

Gly His Glu Glu Cys Val Asp Ala Leu Leu Gln His Gly Ala Lys Cys
                645                 650                 655

Leu Leu Arg Asp Ser Arg Gly Arg Thr Pro Ile His Leu Ser Ala Ala
            660                 665                 670

Cys Gly His Ile Gly Val Leu Gly Ala Leu Leu Gln Ser Ala Ala Ser
        675                 680                 685

Met Asp Ala Asn Pro Ala Thr Ala Asp Asn His Gly Tyr Thr Ala Leu
    690                 695                 700

His Trp Ala Cys Tyr Asn Glu Leu Leu Ser Met Gln Pro Pro Ser Gln
705                 710                 715                 720
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Thr Met

<210> 5211
<211> 1053
<212> PRT
<213> Homo sapiens

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<400> 5211
Met Ala Phe Leu Lys Leu Arg Asp Gln Pro Ser Leu Val Gln Ala Ile
1 5 10 15

Phe Asn Gly Asp Pro Asp Glu Val Arg Ala Leu Ile Phe Lys Lys Glu
20 25 30

Asp Val Asn Phe Gln Asp Asn Glu Lys Arg Thr Pro Leu His Ala Ala
35 40 45

Ala Tyr Leu Gly Asp Ala Glu Ile Ile Glu Leu Leu Ile Leu Ser Gly
50 55 60

Ala Arg Val Asn Ala Lys Asp Ser Lys Trp Leu Thr Pro Leu His Arg
65 70 75 80

Ala Val Ala Ser Cys Ser Glu Glu Ala Val Gln Val Leu Leu Lys His
85 90 95

Ser Ala Asp Val Asn Ala Arg Asp Lys Asn Trp Gln Thr Pro Leu His

```
            100                 105                 110

Ile Ala Ala Ala Asn Lys Ala Val Lys Cys Ala Glu Ala Leu Val Pro
        115                 120                 125

Leu Leu Ser Asn Val Asn Val Ser Asp Arg Ala Gly Arg Thr Ala Leu
    130                 135                 140

His His Ala Ala Phe Ser Gly His Gly Glu Met Val Lys Leu Leu Leu
145                 150                 155                 160

Ser Arg Gly Ala Asn Ile Asn Ala Phe Asp Lys Lys Asp Arg Arg Ala
                165                 170                 175

Ile His Trp Ala Ala Tyr Met Gly His Ile Glu Val Val Lys Leu Leu
            180                 185                 190

Val Ser His Gly Ala Glu Val Thr Cys Lys Asp Lys Lys Ser Tyr Thr
        195                 200                 205

Pro Leu His Ala Ala Ala Ser Ser Gly Met Ile Ser Val Val Lys Tyr
    210                 215                 220

Leu Leu Asp Leu Gly Val Asp Met Asn Glu Pro Asn Ala Tyr Gly Asn
225                 230                 235                 240

Thr Pro Leu His Val Ala Cys Tyr Asn Gly Gln Asp Val Val Val Asn
                245                 250                 255

Glu Leu Ile Asp Cys Gly Ala Ile Val Asn Gln Lys Asn Glu Lys Gly
            260                 265                 270

Phe Thr Pro Leu His Phe Ala Ala Ala Ser Thr His Gly Ala Leu Cys
        275                 280                 285

Leu Glu Leu Leu Val Gly Asn Gly Ala Asp Val Asn Met Lys Ser Lys
    290                 295                 300

Asp Gly Lys Thr Pro Leu His Met Thr Ala Leu His Gly Arg Phe Ser
305                 310                 315                 320

Arg Ser Gln Thr Ile Ile Gln Ser Gly Ala Val Ile Asp Cys Glu Asp
                325                 330                 335
```

```
Lys Asn Gly Asn Thr Pro Leu His Ile Ala Ala Arg Tyr Gly His Glu
            340                 345                 350

Leu Leu Ile Asn Thr Leu Ile Thr Ser Gly Ala Asp Thr Ala Lys Arg
        355                 360                 365

Gly Ile His Gly Met Phe Pro Leu His Leu Ala Ala Leu Ser Gly Phe
    370                 375                 380

Ser Asp Cys Cys Arg Lys Leu Leu Ser Ser Gly Phe Asp Ile Asp Thr
385                 390                 395                 400

Pro Asp Asp Phe Gly Arg Thr Cys Leu His Ala Ala Ala Ala Gly Gly
                405                 410                 415

Asn Leu Glu Cys Leu Asn Leu Leu Leu Asn Thr Gly Ala Asp Phe Asn
            420                 425                 430

Lys Lys Asp Lys Phe Gly Arg Ser Pro Leu His Tyr Ala Ala Ala Asn
        435                 440                 445

Cys Asn Tyr Gln Cys Leu Phe Ala Leu Val Gly Ser Gly Ala Ser Val
    450                 455                 460

Asn Asp Leu Asp Glu Arg Gly Cys Thr Pro Leu His Tyr Ala Ala Thr
465                 470                 475                 480

Ser Asp Thr Asp Gly Lys Cys Leu Glu Tyr Leu Leu Arg Asn Asp Ala
                485                 490                 495

Asn Pro Gly Ile Arg Asp Lys Gln Gly Tyr Asn Ala Val His Tyr Ser
            500                 505                 510

Ala Ala Tyr Gly His Arg Leu Cys Leu Gln Leu Ile Ala Ser Glu Thr
        515                 520                 525

Pro Leu Asp Val Leu Met Glu Thr Ser Gly Thr Asp Met Leu Ser Asp
    530                 535                 540

Ser Asp Asn Arg Ala Thr Ile Ser Pro Leu His Leu Ala Ala Tyr His
545                 550                 555                 560
```

```
Gly His His Gln Ala Leu Glu Val Leu Val Gln Ser Leu Leu Asp Leu
                565                 570                 575

Asp Val Arg Asn Ser Ser Gly Arg Thr Pro Leu Asp Leu Ala Ala Phe
            580                 585                 590

Lys Gly His Val Glu Cys Val Asp Val Leu Ile Asn Gln Gly Ala Ser
        595                 600                 605

Ile Leu Val Lys Asp Tyr Ile Leu Lys Arg Thr Pro Ile His Ala Ala
    610                 615                 620

Ala Thr Asn Gly His Ser Glu Cys Leu Arg Leu Leu Ile Gly Asn Ala
625                 630                 635                 640

Glu Pro Gln Asn Ala Val Asp Ile Gln Asp Gly Asn Gly Gln Thr Pro
                645                 650                 655

Leu Met Leu Ser Val Leu Asn Gly His Thr Asp Cys Val Tyr Ser Leu
            660                 665                 670

Leu Asn Lys Gly Ala Asn Val Asp Ala Lys Asp Lys Trp Gly Arg Thr
        675                 680                 685

Ala Leu His Arg Gly Ala Val Thr Gly His Glu Glu Cys Val Asp Ala
    690                 695                 700

Leu Leu Gln His Gly Ala Lys Cys Leu Leu Arg Asp Ser Arg Gly Arg
705                 710                 715                 720

Thr Pro Ile His Leu Ser Ala Ala Cys Gly His Ile Gly Val Leu Gly
                725                 730                 735

Ala Leu Leu Gln Ser Ala Ala Ser Met Asp Ala Asn Pro Ala Thr Ala
            740                 745                 750

Asp Asn His Gly Tyr Thr Ala Leu His Trp Ala Cys Tyr Asn Gly His
        755                 760                 765

Glu Thr Cys Val Glu Leu Leu Leu Glu Gln Glu Val Phe Gln Lys Thr
    770                 775                 780
```

```
Glu Gly Asn Ala Phe Ser Pro Leu His Cys Ala Val Ile Asn Asp Asn
785                 790                 795                 800

Glu Gly Ala Ala Glu Met Leu Ile Asp Thr Leu Gly Ala Ser Ile Val
                805                 810                 815

Asn Ala Thr Asp Ser Lys Gly Arg Thr Pro Leu His Ala Ala Ala Phe
            820                 825                 830

Thr Asp His Val Glu Cys Leu Gln Leu Leu Leu Ser His Asn Ala Gln
        835                 840                 845

Val Asn Ser Val Asp Ser Thr Gly Lys Thr Pro Leu Met Met Ala Ala
    850                 855                 860

Glu Asn Gly Gln Thr Asn Thr Val Glu Met Leu Val Ser Ser Ala Ser
865                 870                 875                 880

Ala Glu Leu Thr Leu Gln Asp Asn Ser Lys Asn Thr Ala Leu His Leu
                885                 890                 895

Ala Cys Ser Lys Gly His Glu Thr Ser Ala Leu Leu Ile Leu Glu Lys
            900                 905                 910

Ile Thr Asp Arg Asn Leu Ile Asn Ala Thr Asn Ala Ala Leu Gln Thr
        915                 920                 925

Pro Leu His Val Ala Ala Arg Asn Gly Leu Thr Met Val Val Gln Glu
    930                 935                 940

Leu Leu Gly Lys Gly Ala Ser Val Leu Ala Val Asp Glu Asn Gly Tyr
945                 950                 955                 960

Thr Pro Ala Leu Ala Cys Ala Pro Asn Lys Asp Val Ala Asp Cys Leu
                965                 970                 975

Ala Leu Ile Leu Ala Thr Met Met Pro Val Ser Ser Ser Ser Pro Leu
            980                 985                 990

Ser Ser Leu Thr Phe Asn Ala Ile  Asn Arg Tyr Thr Asn  Thr Ser
Lys
        995                 1000                1005
```

```
Thr Val  Ser Phe Glu Ala Leu  Pro Ile Met Arg Asn  Glu Pro Ser
    1010                1015                1020

Ser Tyr  Cys Ser Phe Asn Asn  Ile Gly Gly Glu Gln  Glu Tyr Leu
    1025                1030                1035

Tyr Thr  Asp Val Asp Glu Leu  Asn Asp Ser Asp Ser  Glu Thr Tyr
    1040                1045                1050


<210> 5212
<211> 899
<212> PRT
<213> Homo sapiens

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<400> 5212
Met Val Lys Leu Leu Leu Ser Arg Gly Ala Asn Ile Asn Ala Phe Asp
1               5                  10                  15

Lys Lys Asp Arg Arg Ala Ile His Trp Ala Ala Tyr Met Gly His Ile
            20                  25                  30

Glu Val Val Lys Leu Leu Val Ser His Gly Ala Glu Val Thr Cys Lys
        35                  40                  45

Asp Lys Lys Ser Tyr Thr Pro Leu His Ala Ala Ala Ser Ser Gly Met
    50                  55                  60

Ile Ser Val Val Lys Tyr Leu Leu Asp Leu Gly Val Asp Met Asn Glu
65                  70                  75                  80
```

```
Pro Asn Ala Tyr Gly Asn Thr Pro Leu His Val Ala Cys Tyr Asn Gly
                85                  90                  95

Gln Asp Val Val Val Asn Glu Leu Ile Asp Cys Gly Ala Ile Val Asn
            100                 105                 110

Gln Lys Asn Glu Lys Gly Phe Thr Pro Leu His Phe Ala Ala Ala Ser
        115                 120                 125

Thr His Gly Ala Leu Cys Leu Glu Leu Leu Val Gly Asn Gly Ala Asp
    130                 135                 140

Val Asn Met Lys Ser Lys Asp Gly Lys Thr Pro Leu His Met Thr Ala
145                 150                 155                 160

Leu His Gly Arg Phe Ser Arg Ser Gln Thr Ile Ile Gln Ser Gly Ala
                165                 170                 175

Val Ile Asp Cys Glu Asp Lys Asn Gly Asn Thr Pro Leu His Ile Ala
            180                 185                 190

Ala Arg Tyr Gly His Glu Leu Leu Ile Asn Thr Leu Ile Thr Ser Gly
        195                 200                 205

Ala Asp Thr Ala Lys Arg Gly Ile His Gly Met Phe Pro Leu His Leu
    210                 215                 220

Ala Ala Leu Ser Gly Phe Ser Asp Cys Cys Arg Lys Leu Leu Ser Ser
225                 230                 235                 240

Gly Phe Asp Ile Asp Thr Pro Asp Asp Phe Gly Arg Thr Cys Leu His
                245                 250                 255

Ala Ala Ala Ala Gly Gly Asn Leu Glu Cys Leu Asn Leu Leu Leu Asn
            260                 265                 270

Thr Gly Ala Asp Phe Asn Lys Lys Asp Lys Phe Gly Arg Ser Pro Leu
        275                 280                 285

His Tyr Ala Ala Ala Asn Cys Asn Tyr Gln Cys Leu Phe Ala Leu Val
    290                 295                 300
```

Gly Ser Gly Ala Ser Val Asn Asp Leu Asp Glu Arg Gly Cys Thr Pro
305 310 315 320

Leu His Tyr Ala Ala Thr Ser Asp Thr Asp Gly Lys Cys Leu Glu Tyr
325 330 335

Leu Leu Arg Asn Asp Ala Asn Pro Gly Ile Arg Asp Lys Gln Gly Tyr
340 345 350

Asn Ala Val His Tyr Ser Ala Ala Tyr Gly His Arg Leu Cys Leu Gln
355 360 365

Leu Ile Ala Ser Glu Thr Pro Leu Asp Val Leu Met Glu Thr Ser Gly
370 375 380

Thr Asp Met Leu Ser Asp Ser Asp Asn Arg Ala Thr Ile Ser Pro Leu
385 390 395 400

His Leu Ala Ala Tyr His Gly His His Gln Ala Leu Glu Val Leu Val
405 410 415

Gln Ser Leu Leu Asp Leu Asp Val Arg Asn Ser Ser Gly Arg Thr Pro
420 425 430

Leu Asp Leu Ala Ala Phe Lys Gly His Val Glu Cys Val Asp Val Leu
435 440 445

Ile Asn Gln Gly Ala Ser Ile Leu Val Lys Asp Tyr Ile Leu Lys Arg
450 455 460

Thr Pro Ile His Ala Ala Ala Thr Asn Gly His Ser Glu Cys Leu Arg
465 470 475 480

Leu Leu Ile Gly Asn Ala Glu Pro Gln Asn Ala Val Asp Ile Gln Asp
485 490 495

Gly Asn Gly Gln Thr Pro Leu Met Leu Ser Val Leu Asn Gly His Thr
500 505 510

Asp Cys Val Tyr Ser Leu Leu Asn Lys Gly Ala Asn Val Asp Ala Lys
515 520 525

```
Asp Lys Trp Gly Arg Thr Ala Leu His Arg Gly Ala Val Thr Gly His
    530                 535                 540

Glu Glu Cys Val Asp Ala Leu Leu Gln His Gly Ala Lys Cys Leu Leu
545                 550                 555                 560

Arg Asp Ser Arg Gly Arg Thr Pro Ile His Leu Ser Ala Ala Cys Gly
                565                 570                 575

His Ile Gly Val Leu Gly Ala Leu Leu Gln Ser Ala Ala Ser Met Asp
            580                 585                 590

Ala Asn Pro Ala Thr Ala Asp Asn His Gly Tyr Thr Ala Leu His Trp
        595                 600                 605

Ala Cys Tyr Asn Gly His Glu Thr Cys Val Glu Leu Leu Leu Glu Gln
    610                 615                 620

Glu Val Phe Gln Lys Thr Glu Gly Asn Ala Phe Ser Pro Leu His Cys
625                 630                 635                 640

Ala Val Ile Asn Asp Asn Glu Gly Ala Ala Glu Met Leu Ile Asp Thr
                645                 650                 655

Leu Gly Ala Ser Ile Val Asn Ala Thr Asp Ser Lys Gly Arg Thr Pro
            660                 665                 670

Leu His Ala Ala Ala Phe Thr Asp His Val Glu Cys Leu Gln Leu Leu
        675                 680                 685

Leu Ser His Asn Ala Gln Val Asn Ser Val Asp Ser Thr Gly Lys Thr
    690                 695                 700

Pro Leu Met Met Ala Ala Glu Asn Gly Gln Thr Asn Thr Val Glu Met
705                 710                 715                 720

Leu Val Ser Ser Ala Ser Ala Glu Leu Thr Leu Gln Asp Asn Ser Lys
                725                 730                 735

Asn Thr Ala Leu His Leu Ala Cys Ser Lys Gly His Glu Thr Ser Ala
            740                 745                 750

Leu Leu Ile Leu Glu Lys Ile Thr Asp Arg Asn Leu Ile Asn Ala Thr
```

```
        755                 760                 765

Asn Ala Ala Leu Gln Thr Pro Leu His Val Ala Ala Arg Asn Gly Leu
    770                 775                 780

Thr Met Val Val Gln Glu Leu Leu Gly Lys Gly Ala Ser Val Leu Ala
785                 790                 795                 800

Val Asp Glu Asn Gly Tyr Thr Pro Ala Leu Ala Cys Ala Pro Asn Lys
                805                 810                 815

Asp Val Ala Asp Cys Leu Ala Leu Ile Leu Ala Thr Met Met Pro Val
            820                 825                 830

Ser Ser Ser Ser Pro Leu Ser Ser Leu Thr Phe Asn Ala Ile Asn Arg
        835                 840                 845

Tyr Thr Asn Thr Ser Lys Thr Val Ser Phe Glu Ala Leu Pro Ile Met
    850                 855                 860

Arg Asn Glu Pro Ser Ser Tyr Cys Ser Phe Asn Asn Ile Gly Gly Glu
865                 870                 875                 880

Gln Glu Tyr Leu Tyr Thr Asp Val Asp Glu Leu Asn Asp Ser Asp Ser
                885                 890                 895

Glu Thr Tyr
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<210> 5213
<211> 268
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1130; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD29; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 29; "

<220>
<221> source
<223> /note="Uniprot ID: Q8N6D5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000323387"

<400> 5213
Met Cys Arg Met Ser Phe Lys Lys Glu Thr Pro Leu Ala Asn Ala Ala
1   5   10   15

Phe Trp Ala Ala Arg Arg Gly Asn Leu Ala Leu Leu Lys Leu Leu Leu
            20   25   30

Asn Ser Gly Arg Val Asp Val Asp Cys Arg Asp Ser His Gly Thr Thr
        35   40   45

Leu Leu Met Val Ala Ala Tyr Ala Gly His Ile Asp Cys Val Arg Glu
    50   55   60

Leu Val Leu Gln Gly Ala Asp Ile Asn Leu Gln Arg Glu Ser Gly Thr
65   70   75   80

Thr Ala Leu Phe Phe Ala Ala Gln Gln Gly His Asn Asp Val Val Arg
                85   90   95

Phe Leu Phe Gly Phe Gly Ala Ser Thr Glu Phe Arg Thr Lys Asp Gly
            100   105   110

Gly Thr Ala Leu Leu Ala Ala Ser Gln Tyr Gly His Met Gln Val Val
        115   120   125

Glu Thr Leu Leu Lys His Gly Ala Asn Ile His Asp Gln Leu Tyr Asp
    130   135   140

Gly Ala Thr Ala Leu Phe Leu Ala Ala Gln Gly Gly Tyr Leu Asp Val
145   150   155   160

Ile Arg Leu Leu Leu Ala Ser Gly Ala Lys Val Asn Gln Pro Arg Gln
                165   170   175

Asp Gly Thr Ala Pro Leu Trp Ile Ala Ser Gln Met Gly His Ser Glu
            180   185   190

```
Val Val Arg Val Met Leu Leu Arg Gly Ala Asp Arg Asp Ala Ala Arg
        195                 200                 205

Asn Asp Gly Thr Thr Ala Leu Leu Lys Ala Ala Asn Lys Gly Tyr Asn
    210                 215                 220

Asp Val Ile Lys Glu Leu Leu Lys Phe Ser Pro Thr Leu Gly Ile Leu
225                 230                 235                 240

Lys Ala Asn Glu Leu Pro Ala Glu Leu Thr Lys Asn Glu Arg Ile Leu
                245                 250                 255

Arg Leu Leu Arg Ser Lys Glu Gly Pro Arg Lys Ser
            260                 265


<210> 5214
<211> 143
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1130; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD29; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 29; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000465936"

<400> 5214
Met Cys Arg Met Ser Phe Lys Lys Glu Thr Pro Leu Ala Asn Ala Ala
1               5                   10                  15

Phe Trp Ala Ala Arg Arg Gly Asn Leu Ala Leu Leu Lys Leu Leu Leu
            20                  25                  30

Asn Ser Gly Arg Val Asp Val Asp Cys Arg Asp Ser His Gly Thr Thr
        35                  40                  45

Leu Leu Met Val Ala Ala Tyr Ala Gly His Ile Asp Cys Val Arg Glu
    50                  55                  60
```

```
Leu Val Leu Gln Gly Ala Asp Ile Asn Leu Gln Arg Glu Asp Gly Gly
65                  70                  75                  80


Thr Ala Leu Leu Ala Ala Ser Gln Tyr Gly His Met Gln Val Val Glu
                85                  90                  95


Thr Leu Leu Lys His Gly Ala Asn Ile His Asp Gln Leu Tyr Asp Gly
            100                 105                 110


Ala Thr Ala Leu Phe Leu Ala Ala Gln Gly Gly Tyr Leu Asp Val Ile
        115                 120                 125


Arg Leu Leu Leu Ala Ser Gly Ala Lys Val Asn Gln Pro Arg Gln
    130                 135                 140


<210> 5215
<211> 126
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ANKRD29; "

<220>
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<223> /note="Gene Name:
      ankyrin repeat domain 29; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467890"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5215
Xaa Gly Gly Tyr Leu Asp Val Ile Arg Leu Leu Leu Ala Ser Gly Ala
1               5                   10                  15


Lys Val Asn Gln Pro Arg Gln Asp Gly Thr Ala Pro Leu Trp Ile Ala
            20                  25                  30
```

```
Ser Gln Met Gly His Ser Glu Val Val Arg Val Met Leu Leu Arg Gly
        35                  40                  45

Ala Asp Arg Asp Ala Ala Arg Asn Asp Gly Thr Thr Ala Leu Leu Lys
    50                  55                  60

Ala Ala Asn Lys Gly Tyr Asn Asp Val Ile Lys Glu Leu Leu Lys Phe
65                  70                  75                  80

Ser Pro Thr Leu Gly Ile Leu Lys Asn Gly Thr Ser Ala Leu His Ala
                85                  90                  95

Ala Val Leu Ser Gly Asn Ile Lys Thr Val Ala Leu Leu Leu Glu Ala
            100                 105                 110

Gly Ala Asp Pro Ser Leu Arg Asn Lys Val Arg Trp Gln Asn
        115                 120                 125


<210> 5216
<211> 301
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1130; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD29; "

<220>
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<223> /note="Gene Name:
      ankyrin repeat domain 29; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8N6D5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000468354"

<400> 5216
Met Cys Arg Met Ser Phe Lys Lys Glu Thr Pro Leu Ala Asn Ala Ala
1               5                   10                  15
```

```
Phe Trp Ala Ala Arg Arg Gly Asn Leu Ala Leu Leu Lys Leu Leu Leu
            20                  25                  30

Asn Ser Gly Arg Val Asp Val Asp Cys Arg Asp Ser His Gly Thr Thr
        35                  40                  45

Leu Leu Met Val Ala Ala Tyr Ala Gly His Ile Asp Cys Val Arg Glu
    50                  55                  60

Leu Val Leu Gln Gly Ala Asp Ile Asn Leu Gln Arg Glu Ser Gly Thr
65                  70                  75                  80

Thr Ala Leu Phe Phe Ala Ala Gln Gln Gly His Asn Asp Val Val Arg
                85                  90                  95

Phe Leu Phe Gly Phe Gly Ala Ser Thr Glu Phe Arg Thr Lys Asp Gly
            100                 105                 110

Gly Thr Ala Leu Leu Ala Ala Ser Gln Tyr Gly His Met Gln Val Val
        115                 120                 125

Glu Thr Leu Leu Lys His Gly Ala Asn Ile His Asp Gln Leu Tyr Asp
    130                 135                 140

Gly Ala Thr Ala Leu Phe Leu Ala Ala Gln Gly Gly Tyr Leu Asp Val
145                 150                 155                 160

Ile Arg Leu Leu Leu Ala Ser Gly Ala Lys Val Asn Gln Pro Arg Gln
                165                 170                 175

Asp Gly Thr Ala Pro Leu Trp Ile Ala Ser Gln Met Gly His Ser Glu
            180                 185                 190

Val Val Arg Val Met Leu Leu Arg Gly Ala Asp Arg Asp Ala Ala Arg
        195                 200                 205

Asn Asp Gly Thr Thr Ala Leu Leu Lys Ala Ala Asn Lys Gly Tyr Asn
    210                 215                 220

Asp Val Ile Lys Glu Leu Leu Lys Phe Ser Pro Thr Leu Gly Ile Leu
225                 230                 235                 240

Lys Asn Gly Thr Ser Ala Leu His Ala Ala Val Leu Ser Gly Asn Ile
```

245 250 255

Lys Thr Val Ala Leu Leu Leu Glu Ala Gly Ala Asp Pro Ser Leu Arg
260 265 270

Asn Lys Ala Asn Glu Leu Pro Ala Glu Leu Thr Lys Asn Glu Arg Ile
275 280 285

Leu Arg Leu Leu Arg Ser Lys Glu Gly Pro Arg Lys Ser
290 295 300

<210> 5217
<211> 110
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1130; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD29; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 29; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000477066"

<400> 5217
Met Cys Arg Met Ser Phe Lys Lys Glu Thr Pro Leu Ala Asn Ala Ala
1 5 10 15

Phe Trp Ala Ala Arg Arg Gly Asn Leu Ala Leu Leu Lys Leu Leu Leu
20 25 30

Asn Ser Gly Arg Val Asp Val Asp Cys Arg Asp Ser Val Arg Trp Phe
35 40 45

Gly Arg Cys Met Pro Ser Met His His Cys Pro Leu Trp Ala Gln Glu
50 55 60

His Leu Arg Asn Thr Phe Pro Phe Thr Met Leu Ile Tyr Phe Phe Met
65 70 75 80

```
Cys Leu Leu Ala Leu Ser Phe Leu Lys His Pro Arg Tyr Cys Gly Glu
                85                  90                  95

Leu Lys Asn Met Leu Gly Glu Val Arg Lys Lys Arg Lys Gln
            100                 105                 110


<210> 5218
<211> 1341
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1131; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD30A; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 30A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000354432"

<400> 5218
Met Thr Lys Arg Lys Lys Thr Ile Asn Leu Asn Ile Gln Asp Ala Gln
1               5                   10                  15

Lys Arg Thr Ala Leu His Trp Ala Cys Val Asn Gly His Glu Glu Val
            20                  25                  30

Val Thr Phe Leu Val Asp Arg Lys Cys Gln Leu Asp Val Leu Asp Gly
        35                  40                  45

Glu His Arg Thr Pro Leu Met Lys Ala Leu Gln Cys His Gln Glu Ala
    50                  55                  60

Cys Ala Asn Ile Leu Ile Asp Ser Gly Ala Asp Ile Asn Leu Val Asp
65                  70                  75                  80

Val Tyr Gly Asn Thr Ala Leu His Tyr Ala Val Tyr Ser Glu Ile Leu
                85                  90                  95

Ser Val Val Ala Lys Leu Leu Ser His Gly Ala Val Ile Glu Val His
```

```
            100                 105                 110

Asn Lys Ala Ser Leu Thr Pro Leu Leu Leu Ser Ile Thr Lys Arg Ser
        115                 120                 125

Glu Gln Ile Val Glu Phe Leu Leu Ile Lys Asn Ala Asn Ala Asn Ala
    130                 135                 140

Val Asn Lys Tyr Lys Cys Thr Ala Leu Met Leu Ala Val Cys His Gly
145                 150                 155                 160

Ser Ser Glu Ile Val Gly Met Leu Leu Gln Gln Asn Val Asp Val Phe
                165                 170                 175

Ala Ala Asp Ile Cys Gly Val Thr Ala Glu His Tyr Ala Val Thr Cys
            180                 185                 190

Gly Phe His His Ile His Glu Gln Ile Met Glu Tyr Ile Arg Lys Leu
        195                 200                 205

Ser Lys Asn His Gln Asn Thr Asn Pro Glu Gly Thr Ser Ala Gly Thr
    210                 215                 220

Pro Asp Glu Ala Ala Pro Leu Ala Glu Arg Thr Pro Asp Thr Ala Glu
225                 230                 235                 240

Ser Leu Val Glu Lys Thr Pro Asp Glu Ala Ala Pro Leu Val Glu Arg
                245                 250                 255

Thr Pro Asp Thr Ala Glu Ser Leu Val Glu Lys Thr Pro Asp Glu Ala
            260                 265                 270

Ala Ser Leu Val Glu Gly Thr Ser Asp Lys Ile Gln Cys Leu Glu Lys
        275                 280                 285

Ala Thr Ser Gly Lys Phe Glu Gln Ser Ala Glu Glu Thr Pro Arg Glu
    290                 295                 300

Ile Thr Ser Pro Ala Lys Glu Thr Ser Glu Lys Phe Thr Trp Pro Ala
305                 310                 315                 320

Lys Gly Arg Pro Arg Lys Ile Ala Trp Glu Lys Lys Glu Asp Thr Pro
                325                 330                 335
```

```
Arg Glu Ile Met Ser Pro Ala Lys Glu Thr Ser Glu Lys Phe Thr Trp
            340                 345                 350

Ala Ala Lys Gly Arg Pro Arg Lys Ile Ala Trp Glu Lys Lys Glu Thr
        355                 360                 365

Pro Val Lys Thr Gly Cys Val Ala Arg Val Thr Ser Asn Lys Thr Lys
    370                 375                 380

Val Leu Glu Lys Gly Arg Ser Lys Met Ile Ala Cys Pro Thr Lys Glu
385                 390                 395                 400

Ser Ser Thr Lys Ala Ser Ala Asn Asp Gln Arg Phe Pro Ser Glu Ser
                405                 410                 415

Lys Gln Glu Glu Asp Glu Glu Tyr Ser Cys Asp Ser Arg Ser Leu Phe
            420                 425                 430

Glu Ser Ser Ala Lys Ile Gln Val Cys Ile Pro Glu Ser Ile Tyr Gln
        435                 440                 445

Lys Val Met Glu Ile Asn Arg Glu Val Glu Glu Pro Pro Lys Lys Pro
    450                 455                 460

Ser Ala Phe Lys Pro Ala Ile Glu Met Gln Asn Ser Val Pro Asn Lys
465                 470                 475                 480

Ala Phe Glu Leu Lys Asn Glu Gln Thr Leu Arg Ala Asp Pro Met Phe
                485                 490                 495

Pro Pro Glu Ser Lys Gln Lys Asp Tyr Glu Glu Asn Ser Trp Asp Ser
            500                 505                 510

Glu Ser Leu Cys Glu Thr Val Ser Gln Lys Asp Val Cys Leu Pro Lys
        515                 520                 525

Ala Thr His Gln Lys Glu Ile Asp Lys Ile Asn Gly Lys Leu Glu Glu
    530                 535                 540

Ser Pro Asn Lys Asp Gly Leu Leu Lys Ala Thr Cys Gly Met Lys Val
545                 550                 555                 560
```

Ser Ile Pro Thr Lys Ala Leu Glu Leu Lys Asp Met Gln Thr Phe Lys
565 570 575

Ala Glu Pro Pro Gly Lys Pro Ser Ala Phe Glu Pro Ala Thr Glu Met
580 585 590

Gln Lys Ser Val Pro Asn Lys Ala Leu Glu Leu Lys Asn Glu Gln Thr
595 600 605

Leu Arg Ala Asp Glu Ile Leu Pro Ser Glu Ser Lys Gln Lys Asp Tyr
610 615 620

Glu Glu Asn Ser Trp Asp Thr Glu Ser Leu Cys Glu Thr Val Ser Gln
625 630 635 640

Lys Asp Val Cys Leu Pro Lys Ala Ala His Gln Lys Glu Ile Asp Lys
645 650 655

Ile Asn Gly Lys Leu Glu Gly Ser Pro Val Lys Asp Gly Leu Leu Lys
660 665 670

Ala Asn Cys Gly Met Lys Val Ser Ile Pro Thr Lys Ala Leu Glu Leu
675 680 685

Met Asp Met Gln Thr Phe Lys Ala Glu Pro Pro Glu Lys Pro Ser Ala
690 695 700

Phe Glu Pro Ala Ile Glu Met Gln Lys Ser Val Pro Asn Lys Ala Leu
705 710 715 720

Glu Leu Lys Asn Glu Gln Thr Leu Arg Ala Asp Glu Ile Leu Pro Ser
725 730 735

Glu Ser Lys Gln Lys Asp Tyr Glu Glu Ser Ser Trp Asp Ser Glu Ser
740 745 750

Leu Cys Glu Thr Val Ser Gln Lys Asp Val Cys Leu Pro Lys Ala Thr
755 760 765

His Gln Lys Glu Ile Asp Lys Ile Asn Gly Lys Leu Glu Glu Ser Pro
770 775 780

```
Asp Asn Asp Gly Phe Leu Lys Ala Pro Cys Arg Met Lys Val Ser Ile
785                 790                 795                 800

Pro Thr Lys Ala Leu Glu Leu Met Asp Met Gln Thr Phe Lys Ala Glu
                805                 810                 815

Pro Pro Glu Lys Pro Ser Ala Phe Glu Pro Ala Ile Glu Met Gln Lys
            820                 825                 830

Ser Val Pro Asn Lys Ala Leu Glu Leu Lys Asn Glu Gln Thr Leu Arg
        835                 840                 845

Ala Asp Gln Met Phe Pro Ser Glu Ser Lys Gln Lys Lys Val Glu Glu
    850                 855                 860

Asn Ser Trp Asp Ser Glu Ser Leu Arg Glu Thr Val Ser Gln Lys Asp
865                 870                 875                 880

Val Cys Val Pro Lys Ala Thr His Gln Lys Glu Met Asp Lys Ile Ser
                885                 890                 895

Gly Lys Leu Glu Asp Ser Thr Ser Leu Ser Lys Ile Leu Asp Thr Val
            900                 905                 910

His Ser Cys Glu Arg Ala Arg Glu Leu Gln Lys Asp His Cys Glu Gln
        915                 920                 925

Arg Thr Gly Lys Met Glu Gln Met Lys Lys Lys Phe Cys Val Leu Lys
    930                 935                 940

Lys Lys Leu Ser Glu Ala Lys Glu Ile Lys Ser Gln Leu Glu Asn Gln
945                 950                 955                 960

Lys Val Lys Trp Glu Gln Glu Leu Cys Ser Val Arg Leu Thr Leu Asn
                965                 970                 975

Gln Glu Glu Glu Lys Arg Arg Asn Ala Asp Ile Leu Asn Glu Lys Ile
            980                 985                 990

Arg Glu Glu Leu Gly Arg Ile Glu  Glu Gln His Arg Lys  Glu Leu
Glu
        995                 1000                1005
```

Val Lys Gln Gln Leu Glu Gln Ala Leu Arg Ile Gln Asp Ile Glu
1010 1015 1020

Leu Lys Ser Val Glu Ser Asn Leu Asn Gln Val Ser His Thr His
1025 1030 1035

Glu Asn Glu Asn Tyr Leu Leu His Glu Asn Cys Met Leu Lys Lys
1040 1045 1050

Glu Ile Ala Met Leu Lys Leu Glu Ile Ala Thr Leu Lys His Gln
1055 1060 1065

Tyr Gln Glu Lys Glu Asn Lys Tyr Phe Glu Asp Ile Lys Ile Leu
1070 1075 1080

Lys Glu Lys Asn Ala Glu Leu Gln Met Thr Leu Lys Leu Lys Glu
1085 1090 1095

Glu Ser Leu Thr Lys Arg Ala Ser Gln Tyr Ser Gly Gln Leu Lys
1100 1105 1110

Val Leu Ile Ala Glu Asn Thr Met Leu Thr Ser Lys Leu Lys Glu
1115 1120 1125

Lys Gln Asp Lys Glu Ile Leu Glu Ala Glu Ile Glu Ser His His
1130 1135 1140

Pro Arg Leu Ala Ser Ala Val Gln Asp His Asp Gln Ile Val Thr
1145 1150 1155

Ser Arg Lys Ser Gln Glu Pro Ala Phe His Ile Ala Gly Asp Ala
1160 1165 1170

Cys Leu Gln Arg Lys Met Asn Val Asp Val Ser Ser Thr Ile Tyr
1175 1180 1185

Asn Asn Glu Val Leu His Gln Pro Leu Ser Glu Ala Gln Arg Lys
1190 1195 1200

Ser Lys Ser Leu Lys Ile Asn Leu Asn Tyr Ala Gly Asp Ala Leu
1205 1210 1215

Arg Glu Asn Thr Leu Val Ser Glu His Ala Gln Arg Asp Gln Arg

```
    1220                1225                1230

Glu Thr  Gln Cys Gln Met Lys  Glu Ala Glu His Met  Tyr Gln Asn
    1235                1240                1245

Glu Gln  Asp Asn Val Asn Lys  His Thr Glu Gln Gln  Glu Ser Leu
    1250                1255                1260

Asp Gln  Lys Leu Phe Gln Leu  Gln Ser Lys Asn Met  Trp Leu Gln
    1265                1270                1275

Gln Gln  Leu Val His Ala His  Lys Lys Ala Asp Asn  Lys Ser Lys
    1280                1285                1290

Ile Thr  Ile Asp Ile His Phe  Leu Glu Arg Lys Met  Gln His His
    1295                1300                1305

Leu Leu  Lys Glu Lys Asn Glu  Glu Ile Phe Asn Tyr  Asn Asn His
    1310                1315                1320

Leu Lys  Asn Arg Ile Tyr Gln  Tyr Glu Lys Glu Lys  Ala Glu Thr
    1325                1330                1335

Glu Asn  Ser
    1340


<210> 5219
<211> 1460
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1131; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD30A; "

<220>
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<223> /note="Gene Name:
      ankyrin repeat domain 30A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000363792"
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<400> 5219
Met Thr Lys Arg Lys Lys Thr Ile Asn Leu Asn Ile Gln Asp Ala Gln
1 5 10 15

Lys Arg Thr Ala Leu His Trp Ala Cys Val Asn Gly His Glu Glu Val
20 25 30

Val Thr Phe Leu Val Asp Arg Lys Cys Gln Leu Asp Val Leu Asp Gly
35 40 45

Glu His Arg Thr Pro Leu Met Lys Ala Leu Gln Cys His Gln Glu Ala
50 55 60

Cys Ala Asn Ile Leu Ile Asp Ser Gly Ala Asp Ile Asn Leu Val Asp
65 70 75 80

Val Tyr Gly Asn Thr Ala Leu His Tyr Ala Val Tyr Ser Glu Ile Leu
85 90 95

Ser Val Val Ala Lys Leu Leu Ser His Gly Ala Val Ile Glu Val His
100 105 110

Asn Lys Ala Ser Leu Thr Pro Leu Leu Leu Ser Ile Thr Lys Arg Ser
115 120 125

Glu Gln Ile Val Glu Phe Leu Leu Ile Lys Asn Ala Asn Ala Asn Ala
130 135 140

Val Asn Lys Tyr Lys Cys Thr Ala Leu Met Leu Ala Val Cys His Gly
145 150 155 160

Ser Ser Glu Ile Val Gly Met Leu Leu Gln Gln Asn Val Asp Val Phe
165 170 175

Ala Ala Asp Ile Cys Gly Val Thr Ala Glu His Tyr Ala Val Thr Cys
180 185 190

Gly Phe His His Ile His Glu Gln Ile Met Glu Tyr Ile Arg Lys Leu
195 200 205

Ser Lys Asn His Gln Asn Thr Asn Pro Glu Gly Thr Ser Ala Gly Thr
210 215 220

```
Pro Asp Glu Ala Ala Pro Leu Ala Glu Arg Thr Pro Asp Thr Ala Glu
225                 230                 235                 240

Ser Leu Val Glu Lys Thr Pro Asp Glu Ala Ala Pro Leu Val Glu Arg
                245                 250                 255

Thr Pro Asp Thr Ala Glu Ser Leu Val Glu Lys Thr Pro Asp Glu Ala
            260                 265                 270

Ala Ser Leu Val Glu Gly Thr Ser Asp Lys Ile Gln Cys Leu Glu Lys
        275                 280                 285

Ala Thr Ser Gly Lys Phe Glu Gln Ser Ala Glu Glu Thr Pro Arg Glu
    290                 295                 300

Ile Thr Ser Pro Ala Lys Glu Thr Ser Glu Lys Phe Thr Trp Pro Ala
305                 310                 315                 320

Lys Gly Arg Pro Arg Lys Ile Ala Trp Glu Lys Lys Glu Asp Thr Pro
                325                 330                 335

Arg Glu Ile Met Ser Pro Ala Lys Glu Thr Ser Glu Lys Phe Thr Trp
            340                 345                 350

Ala Ala Lys Gly Arg Pro Arg Lys Ile Ala Trp Glu Lys Lys Glu Thr
        355                 360                 365

Pro Val Lys Thr Gly Cys Val Ala Arg Val Thr Ser Asn Lys Thr Lys
    370                 375                 380

Val Leu Glu Lys Gly Arg Ser Lys Met Ile Ala Cys Pro Thr Lys Glu
385                 390                 395                 400

Ser Ser Thr Lys Ala Ser Ala Asn Asp Gln Arg Phe Pro Ser Glu Ser
                405                 410                 415

Lys Gln Glu Glu Asp Glu Glu Tyr Ser Cys Asp Ser Arg Ser Leu Phe
            420                 425                 430

Glu Ser Ser Ala Lys Ile Gln Val Cys Ile Pro Glu Ser Ile Tyr Gln
        435                 440                 445

Lys Val Met Glu Ile Asn Arg Glu Val Glu Glu Pro Pro Lys Lys Pro
```

```
    450                 455                 460

Ser Ala Phe Lys Pro Ala Ile Glu Met Gln Asn Ser Val Pro Asn Lys
465                 470                 475                 480

Ala Phe Glu Leu Lys Asn Glu Gln Thr Leu Arg Ala Asp Pro Met Phe
                485                 490                 495

Pro Pro Glu Ser Lys Gln Lys Asp Tyr Glu Glu Asn Ser Trp Asp Ser
            500                 505                 510

Glu Ser Leu Cys Glu Thr Val Ser Gln Lys Asp Val Cys Leu Pro Lys
        515                 520                 525

Ala Thr His Gln Lys Glu Ile Asp Lys Ile Asn Gly Lys Leu Glu Glu
    530                 535                 540

Ser Pro Asn Lys Asp Gly Leu Leu Lys Ala Thr Cys Gly Met Lys Val
545                 550                 555                 560

Ser Ile Pro Thr Lys Ala Leu Glu Leu Lys Asp Met Gln Thr Phe Lys
                565                 570                 575

Ala Glu Pro Pro Gly Lys Pro Ser Ala Phe Glu Pro Ala Thr Glu Met
            580                 585                 590

Gln Lys Ser Val Pro Asn Lys Ala Leu Glu Leu Lys Asn Glu Gln Thr
        595                 600                 605

Leu Arg Ala Asp Glu Ile Leu Pro Ser Glu Ser Lys Gln Lys Asp Tyr
    610                 615                 620

Glu Glu Asn Ser Trp Asp Thr Glu Ser Leu Cys Glu Thr Val Ser Gln
625                 630                 635                 640

Lys Asp Val Cys Leu Pro Lys Ala Ala His Gln Lys Glu Ile Asp Lys
                645                 650                 655

Ile Asn Gly Lys Leu Glu Gly Ser Pro Val Lys Asp Gly Leu Leu Lys
            660                 665                 670

Ala Asn Cys Gly Met Lys Val Ser Ile Pro Thr Lys Ala Leu Glu Leu
        675                 680                 685
```

```
Met Asp Met Gln Thr Phe Lys Ala Glu Pro Pro Glu Lys Pro Ser Ala
    690                 695                 700

Phe Glu Pro Ala Ile Glu Met Gln Lys Ser Val Pro Asn Lys Ala Leu
705                 710                 715                 720

Glu Leu Lys Asn Glu Gln Thr Leu Arg Ala Asp Glu Ile Leu Pro Ser
                725                 730                 735

Glu Ser Lys Gln Lys Asp Tyr Glu Glu Ser Ser Trp Asp Ser Glu Ser
            740                 745                 750

Leu Cys Glu Thr Val Ser Gln Lys Asp Val Cys Leu Pro Lys Ala Ala
        755                 760                 765

His Gln Lys Glu Ile Asp Lys Ile Asn Gly Lys Leu Glu Gly Ser Pro
    770                 775                 780

Val Lys Asp Gly Leu Leu Lys Ala Asn Cys Gly Met Lys Val Ser Ile
785                 790                 795                 800

Pro Thr Lys Ala Leu Glu Leu Met Asp Met Gln Thr Phe Lys Ala Glu
                805                 810                 815

Pro Pro Glu Lys Pro Ser Ala Phe Glu Pro Ala Ile Glu Met Gln Lys
            820                 825                 830

Ser Val Pro Asn Lys Ala Leu Glu Leu Lys Asn Glu Gln Thr Leu Arg
        835                 840                 845

Ala Asp Glu Ile Leu Pro Ser Glu Ser Lys Gln Lys Asp Tyr Glu Glu
    850                 855                 860

Ser Ser Trp Asp Ser Glu Ser Leu Cys Glu Thr Val Ser Gln Lys Asp
865                 870                 875                 880

Val Cys Leu Pro Lys Ala Thr His Gln Lys Glu Ile Asp Lys Ile Asn
                885                 890                 895

Gly Lys Leu Glu Glu Ser Pro Asp Asn Asp Gly Phe Leu Lys Ala Pro
            900                 905                 910
```

```
Cys Arg Met Lys Val Ser Ile Pro Thr Lys Ala Leu Glu Leu Met Asp
        915                 920                 925

Met Gln Thr Phe Lys Ala Glu Pro Pro Glu Lys Pro Ser Ala Phe Glu
    930                 935                 940

Pro Ala Ile Glu Met Gln Lys Ser Val Pro Asn Lys Ala Leu Glu Leu
945                 950                 955                 960

Lys Asn Glu Gln Thr Leu Arg Ala Asp Gln Met Phe Pro Ser Glu Ser
                965                 970                 975

Lys Gln Lys Lys Val Glu Glu Asn Ser Trp Asp Ser Glu Ser Leu Arg
            980                 985                 990

Glu Thr Val Ser Gln Lys Asp Val  Cys Val Pro Lys Ala  Thr His
Gln
        995                 1000                1005

Lys Glu  Met Asp Lys Ile Ser  Gly Lys Leu Glu Asp  Ser Thr Ser
    1010                1015                1020

Leu Ser  Lys Ile Leu Asp Thr  Val His Ser Cys Glu  Arg Ala Arg
    1025                1030                1035

Glu Leu  Gln Lys Asp His Cys  Glu Gln Arg Thr Gly  Lys Met Glu
    1040                1045                1050

Gln Met  Lys Lys Lys Phe Cys  Val Leu Lys Lys Lys  Leu Ser Glu
    1055                1060                1065

Ala Lys  Glu Ile Lys Ser Gln  Leu Glu Asn Gln Lys  Val Lys Trp
    1070                1075                1080

Glu Gln  Glu Leu Cys Ser Val  Arg Leu Thr Leu Asn  Gln Glu Glu
    1085                1090                1095

Glu Lys  Arg Arg Asn Ala Asp  Ile Leu Asn Glu Lys  Ile Arg Glu
    1100                1105                1110

Glu Leu  Gly Arg Ile Glu Glu  Gln His Arg Lys Glu  Leu Glu Val
    1115                1120                1125
```

```
Lys Gln  Gln Leu Glu Gln Ala  Leu Arg Ile Gln Asp  Ile Glu Leu
    1130                1135                1140

Lys Ser  Val Glu Ser Asn Leu  Asn Gln Val Ser His  Thr His Glu
    1145                1150                1155

Asn Glu  Asn Tyr Leu Leu His  Glu Asn Cys Met Leu  Lys Lys Glu
    1160                1165                1170

Ile Ala  Met Leu Lys Leu Glu  Ile Ala Thr Leu Lys  His Gln Tyr
    1175                1180                1185

Gln Glu  Lys Glu Asn Lys Tyr  Phe Glu Asp Ile Lys  Ile Leu Lys
    1190                1195                1200

Glu Lys  Asn Ala Glu Leu Gln  Met Thr Leu Lys Leu  Lys Glu Glu
    1205                1210                1215

Ser Leu  Thr Lys Arg Ala Ser  Gln Tyr Ser Gly Gln  Leu Lys Val
    1220                1225                1230

Leu Ile  Ala Glu Asn Thr Met  Leu Thr Ser Lys Leu  Lys Glu Lys
    1235                1240                1245

Gln Asp  Lys Glu Ile Leu Glu  Ala Glu Ile Glu Ser  His His Pro
    1250                1255                1260

Arg Leu  Ala Ser Ala Val Gln  Asp His Asp Gln Ile  Val Thr Ser
    1265                1270                1275

Arg Lys  Ser Gln Glu Pro Ala  Phe His Ile Ala Gly  Asp Ala Cys
    1280                1285                1290

Leu Gln  Arg Lys Met Asn Val  Asp Val Ser Ser Thr  Ile Tyr Asn
    1295                1300                1305

Asn Glu  Val Leu His Gln Pro  Leu Ser Glu Ala Gln  Arg Lys Ser
    1310                1315                1320

Lys Ser  Leu Lys Ile Asn Leu  Asn Tyr Ala Gly Asp  Ala Leu Arg
    1325                1330                1335
```

```
Glu Asn  Thr Leu Val Ser Glu  His Ala Gln Arg Asp  Gln Arg Glu
    1340                1345                1350

Thr Gln  Cys Gln Met Lys Glu  Ala Glu His Met Tyr  Gln Asn Glu
    1355                1360                1365

Gln Asp  Asn Val Asn Lys His  Thr Glu Gln Gln Glu  Ser Leu Asp
    1370                1375                1380

Gln Lys  Leu Phe Gln Leu Gln  Ser Lys Asn Met Trp  Leu Gln Gln
    1385                1390                1395

Gln Leu  Val His Ala His Lys  Lys Ala Asp Asn Lys  Ser Lys Ile
    1400                1405                1410

Thr Ile  Asp Ile His Phe Leu  Glu Arg Lys Met Gln  His His Leu
    1415                1420                1425

Leu Lys  Glu Lys Asn Glu Glu  Ile Phe Asn Tyr Asn  Asn His Leu
    1430                1435                1440

Lys Asn  Arg Ile Tyr Gln Tyr  Glu Lys Glu Lys Ala  Glu Thr Glu
    1445                1450                1455

Asn Ser
    1460


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Lys Arg Thr Ala Leu His Trp Ala Cys Val Asn Gly His Glu Glu Val
20 25 30

Val Thr Phe Leu Val Asp Arg Lys Cys Gln Leu Asp Val Leu Asp Gly
35 40 45

Glu His Arg Thr Pro Leu Met Lys Ala Leu Gln Cys His Gln Glu Ala
50 55 60

Cys Ala Asn Ile Leu Ile Asp Ser Gly Ala Asp Ile Asn Leu Val Asp
65 70 75 80

Val Tyr Gly Asn Thr Ala Leu His Tyr Ala Val Tyr Ser Glu Ile Leu
85 90 95

Ser Val Val Ala Lys Leu Leu Ser His Gly Ala Val Ile Glu Val His
100 105 110

Asn Lys Ala Ser Leu Thr Pro Leu Leu Leu Ser Ile Thr Lys Arg Ser
115 120 125

Glu Gln Ile Val Glu Phe Leu Leu Ile Lys Asn Ala Asn Ala Asn Ala
130 135 140

Val Asn Lys Tyr Lys Cys Thr Ala Leu Met Leu Ala Val Cys His Gly
145 150 155 160

Ser Ser Glu Ile Val Gly Met Leu Leu Gln Gln Asn Val Asp Val Phe
165 170 175

Ala Ala Asp Ile Cys Gly Val Thr Ala Glu His Tyr Ala Val Thr Cys
180 185 190

Gly Phe His His Ile His Glu Gln Ile Met Glu Tyr Ile Arg Lys Leu
195 200 205

Ser Lys Asn His Gln Asn Thr Asn Pro Glu Gly Thr Ser Ala Gly Thr
210 215 220

```
Pro Asp Glu Ala Ala Pro Leu Ala Glu Arg Thr Pro Asp Thr Ala Glu
225                 230                 235                 240

Ser Leu Val Glu Lys Thr Pro Asp Glu Ala Ala Pro Leu Val Glu Arg
                245                 250                 255

Thr Pro Asp Thr Ala Glu Ser Leu Val Glu Lys Thr Pro Asp Glu Ala
            260                 265                 270

Ala Ser Leu Val Glu Gly Thr Ser Asp Lys Ile Gln Cys Leu Glu Lys
        275                 280                 285

Ala Thr Ser Gly Lys Phe Glu Gln Ser Ala Glu Glu Thr Pro Arg Glu
    290                 295                 300

Ile Thr Ser Pro Ala Lys Glu Thr Ser Glu Lys Phe Thr Trp Pro Ala
305                 310                 315                 320

Lys Gly Arg Pro Arg Lys Ile Ala Trp Glu Lys Lys Glu Asp Thr Pro
                325                 330                 335

Arg Glu Ile Met Ser Pro Ala Lys Glu Thr Ser Glu Lys Phe Thr Trp
            340                 345                 350

Ala Ala Lys Gly Arg Pro Arg Lys Ile Ala Trp Glu Lys Lys Glu Thr
        355                 360                 365

Pro Val Lys Thr Gly Cys Val Ala Arg Val Thr Ser Asn Lys Thr Lys
    370                 375                 380

Val Leu Glu Lys Gly Arg Ser Lys Met Ile Ala Cys Pro Thr Lys Glu
385                 390                 395                 400

Ser Ser Thr Lys Ala Ser Ala Asn Asp Gln Arg Phe Pro Ser Glu Ser
                405                 410                 415

Lys Gln Glu Glu Asp Glu Glu Tyr Ser Cys Asp Ser Arg Ser Leu Phe
            420                 425                 430

Glu Ser Ser Ala Lys Ile Gln Val Cys Ile Pro Glu Ser Ile Tyr Gln
        435                 440                 445
```

```
Lys Val Met Glu Ile Asn Arg Glu Val Glu Glu Pro Pro Lys Lys Pro
    450                 455                 460

Ser Ala Phe Lys Pro Ala Ile Glu Met Gln Asn Ser Val Pro Asn Lys
465                 470                 475                 480

Ala Phe Glu Leu Lys Asn Glu Gln Thr Leu Arg Ala Asp Pro Met Phe
                485                 490                 495

Pro Pro Glu Ser Lys Gln Lys Asp Tyr Glu Glu Asn Ser Trp Asp Ser
            500                 505                 510

Glu Ser Leu Cys Glu Thr Val Ser Gln Lys Asp Val Cys Leu Pro Lys
        515                 520                 525

Ala Thr His Gln Lys Glu Ile Asp Lys Ile Asn Gly Lys Leu Glu Glu
    530                 535                 540

Ser Pro Asn Lys Asp Gly Leu Leu Lys Ala Thr Cys Gly Met Lys Val
545                 550                 555                 560

Ser Ile Pro Thr Lys Ala Leu Glu Leu Lys Asp Met Gln Thr Phe Lys
                565                 570                 575

Ala Glu Pro Pro Gly Lys Pro Ser Ala Phe Glu Pro Ala Thr Glu Met
            580                 585                 590

Gln Lys Ser Val Pro Asn Lys Ala Leu Glu Leu Lys Asn Glu Gln Thr
        595                 600                 605

Leu Arg Ala Asp Glu Ile Leu Pro Ser Glu Ser Lys Gln Lys Asp Tyr
    610                 615                 620

Glu Glu Asn Ser Trp Asp Thr Glu Ser Leu Cys Glu Thr Val Ser Gln
625                 630                 635                 640

Lys Asp Val Cys Leu Pro Lys Ala Ala His Gln Lys Glu Ile Asp Lys
                645                 650                 655

Ile Asn Gly Lys Leu Glu Gly Ser Pro Val Lys Asp Gly Leu Leu Lys
            660                 665                 670

Ala Asn Cys Gly Met Lys Val Ser Ile Pro Thr Lys Ala Leu Glu Leu
```

675 680 685

Met Asp Met Gln Thr Phe Lys Ala Glu Pro Pro Glu Lys Pro Ser Ala
690 695 700

Phe Glu Pro Ala Ile Glu Met Gln Lys Ser Val Pro Asn Lys Ala Leu
705 710 715 720

Glu Leu Lys Asn Glu Gln Thr Leu Arg Ala Asp Glu Ile Leu Pro Ser
725 730 735

Glu Ser Lys Gln Lys Asp Tyr Glu Glu Ser Ser Trp Asp Ser Glu Ser
740 745 750

Leu Cys Glu Thr Val Ser Gln Lys Asp Val Cys Leu Pro Lys Ala Thr
755 760 765

His Gln Lys Glu Ile Asp Lys Ile Asn Gly Lys Leu Glu Glu Ser Pro
770 775 780

Asp Asn Asp Gly Phe Leu Lys Ala Pro Cys Arg Met Lys Val Ser Ile
785 790 795 800

Pro Thr Lys Ala Leu Glu Leu Met Asp Met Gln Thr Phe Lys Ala Glu
805 810 815

Pro Pro Glu Lys Pro Ser Ala Phe Glu Pro Ala Ile Glu Met Gln Lys
820 825 830

Ser Val Pro Asn Lys Ala Leu Glu Leu Lys Asn Glu Gln Thr Leu Arg
835 840 845

Ala Asp Gln Met Phe Pro Ser Glu Ser Lys Gln Lys Lys Val Glu Glu
850 855 860

Asn Ser Trp Asp Ser Glu Ser Leu Arg Glu Thr Val Ser Gln Lys Asp
865 870 875 880

Val Cys Val Pro Lys Ala Thr His Gln Lys Glu Met Asp Lys Ile Ser
885 890 895

Gly Lys Leu Glu Asp Ser Thr Ser Leu Ser Lys Ile Leu Asp Thr Val
900 905 910

```
His Ser Cys Glu Arg Ala Arg Glu Leu Gln Lys Asp His Cys Glu Gln
        915                 920                 925

Arg Thr Gly Lys Met Glu Gln Met Lys Lys Lys Phe Cys Val Leu Lys
    930                 935                 940

Lys Lys Leu Ser Glu Ala Lys Glu Ile Lys Ser Gln Leu Glu Asn Gln
945                 950                 955                 960

Lys Val Lys Trp Glu Gln Glu Leu Cys Ser Val Arg Leu Thr Leu Asn
                965                 970                 975

Gln Glu Glu Glu Lys Arg Arg Asn Ala Asp Ile Leu Asn Glu Lys Ile
            980                 985                 990

Arg Glu Glu Leu Gly Arg Ile Glu  Glu Gln His Arg Lys  Glu Leu
Glu
        995                 1000                1005

Val Lys  Gln Gln Leu Glu Gln  Ala Leu Arg Ile Gln  Asp Ile Glu
    1010                1015                1020

Leu Lys  Ser Val Glu Ser Asn  Leu Asn Gln Val Ser  His Thr His
    1025                1030                1035

Glu Asn  Glu Asn Tyr Leu Leu  His Glu Asn Cys Met  Leu Lys Lys
    1040                1045                1050

Glu Ile  Ala Met Leu Lys Leu  Glu Ile Ala Thr Leu  Lys His Gln
    1055                1060                1065

Tyr Gln  Glu Lys Glu Asn Lys  Tyr Phe Glu Asp Ile  Lys Ile Leu
    1070                1075                1080

Lys Glu  Lys Asn Ala Glu Leu  Gln Met Thr Leu Lys  Leu Lys Glu
    1085                1090                1095

Glu Ser  Leu Thr Lys Arg Ala  Ser Gln Tyr Ser Gly  Gln Leu Lys
    1100                1105                1110

Val Leu  Ile Ala Glu Asn Thr  Met Leu Thr Ser Lys  Leu Lys Glu
    1115                1120                1125
```

```
Lys Gln  Asp Lys Glu Ile Leu  Glu Ala Glu Ile Glu  Ser His His
    1130                1135                1140

Pro Arg  Leu Ala Ser Ala Val  Gln Asp His Asp Gln  Ile Val Thr
    1145                1150                1155

Ser Arg  Lys Ser Gln Glu Pro  Ala Phe His Ile Ala  Gly Asp Ala
    1160                1165                1170

Cys Leu  Gln Arg Lys Met Asn  Val Asp Val Ser Ser  Thr Ile Tyr
    1175                1180                1185

Asn Asn  Glu Val Leu His Gln  Pro Leu Ser Glu Ala  Gln Arg Lys
    1190                1195                1200

Ser Lys  Ser Leu Lys Ile Asn  Leu Asn Tyr Ala Gly  Asp Ala Leu
    1205                1210                1215

Arg Glu  Asn Thr Leu Val Ser  Glu His Ala Gln Arg  Asp Gln Arg
    1220                1225                1230

Glu Thr  Gln Cys Gln Met Lys  Glu Ala Glu His Met  Tyr Gln Asn
    1235                1240                1245

Glu Gln  Asp Asn Val Asn Lys  His Thr Glu Gln Gln  Glu Ser Leu
    1250                1255                1260

Asp Gln  Lys Leu Phe Gln Leu  Gln Ser Lys Asn Met  Trp Leu Gln
    1265                1270                1275

Gln Gln  Leu Val His Ala His  Lys Lys Ala Asp Asn  Lys Ser Lys
    1280                1285                1290

Ile Thr  Ile Asp Ile His Phe  Leu Glu Arg Lys Met  Gln His His
    1295                1300                1305

Leu Leu  Lys Glu Lys Asn Glu  Glu Ile Phe Asn Tyr  Asn Asn His
    1310                1315                1320

Leu Lys  Asn Arg Ile Tyr Gln  Tyr Glu Lys Glu Lys  Ala Glu Thr
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Glu Asn Ser
    1340

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Met Glu Glu Ile Ser Ala Ala Ala Val Lys Val Val Pro Gly Pro Glu
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Arg Pro Ser Pro Phe Ser Gln Leu Val Tyr Thr Ser Asn Asp Ser Tyr
            20   25   30

Ile Val His Ser Gly Asp Leu Arg Lys Ile His Lys Ala Ala Ser Arg
        35   40   45

Gly Gln Val Arg Lys Leu Glu Lys Met Thr Lys Arg Lys Lys Thr Ile
    50   55   60

Asn Leu Asn Ile Gln Asp Ala Gln Lys Arg Thr Ala Leu His Trp Ala
65   70   75   80

Cys Val Asn Gly His Glu Glu Val Val Thr Phe Leu Val Asp Arg Lys
                85   90   95

Cys Gln Leu Asp Val Leu Asp Gly Glu His Arg Thr Pro Leu Met Lys

```
            100                 105                 110

Ala Leu Gln Cys His Gln Glu Ala Cys Ala Asn Ile Leu Ile Asp Ser
        115                 120                 125

Gly Ala Asp Ile Asn Leu Val Asp Val Tyr Gly Asn Thr Ala Leu His
    130                 135                 140

Tyr Ala Val Tyr Ser Glu Ile Leu Ser Val Val Ala Lys Leu Leu Ser
145                 150                 155                 160

His Gly Ala Val Ile Glu Val His Asn Lys Ala Ser Leu Thr Pro Leu
                165                 170                 175

Leu Leu Ser Ile Thr Lys Arg Ser Glu Gln Ile Val Glu Phe Leu Leu
            180                 185                 190

Ile Lys Asn Ala Asn Ala Asn Ala Val Asn Lys Tyr Lys Cys Thr Ala
        195                 200                 205

Leu Met Leu Ala Val Cys His Gly Ser Ser Glu Ile Val Gly Met Leu
    210                 215                 220

Leu Gln Gln Asn Val Asp Val Phe Ala Ala Asp Ile Cys Gly Val Thr
225                 230                 235                 240

Ala Glu His Tyr Ala Val Thr Cys Gly Phe His His Ile His Glu Gln
                245                 250                 255

Ile Met Glu Tyr Ile Arg Lys Leu Ser Lys Asn His Gln Asn Thr Asn
            260                 265                 270

Pro Glu Gly Thr Ser Ala Gly Thr Pro Asp Glu Ala Ala Pro Leu Ala
        275                 280                 285

Glu Arg Thr Pro Asp Thr Ala Glu Ser Leu Val Glu Lys Thr Pro Asp
    290                 295                 300

Glu Ala Ala Pro Leu Val Glu Arg Thr Pro Asp Thr Ala Glu Ser Leu
305                 310                 315                 320

Val Glu Lys Thr Pro Asp Glu Ala Ala Ser Leu Val Glu Gly Thr Ser
                325                 330                 335
```

```
Asp Lys Ile Gln Cys Leu Glu Lys Ala Thr Ser Gly Lys Phe Glu Gln
            340                 345                 350

Ser Ala Glu Glu Thr Pro Arg Glu Ile Thr Ser Pro Ala Lys Glu Thr
        355                 360                 365

Ser Glu Lys Phe Thr Trp Pro Ala Lys Gly Arg Pro Arg Lys Ile Ala
    370                 375                 380

Trp Glu Lys Lys Glu Asp Thr Pro Arg Glu Ile Met Ser Pro Ala Lys
385                 390                 395                 400

Glu Thr Ser Glu Lys Phe Thr Trp Ala Ala Lys Gly Arg Pro Arg Lys
                405                 410                 415

Ile Ala Trp Glu Lys Lys Glu Thr Pro Val Lys Thr Gly Cys Val Ala
            420                 425                 430

Arg Val Thr Ser Asn Lys Thr Lys Val Leu Glu Lys Gly Arg Ser Lys
        435                 440                 445

Met Ile Ala Cys Pro Thr Lys Glu Ser Ser Thr Lys Ala Ser Ala Asn
    450                 455                 460

Asp Gln Arg Phe Pro Ser Glu Ser Lys Gln Glu Glu Asp Glu Glu Tyr
465                 470                 475                 480

Ser Cys Asp Ser Arg Ser Leu Phe Glu Ser Ser Ala Lys Ile Gln Val
                485                 490                 495

Cys Ile Pro Glu Ser Ile Tyr Gln Lys Val Met Glu Ile Asn Arg Glu
            500                 505                 510

Val Glu Glu Pro Pro Lys Lys Pro Ser Ala Phe Lys Pro Ala Ile Glu
        515                 520                 525

Met Gln Asn Ser Val Pro Asn Lys Ala Phe Glu Leu Lys Asn Glu Gln
    530                 535                 540

Thr Leu Arg Ala Asp Pro Met Phe Pro Pro Glu Ser Lys Gln Lys Asp
545                 550                 555                 560
```

Tyr Glu Glu Asn Ser Trp Asp Ser Glu Ser Leu Cys Glu Thr Val Ser
565 570 575

Gln Lys Asp Val Cys Leu Pro Lys Ala Thr His Gln Lys Glu Ile Asp
580 585 590

Lys Ile Asn Gly Lys Leu Glu Glu Ser Pro Asn Lys Asp Gly Leu Leu
595 600 605

Lys Ala Thr Cys Gly Met Lys Val Ser Ile Pro Thr Lys Ala Leu Glu
610 615 620

Leu Lys Asp Met Gln Thr Phe Lys Ala Glu Pro Pro Gly Lys Pro Ser
625 630 635 640

Ala Phe Glu Pro Ala Thr Glu Met Gln Lys Ser Val Pro Asn Lys Ala
645 650 655

Leu Glu Leu Lys Asn Glu Gln Thr Leu Arg Ala Asp Glu Ile Leu Pro
660 665 670

Ser Glu Ser Lys Gln Lys Asp Tyr Glu Glu Asn Ser Trp Asp Thr Glu
675 680 685

Ser Leu Cys Glu Thr Val Ser Gln Lys Asp Val Cys Leu Pro Lys Ala
690 695 700

Ala His Gln Lys Glu Ile Asp Lys Ile Asn Gly Lys Leu Glu Gly Ser
705 710 715 720

Pro Val Lys Asp Gly Leu Leu Lys Ala Asn Cys Gly Met Lys Val Ser
725 730 735

Ile Pro Thr Lys Ala Leu Glu Leu Met Asp Met Gln Thr Phe Lys Ala
740 745 750

Glu Pro Pro Glu Lys Pro Ser Ala Phe Glu Pro Ala Ile Glu Met Gln
755 760 765

Lys Ser Val Pro Asn Lys Ala Leu Glu Leu Lys Asn Glu Gln Thr Leu
770 775 780

```
Arg Ala Asp Glu Ile Leu Pro Ser Glu Ser Lys Gln Lys Asp Tyr Glu
785                 790                 795                 800

Glu Ser Ser Trp Asp Ser Glu Ser Leu Cys Glu Thr Val Ser Gln Lys
                805                 810                 815

Asp Val Cys Leu Pro Lys Ala Thr His Gln Lys Glu Ile Asp Lys Ile
            820                 825                 830

Asn Gly Lys Leu Glu Glu Ser Pro Asp Asn Asp Gly Phe Leu Lys Ala
        835                 840                 845

Pro Cys Arg Met Lys Val Ser Ile Pro Thr Lys Ala Leu Glu Leu Met
    850                 855                 860

Asp Met Gln Thr Phe Lys Ala Glu Pro Pro Glu Lys Pro Ser Ala Phe
865                 870                 875                 880

Glu Pro Ala Ile Glu Met Gln Lys Ser Val Pro Asn Lys Ala Leu Glu
                885                 890                 895

Leu Lys Asn Glu Gln Thr Leu Arg Ala Asp Gln Met Phe Pro Ser Glu
            900                 905                 910

Ser Lys Gln Lys Lys Val Glu Glu Asn Ser Trp Asp Ser Glu Ser Leu
        915                 920                 925

Arg Glu Thr Val Ser Gln Lys Asp Val Cys Val Pro Lys Ala Thr His
    930                 935                 940

Gln Lys Glu Met Asp Lys Ile Ser Gly Lys Leu Glu Asp Ser Thr Ser
945                 950                 955                 960

Leu Ser Lys Ile Leu Asp Thr Val His Ser Cys Glu Arg Ala Arg Glu
                965                 970                 975

Leu Gln Lys Asp His Cys Glu Gln Arg Thr Gly Lys Met Glu Gln Met
            980                 985                 990

Lys Lys Lys Phe Cys Val Leu Lys  Lys Lys Leu Ser Glu  Ala Lys
Glu
        995                 1000                1005
```

```
Ile Lys  Ser Gln Leu Glu Asn  Gln Lys Val Lys Trp  Glu Gln Glu
    1010                1015                1020

Leu Cys  Ser Val Arg Leu Thr  Leu Asn Gln Glu Glu  Glu Lys Arg
    1025                1030                1035

Arg Asn  Ala Asp Ile Leu Asn  Glu Lys Ile Arg Glu  Glu Leu Gly
    1040                1045                1050

Arg Ile  Glu Glu Gln His Arg  Lys Glu Leu Glu Val  Lys Gln Gln
    1055                1060                1065

Leu Glu  Gln Ala Leu Arg Ile  Gln Asp Ile Glu Leu  Lys Ser Val
    1070                1075                1080

Glu Ser  Asn Leu Asn Gln Val  Ser His Thr His Glu  Asn Glu Asn
    1085                1090                1095

Tyr Leu  Leu His Glu Asn Cys  Met Leu Lys Lys Glu  Ile Ala Met
    1100                1105                1110

Leu Lys  Leu Glu Ile Ala Thr  Leu Lys His Gln Tyr  Gln Glu Lys
    1115                1120                1125

Glu Asn  Lys Tyr Phe Glu Asp  Ile Lys Ile Leu Lys  Glu Lys Asn
    1130                1135                1140

Ala Glu  Leu Gln Met Thr Leu  Lys Leu Lys Glu Glu  Ser Leu Thr
    1145                1150                1155

Lys Arg  Ala Ser Gln Tyr Ser  Gly Gln Leu Lys Val  Leu Ile Ala
    1160                1165                1170

Glu Asn  Thr Met Leu Thr Ser  Lys Leu Lys Glu Lys  Gln Asp Lys
    1175                1180                1185

Glu Ile  Leu Glu Ala Glu Ile  Glu Ser His His Pro  Arg Leu Ala
    1190                1195                1200

Ser Ala  Val Gln Asp His Asp  Gln Ile Val Thr Ser  Arg Lys Ser
    1205                1210                1215

Gln Glu  Pro Ala Phe His Ile  Ala Gly Asp Ala Cys  Leu Gln Arg
```

```
    1220                1225                1230

Lys Met  Asn Val Asp Val Ser  Ser Thr Ile Tyr Asn  Asn Glu Val
    1235                1240                1245

Leu His  Gln Pro Leu Ser Glu  Ala Gln Arg Lys Ser  Lys Ser Leu
    1250                1255                1260

Lys Ile  Asn Leu Asn Tyr Ala  Gly Asp Ala Leu Arg  Glu Asn Thr
    1265                1270                1275

Leu Val  Ser Glu His Ala Gln  Arg Asp Gln Arg Glu  Thr Gln Cys
    1280                1285                1290

Gln Met  Lys Glu Ala Glu His  Met Tyr Gln Asn Glu  Gln Asp Asn
    1295                1300                1305

Val Asn  Lys His Thr Glu Gln  Gln Glu Ser Leu Asp  Gln Lys Leu
    1310                1315                1320

Phe Gln  Leu Gln Ser Lys Asn  Met Trp Leu Gln Gln  Gln Leu Val
    1325                1330                1335

His Ala  His Lys Lys Ala Asp  Asn Lys Ser Lys Ile  Thr Ile Asp
    1340                1345                1350

Ile His  Phe Leu Glu Arg Lys  Met Gln His His Leu  Leu Lys Glu
    1355                1360                1365

Lys Asn  Glu Glu Ile Phe Asn  Tyr Asn Asn His Leu  Lys Asn Arg
    1370                1375                1380

Ile Tyr  Gln Tyr Glu Lys Glu  Lys Ala Glu Thr Glu  Asn Ser
    1385                1390                1395


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Met	Lys	Arg	Leu	Leu	Ala	Ala	Ala	Gly	Lys	Gly	Val	Arg	Gly	Pro	Glu
1				5				10						15	
Pro	Pro	Asn	Pro	Phe	Ser	Glu	Arg	Val	Tyr	Thr	Glu	Lys	Asp	Tyr	Gly
			20					25					30		
Thr	Ile	Tyr	Phe	Gly	Asp	Leu	Gly	Lys	Ile	His	Thr	Ala	Ala	Ser	Arg
		35					40					45			
Gly	Gln	Val	Gln	Lys	Leu	Glu	Lys	Met	Thr	Val	Gly	Lys	Lys	Pro	Val
	50					55					60				
Asn	Leu	Asn	Lys	Arg	Asp	Met	Lys	Lys	Arg	Thr	Ala	Leu	His	Trp	Ala
65					70					75					80
Cys	Val	Asn	Gly	His	Ala	Glu	Val	Val	Thr	Phe	Leu	Val	Asp	Arg	Lys
				85					90					95	
Cys	Gln	Leu	Asn	Val	Leu	Asp	Gly	Glu	Gly	Arg	Thr	Pro	Leu	Met	Lys
			100					105					110		
Ala	Leu	Gln	Cys	Glu	Arg	Glu	Ala	Cys	Ala	Asn	Ile	Leu	Ile	Asp	Ala
		115					120					125			
Gly	Ala	Asp	Leu	Asn	Tyr	Val	Asp	Val	Tyr	Gly	Asn	Thr	Ala	Leu	His
	130					135					140				
Tyr	Ala	Val	Tyr	Ser	Glu	Asn	Leu	Leu	Met	Val	Ala	Thr	Leu	Leu	Ser
145					150					155					160

```
Tyr Gly Ala Val Ile Glu Val Gln Asn Lys Ala Ser Leu Thr Pro Leu
                165                 170                 175

Leu Leu Ala Ile Gln Lys Arg Ser Lys Gln Thr Val Glu Phe Leu Leu
            180                 185                 190

Thr Lys Asn Ala Asn Ala Asn Ala Phe Asn Glu Ser Lys Cys Thr Ala
        195                 200                 205

Leu Met Leu Ala Ile Cys Glu Gly Ser Ser Glu Ile Val Gly Met Leu
    210                 215                 220

Leu Gln Gln Asn Val Asp Val Phe Ala Glu Asp Ile His Gly Ile Thr
225                 230                 235                 240

Ala Glu Arg Tyr Ala Ala Ala Cys Gly Val Asn Tyr Ile His Gln Gln
                245                 250                 255

Leu Leu Glu His Ile Arg Lys Leu Pro Lys Asn Pro Gln Asn Thr Asn
            260                 265                 270

Pro Glu Gly Thr Ser Thr Gly Thr Pro Asp Glu Ala Ala Pro Leu Ala
        275                 280                 285

Glu Arg Thr Pro Asp Thr Ala Glu Ser Leu Leu Glu Lys Thr Pro Asp
    290                 295                 300

Glu Ala Ala Arg Leu Val Glu Gly Thr Ser Ala Lys Ile Gln Cys Leu
305                 310                 315                 320

Gly Lys Ala Thr Ser Gly Lys Phe Glu Gln Ser Thr Glu Glu Thr Pro
                325                 330                 335

Arg Lys Ile Leu Arg Pro Thr Lys Glu Thr Ser Glu Lys Phe Ser Trp
            340                 345                 350

Pro Ala Lys Glu Arg Ser Arg Lys Ile Thr Trp Glu Glu Lys Glu Thr
        355                 360                 365

Ser Val Lys Thr Glu Cys Val Ala Gly Val Thr Pro Asn Lys Thr Glu
    370                 375                 380

Val Leu Glu Lys Gly Thr Ser Asn Met Ile Ala Cys Pro Thr Lys Glu
```

385 390 395 400

Thr Ser Thr Lys Ala Ser Thr Asn Val Asp Val Ser Ser Val Glu Pro
405 410 415

Ile Phe Ser Leu Phe Gly Thr Arg Thr Ile Glu Asn Ser Gln Cys Thr
420 425 430

Lys Val Glu Glu Asp Phe Asn Leu Ala Thr Lys Ile Ile Ser Lys Ser
435 440 445

Ala Ala Gln Asn Tyr Thr Cys Leu Pro Asp Ala Thr Tyr Gln Lys Asp
450 455 460

Ile Lys Thr Ile Asn His Lys Ile Glu Asp Gln Met Phe Pro Ser Glu
465 470 475 480

Ser Lys Arg Glu Glu Asp Glu Glu Tyr Ser Trp Asp Ser Gly Ser Leu
485 490 495

Phe Glu Ser Ser Ala Lys Thr Gln Val Cys Ile Pro Glu Ser Met Tyr
500 505 510

Gln Lys Val Met Glu Ile Asn Arg Glu Val Glu Glu Leu Pro Glu Lys
515 520 525

Pro Ser Ala Phe Lys Pro Ala Val Glu Met Gln Lys Thr Val Pro Asn
530 535 540

Lys Ala Phe Glu Leu Lys Asn Glu Gln Thr Leu Arg Ala Ala Gln Met
545 550 555 560

Phe Pro Ser Glu Ser Lys Gln Lys Asp Asp Glu Glu Asn Ser Trp Asp
565 570 575

Ser Glu Ser Pro Cys Glu Thr Val Ser Gln Lys Asp Val Tyr Leu Pro
580 585 590

Lys Ala Thr His Gln Lys Glu Phe Asp Thr Leu Ser Gly Lys Leu Glu
595 600 605

Glu Ser Pro Val Lys Asp Gly Leu Leu Lys Pro Thr Cys Gly Arg Lys
610 615 620

```
Val Ser Leu Pro Asn Lys Ala Leu Glu Leu Lys Asp Arg Glu Thr Phe
625                 630                 635                 640

Lys Ala Glu Ser Pro Asp Lys Asp Gly Leu Leu Lys Pro Thr Cys Gly
                645                 650                 655

Arg Lys Val Ser Leu Pro Asn Lys Ala Leu Glu Leu Lys Asp Arg Glu
            660                 665                 670

Thr Leu Lys Ala Glu Ser Pro Asp Asn Asp Gly Leu Leu Lys Pro Thr
        675                 680                 685

Cys Gly Arg Lys Val Ser Leu Pro Asn Lys Ala Leu Glu Leu Lys Asp
    690                 695                 700

Arg Glu Thr Phe Lys Ala Ala Gln Met Phe Pro Ser Glu Ser Lys Gln
705                 710                 715                 720

Lys Asp Asp Glu Glu Asn Ser Trp Asp Phe Glu Ser Phe Leu Glu Thr
                725                 730                 735

Leu Leu Gln Asn Asp Val Cys Leu Pro Lys Ala Thr His Gln Lys Glu
            740                 745                 750

Phe Asp Thr Leu Ser Gly Lys Leu Glu Glu Ser Pro Asp Lys Asp Gly
        755                 760                 765

Leu Leu Lys Pro Thr Cys Gly Met Lys Ile Ser Leu Pro Asn Lys Ala
    770                 775                 780

Leu Glu Leu Lys Asp Arg Glu Thr Phe Lys Ala Glu Asp Val Ser Ser
785                 790                 795                 800

Val Glu Ser Thr Phe Ser Leu Phe Gly Lys Pro Thr Thr Glu Asn Ser
                805                 810                 815

Gln Ser Thr Lys Val Glu Glu Asp Phe Asn Leu Thr Thr Lys Glu Gly
            820                 825                 830

Ala Thr Lys Thr Val Thr Gly Gln Gln Glu Arg Asp Ile Gly Ile Ile
        835                 840                 845
```

```
Glu Arg Ala Pro Gln Asp Gln Thr Asn Lys Met Pro Thr Ser Glu Leu
    850                 855                 860

Gly Arg Lys Glu Asp Thr Lys Ser Thr Ser Asp Ser Glu Ile Ile Ser
865                 870                 875                 880

Val Ser Asp Thr Gln Asn Tyr Glu Cys Leu Pro Glu Ala Thr Tyr Gln
                885                 890                 895

Lys Glu Ile Lys Thr Thr Asn Gly Lys Ile Glu Glu Ser Pro Glu Lys
            900                 905                 910

Pro Ser His Phe Glu Pro Ala Thr Glu Met Gln Asn Ser Val Pro Asn
        915                 920                 925

Lys Gly Leu Glu Trp Lys Asn Lys Gln Thr Leu Arg Ala Asp Ser Thr
    930                 935                 940

Thr Leu Ser Lys Ile Leu Asp Ala Leu Pro Ser Cys Glu Arg Gly Arg
945                 950                 955                 960

Glu Leu Lys Lys Asp Asn Cys Glu Gln Ile Thr Ala Lys Met Glu Gln
                965                 970                 975

Thr Lys Asn Lys Phe Cys Val Leu Gln Lys Glu Leu Ser Glu Ala Lys
            980                 985                 990

Glu Ile Lys Ser Gln Leu Glu Asn  Gln Lys Ala Lys Trp  Glu Gln
Glu
        995                 1000                1005

Leu Cys  Ser Val Arg Leu Thr  Leu Asn Gln Glu Glu  Glu Lys Arg
    1010                1015                1020

Arg Asn  Val Asp Ile Leu Lys  Glu Lys Ile Arg Pro  Glu Glu Gln
    1025                1030                1035

Leu Arg  Lys Lys Leu Glu Val  Lys Gln Gln Leu Glu  Gln Thr Leu
    1040                1045                1050

Arg Ile  Gln Asp Ile Glu Leu  Lys Ser Val Thr Ser  Asn Leu Asn
    1055                1060                1065
```

```
Gln Val  Ser His Thr His Glu  Ser Glu Asn Asp Leu  Phe His Glu
    1070                1075                1080

Asn Cys  Met Leu Lys Lys Glu  Ile Ala Met Leu Lys  Leu Glu Val
    1085                1090                1095

Ala Thr  Leu Lys His Gln His  Gln Val Lys Glu Asn  Lys Tyr Phe
    1100                1105                1110

Glu Asp  Ile Lys Ile Leu Gln  Glu Lys Asn Ala Glu  Leu Gln Met
    1115                1120                1125

Thr Leu  Lys Leu Lys Gln Lys  Thr Val Thr Lys Arg  Ala Ser Gln
    1130                1135                1140

Tyr Arg  Glu Gln Leu Lys Val  Leu Thr Ala Glu Asn  Thr Met Leu
    1145                1150                1155

Thr Ser  Lys Leu Lys Glu Lys  Gln Asp Lys Glu Ile  Leu Glu Thr
    1160                1165                1170

Glu Ile  Glu Ser His His Pro  Arg Leu Ala Ser Ala  Leu Gln Asp
    1175                1180                1185

His Asp  Gln Ser Val Thr Ser  Arg Lys Asn Gln Glu  Leu Ala Phe
    1190                1195                1200

His Ser  Ala Gly Asp Ala Pro  Leu Gln Gly Ile Met  Asn Val Asp
    1205                1210                1215

Val Ser  Asn Thr Ile Tyr Asn  Asn Glu Val Leu His  Gln Pro Leu
    1220                1225                1230

Tyr Glu  Ala Gln Arg Lys Ser  Lys Ser Pro Lys Ile  Asn Leu Asn
    1235                1240                1245

Tyr Ala  Gly Asp Asp Leu Arg  Glu Asn Ala Leu Val  Ser Glu His
    1250                1255                1260

Ala Gln  Arg Asp Arg Cys Glu  Thr Gln Cys Gln Met  Lys Lys Ala
    1265                1270                1275
```

```
Glu His  Met Tyr Gln Asn Glu  Gln Asp Asn Val Asp  Lys His Thr
    1280                 1285                 1290

Glu Gln  Gln Glu Ser Leu Glu  Gln Lys Leu Phe Gln  Leu Glu Ser
    1295                 1300                 1305

Lys Asn  Arg Trp Leu Arg Gln  Gln Leu Val Tyr Ala  His Lys Lys
    1310                 1315                 1320

Val Asn  Lys Ser Lys Val Thr  Ile Asn Ile Gln Phe  Pro Glu Met
    1325                 1330                 1335

Lys Met  Gln Arg His Leu Asn  Glu Lys Asn Glu Glu  Val Phe Asn
    1340                 1345                 1350

Tyr Gly  Asn His Leu Lys Glu  Arg Ile Asp Gln Tyr  Glu Lys Glu
    1355                 1360                 1365

Lys Ala  Glu Arg Glu Val Ser  Ile Lys Lys Tyr Lys  Tyr Phe Ser
    1370                 1375                 1380

Asn Phe  Leu Lys Glu Ser Gly  Leu Gly
    1385                 1390


<210> 5223
<211> 619
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1132; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD30B; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 30B; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9BXX2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000463332"
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<400> 5223
Met Lys Arg Leu Leu Ala Ala Ala Gly Lys Gly Val Arg Gly Pro Glu
1 5 10 15

Pro Pro Asn Pro Phe Ser Glu Arg Val Tyr Thr Glu Lys Asp Tyr Gly
20 25 30

Thr Ile Tyr Phe Gly Asp Leu Gly Lys Ile His Thr Ala Ala Ser Arg
35 40 45

Gly Gln Val Gln Lys Leu Glu Lys Met Thr Val Gly Lys Lys Pro Val
50 55 60

Asn Leu Asn Lys Arg Asp Met Lys Lys Arg Thr Ala Leu His Trp Ala
65 70 75 80

Cys Val Asn Gly His Ala Glu Val Val Thr Phe Leu Val Asp Arg Lys
85 90 95

Cys Gln Leu Asn Val Leu Asp Gly Glu Gly Arg Thr Pro Leu Met Lys
100 105 110

Ala Leu Gln Cys Glu Arg Glu Ala Cys Ala Asn Ile Leu Ile Asp Ala
115 120 125

Gly Ala Asp Leu Asn Tyr Val Asp Val Tyr Gly Asn Thr Ala Leu His
130 135 140

Tyr Ala Val Tyr Ser Glu Asn Leu Leu Met Val Ala Thr Leu Leu Ser
145 150 155 160

Tyr Gly Ala Val Ile Glu Val Gln Asn Lys Ala Ser Leu Thr Pro Leu
165 170 175

Leu Leu Ala Ile Gln Lys Arg Ser Lys Gln Thr Val Glu Phe Leu Leu
180 185 190

Thr Lys Asn Ala Asn Ala Asn Ala Phe Asn Glu Ser Lys Cys Thr Ala
195 200 205

Leu Met Leu Ala Ile Cys Glu Gly Ser Ser Glu Ile Val Gly Met Leu
210 215 220

```
Leu Gln Gln Asn Val Asp Val Phe Ala Glu Asp Ile His Gly Ile Thr
225                 230                 235                 240

Ala Glu Arg Tyr Ala Ala Ala Cys Gly Val Asn Tyr Ile His Gln Gln
                245                 250                 255

Leu Leu Glu His Ile Arg Lys Leu Pro Lys Asn Pro Gln Asn Thr Asn
            260                 265                 270

Pro Glu Gly Thr Ser Thr Gly Thr Pro Asp Glu Ala Ala Pro Leu Ala
        275                 280                 285

Glu Arg Thr Pro Asp Thr Ala Glu Ser Leu Leu Glu Lys Thr Pro Asp
    290                 295                 300

Glu Ala Ala Arg Leu Val Glu Gly Thr Ser Ala Lys Ile Gln Cys Leu
305                 310                 315                 320

Gly Lys Ala Thr Ser Gly Lys Phe Glu Gln Ser Thr Glu Glu Thr Pro
                325                 330                 335

Arg Lys Ile Leu Arg Pro Thr Lys Glu Thr Ser Glu Lys Phe Ser Trp
            340                 345                 350

Pro Ala Lys Glu Arg Ser Arg Lys Ile Thr Trp Glu Glu Lys Glu Thr
        355                 360                 365

Ser Val Lys Thr Glu Cys Val Ala Gly Val Thr Pro Asn Lys Thr Glu
    370                 375                 380

Val Leu Glu Lys Gly Thr Ser Asn Met Ile Ala Cys Pro Thr Lys Glu
385                 390                 395                 400

Thr Ser Thr Lys Ala Ser Thr Asn Val Asp Val Ser Ser Val Glu Pro
                405                 410                 415

Ile Phe Ser Leu Phe Gly Thr Arg Thr Ile Glu Asn Ser Gln Cys Thr
            420                 425                 430

Lys Val Glu Glu Asp Phe Asn Leu Ala Thr Lys Ile Ile Ser Lys Ser
        435                 440                 445
```

```
Ala Ala Gln Asn Tyr Thr Cys Leu Pro Asp Ala Thr Tyr Gln Lys Asp
    450                 455                 460

Ile Lys Thr Ile Asn His Lys Ile Glu Asp Gln Met Phe Pro Ser Glu
465                 470                 475                 480

Ser Lys Arg Glu Glu Asp Glu Glu Tyr Ser Trp Asp Ser Gly Ser Leu
                485                 490                 495

Phe Glu Ser Ser Ala Lys Thr Gln Val Cys Ile Pro Glu Ser Met Tyr
            500                 505                 510

Gln Lys Val Met Glu Ile Asn Arg Glu Val Glu Glu Leu Pro Glu Lys
        515                 520                 525

Pro Ser Ala Phe Lys Pro Ala Val Glu Met Gln Lys Thr Val Pro Asn
    530                 535                 540

Lys Ala Phe Glu Leu Lys Asn Glu Gln Thr Leu Arg Ala Ala Gln Met
545                 550                 555                 560

Phe Pro Ser Glu Ser Lys Gln Lys Asp Asp Glu Glu Asn Ser Trp Asp
                565                 570                 575

Ser Glu Ser Pro Cys Glu Thr Val Ser Gln Lys Asp Val Tyr Leu Pro
            580                 585                 590

Lys Ala Thr His Gln Lys Glu Phe Asp Thr Leu Ser Gly Lys Leu Glu
        595                 600                 605

Ala Tyr Leu Trp Lys Glu Ser Phe Ser Ser Lys
    610                 615
```

<210> 5224
<211> 251
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1133; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD30BL; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 30B-like; "

<220>
<221> source
<223> /note="Uniprot ID: A7E2S9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000295181"

<400> 5224

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Met Glu Arg Leu Ser Ala Ala Pro Val Lys Gly Gln Thr Gly Pro Glu
1               5                  10                  15

Arg Pro Ser Pro Phe Ser Gln Leu Val Tyr Thr Asn Asn Asp Ser Tyr
            20                  25                  30

Val Ile His His Gly Asp Leu Arg Lys Ile His Lys Ala Ala Ser Arg
        35                  40                  45

Gly Gln Ala Trp Lys Leu Glu Arg Met Met Lys Lys Thr Thr Met Asp
    50                  55                  60

Leu Asn Ile Arg Asp Ala Lys Lys Arg Thr Ala Leu Tyr Trp Ala Cys
65                  70                  75                  80

Ala Asn Gly His Ala Glu Val Val Thr Leu Leu Val Asp Arg Lys Cys
                85                  90                  95

Gln Leu Asp Val Leu Asp Gly Glu Asn Arg Thr Ile Leu Met Lys Ala
            100                 105                 110

Leu Gln Cys Gln Arg Glu Ala Cys Ala Asn Ile Leu Ile Asp Ser Gly
        115                 120                 125

Ala Asp Pro Asn Ile Val Asp Val Tyr Gly Asn Thr Ala Val His Tyr
    130                 135                 140

Ala Val Asn Ser Glu Asn Leu Ser Val Val Ala Lys Leu Leu Ser Cys
145                 150                 155                 160

Gly Ala Asp Ile Glu Val Lys Asn Lys Ala Gly His Thr Pro Leu Leu
                165                 170                 175
```

```
Leu Ala Ile Arg Lys Arg Ser Glu Glu Ile Val Glu Phe Leu Leu Thr
            180                 185                 190

Lys Asn Ala Asn Ala Asn Ala Val Asp Lys Phe Lys Cys Thr Ala Leu
        195                 200                 205

Met Leu Ala Ile Cys His Gly Ser Ser Glu Ile Val Gly Lys Leu Leu
    210                 215                 220

Gln Gln Asn Val Asp Ile Cys Ala Glu Ala Thr Cys Gly Met Ile Ala
225                 230                 235                 240

Glu Arg Tyr Ala Val Ala Cys Gly Phe Asn Leu
                245                 250


<210> 5225
<211> 258
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1133; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD30BL; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 30B-like; "

<220>
<221> source
<223> /note="Uniprot ID:  A7E2S9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000386398"

<400> 5225
Met Glu Arg Leu Ser Ala Ala Pro Val Lys Gly Gln Thr Gly Pro Glu
1               5                   10                  15

Arg Pro Ser Pro Phe Ser Gln Leu Val Tyr Thr Asn Asn Asp Ser Tyr
            20                  25                  30

Val Ile His His Gly Asp Leu Arg Lys Ile His Lys Ala Ala Ser Arg
```

```
        35                  40                  45

Gly Gln Ala Trp Lys Leu Glu Arg Met Met Lys Lys Thr Thr Met Asp
    50                  55                  60

Leu Asn Ile Arg Asp Ala Lys Lys Arg Thr Ala Leu Tyr Trp Ala Cys
65                  70                  75                  80

Ala Asn Gly His Ala Glu Val Val Thr Leu Leu Val Asp Arg Lys Cys
                85                  90                  95

Gln Leu Asp Val Leu Asp Gly Glu Asn Arg Thr Ile Leu Met Lys Ala
            100                 105                 110

Leu Gln Cys Gln Arg Glu Ala Cys Ala Asn Ile Leu Ile Asp Ser Gly
        115                 120                 125

Ala Asp Pro Asn Ile Val Asp Val Tyr Gly Asn Thr Ala Val His Tyr
    130                 135                 140

Ala Val Asn Ser Glu Asn Leu Ser Val Val Ala Lys Leu Leu Ser Cys
145                 150                 155                 160

Gly Ala Asp Ile Glu Val Lys Asn Lys Ala Gly His Thr Pro Leu Leu
                165                 170                 175

Leu Ala Ile Arg Lys Arg Ser Glu Glu Ile Val Glu Phe Leu Leu Thr
            180                 185                 190

Lys Asn Ala Asn Ala Asn Ala Val Asp Lys Phe Lys Cys Val His Gln
        195                 200                 205

Gln Leu Leu Glu Tyr Lys Gln Lys Ile Ser Lys Asn Ser Gln Asn Ser
    210                 215                 220

Asn Pro Glu Gly Thr Ser Glu Gly Thr Pro Asp Glu Ala Ala Pro Leu
225                 230                 235                 240

Ala Glu Arg Thr Pro Asp Thr Ala Glu Ser Leu Val Glu Arg Thr Pro
                245                 250                 255

Asp Glu
```

<210> 5226
<211> 1873
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1134; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD31; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 31; "

<220>
<221> source
<223> /note="Uniprot ID: Q8N7Z5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000274361"

<400> 5226
Met Glu Glu Gly Val Gln Ala Pro Asp Trp Asp Ser Asp Glu Thr Val
1   5   10   15

Ile Glu Gly Ser Val Thr Glu Ser Asp Leu Glu Glu Lys Glu Leu Pro
            20   25   30

Trp Arg Arg Leu Leu Phe Asp Gln Asp Ala Ser Leu Lys Ser Glu Phe
        35   40   45

Ser Leu His Pro Asp Thr Arg Gly Met Cys Lys Gly Met Pro Ser Pro
    50   55   60

Glu Ile Gln Leu Gly Phe Lys Leu Arg Glu Asp Leu Gln Glu Gln Met
65   70   75   80

Asn Lys Asn Lys Met Met Pro Val Leu Ser Glu Asp Thr Ile Leu Gln
                85   90   95

Ser Gln Asp Glu Thr Glu Arg Asn Gln Ala Leu Leu Gln Thr Arg Lys
            100   105   110

```
Asn Cys Ser Met Phe Ile Gly Ser Phe Arg Gln Ser Gly Leu Ser Leu
        115                 120                 125

Asn His Gln Asn Ile Glu Gly Pro Glu Ala Glu Ser Pro Glu Val Leu
    130                 135                 140

Pro His Ile Glu Lys Glu Leu Ser Glu Gly Arg Asp Ser Pro Glu Val
145                 150                 155                 160

Ser Leu Leu Ser Gly Thr Ala Ile Thr Val Ser Asp Thr Val Ala Val
                165                 170                 175

Lys Glu Thr Ser Leu Val Glu Pro Glu Lys Ile Leu Ala Ala Pro Asn
            180                 185                 190

Thr Phe Phe Glu Pro Arg Lys Glu Val Thr Met Thr Met Thr Ser Glu
        195                 200                 205

Glu Thr Lys Asp Glu Glu Ser Ser Leu Glu Thr Phe Val Ser Ala Leu
    210                 215                 220

Glu Ser Leu Leu Thr Ser Pro Glu Ser Thr Gln Glu Glu Arg Leu Phe
225                 230                 235                 240

Glu Leu Val Ser Asp Phe Asp Arg Lys Glu Leu Met Asn Pro Leu Ser
                245                 250                 255

Asp Ser Leu Ser Ser Ile Ser Ile Pro Leu Asn Ser Trp Ser Ala Cys
            260                 265                 270

His Arg Asp Leu Leu Glu Asp Ala Lys Asp Asp Ala Leu Pro Ala Glu
        275                 280                 285

Leu Leu Glu Ala Leu Asn Thr Leu Ser Glu Ala Lys Val Glu Thr Ile
    290                 295                 300

Cys His Arg Lys Glu Gly Gly Ser Ser Leu Ile Ala Arg Asn Glu Cys
305                 310                 315                 320

Leu Glu Val Glu Phe Asn Thr Ser Gln Thr Asn Glu Asp Cys Thr Gln
                325                 330                 335

Ile Ala Glu Thr Leu Gln Asp Pro Asn Pro Ser Gly Leu Gln Thr Leu
```

```
            340                 345                 350

Ala His Gln Asn Ile Thr Ser Cys Glu Pro Leu Ser Asn Lys Arg Asn
        355                 360                 365

Ser Asn Ser Val Thr Asn Ser Ser Asp Gln Glu Thr Ala Cys Val Leu
    370                 375                 380

Arg Arg Ser Ser Arg Leu Glu Lys Leu Lys Val Ser Arg Asp Ala Lys
385                 390                 395                 400

Tyr Ser Asp His Met Tyr Lys Met Pro Glu Lys Ile Leu Pro Lys Ile
                405                 410                 415

Leu Gly Cys Glu Asp Leu Thr Asn Asn Asn Ser Ser Ala Gln Asn Phe
            420                 425                 430

Arg Met Gln Asp Pro Ala Leu Met Ile Asp Gly Lys Glu Lys Asn Met
        435                 440                 445

His Ser Ala Arg Phe Lys Asn Gly Lys Gln Ile Arg Lys Asn Glu Gln
    450                 455                 460

Phe Ser Gly Lys Lys Glu Lys Met Lys Val Asn Lys Ile Ser Leu His
465                 470                 475                 480

Ser Ile Asn Arg Arg Asn Ile Phe Gly Glu Asn Leu Val Tyr Lys Ala
                485                 490                 495

Ala Leu His Asp Asp Ala Asp Leu Val His His Cys Ile Lys Lys Gly
            500                 505                 510

Gly Asn Val Asn Gln Pro Ser Tyr Ala Gly Trp Thr Ala Leu His Glu
        515                 520                 525

Ala Ser Val Gly Gly Phe Tyr Arg Thr Ala Ser Glu Leu Leu Lys Gly
    530                 535                 540

Gly Ala Asp Val Asn Ile Lys Gly Leu Tyr Gln Ile Thr Pro Leu His
545                 550                 555                 560

Asp Ala Val Met Asn Gly His Tyr Lys Val Ala Glu Leu Leu Leu Leu
                565                 570                 575
```

```
Asn Gly Ala Asp Pro Leu Phe Arg Asn Asp Asp Gly Lys Cys Ala Leu
            580                 585                 590

Asp Glu Ala Lys Asp Leu Cys Met Lys Arg Leu Leu Glu Arg Tyr Ile
        595                 600                 605

Pro Lys His Gln Lys Cys Leu Thr Ser Ala Gln Arg Ser Ser Ile Asp
    610                 615                 620

Pro Leu Asp Ile Glu Asp Val Tyr Gln His Lys Lys Pro Lys Phe Ser
625                 630                 635                 640

Ser Lys Ser His Ile Trp His Val Tyr Asn Glu Asn Ser Asn Arg Gln
                645                 650                 655

Lys Leu Glu His Val Lys Val Asn Lys Gly Ser Lys Ala Ser Leu Phe
            660                 665                 670

Ile Asn Lys Glu Asp Val Tyr Glu Tyr Tyr Gln Lys Asp Pro Lys Asn
        675                 680                 685

Thr Lys Phe Gly Lys Ser Lys His Lys Gln Ser Thr Leu Asp Gln Ile
    690                 695                 700

Tyr Ser Thr Gly Leu Arg Lys Gly Asn Leu His Asn Val Lys Asp Pro
705                 710                 715                 720

Asn Thr Asn Val Pro Lys Gly Ile Gly Arg Arg Lys Thr Gln His Lys
                725                 730                 735

Arg Thr Gln Val Asp Asp Val Asp Cys Asn Pro Arg Lys Ile Leu Ala
            740                 745                 750

Val Ser Pro Ser Arg Arg Ile Asn Arg Leu Val Thr Tyr Gln Gln His
        755                 760                 765

Ile Pro Glu Thr His Asn Asp Leu Pro Glu Glu Leu Cys Glu Pro Ser
    770                 775                 780

Ser Leu Thr Leu Ser Ser Leu Arg Asn Gly Leu Asp Ser Ser Thr Glu
785                 790                 795                 800
```

```
Ala Cys Ser Val Ser Lys Glu Lys His Ile Gln Asn Leu Asp Leu Ser
                805                 810                 815

Asp Ser Gln Glu Val Gln Cys Leu Glu Leu Glu Ser Val Asp Gln Thr
            820                 825                 830

Glu Ala Val Ser Phe Pro Gly Leu Leu Leu His Lys Glu Ile Lys Leu
        835                 840                 845

Pro Val Val Thr Thr Asp Lys Gln Pro His Thr Leu Gln Glu Gln His
    850                 855                 860

His Val Leu Tyr Lys Ser His Glu Asn Ser Asn Leu Val Pro Lys Asp
865                 870                 875                 880

Glu Arg Phe Asn Lys Trp Glu Asn Ser Phe Leu Ser Phe Val Lys Glu
                885                 890                 895

Asn Ser Asp Asn Asp Asp Asp Asp Asp Cys Ser Thr Ser Glu Lys Ala
            900                 905                 910

Ile Thr Ser Lys Lys Val Leu Cys Ser Thr Gly Gly Lys Lys His Tyr
        915                 920                 925

Asn Phe Lys Glu Asn Leu Thr Asn Lys Lys Glu Met Gly Phe Gln Gln
    930                 935                 940

Phe Leu Leu Ser Glu Asp His Leu Ser Gln Glu Asn Glu Leu Lys Ala
945                 950                 955                 960

Val Ser Leu Thr Thr Leu Pro Glu Gln Glu Ala Val Asn Phe Ser Tyr
                965                 970                 975

Ser Asp Asn Ala Val Ile Ser Glu His Val Ala Asn Tyr Glu Gln Cys
            980                 985                 990

Ile Phe Gly Pro Ser Phe Asp His  Ser Asn Gly Asn Pro  Glu Gln
Asn
        995                 1000                1005

Ser Leu  Ala Cys Met Arg Thr  Leu Leu Thr His Glu  Ala Ser Lys
    1010                1015                1020
```

Leu Thr Asn His Val Glu Leu Phe Lys Lys Pro Gln Asp Tyr Ile
1025 1030 1035

Pro Arg Ala Pro Thr Phe Leu Met Asn Gln Thr Asp Thr His Ile
1040 1045 1050

Val Glu Lys Met Ala Lys Asn Cys Asp Thr Glu Arg Asn Tyr Ile
1055 1060 1065

Asp Arg Asp Gln Lys Ile Ile Tyr Ser Asn Glu Pro Leu Ser Ile
1070 1075 1080

Val Ala His Ser Gln Val Ile Glu Thr Thr Lys Val Glu Lys Arg
1085 1090 1095

Arg Gln Asn His Leu Glu Ser Glu Thr Ile His Asn Ile Asp Ser
1100 1105 1110

His Ser Thr Asp Asn Met Ser Lys Glu Leu Ala Asn Ile Ser Lys
1115 1120 1125

Leu Ser Gln Arg Glu Lys Lys Glu Ile Ser His Lys Pro Gly Met
1130 1135 1140

Lys Ala Gly Arg Ile Asn Lys Arg Asn Ala Arg Gly Glu Ser Gln
1145 1150 1155

Leu His Leu Ala Val Arg Arg Gly Asn Leu Pro Leu Val Lys Ala
1160 1165 1170

Leu Ile Glu Ser Gly Ala Asp Val Asn Leu Asn Asp Asn Ala Gly
1175 1180 1185

Trp Thr Pro Leu His Glu Ala Ser Asn Glu Gly Ser Ile Asp Ile
1190 1195 1200

Ile Val Glu Leu Leu Lys Ala Gly Ala Lys Val Asn Cys Glu Asn
1205 1210 1215

Ile Asp Gly Ile Leu Pro Leu His Asp Ala Val Ala Asn Asn His
1220 1225 1230

```
Leu Lys  Ala Ala Glu Ile Leu  Leu Gln Asn Gly Ala  Asn Pro Asn
    1235                1240                1245

Gln Lys  Asp Gln Lys Gln Lys  Ser Ala Leu Asp Glu  Ala Asp Asp
    1250                1255                1260

Glu Lys  Met Lys Glu Leu Leu  Arg Ser Tyr Gly Ala  Ile Glu Thr
    1265                1270                1275

Val Asn  Arg Asp Glu Ser Asp  Ala Ile Val Asn Glu  Lys Ile Pro
    1280                1285                1290

Ala Val  Arg Ser Lys Arg His  Lys Gln Cys Phe Cys  Asp Asp Gly
    1295                1300                1305

Lys Thr  Ile Asp Ser Ser Ser  Leu Ser His Gln Glu  Arg Ser Arg
    1310                1315                1320

Glu Ser  Leu Ser Val His Gln  Thr Leu Ser Ala Ile  Leu Gln Asp
    1325                1330                1335

Ile Glu  Glu Lys Gln Glu Tyr  Leu Leu Glu Phe Glu  Ile Arg Asn
    1340                1345                1350

Pro Glu  Asp Ala Glu Gln Tyr  Ile Glu Lys Met Leu  Lys Ile Lys
    1355                1360                1365

Lys Ile  Met Asp Asn Val Leu  Ala Lys Gln Lys Ala  Glu Arg Asp
    1370                1375                1380

Asp Leu  Ala Lys Lys Tyr Arg  Val Ser Ile Glu Ser  Phe Lys His
    1385                1390                1395

Gly Ala  Leu Arg Glu Gln Leu  Ala Asn Leu Ala Ala  Arg Gln Lys
    1400                1405                1410

Ser Leu  Leu Val Val Ala Lys  Lys Gln Lys Lys Ile  Ser Leu Lys
    1415                1420                1425

Ile Gln  Asn Cys Arg Asn Val  Thr Ser Leu Pro Cys  Leu Ser Leu
    1430                1435                1440

Arg Lys  Leu Pro Pro Arg Ser  Glu Ile Ser Ser Glu  Lys Asp Ser
```

1445 1450 1455

Gln Glu Leu Thr Ser Leu Glu Asn Leu Glu His Pro Gln Ser Gly
1460 1465 1470

Ser Leu Ser Pro Val Ser Gly Ser Met Gln Glu Thr Gln Leu Ser
1475 1480 1485

Leu Glu Thr Trp Asn Tyr Ser Gln Asn Thr Asn Ile Cys Leu Asn
1490 1495 1500

Ser Glu Ala Val Arg Arg Gly Glu Phe Ser Gly Asn Asp Met Asn
1505 1510 1515

Ser Lys Gln Asn Gly Ser Asp Cys Thr Leu Asp Gly Phe Pro Lys
1520 1525 1530

Ser Arg His Ser Asp Gly Thr Glu Lys Asn Lys Leu Pro Ser Gln
1535 1540 1545

Pro Val Ala Phe Ile Gly Gln Thr Glu Tyr Ser Gln Lys Glu Asn
1550 1555 1560

Asp Leu Thr Glu Ala Thr Asp Lys Asp His Glu Phe Tyr Val Ser
1565 1570 1575

Ser Pro Val Ile Gly Lys Leu Asn Ile Ser Glu Thr Ala Ser Val
1580 1585 1590

Leu Ala Glu Asn Ala Ala His Pro Ser Asn Ile Ile Cys Asp Gln
1595 1600 1605

Asp Leu Ser Asn Tyr Asp Pro Lys Arg Gly Asn Arg Lys Thr Ser
1610 1615 1620

Ser Gln Gln Ser Pro Thr Gly Ala Ser Glu Ser Leu Ala His Gln
1625 1630 1635

Gly Ile Ala Val Leu Gly Ser Asp Thr Val His Gln Met Lys Pro
1640 1645 1650

Tyr Leu Lys Lys Ser Val Ser Val Val Pro Cys Ala Asp Asp Ser
1655 1660 1665

```
Gln Ile  Ser Ser Ser Ser Gly  Ser Gly Gln Gln Asp  Thr Ile Lys
    1670                 1675                 1680

Lys Ala  Leu Asn Tyr Ser Thr  Ala Pro Lys Lys Lys  Cys Ile Gln
    1685                 1690                 1695

Ile Lys  Asp Leu Ile Leu Leu  Gly Arg Ile Asn Pro  Gly Asn Asn
    1700                 1705                 1710

Ile Leu  Glu Phe Lys Thr Gln  Glu Thr Thr His Lys  Ala Ser Ile
    1715                 1720                 1725

Leu Leu  Asn Gly Lys Leu Lys  Val Glu Ser Gly Gln  Ile Tyr Lys
    1730                 1735                 1740

Asn Pro  Val Thr Trp Leu Lys  Asp Leu Leu Gly Gly  Asn Ser Tyr
    1745                 1750                 1755

Val Thr  Trp Asn Tyr Ala Trp  Ser Lys Val Thr Tyr  Leu Gly Lys
    1760                 1765                 1770

Glu Leu  Leu Arg Tyr Val Ser  Glu Asp Ala Pro Ile  Leu Pro Glu
    1775                 1780                 1785

Pro Asn  Ser Val Pro Gln Gln  Tyr Gln Pro Cys Leu  Pro Glu Val
    1790                 1795                 1800

Ala Cys  Leu Asp Asp Pro Val  Gln Glu Pro Asn Lys  Ser Met Phe
    1805                 1810                 1815

Glu Lys  Thr Lys Phe Gly Gln  Gly Thr Ser Arg Glu  Ser Met Gln
    1820                 1825                 1830

Ser Ser  Pro Arg Tyr Leu Gln  Ile Asn Glu Ile Leu  Leu Ile Ser
    1835                 1840                 1845

Asp Gln  Glu Phe Leu Pro Cys  His Ile Met Asp Gln  His Trp Lys
    1850                 1855                 1860

Phe Cys  Val Glu Cys Glu Glu  Leu Thr Pro
    1865                 1870
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<210> 5227
<211> 1930
<212> PRT
<213> Homo sapiens

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<220>
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<220>
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<220>
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<400> 5227

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Met Glu Glu Gly Val Gln Ala Pro Asp Trp Asp Ser Asp Glu Thr Val
1               5                  10                  15

Ile Glu Gly Ser Val Thr Glu Ser Asp Leu Glu Glu Lys Glu Leu Pro
            20                  25                  30

Trp Arg Arg Leu Leu Phe Asp Gln Asp Ala Ser Leu Lys Ser Glu Phe
        35                  40                  45

Ser Leu His Pro Asp Thr Arg Gly Met Cys Lys Gly Met Pro Ser Pro
    50                  55                  60

Glu Ile Gln Leu Gly Phe Lys Leu Arg Glu Asp Leu Gln Glu Gln Met
65                  70                  75                  80

Asn Lys Asn Lys Met Met Pro Val Leu Ser Glu Asp Thr Ile Leu Gln
                85                  90                  95

Ser Gln Asp Glu Thr Glu Arg Asn Gln Ala Leu Leu Gln Thr Arg Lys
            100                 105                 110

Asn Cys Ser Met Phe Ile Gly Ser Phe Arg Gln Ser Gly Leu Ser Leu
        115                 120                 125

Asn His Gln Asn Ile Glu Gly Pro Glu Ala Glu Ser Pro Glu Val Leu
```

```
    130                 135                 140

Pro His Ile Glu Lys Glu Leu Ser Glu Gly Arg Asp Ser Pro Glu Val
145                 150                 155                 160

Ser Leu Leu Ser Gly Thr Ala Ile Thr Val Ser Asp Thr Val Ala Val
                165                 170                 175

Lys Glu Thr Ser Leu Val Glu Pro Glu Lys Ile Leu Ala Ala Pro Asn
            180                 185                 190

Thr Phe Phe Glu Pro Arg Lys Glu Val Thr Met Thr Met Thr Ser Glu
        195                 200                 205

Glu Thr Lys Asp Glu Glu Ser Ser Leu Glu Thr Phe Val Ser Ala Leu
    210                 215                 220

Glu Ser Leu Leu Thr Ser Pro Glu Ser Thr Gln Glu Glu Arg Leu Phe
225                 230                 235                 240

Glu Leu Val Ser Asp Phe Asp Arg Lys Glu Leu Met Asn Pro Leu Ser
                245                 250                 255

Asp Ser Leu Ser Ser Ile Ser Ile Pro Leu Asn Ser Trp Ser Ala Cys
            260                 265                 270

His Arg Asp Leu Leu Glu Asp Ala Lys Asp Asp Ala Leu Pro Ala Glu
        275                 280                 285

Leu Leu Glu Ala Leu Asn Thr Leu Ser Glu Ala Lys Val Glu Thr Ile
    290                 295                 300

Cys His Arg Lys Glu Gly Gly Ser Ser Leu Ile Ala Arg Asn Glu Cys
305                 310                 315                 320

Leu Glu Val Glu Phe Asn Thr Ser Gln Thr Asn Glu Asp Cys Thr Gln
                325                 330                 335

Ile Ala Glu Thr Leu Gln Asp Pro Asn Pro Ser Gly Leu Gln Thr Leu
            340                 345                 350

Ala His Gln Asn Ile Thr Ser Cys Glu Pro Leu Ser Asn Lys Arg Asn
        355                 360                 365
```

```
Ser Asn Ser Val Thr Asn Ser Ser Asp Gln Glu Thr Ala Cys Val Leu
    370                 375                 380

Arg Arg Ser Ser Arg Leu Glu Lys Leu Lys Val Ser Arg Asp Ala Lys
385                 390                 395                 400

Tyr Ser Asp His Met Tyr Lys Met Pro Glu Lys Ile Leu Pro Lys Ile
                405                 410                 415

Leu Gly Cys Glu Asp Leu Thr Asn Asn Asn Ser Ser Ala Gln Asn Phe
            420                 425                 430

Arg Met Gln Asp Pro Ala Leu Met Ile Asp Gly Lys Glu Lys Asn Met
        435                 440                 445

His Ser Ala Arg Phe Lys Asn Gly Lys Gln Ile Arg Lys Asn Glu Gln
    450                 455                 460

Phe Ser Gly Lys Lys Glu Lys Met Lys Val Asn Lys Ile Ser Leu His
465                 470                 475                 480

Ser Ile Asn Arg Arg Asn Ile Phe Gly Glu Asn Leu Val Tyr Lys Ala
                485                 490                 495

Ala Leu His Asp Asp Ala Asp Leu Val His His Cys Ile Lys Lys Gly
            500                 505                 510

Gly Asn Val Asn Gln Pro Ser Tyr Ala Gly Trp Thr Ala Leu His Glu
        515                 520                 525

Ala Ser Val Gly Gly Phe Tyr Arg Thr Ala Ser Glu Leu Leu Lys Gly
    530                 535                 540

Gly Ala Asp Val Asn Ile Lys Gly Leu Tyr Gln Ile Thr Pro Leu His
545                 550                 555                 560

Asp Ala Val Met Asn Gly His Tyr Lys Val Ala Glu Leu Leu Leu Leu
                565                 570                 575

Asn Gly Ala Asp Pro Leu Phe Arg Asn Asp Asp Gly Lys Cys Ala Leu
            580                 585                 590
```

```
Asp Glu Ala Lys Asp Leu Cys Met Lys Arg Leu Leu Glu Arg Tyr Ile
        595                 600                 605

Pro Lys His Gln Lys Cys Leu Thr Ser Ala Gln Arg Ser Ser Ile Asp
    610                 615                 620

Pro Leu Asp Ile Glu Asp Val Tyr Gln His Lys Lys Pro Lys Phe Ser
625                 630                 635                 640

Ser Lys Ser His Ile Trp His Val Tyr Asn Glu Asn Ser Asn Arg Gln
                645                 650                 655

Lys Leu Glu His Val Lys Val Asn Lys Gly Ser Lys Ala Ser Leu Phe
            660                 665                 670

Ile Asn Lys Glu Asp Val Tyr Glu Tyr Tyr Gln Lys Asp Pro Lys Asn
        675                 680                 685

Thr Lys Phe Gly Lys Ser Lys His Lys Gln Ser Thr Leu Asp Gln Ile
    690                 695                 700

Tyr Ser Thr Gly Leu Arg Lys Gly Asn Leu His Asn Val Lys Asp Pro
705                 710                 715                 720

Asn Thr Asn Val Pro Lys Gly Ile Gly Arg Arg Lys Thr Gln His Lys
                725                 730                 735

Arg Thr Gln Val Asp Asp Val Asp Cys Asn Pro Arg Lys Ile Leu Ala
            740                 745                 750

Val Ser Pro Ser Arg Arg Ile Asn Arg Leu Val Thr Tyr Gln Gln His
        755                 760                 765

Ile Pro Glu Thr His Asn Asp Leu Pro Glu Glu Leu Cys Glu Pro Ser
    770                 775                 780

Ser Leu Thr Leu Ser Ser Leu Arg Asn Gly Leu Asp Ser Ser Thr Glu
785                 790                 795                 800

Ala Cys Ser Val Ser Lys Glu Lys His Ile Gln Asn Leu Asp Leu Ser
                805                 810                 815
```

```
Asp Ser Gln Glu Val Gln Cys Leu Glu Leu Glu Ser Val Asp Gln Thr
            820                 825                 830

Glu Ala Val Ser Phe Pro Gly Leu Leu Leu His Lys Glu Ile Lys Leu
        835                 840                 845

Pro Val Val Thr Thr Asp Lys Gln Pro His Thr Leu Gln Glu Gln His
    850                 855                 860

His Val Leu Tyr Lys Ser His Glu Asn Ser Asn Leu Val Pro Lys Asp
865                 870                 875                 880

Glu Arg Phe Asn Lys Trp Glu Asn Ser Phe Leu Ser Phe Val Lys Glu
                885                 890                 895

Asn Ser Asp Asn Asp Asp Asp Asp Asp Cys Ser Thr Ser Glu Lys Ala
            900                 905                 910

Ile Thr Ser Lys Lys Val Leu Cys Ser Thr Gly Gly Lys Lys His Tyr
        915                 920                 925

Asn Phe Lys Glu Asn Leu Thr Asn Lys Lys Glu Met Gly Phe Gln Gln
    930                 935                 940

Phe Leu Leu Ser Glu Asp His Leu Ser Gln Glu Asn Glu Leu Lys Ala
945                 950                 955                 960

Val Ser Leu Thr Thr Leu Pro Glu Gln Glu Ala Val Asn Phe Ser Tyr
                965                 970                 975

Ser Asp Asn Ala Val Ile Ser Glu His Val Ala Asn Tyr Glu Gln Cys
            980                 985                 990

Ile Phe Gly Pro Ser Phe Asp His  Ser Asn Gly Asn Pro  Glu Gln
Asn
        995                 1000                1005

Ser Leu  Ala Cys Met Arg Thr  Leu Leu Thr His Glu  Ala Ser Lys
    1010                1015                1020

Leu Thr  Asn His Val Glu Leu  Phe Lys Lys Pro Gln  Asp Tyr Ile
    1025                1030                1035
```

```
Pro Arg  Ala Pro Thr Phe Leu  Met Asn Gln Thr Asp  Thr His Ile
    1040                1045                1050

Val Glu  Lys Met Ala Lys Asn  Cys Asp Thr Glu Arg  Asn Tyr Ile
    1055                1060                1065

Asp Arg  Asp Gln Lys Ile Ile  Tyr Ser Asn Glu Pro  Leu Ser Ile
    1070                1075                1080

Val Ala  His Ser Gln Val Ile  Glu Thr Thr Lys Val  Glu Lys Arg
    1085                1090                1095

Arg Gln  Asn His Leu Glu Ser  Glu Thr Ile His Asn  Ile Asp Ser
    1100                1105                1110

His Ser  Thr Asp Asn Met Ser  Lys Glu Leu Ala Asn  Ile Ser Lys
    1115                1120                1125

Leu Ser  Gln Arg Glu Lys Lys  Glu Ile Ser His Lys  Pro Asp Glu
    1130                1135                1140

Glu Leu  Thr Asn Asn Ile Ser  Gly Asp Glu Ile Thr  Ile Arg Asn
    1145                1150                1155

Cys Glu  Glu Ile Lys Glu Lys  Thr Glu Ser Glu Ile  His Met Pro
    1160                1165                1170

Thr Asn  Ser Gln Glu His Lys  Thr Val Gln Asn Phe  Arg Lys Arg
    1175                1180                1185

Gln Ser  Phe Leu Lys Thr Thr  Cys Asn Leu Gly Met  Lys Ala Gly
    1190                1195                1200

Arg Ile  Asn Lys Arg Asn Ala  Arg Gly Glu Ser Gln  Leu His Leu
    1205                1210                1215

Ala Val  Arg Arg Gly Asn Leu  Pro Leu Val Lys Ala  Leu Ile Glu
    1220                1225                1230

Ser Gly  Ala Asp Val Asn Leu  Asn Asp Asn Ala Gly  Trp Thr Pro
    1235                1240                1245

Leu His  Glu Ala Ser Asn Glu  Gly Ser Ile Asp Ile  Ile Val Glu
```

1250 1255 1260

Leu Leu Lys Ala Gly Ala Lys Val Asn Cys Glu Asn Ile Asp Gly
1265 1270 1275

Ile Leu Pro Leu His Asp Ala Val Ala Asn Asn His Leu Lys Ala
1280 1285 1290

Ala Glu Ile Leu Leu Gln Asn Gly Ala Asn Pro Asn Gln Lys Asp
1295 1300 1305

Gln Lys Gln Lys Ser Ala Leu Asp Glu Ala Asp Asp Glu Lys Met
1310 1315 1320

Lys Glu Leu Leu Arg Ser Tyr Gly Ala Ile Glu Thr Val Asn Arg
1325 1330 1335

Asp Glu Ser Asp Ala Ile Val Asn Glu Lys Ile Pro Ala Val Arg
1340 1345 1350

Ser Lys Arg His Lys Gln Cys Phe Cys Asp Asp Gly Lys Thr Ile
1355 1360 1365

Asp Ser Ser Ser Ser Leu Ser His Gln Glu Arg Ser Arg Glu Ser Leu
1370 1375 1380

Ser Val His Gln Thr Leu Ser Ala Ile Leu Gln Asp Ile Glu Glu
1385 1390 1395

Lys Gln Glu Tyr Leu Leu Glu Phe Glu Ile Arg Asn Pro Glu Asp
1400 1405 1410

Ala Glu Gln Tyr Ile Glu Lys Met Leu Lys Ile Lys Lys Ile Met
1415 1420 1425

Asp Asn Val Leu Ala Lys Gln Lys Ala Glu Arg Asp Asp Leu Ala
1430 1435 1440

Lys Lys Tyr Arg Val Ser Ile Glu Ser Phe Lys His Gly Ala Leu
1445 1450 1455

Arg Glu Gln Leu Ala Asn Leu Ala Ala Arg Gln Lys Ser Leu Leu
1460 1465 1470

```
Val Val  Ala Lys Lys Gln Lys  Lys Ile Ser Leu Lys  Ile Gln Asn
    1475                1480                1485

Cys Arg  Asn Val Thr Ser Leu  Pro Cys Leu Ser Leu  Arg Lys Leu
    1490                1495                1500

Pro Pro  Arg Ser Glu Ile Ser  Ser Glu Lys Asp Ser  Gln Glu Leu
    1505                1510                1515

Thr Ser  Leu Glu Asn Leu Glu  His Pro Gln Ser Gly  Ser Leu Ser
    1520                1525                1530

Pro Val  Ser Gly Ser Met Gln  Glu Thr Gln Leu Ser  Leu Glu Thr
    1535                1540                1545

Trp Asn  Tyr Ser Gln Asn Thr  Asn Ile Cys Leu Asn  Ser Glu Ala
    1550                1555                1560

Val Arg  Arg Gly Glu Phe Ser  Gly Asn Asp Met Asn  Ser Lys Gln
    1565                1570                1575

Asn Gly  Ser Asp Cys Thr Leu  Asp Gly Phe Pro Lys  Ser Arg His
    1580                1585                1590

Ser Asp  Gly Thr Glu Lys Asn  Lys Leu Pro Ser Gln  Pro Val Ala
    1595                1600                1605

Phe Ile  Gly Gln Thr Glu Tyr  Ser Gln Lys Glu Asn  Asp Leu Thr
    1610                1615                1620

Glu Ala  Thr Asp Lys Asp His  Glu Phe Tyr Val Ser  Ser Pro Val
    1625                1630                1635

Ile Gly  Lys Leu Asn Ile Ser  Glu Thr Ala Ser Val  Leu Ala Glu
    1640                1645                1650

Asn Ala  Ala His Pro Ser Asn  Ile Ile Cys Asp Gln  Asp Leu Ser
    1655                1660                1665

Asn Tyr  Asp Pro Lys Arg Gly  Asn Arg Lys Thr Ser  Ser Gln Gln
    1670                1675                1680
```

```
Ser Pro  Thr Gly Ala Ser Glu  Ser Leu Ala His Gln  Gly Ile Ala
    1685                1690                1695

Val Leu  Gly Ser Asp Thr Val  His Gln Met Lys Pro  Tyr Leu Lys
    1700                1705                1710

Lys Ser  Val Ser Val Val Pro  Cys Ala Asp Asp Ser  Gln Ile Ser
    1715                1720                1725

Ser Ser  Ser Gly Ser Gly Gln  Gln Asp Thr Ile Lys  Lys Ala Leu
    1730                1735                1740

Asn Tyr  Ser Thr Ala Pro Lys  Lys Lys Cys Ile Gln  Ile Lys Asp
    1745                1750                1755

Leu Ile  Leu Leu Gly Arg Ile  Asn Pro Gly Asn Asn  Ile Leu Glu
    1760                1765                1770

Phe Lys  Thr Gln Glu Thr Thr  His Lys Ala Ser Ile  Leu Leu Asn
    1775                1780                1785

Gly Lys  Leu Lys Val Glu Ser  Gly Gln Ile Tyr Lys  Asn Pro Val
    1790                1795                1800

Thr Trp  Leu Lys Asp Leu Leu  Gly Gly Asn Ser Tyr  Val Thr Trp
    1805                1810                1815

Asn Tyr  Ala Trp Ser Lys Val  Thr Tyr Leu Gly Lys  Glu Leu Leu
    1820                1825                1830

Arg Tyr  Val Ser Glu Asp Ala  Pro Ile Leu Pro Glu  Pro Asn Ser
    1835                1840                1845

Val Pro  Gln Gln Tyr Gln Pro  Cys Leu Pro Glu Val  Ala Cys Leu
    1850                1855                1860

Asp Asp  Pro Val Gln Glu Pro  Asn Lys Ser Met Phe  Glu Lys Thr
    1865                1870                1875

Lys Phe  Gly Gln Gly Thr Ser  Arg Glu Ser Met Gln  Ser Ser Pro
    1880                1885                1890
```

```
Arg Tyr  Leu Gln Ile Asn Glu  Ile Leu Leu Ile Ser  Asp Gln Glu
    1895                1900                1905


Phe Leu  Pro Cys His Ile Met  Asp Gln His Trp Lys  Phe Cys Val
    1910                1915                1920


Glu Cys  Glu Glu Leu Thr Pro
    1925                1930


<210> 5228
<211> 452
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<220>
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      ankyrin repeat domain 33; "

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<220>
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<400> 5228
Met Lys Val Gln Pro Ser Val Thr Cys Val Ala Ser Trp Gly Gly Ile
1               5                  10                  15


Val His Leu Glu Ala Phe Gly Asp Pro Val Ile Val Leu Arg Gly Ala
            20                  25                  30


Trp Ala Val Pro Arg Val Asp Cys Leu Ile Asp Thr Leu Arg Thr Pro
        35                  40                  45


Asn Ala Ser Cys Met Arg Lys Gly Thr His Leu Leu Val Pro Cys Leu
    50                  55                  60


Glu Glu Glu Glu Leu Ala Leu His Arg Arg Arg Leu Asp Met Ser Glu
65                  70                  75                  80
```

```
Ala Leu Pro Cys Pro Gly Lys Glu Thr Pro Thr Pro Gly Cys Arg Leu
                85                  90                  95

Gly Ala Leu Tyr Trp Ala Cys Val His Asn Asp Pro Thr Gln Leu Gln
            100                 105                 110

Ala Ile Leu Asp Gly Gly Val Ser Pro Glu Glu Ala Thr Gln Val Asp
        115                 120                 125

Ser Asn Gly Arg Thr Gly Leu Met Val Ala Cys Tyr His Gly Phe Gln
    130                 135                 140

Ser Val Val Ala Leu Leu Ser His Cys Pro Phe Leu Asp Val Asn Gln
145                 150                 155                 160

Gln Asp Lys Gly Gly Asp Thr Ala Leu Met Leu Ala Ala Gln Ala Gly
                165                 170                 175

His Val Pro Leu Val Ser Leu Leu Leu Asn Tyr Tyr Val Gly Leu Asp
            180                 185                 190

Leu Glu Arg Arg Asp Gln Arg Gly Leu Thr Ala Leu Met Lys Ala Ala
        195                 200                 205

Met Arg Asn Arg Cys Ala Asp Leu Thr Ala Val Asp Pro Val Arg Gly
    210                 215                 220

Lys Thr Ala Leu Glu Trp Ala Val Leu Thr Asp Ser Phe Asp Thr Val
225                 230                 235                 240

Trp Arg Ile Arg Gln Leu Leu Arg Arg Pro Gln Val Glu Gln Leu Ser
                245                 250                 255

Gln His Tyr Lys Pro Glu Trp Pro Ala Leu Ser Gly Leu Val Ala Gln
            260                 265                 270

Ala Gln Ala Gln Ala Gln Val Ala Pro Ser Leu Leu Glu Arg Leu Gln
        275                 280                 285

Ala Thr Leu Ser Leu Pro Phe Ala Pro Ser Pro Gln Glu Gly Gly Val
    290                 295                 300
```

```
Leu Asp His Leu Val Thr Ala Thr Thr Ser Leu Ala Ser Pro Phe Val
305                 310                 315                 320

Thr Thr Ala Cys His Thr Leu Cys Pro Asp His Pro Pro Ser Leu Gly
                325                 330                 335

Thr Arg Ser Lys Ser Val Pro Glu Leu Leu Gly Thr Ala Pro Pro Pro
            340                 345                 350

Pro Leu Val Pro Gln Ser Pro Pro Gly Ser Pro Gln Arg Ser Pro Trp
        355                 360                 365

Val Phe Val Pro Tyr Gln Ser Pro Gln Gly Ile Leu Ser Lys Cys Leu
    370                 375                 380

Gln Trp Leu Gln Pro Arg Asp Ser Thr Ser Pro Arg Pro Gln Val Pro
385                 390                 395                 400

Lys Ile Leu Leu Ser Lys Ala Ser Ser Ser Ser His Gln Cys Gln Pro
                405                 410                 415

Lys Pro Ser Pro Ser Gly His Gln Ser Leu Ala Leu Pro Leu Trp Arg
            420                 425                 430

Tyr Gln Glu Leu Arg Ile Glu Lys Arg Lys Gln Glu Glu Glu Ala Arg
        435                 440                 445

Met Ala Gln Lys
    450


<210> 5229
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ankyrin repeat domain 33; "

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Met Val Ala Cys Tyr His Gly Phe Gln Ser Val Val Ala Leu Leu Ser
1   5   10   15

His Cys Pro Phe Leu Asp Val Asn Gln Gln Asp Lys Gly Gly Asp Thr
            20   25   30

Ala Leu Met Leu Ala Ala Gln Ala Gly His Val Pro Leu Val Ser Leu
        35   40   45

Leu Leu Asn Tyr Tyr Val Gly Leu Asp Leu Glu Arg Arg Asp Gln Arg
    50   55   60

Gly Leu Thr Ala Leu Met Lys Ala Ala Met Arg Asn Arg Cys Glu Cys
65   70   75   80

Val Ala Thr Leu Leu Met Ala Gly Ala Asp Leu Thr Ala Val Asp Pro
                85   90   95

Val Arg Gly Lys Thr Ala Leu Glu Trp Ala Val Leu Thr Asp Ser Phe
            100   105   110

Asp Thr Val Trp Arg Ile Arg Gln Leu Leu Arg Arg Pro Gln Val Glu
        115   120   125

Gln Leu Ser Gln His Tyr Lys Pro Glu Trp Pro Ala Leu Ser Gly Leu
    130   135   140

Val Ala Gln Ala Gln Ala Gln Ala Gln Val Ala Pro Ser Leu Leu Glu
145   150   155   160

Arg Leu Gln Ala Thr Leu Ser Leu Pro Phe Ala Pro Ser Pro Gln Glu
                165   170   175

Gly Gly Val Leu Asp His Leu Val Thr Ala Thr Thr Ser Leu Ala Ser
            180   185   190

```
Pro Phe Val Thr Thr Ala Cys His Thr Leu Cys Pro Asp His Pro Pro
        195                 200                 205

Ser Leu Gly Thr Arg Ser Lys Ser Val Pro Glu Leu Leu Val Pro Ala
    210                 215                 220

Glu Ala Gln Ser Phe Arg Thr Pro Lys Ser Gly Pro Ser Ser Leu Ala
225                 230                 235                 240

Ile Pro Gly Ala Gln Asp Arg Glu Glu Glu Thr Gly Gly Gly Gly Gln
                245                 250                 255

Asn Gly Thr Glu Val Gly Glu Asp Gly Ile Gly Gln Ala Gly Asn Arg
            260                 265                 270
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<210> 5230
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<213> Homo sapiens

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<220>
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<223> /note="ENSP ID: ENSP00000448116"

<400> 5230

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Met Lys Val Gln Pro Ser Val Thr Cys Val Ala Ser Trp Gly Gly Ile
1               5                   10                  15

Val His Leu Glu Ala Phe Gly Asp Pro Val Ile Val Leu Arg Gly Ala
            20                  25                  30

Trp Ala Val Pro Arg Val Asp Cys Leu Ile Asp Thr Leu Arg Thr Pro
        35                  40                  45
```

```
Asn Ala Ser Cys Met Arg Lys Gly Thr His Leu Leu Val Pro Cys Leu
    50                  55                  60

Glu Glu Glu Glu Leu Ala Leu His Arg Arg Arg Leu Asp Met Ser Glu
65                  70                  75                  80

Ala Leu Pro Cys Pro Gly Lys Glu Thr Pro Thr Pro Gly Cys Arg Leu
                85                  90                  95

Gly Ala Leu Tyr Trp Ala Cys Val His Asn Asp Pro Thr Gln Leu Gln
            100                 105                 110

Ala Ile Leu Asp Gly Gly Val Ser Pro Glu Glu Ala Thr Gln Val Asp
        115                 120                 125

Ser Asn Gly Arg Ala Thr Cys Leu
    130                 135


<210> 5231
<211> 494
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1136; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD33B; "

<220>
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<223> /note="Gene Name:
      ankyrin repeat domain 33B; "

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<223> /note="Uniprot ID:  A6NCL7; "

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<223> /note="ENSP ID: ENSP00000296657"

<400> 5231
Met Val Leu Leu Ala Gly Thr Gly Pro Glu Gly Gly Gly Ala Arg Cys
1               5                   10                  15

Met Thr Pro Pro Pro Pro Ser Pro Pro Arg Gly Ala Gln Val Glu Glu
            20                  25                  30
```

```
Asp Pro Ala Asp Tyr Glu Glu Phe Glu Asp Phe Ser Ser Leu Pro Asp
        35                  40                  45

Thr Arg Ser Ile Ala Ser Asp Asp Ser Phe Tyr Pro Phe Glu Asp Glu
    50                  55                  60

Glu Glu His Gly Val Glu Ser Ala Glu Ser Val Pro Glu Gly Val Pro
65                  70                  75                  80

Glu Ser Val Pro Glu Thr Ala Thr Leu Leu Arg Ala Ala Cys Ala Asn
                85                  90                  95

Asn Val Gly Leu Leu Arg Thr Leu Val Arg Arg Gly Val Ser Val Glu
            100                 105                 110

Glu Ala Gln Glu Thr Asp Arg Asn Gly Arg Thr Gly Leu Ile Val Ala
        115                 120                 125

Cys Tyr His Gly Phe Val Asp Thr Val Val Ala Leu Ala Glu Cys Pro
    130                 135                 140

His Val Asp Val Asn Trp Gln Asp Ser Glu Gly Asn Thr Ala Leu Ile
145                 150                 155                 160

Thr Ala Ala Gln Ala Gly His Ala Ile Ile Thr Asn Tyr Leu Leu Asn
                165                 170                 175

Tyr Phe Pro Gly Leu Asp Leu Glu Arg Arg Asn Ala Phe Gly Phe Thr
            180                 185                 190

Ala Leu Met Lys Ala Ala Met Gln Gly Arg Thr Asp Cys Ile Arg Ala
        195                 200                 205

Leu Met Leu Ala Gly Ala Asp Val His Ala Arg Asp Pro Arg Arg Gly
    210                 215                 220

Met Ser Pro Gln Glu Trp Ala Thr Tyr Thr Gly Arg Val Asp Ala Val
225                 230                 235                 240

Arg Leu Met Gln Arg Leu Leu Glu Arg Pro Cys Pro Glu Gln Phe Trp
                245                 250                 255
```

```
Glu Lys Tyr Arg Pro Glu Leu Pro Pro Pro Pro Glu Ala Ala Arg Lys
            260                 265                 270

Pro Ala Gly Ser Lys Asn Cys Leu Gln Arg Leu Thr Asp Cys Val Leu
        275                 280                 285

Ser Val Leu Thr Pro Arg Ser Val Arg Gly Pro Glu Asp Gly Gly Val
    290                 295                 300

Leu Asp His Met Val Arg Met Thr Thr Ser Leu Tyr Ser Pro Ala Val
305                 310                 315                 320

Ala Ile Val Cys Gln Thr Val Cys Pro Glu Ser Pro Pro Ser Val Gly
                325                 330                 335

Lys Arg Arg Leu Ala Val Gln Glu Ile Leu Ala Ala Arg Ala Ala Arg
            340                 345                 350

Gly Pro Gln Ala Gln Glu Glu Asp Glu Val Gly Gly Ala Gly Gln Arg
        355                 360                 365

Gly Arg Thr Gly Gln Glu Asp Ala Asp Ser Arg Glu Gly Ser Pro Arg
    370                 375                 380

Ala Gly Leu Pro Pro Ala Leu Gly Ser Arg Gly Pro Ala Ala Pro Ala
385                 390                 395                 400

Pro Arg Lys Ala Ser Leu Leu Pro Leu Gln Arg Leu Arg Arg Arg Ser
                405                 410                 415

Val Arg Pro Gly Val Val Val Pro Arg Val Arg Val Ser Lys Ala Pro
            420                 425                 430

Ala Pro Thr Phe Gln Pro Glu Arg Pro Ala Arg Lys Gly Ser Thr Lys
        435                 440                 445

Asp Ser Gly His Leu Gln Ile Pro Lys Trp Arg Tyr Lys Glu Ala Lys
    450                 455                 460

Glu Glu Lys Arg Lys Ala Glu Glu Ala Glu Lys Lys Arg Gln Ala Glu
465                 470                 475                 480
```

Ala Gln Lys Glu Arg Arg Thr Ala Pro Trp Lys Lys Arg Thr
485 490

<210> 5232
<211> 198
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1136; "

<220>
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<223> /note="Gene Symbol: ANKRD33B; "

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<223> /note="Gene Name:
ankyrin repeat domain 33B; "

<220>
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<400> 5232
Met Val Leu Leu Ala Gly Thr Gly Pro Glu Gly Gly Gly Ala Arg Cys
1 5 10 15

Met Thr Pro Pro Pro Pro Ser Pro Pro Arg Gly Ala Gln Val Glu Glu
20 25 30

Asp Pro Ala Asp Tyr Glu Glu Phe Glu Asp Phe Ser Ser Leu Pro Asp
35 40 45

Thr Arg Ser Ile Ala Ser Asp Asp Ser Phe Tyr Pro Phe Glu Asp Glu
50 55 60

Glu Glu His Gly Val Glu Ser Ala Glu Ser Val Pro Glu Gly Val Pro
65 70 75 80

Glu Ser Val Pro Glu Thr Ala Thr Leu Leu Arg Ala Ala Cys Ala Asn
85 90 95

Asn Val Gly Leu Leu Arg Thr Leu Val Arg Arg Gly Val Ser Val Glu
100 105 110

Glu Ala Gln Glu Thr Asp Arg Asn Gly Arg Thr Gly Leu Ile Val Ala
115 120 125

```
Cys Tyr His Gly Phe Val Asp Thr Val Val Ala Leu Ala Glu Cys Pro
    130                 135                 140

His Val Asp Val Asn Trp Gln Asp Ser Glu Gly Asn Thr Ala Leu Ile
145                 150                 155                 160

Thr Ala Ala Gln Ala Gly Ala Ala Pro Val Pro Met Gly Ile Val Ser
                165                 170                 175

Leu Asp Thr Gly Ser Gln Ser Cys Ala Ser Gly Val Ser Ile Thr Trp
            180                 185                 190

Ala Gly Ser Cys Glu His
        195


<210> 5233
<211> 496
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1137; "

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<223> /note="Gene Symbol: ANKRD34A; "

<220>
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<223> /note="Gene Name:
      ankyrin repeat domain 34A; "

<220>
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<223> /note="Uniprot ID:  Q69YU3; "

<220>
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<223> /note="ENSP ID: ENSP00000475189"

<400> 5233
Met Leu His Thr Glu Gly His Ala Leu Leu Arg Ala Val Gly Gln Gly
1               5                   10                  15

Lys Leu Arg Leu Ala Arg Leu Leu Leu Glu Gly Gly Ala Tyr Val Asn
            20                  25                  30
```

```
Glu Gly Asp Ala Gln Gly Glu Thr Ala Leu Met Ala Ala Cys Arg Ala
        35                  40                  45

Arg Tyr Asp Asp Pro Gln Asn Lys Ala Arg Met Val Arg Tyr Leu Leu
    50                  55                  60

Glu Gln Gly Ala Asp Pro Asn Ile Ala Asp Arg Leu Gly Arg Thr Ala
65                  70                  75                  80

Leu Met His Ala Cys Ala Gly Gly Gly Gly Ala Ala Val Ala Ser Leu
                85                  90                  95

Leu Leu Ala His Gly Ala Asp Pro Ser Val Arg Asp His Ala Gly Ala
            100                 105                 110

Ser Ala Leu Val His Ala Leu Asp Arg Gly Asp Arg Glu Thr Leu Ala
        115                 120                 125

Thr Leu Leu Asp Ala Cys Lys Ala Lys Gly Thr Glu Val Ile Ile Ile
    130                 135                 140

Thr Thr Asp Thr Ser Pro Ser Gly Thr Lys Lys Thr Arg Gln Tyr Leu
145                 150                 155                 160

Asn Ser Pro Pro Ser Pro Gly Val Glu Asp Pro Ala Pro Ala Ser Pro
                165                 170                 175

Ser Pro Gly Phe Cys Thr Ser Pro Ser Glu Ile Gln Leu Gln Thr Ala
            180                 185                 190

Gly Gly Gly Gly Arg Gly Met Leu Ser Pro Arg Ala Gln Glu Glu Glu
        195                 200                 205

Glu Lys Arg Asp Val Phe Glu Phe Pro Leu Pro Lys Pro Pro Asp Asp
    210                 215                 220

Pro Ser Pro Ser Glu Pro Leu Pro Lys Pro Pro Arg His Pro Pro Lys
225                 230                 235                 240

Pro Leu Lys Arg Leu Asn Ser Glu Pro Trp Gly Leu Val Ala Pro Pro
                245                 250                 255

Gln Pro Val Pro Pro Thr Glu Gly Arg Pro Gly Ile Glu Arg Leu Thr
```

260 265 270

Ala Glu Phe Asn Gly Leu Thr Leu Thr Gly Arg Pro Arg Leu Ser Arg
275 280 285

Arg His Ser Thr Glu Gly Pro Glu Asp Pro Pro Pro Trp Ala Glu Lys
290 295 300

Val Thr Ser Gly Gly Pro Leu Ser Arg Arg Asn Thr Ala Pro Glu Ala
305 310 315 320

Gln Glu Ser Gly Pro Pro Ser Gly Leu Arg Gln Lys Leu Ser Arg Met
325 330 335

Glu Pro Val Glu Leu Asp Thr Pro Gly His Leu Cys Pro Asp Ser Pro
340 345 350

Glu Ser Ser Arg Leu Ser Leu Glu Arg Arg Arg Tyr Ser Ala Ser Pro
355 360 365

Leu Thr Leu Pro Pro Ala Gly Ser Ala Pro Ser Pro Arg Gln Ser Gln
370 375 380

Glu Ser Leu Pro Gly Ala Val Ser Pro Leu Ser Gly Arg Arg Arg Ser
385 390 395 400

Pro Gly Leu Leu Glu Arg Arg Gly Ser Gly Thr Leu Leu Leu Asp His
405 410 415

Ile Ser Gln Thr Arg Pro Gly Phe Leu Pro Pro Leu Asn Val Ser Pro
420 425 430

His Pro Pro Ile Pro Asp Ile Arg Pro Gln Pro Gly Gly Arg Ala Pro
435 440 445

Ser Leu Pro Ala Pro Pro Tyr Ala Gly Ala Pro Gly Ser Pro Arg Thr
450 455 460

Lys Arg Lys Leu Val Arg Arg His Ser Met Gln Thr Glu Gln Ile Arg
465 470 475 480

Leu Leu Gly Gly Phe Gln Ser Leu Gly Gly Pro Gly Glu Pro Gly Arg
485 490 495

<210> 5234
<211> 118
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1137; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD34A; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 34A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000478172"

<400> 5234
Met Leu His Thr Glu Gly His Ala Leu Leu Arg Ala Val Gly Gln Gly
1 5 10 15

Lys Leu Arg Leu Ala Arg Leu Leu Leu Glu Gly Gly Ala Tyr Val Asn
20 25 30

Glu Gly Asp Ala Gln Gly Glu Thr Ala Leu Met Ala Ala Cys Arg Ala
35 40 45

Arg Tyr Asp Asp Pro Gln Asn Lys Ala Arg Met Val Arg Tyr Leu Leu
50 55 60

Glu Gln Gly Ala Asp Pro Asn Ile Ala Asp Arg Leu Gly Arg Thr Ala
65 70 75 80

Leu Met His Ala Cys Ala Gly Gly Gly Gly Ala Ala Val Ala Ser Leu
85 90 95

Leu Leu Ala His Gly Ala Asp Pro Ser Val Arg Asp His Ala Gly Ala
100 105 110

Ser Ala Leu Val His Ala
115

<210> 5235
<211> 103
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1137; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD34A; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 34A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000484224"

<400> 5235
Met Leu His Thr Glu Gly His Ala Leu Leu Arg Ala Val Gly Gln Gly
1 5 10 15

Lys Leu Arg Leu Ala Arg Leu Leu Leu Glu Gly Gly Ala Tyr Val Asn
20 25 30

Glu Gly Asp Ala Gln Gly Glu Thr Ala Leu Met Ala Ala Cys Arg Ala
35 40 45

Arg Tyr Asp Asp Pro Gln Asn Lys Ala Arg Met Val Arg Tyr Leu Leu
50 55 60

Glu Gln Gly Ala Asp Pro Asn Ile Ala Asp Arg Leu Gly Arg Thr Ala
65 70 75 80

Leu Met His Ala Cys Ala Gly Gly Gly Gly Ala Ala Val Ala Ser Leu
85 90 95

Leu Leu Ala His Gly Ala Asp
100

<210> 5236
<211> 514
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1138; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD34B; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 34B; "

<220>
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<223> /note="Uniprot ID: A5PLL1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000339802"

<400> 5236

```
Met Asp Glu Gly Met Glu Ile Ser Ser Glu Gly Asn Ser Leu Ile Lys
1               5                  10                  15

Ala Val His Gln Ser Arg Leu Arg Leu Thr Arg Leu Leu Leu Glu Gly
            20                  25                  30

Gly Ala Tyr Ile Asn Glu Ser Asn Asp Arg Gly Glu Thr Pro Leu Met
        35                  40                  45

Ile Ala Cys Lys Thr Lys His Val Asp His Gln Ser Val Ser Lys Ala
    50                  55                  60

Lys Met Val Lys Tyr Leu Leu Glu Asn Asn Ala Asp Pro Asn Ile Gln
65                  70                  75                  80

Asp Lys Ser Gly Lys Thr Ala Leu Met His Ala Cys Leu Glu Lys Ala
                85                  90                  95

Gly Pro Glu Val Val Ser Leu Leu Leu Lys Ser Gly Ala Asp Leu Ser
            100                 105                 110

Leu Gln Asp His Ser Ser Tyr Ser Ala Leu Val Tyr Ala Ile Asn Ser
        115                 120                 125

Glu Asp Thr Glu Thr Leu Lys Val Leu Leu Ser Ala Cys Lys Ala Lys
    130                 135                 140
```

Gly Lys Glu Val Ile Ile Ile Thr Thr Ala Lys Leu Pro Cys Gly Lys
145 150 155 160

His Thr Thr Lys Gln Tyr Leu Asn Met Pro Pro Val Asp Ile Asp Gly
165 170 175

Cys His Ser Pro Ala Thr Cys Thr Thr Pro Ser Glu Ile Asp Ile Lys
180 185 190

Thr Ala Ser Ser Pro Leu Ser His Ser Ser Glu Thr Glu Leu Thr Leu
195 200 205

Phe Gly Phe Lys Asp Leu Glu Leu Ala Gly Ser Asn Asp Asp Thr Trp
210 215 220

Asp Pro Gly Ser Pro Val Arg Lys Pro Ala Leu Ala Pro Lys Gly Pro
225 230 235 240

Lys Leu Pro His Ala Pro Pro Trp Val Lys Ser Pro Pro Leu Leu Met
245 250 255

His Gln Asn Arg Val Ala Ser Leu Gln Glu Glu Leu Gln Asp Ile Thr
260 265 270

Pro Glu Glu Glu Leu Ser Tyr Lys Thr Asn Gly Leu Ala Leu Ser Lys
275 280 285

Arg Phe Ile Thr Arg His Gln Ser Ile Asp Val Lys Asp Thr Ala His
290 295 300

Leu Leu Arg Ala Phe Asp Gln Ala Ser Ser Arg Lys Met Ser Tyr Asp
305 310 315 320

Glu Ile Asn Cys Gln Ser Tyr Leu Ser Glu Gly Asn Gln Gln Cys Ile
325 330 335

Glu Val Pro Val Asp Gln Asp Pro Asp Ser Asn Gln Thr Ile Phe Ala
340 345 350

Ser Thr Leu Arg Ser Ile Val Gln Lys Arg Asn Leu Gly Ala Asn His
355 360 365

Tyr Ser Ser Asp Ser Gln Leu Ser Ala Gly Leu Thr Pro Pro Thr Ser

```
    370                 375                 380

Glu Asp Gly Lys Ala Leu Ile Gly Lys Lys Lys Ile Leu Ser Pro Ser
385                 390                 395                 400

Pro Ser Gln Leu Ser Glu Ser Lys Glu Leu Leu Glu Asn Ile Pro Pro
                405                 410                 415

Gly Pro Leu Ser Arg Arg Asn His Ala Val Leu Glu Arg Arg Gly Ser
            420                 425                 430

Gly Ala Phe Pro Leu Asp His Ser Val Thr Gln Thr Arg Gln Gly Phe
        435                 440                 445

Leu Pro Pro Leu Asn Val Asn Ser His Pro Pro Ile Ser Asp Ile Asn
    450                 455                 460

Val Asn Asn Lys Ile Cys Ser Leu Leu Ser Cys Gly Gln Lys Val Leu
465                 470                 475                 480

Met Pro Thr Val Pro Ile Phe Pro Lys Glu Phe Lys Ser Lys Lys Met
                485                 490                 495

Leu Leu Arg Arg Gln Ser Leu Gln Thr Glu Gln Ile Lys Gln Leu Val
            500                 505                 510

Asn Phe
```

<210> 5237
<211> 17
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1138; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD34B; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 34B; "

<220>
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<400> 5237
Met Asp Glu Gly Met Glu Ile Ser Ser Glu Gly Asn Ser Leu Ile Lys
1   5   10   15

Ala

<210> 5238
<211> 535
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1139; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD34C; "

<220>
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<223> /note="Gene Name:
ankyrin repeat domain 34C; "

<220>
<221> source
<223> /note="Uniprot ID: P0C6C1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000401089"

<400> 5238
Met Met Asp Asp Asp Thr Glu Leu Arg Thr Asp Gly Asn Ser Leu Leu
1   5   10   15

Lys Ala Val Trp Leu Gly Arg Leu Arg Leu Thr Arg Leu Leu Leu Glu
            20   25   30

Gly Gly Ala Tyr Ile Asn Glu Ser Asn Asp Lys Gly Glu Thr Ala Leu
        35   40   45

Met Val Ala Cys Ile Thr Lys His Val Asp Gln Gln Ser Ile Ser Lys
    50   55   60

Ser Lys Met Val Lys Tyr Leu Leu Asp Asn Arg Ala Asp Pro Asn Ile

```
65                  70                  75                  80

Gln Asp Lys Ser Gly Lys Thr Ala Leu Ile His Ala Cys Ile Arg Arg
                85                  90                  95

Ala Gly Gly Glu Val Val Ser Leu Leu Leu Glu Asn Gly Ala Asp Pro
            100                 105                 110

Ser Leu Glu Asp Arg Thr Gly Ala Ser Ala Leu Val Tyr Ala Ile Asn
        115                 120                 125

Ala Asp Asp Lys Asp Ala Leu Lys His Leu Leu Asp Ala Cys Lys Ala
    130                 135                 140

Lys Gly Lys Glu Val Ile Ile Ile Thr Thr Asp Lys Ser Ser Ser Gly
145                 150                 155                 160

Thr Lys Thr Thr Lys Gln Tyr Leu Asn Val Pro Pro Ser Pro Lys Val
                165                 170                 175

Glu Asp Arg His Ser Pro Pro Leu Cys Ala Ser Pro Ser Asp Ile Glu
            180                 185                 190

Leu Lys Ala Leu Gly Leu Asp Ser Pro Leu Thr Glu Lys Glu Asp Asp
        195                 200                 205

Phe Phe Ser Leu Gln Ala Gly His Pro Ser Ser Cys Asn Thr Ser Lys
    210                 215                 220

Ala Val Asn Glu Pro Gly Ser Pro Thr Arg Lys Val Ser Asn Leu Lys
225                 230                 235                 240

Arg Ala Arg Leu Pro Gln Leu Lys Arg Leu Gln Ser Glu Pro Trp Gly
                245                 250                 255

Leu Ile Ala Pro Ser Val Leu Ala Ala Ser Thr Arg Gln Asp Glu Thr
            260                 265                 270

His Gly Ala Ser Thr Asp Asn Glu Val Ile Lys Ser Ile Ser Asp Ile
        275                 280                 285

Ser Phe Pro Lys Arg Gly Pro Leu Ser Arg Thr Asn Ser Ile Asp Ser
    290                 295                 300
```

```
Lys Asp Pro Thr Leu Phe His Thr Val Thr Glu Gln Val Leu Lys Ile
305                 310                 315                 320

Pro Val Ser Ser Ala Pro Ala Ser Trp Lys Ala Ala Tyr Glu Lys Gly
                325                 330                 335

Gln Ala Pro His Pro Arg Leu Ala Arg Arg Gly Thr Leu Pro Val Asp
            340                 345                 350

Gln Glu Lys Cys Gly Met Gly Pro Ser Gly Pro Ser Ala Leu Lys Glu
        355                 360                 365

Pro Ala Ser Leu Lys Trp Leu Glu Asn Asp Leu Tyr Asp Leu Asp Ile
    370                 375                 380

Gln Pro Gly Pro Asp Pro Pro Asn Ser Ile Ser Leu Glu Ser Gly Lys
385                 390                 395                 400

Gly Pro Leu Asp Arg Lys Lys Leu Asn Ser Ser His Leu Ser Leu Phe
                405                 410                 415

His Gly Ser Arg Glu Ser Leu Asp Thr Val Pro Ser Thr Ser Pro Ser
            420                 425                 430

Ser Ala Arg Arg Arg Pro Pro His Leu Leu Glu Arg Arg Gly Ser Gly
        435                 440                 445

Thr Leu Leu Leu Asp Arg Ile Ser His Thr Arg Pro Gly Phe Leu Pro
    450                 455                 460

Pro Leu Asn Val Asn Leu Asn Pro Pro Ile Pro Asp Ile Arg Ser Ser
465                 470                 475                 480

Ser Lys Pro Ser Cys Ser Leu Ala Ser Gly Leu Lys Ser Met Val Pro
                485                 490                 495

Val Ala Pro Ser Ser Pro Lys Arg Val Asp Leu Arg Ser Lys Lys Lys
            500                 505                 510

Leu Leu Arg Arg His Ser Met Gln Ile Glu Gln Met Lys Gln Leu Ser
        515                 520                 525
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Asp Phe Glu Glu Ile Met Thr
530 535

<210> 5239
<211> 1001
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1140; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD35; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 35; "

<220>
<221> source
<223> /note="Uniprot ID: Q8N283; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000347802"

<400> 5239
Met Lys Arg Ile Phe Ser Cys Ser Ser Thr Gln Val Ala Val Glu Arg
1 5 10 15

Trp Asn Arg His Asp Gln Lys Leu Leu Glu Ala Val His Arg Gly Asp
20 25 30

Val Gly Arg Val Ala Ala Leu Ala Ser Arg Lys Ser Ala Arg Pro Thr
35 40 45

Lys Leu Asp Ser Asn Gly Gln Ser Pro Phe His Leu Ala Ala Ser Lys
50 55 60

Gly Leu Thr Glu Cys Leu Thr Ile Leu Leu Ala Asn Gly Ala Asp Ile
65 70 75 80

Asn Ser Lys Asn Glu Asp Gly Ser Thr Ala Leu His Leu Ala Thr Ile
85 90 95

Ser Cys Gln Pro Gln Cys Val Lys Val Leu Leu Gln His Gly Ala Asn

```
            100                 105                 110

Glu Asp Ala Val Asp Ala Glu Asn Arg Ser Pro Leu His Trp Ala Ala
        115                 120                 125

Ser Ser Gly Cys Ala Ser Ser Val Leu Leu Leu Cys Asp His Glu Ala
    130                 135                 140

Phe Leu Asp Val Leu Asp Asn Asp Gly Arg Thr Pro Leu Met Ile Ala
145                 150                 155                 160

Ser Leu Gly Gly His Ala Ala Ile Cys Ser Gln Leu Leu Gln Arg Gly
                165                 170                 175

Ala Arg Val Asn Val Thr Asp Lys Asn Asp Lys Ser Ala Leu Ile Leu
            180                 185                 190

Ala Cys Glu Lys Gly Ser Ala Glu Val Ala Glu Leu Leu Leu Ser His
        195                 200                 205

Gly Ala Asp Ala Gly Ala Val Asp Ser Thr Gly His Asp Ala Leu His
    210                 215                 220

Tyr Ala Leu His Thr Gln Asp Lys Ala Leu Trp Arg His Leu Gln Gln
225                 230                 235                 240

Ala Leu Ser Arg Arg Arg Arg Gly Gly Gln Arg Leu Val Gln His Pro
                245                 250                 255

Asp Leu Ala Ser Gln Ala Ser Pro Ser Glu Pro Gln Ala Gly Ser Pro
            260                 265                 270

Pro Lys Ser Ser Trp Arg Ala Glu Pro Glu Glu Glu Gln Glu Glu Lys
        275                 280                 285

Glu Asp Glu Asp Pro Cys Ser Glu Glu Trp Arg Trp Lys Tyr Glu Glu
    290                 295                 300

Glu Arg Arg Lys Val Val Arg Leu Glu Gln Glu Leu Val Gln Lys Thr
305                 310                 315                 320

Glu Glu Cys Lys Thr Gln Ala Ala Ala Tyr Leu Asp Leu Glu Asn Gln
                325                 330                 335
```

```
Ile Arg Glu Gln Ala Gln Glu Leu Gly Val Leu Leu Ser Trp Glu Pro
            340                 345                 350

Arg Ala Ser Gly Lys Gln Gly Ser Ser Leu Arg Pro Gly Gly Asp Gly
        355                 360                 365

Met Glu Gln Gly Cys Pro Lys Asp Leu Leu Ala Glu Ser Thr Gln Glu
    370                 375                 380

Leu Lys Lys Gln Gln Gln Ala Ala Ala Thr Val Asn Pro Val Leu Ala
385                 390                 395                 400

Pro Lys Lys Ala Glu Asp Ser Ala Pro Gly Lys Ile Gln Tyr Glu Val
                405                 410                 415

His Gly Arg Ser Gln Pro Glu Glu Gln Gly Pro Pro Gln Ser Pro Ala
            420                 425                 430

Ser Glu Thr Ile Arg Lys Ala Thr Gly Gln Gln Leu Thr Thr Asn Gly
        435                 440                 445

Ala Gln Thr Phe Gly Pro Asp His Ala Asp Gln Leu Pro Ala Gly Gln
    450                 455                 460

Lys Glu Ser Ser Gln Val Leu Gly Val Glu Pro Gly Gly Thr Val Ala
465                 470                 475                 480

Glu Pro Val Gly Pro Ala Ala Met Asn Gln Leu Leu Leu Gln Leu Arg
                485                 490                 495

Glu Glu Leu Ala Ala Val Trp Arg Glu Lys Asp Ala Ala Arg Gly Ala
            500                 505                 510

Leu Ser Arg Pro Val Met Glu Gly Ala Leu Gly Thr Pro Arg Ala Glu
        515                 520                 525

Ala Ala Ala Ala Ala Trp Glu Lys Met Glu Ala Arg Leu Glu Arg Val
    530                 535                 540

Leu Ala Arg Leu Glu Trp Ala Lys Ala Gly Leu Gln Val Lys Pro Glu
545                 550                 555                 560
```

Val Pro Ser Gln Glu Ser Arg Glu Gly Ala Leu Lys Ala Ala Pro Gly
565 570 575

Ser Ile Lys Gln Asp Glu Glu Lys Glu Lys Arg Val Pro Gly Ala Gln
580 585 590

Gly Glu Pro Leu Gly Ala Leu Gly Gly Glu Lys Ala Leu Gly Gly Leu
595 600 605

Ala Lys Gly Gln Leu Glu Lys Glu Met Ser Val Leu Arg Leu Ser Asn
610 615 620

Ser Asn Leu Leu Glu Glu Leu Gly Glu Leu Gly Arg Glu Arg Gln Arg
625 630 635 640

Leu Gln Arg Glu Leu Gln Ser Leu Ser Gln Arg Leu Gln Arg Glu Phe
645 650 655

Val Pro Lys Pro Gln Ala Gln Val Gln Leu Gln Gln Leu Arg Gln Ser
660 665 670

Val Gly Leu Leu Thr Asn Glu Leu Ala Met Glu Lys Glu Ala Thr Glu
675 680 685

Lys Leu Arg Lys Leu Leu Ala Ser Gln Ser Ser Gly Leu Arg Gly Leu
690 695 700

Trp Asp Cys Leu Pro Ala Asp Leu Val Gly Glu Arg Ser Ala Gln Ser
705 710 715 720

Lys Ala Ala Glu Ser Leu Glu Glu Leu Arg Ala Cys Ile Ser Thr Leu
725 730 735

Val Asp Arg His Arg Glu Ala Gln Gln Val Leu Ala Arg Leu Gln Glu
740 745 750

Glu Asn Gln Gln Leu Arg Gly Ser Leu Ser Pro Cys Arg Glu Pro Gly
755 760 765

Thr Ser Leu Lys Ala Pro Ala Ser Pro Gln Val Ala Ala Leu Glu Gln
770 775 780

```
Asp Leu Gly Lys Leu Glu Glu Glu Leu Arg Ala Val Gln Ala Thr Met
785                 790                 795                 800

Ser Gly Lys Ser Gln Glu Ile Gly Lys Leu Lys Gln Leu Leu Tyr Gln
                805                 810                 815

Ala Thr Glu Glu Val Ala Glu Leu Arg Ala Arg Glu Ala Ala Ser Leu
            820                 825                 830

Arg Gln His Glu Lys Thr Arg Gly Ser Leu Val Ala Gln Ala Gln Ala
        835                 840                 845

Trp Gly Gln Glu Leu Lys Ala Leu Leu Glu Lys Tyr Asn Thr Ala Cys
    850                 855                 860

Arg Glu Val Gly Arg Leu Arg Glu Ala Val Ala Glu Glu Arg Arg Arg
865                 870                 875                 880

Ser Gly Asp Leu Ala Ala Gln Ala Ala Glu Gln Glu Arg Gln Ala Ser
                885                 890                 895

Glu Met Arg Gly Arg Ser Glu Gln Phe Glu Lys Thr Ala Glu Leu Leu
            900                 905                 910

Lys Glu Lys Met Glu His Leu Ile Gly Ala Cys Arg Asp Lys Glu Ala
        915                 920                 925

Lys Ile Lys Glu Leu Leu Lys Lys Leu Glu Gln Leu Ser Glu Glu Val
    930                 935                 940

Leu Ala Ile Arg Gly Glu Asn Ala Arg Leu Ala Leu Gln Leu Gln Asp
945                 950                 955                 960

Ser Gln Lys Asn His Glu Glu Ile Ile Ser Thr Tyr Arg Asn His Leu
                965                 970                 975

Leu Asn Ala Ala Arg Gly Tyr Met Glu His Glu Val Tyr Asn Ile Leu
            980                 985                 990

Leu Gln Ile Leu Ser Met Glu Glu  Glu
        995                 1000
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<210> 5240

<211> 911
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1140; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD35; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 35; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000442671"

<400> 5240

Met	Lys	Arg	Ile	Phe	Ser	Cys	Ser	Ser	Thr	Gln	Cys	Val	Lys	Val	Leu
1				5					10					15	

Leu	Gln	His	Gly	Ala	Asn	Glu	Asp	Ala	Val	Asp	Ala	Glu	Asn	Arg	Ser
			20					25					30		

Pro	Leu	His	Trp	Ala	Ala	Ser	Ser	Gly	Cys	Ala	Ser	Ser	Val	Leu	Leu
		35					40					45			

Leu	Cys	Asp	His	Glu	Ala	Phe	Leu	Asp	Val	Leu	Asp	Asn	Asp	Gly	Arg
	50					55					60				

Thr	Pro	Leu	Met	Ile	Ala	Ser	Leu	Gly	Gly	His	Ala	Ala	Ile	Cys	Ser
65					70					75					80

Gln	Leu	Leu	Gln	Arg	Gly	Ala	Arg	Val	Asn	Val	Thr	Asp	Lys	Asn	Asp
				85					90					95	

Lys	Ser	Ala	Leu	Ile	Leu	Ala	Cys	Glu	Lys	Gly	Ser	Ala	Glu	Val	Ala
			100					105					110		

Glu	Leu	Leu	Leu	Ser	His	Gly	Ala	Asp	Ala	Gly	Ala	Val	Asp	Ser	Thr
		115					120					125			

Gly	His	Asp	Ala	Leu	His	Tyr	Ala	Leu	His	Thr	Gln	Asp	Lys	Ala	Leu
	130					135					140				

```
Trp Arg His Leu Gln Gln Ala Leu Ser Arg Arg Arg Arg Gly Gly Gln
145                 150                 155                 160

Arg Leu Val Gln His Pro Asp Leu Ala Ser Gln Ala Ser Pro Ser Glu
                165                 170                 175

Pro Gln Ala Gly Ser Pro Pro Lys Ser Ser Trp Arg Ala Glu Pro Glu
            180                 185                 190

Glu Glu Gln Glu Glu Lys Glu Asp Glu Asp Pro Cys Ser Glu Glu Trp
        195                 200                 205

Arg Trp Lys Tyr Glu Glu Glu Arg Arg Lys Val Val Arg Leu Glu Gln
    210                 215                 220

Glu Leu Val Gln Lys Thr Glu Glu Cys Lys Thr Gln Ala Ala Ala Tyr
225                 230                 235                 240

Leu Asp Leu Glu Asn Gln Ile Arg Glu Gln Ala Gln Glu Leu Gly Val
                245                 250                 255

Leu Leu Ser Trp Glu Pro Arg Ala Ser Gly Lys Gln Gly Ser Ser Leu
            260                 265                 270

Arg Pro Gly Gly Asp Gly Met Glu Gln Gly Cys Pro Lys Asp Leu Leu
        275                 280                 285

Ala Glu Ser Thr Gln Glu Leu Lys Lys Gln Gln Gln Ala Ala Ala Thr
    290                 295                 300

Val Asn Pro Val Leu Ala Pro Lys Lys Ala Glu Asp Ser Ala Pro Gly
305                 310                 315                 320

Lys Ile Gln Tyr Glu Val His Gly Arg Ser Gln Pro Glu Glu Gln Gly
                325                 330                 335

Pro Pro Gln Ser Pro Ala Ser Glu Thr Ile Arg Lys Ala Thr Gly Gln
            340                 345                 350

Gln Leu Thr Thr Asn Gly Ala Gln Thr Phe Gly Pro Asp His Ala Asp
        355                 360                 365
```

```
Gln Leu Pro Ala Gly Gln Lys Glu Ser Ser Gln Val Leu Gly Val Glu
    370                 375                 380

Pro Gly Gly Thr Val Ala Glu Pro Val Gly Pro Ala Ala Met Asn Gln
385                 390                 395                 400

Leu Leu Leu Gln Leu Arg Glu Glu Leu Ala Ala Val Trp Arg Glu Lys
                405                 410                 415

Asp Ala Ala Arg Gly Ala Leu Ser Arg Pro Val Met Glu Gly Ala Leu
            420                 425                 430

Gly Thr Pro Arg Ala Glu Ala Ala Ala Ala Ala Trp Glu Lys Met Glu
        435                 440                 445

Ala Arg Leu Glu Arg Val Leu Ala Arg Leu Glu Trp Ala Lys Ala Gly
    450                 455                 460

Leu Gln Val Lys Pro Glu Val Pro Ser Gln Glu Ser Arg Glu Gly Ala
465                 470                 475                 480

Leu Lys Ala Ala Pro Gly Ser Ile Lys Gln Asp Glu Glu Lys Glu Lys
                485                 490                 495

Arg Val Pro Gly Ala Gln Gly Glu Pro Leu Gly Ala Leu Gly Gly Glu
            500                 505                 510

Lys Ala Leu Gly Gly Leu Ala Lys Gly Gln Leu Glu Lys Glu Met Ser
        515                 520                 525

Val Leu Arg Leu Ser Asn Ser Asn Leu Leu Glu Glu Leu Gly Glu Leu
    530                 535                 540

Gly Arg Glu Arg Gln Arg Leu Gln Arg Glu Leu Gln Ser Leu Ser Gln
545                 550                 555                 560

Arg Leu Gln Arg Glu Phe Val Pro Lys Pro Gln Ala Gln Val Gln Leu
                565                 570                 575

Gln Gln Leu Arg Gln Ser Val Gly Leu Leu Thr Asn Glu Leu Ala Met
            580                 585                 590

Glu Lys Glu Ala Thr Glu Lys Leu Arg Lys Leu Leu Ala Ser Gln Ser
```

595 600 605

Ser Gly Leu Arg Gly Leu Trp Asp Cys Leu Pro Ala Asp Leu Val Gly
610 615 620

Glu Arg Ser Ala Gln Ser Lys Ala Ala Glu Ser Leu Glu Glu Leu Arg
625 630 635 640

Ala Cys Ile Ser Thr Leu Val Asp Arg His Arg Glu Ala Gln Gln Val
645 650 655

Leu Ala Arg Leu Gln Glu Glu Asn Gln Gln Leu Arg Gly Ser Leu Ser
660 665 670

Pro Cys Arg Glu Pro Gly Thr Ser Leu Lys Ala Pro Ala Ser Pro Gln
675 680 685

Val Ala Ala Leu Glu Gln Asp Leu Gly Lys Leu Glu Glu Glu Leu Arg
690 695 700

Ala Val Gln Ala Thr Met Ser Gly Lys Ser Gln Glu Ile Gly Lys Leu
705 710 715 720

Lys Gln Leu Leu Tyr Gln Ala Thr Glu Glu Val Ala Glu Leu Arg Ala
725 730 735

Arg Glu Ala Ala Ser Leu Arg Gln His Glu Lys Thr Arg Gly Ser Leu
740 745 750

Val Ala Gln Ala Gln Ala Trp Gly Gln Glu Leu Lys Ala Leu Leu Glu
755 760 765

Lys Tyr Asn Thr Ala Cys Arg Glu Val Gly Arg Leu Arg Glu Ala Val
770 775 780

Ala Glu Glu Arg Arg Arg Ser Gly Asp Leu Ala Ala Gln Ala Ala Glu
785 790 795 800

Gln Glu Arg Gln Ala Ser Glu Met Arg Gly Arg Ser Glu Gln Phe Glu
805 810 815

Lys Thr Ala Glu Leu Leu Lys Glu Lys Met Glu His Leu Ile Gly Ala
820 825 830

```
Cys Arg Asp Lys Glu Ala Lys Ile Lys Glu Leu Leu Lys Lys Leu Glu
        835                 840                 845

Gln Leu Ser Glu Glu Val Leu Ala Ile Arg Gly Glu Asn Ala Arg Leu
    850                 855                 860

Ala Leu Gln Leu Gln Asp Ser Gln Lys Asn His Glu Glu Ile Ile Ser
865                 870                 875                 880

Thr Tyr Arg Asn His Leu Leu Asn Ala Ala Arg Gly Tyr Met Glu His
                885                 890                 895

Glu Val Tyr Asn Ile Leu Leu Gln Ile Leu Ser Met Glu Glu Glu
            900                 905                 910


<210> 5241
<211> 1941
<212> PRT
<213> Homo sapiens

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<223> /note="Gene Symbol: ANKRD36; "

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<400> 5241
Met Glu Asp Gly Lys Arg Glu Arg Trp Pro Thr Leu Met Glu Arg Leu
1               5                   10                  15

Cys Ser Asp Gly Phe Ala Phe Pro Gln Tyr Pro Ile Lys Pro Tyr His
            20                  25                  30
```

```
Leu Lys Arg Ile His Arg Ala Val Leu His Gly Asn Leu Glu Lys Leu
        35                  40                  45

Lys Tyr Leu Leu Leu Thr Tyr Tyr Asp Ala Asn Lys Arg Asp Arg Lys
    50                  55                  60

Glu Arg Thr Ala Leu His Leu Ala Cys Ala Thr Gly Gln Pro Glu Met
65                  70                  75                  80

Val His Leu Leu Val Ser Arg Arg Cys Glu Leu Asn Leu Cys Asp Arg
                85                  90                  95

Glu Asp Arg Thr Pro Leu Ile Lys Ala Val Gln Leu Arg Gln Glu Ala
            100                 105                 110

Cys Ala Thr Leu Leu Leu Gln Asn Gly Ala Asn Pro Asn Ile Thr Asp
        115                 120                 125

Phe Phe Gly Arg Thr Ala Leu His Tyr Ala Val Tyr Asn Glu Asp Thr
    130                 135                 140

Ser Met Ile Glu Lys Leu Leu Ser His Gly Thr Asn Ile Glu Glu Cys
145                 150                 155                 160

Ser Lys Cys Glu Tyr Gln Pro Leu Leu Phe Ala Val Ser Arg Arg Lys
                165                 170                 175

Val Lys Met Val Glu Phe Leu Leu Lys Lys Lys Ala Asn Val Asn Ala
            180                 185                 190

Ile Asp Tyr Leu Gly Arg Ser Ala Leu Ile His Ala Val Thr Leu Gly
        195                 200                 205

Glu Lys Asp Ile Val Ile Leu Leu Leu Gln His Asn Ile Asp Val Leu
    210                 215                 220

Ser Arg Asp Ala Phe Arg Lys Ile Ala Gly Asp Tyr Ala Ile Glu Ala
225                 230                 235                 240

Lys Asn Arg Val Ile Phe Asp Leu Ile Tyr Glu Tyr Glu Arg Lys Arg
                245                 250                 255

Tyr Glu Asp Leu Pro Ile Asn Ser Asn Pro Val Ser Ser Gln Lys Gln
```

```
            260                 265                 270

Pro Ala Leu Lys Ala Thr Ser Gly Lys Glu Asp Ser Ile Ser Asn Ile
        275                 280                 285

Ala Thr Glu Ile Lys Asp Gly Gln Lys Ser Gly Thr Val Ser Ser Gln
    290                 295                 300

Lys Gln Pro Ala Leu Lys Asp Thr Ser Asp Lys Asp Asp Ser Val Ser
305                 310                 315                 320

Asn Thr Ala Thr Glu Ile Lys Asp Glu Gln Lys Ser Gly Thr Val Leu
                325                 330                 335

Pro Ala Val Glu Gln Cys Leu Asn Arg Ser Leu Tyr Arg Pro Asp Ala
            340                 345                 350

Val Ala Gln Pro Val Thr Glu Asn Glu Phe Ser Leu Glu Ser Glu Ile
        355                 360                 365

Ile Ser Lys Leu Tyr Ile Pro Lys Arg Lys Ile Ile Ser Pro Arg Ser
    370                 375                 380

Ile Lys Asp Val Leu Pro Pro Val Glu Glu Ala Val Asp Arg Cys Leu
385                 390                 395                 400

Tyr Leu Leu Asp Arg Phe Ala Gln Pro Val Thr Lys Asp Lys Phe Ala
                405                 410                 415

Leu Glu Ser Glu Asn Ile Ser Glu Pro Tyr Phe Thr Asn Arg Arg Thr
            420                 425                 430

Ile Ser Gln Gln Ser Ala Glu Asn Leu Asp Ala Ala Cys Gly Ile Asp
        435                 440                 445

Lys Thr Glu Asn Gly Asn Met Phe Glu Asp Gln Asn Val Asp Lys Glu
    450                 455                 460

Gly Lys Ala Leu Pro Ala Thr Gly Gln Lys Ala Asn Val Ser Pro Glu
465                 470                 475                 480

Gln Pro Pro Leu Phe Thr His Thr Val Lys Asp Arg Asp His Ile Ser
                485                 490                 495
```

```
Thr Arg Phe Leu Gly Gly Met Asp Ser Leu Thr Ser Ser Glu Glu Ser
            500                 505                 510

Ser Glu Arg Pro Pro Leu Ser Thr Leu Thr Leu Lys Glu Ala Asp Pro
        515                 520                 525

Ser Ser Lys Ala Ala Met Arg Arg Lys Asp Ser Pro Pro Pro Gly Lys
    530                 535                 540

Val Ser Ser Gln Lys Gln Pro Ala Glu Lys Ala Thr Ser Asp Asp Lys
545                 550                 555                 560

Asp Ser Val Ser Asn Ile Ala Thr Glu Ile Lys Glu Gly Pro Ile Ser
                565                 570                 575

Gly Thr Val Ser Ser Gln Lys Gln Pro Ala Glu Lys Ala Thr Ser Asp
            580                 585                 590

Glu Lys Asp Ser Val Ser Asn Ile Ala Thr Glu Ile Lys Lys Gly Gln
        595                 600                 605

Gln Ser Gly Thr Val Ser Pro Gln Lys Gln Ser Ala Trp Lys Val Ile
    610                 615                 620

Phe Lys Lys Lys Val Ser Leu Leu Asn Ile Ala Thr Arg Ile Met Gly
625                 630                 635                 640

Gly Gly Lys Ser Gly Thr Val Ser Ser Gln Lys Gln Pro Ala Ser Lys
                645                 650                 655

Ala Thr Ser Asp Lys Thr Asp Ser Ala Leu Asn Ile Ala Thr Glu Ile
            660                 665                 670

Lys Asp Gly Leu Gln Cys Gly Thr Val Ser Ser Gln Lys Gln Pro Ala
        675                 680                 685

Leu Lys Ala Thr Thr Asp Glu Glu Asp Ser Val Ser Asn Ile Ala Thr
    690                 695                 700

Glu Ile Lys Asp Gly Glu Lys Ser Gly Thr Val Ser Ser Gln Lys Gln
705                 710                 715                 720
```

```
Pro Ala Leu Lys Ala Thr Thr Asp Glu Glu Asp Ser Val Ser Asn Ile
                725                 730                 735

Ala Thr Glu Ile Lys Asp Gly Glu Lys Ser Gly Thr Val Ser Ser Gln
            740                 745                 750

Lys Gln Pro Ala Leu Lys Ala Thr Thr Asp Glu Lys Asp Ser Val Ser
        755                 760                 765

Asn Ile Ala Thr Glu Ile Lys Asp Gly Glu Lys Ser Gly Thr Val Ser
    770                 775                 780

Ser Gln Lys Pro Pro Ala Leu Thr Ala Thr Ser Asp Glu Glu Gly Ser
785                 790                 795                 800

Val Leu Ser Ile Ala Arg Glu Asn Lys Asp Gly Glu Lys Ser Arg Thr
                805                 810                 815

Val Ser Ser Arg Lys Lys Pro Ala Leu Lys Ala Thr Ser Asp Glu Lys
            820                 825                 830

Asp Ser Phe Ser Asn Ile Thr Arg Gly Lys Lys Asp Gly Glu Ile Ser
        835                 840                 845

Arg Lys Val Ser Ser Gln Lys Pro Pro Thr Leu Lys Gly Thr Ser Asp
    850                 855                 860

Glu Glu Asp Ser Val Leu Gly Ile Ala Arg Glu Asn Lys Asp Gly Glu
865                 870                 875                 880

Lys Ser Arg Thr Val Ser Ser Glu Lys Pro Pro Gly Leu Lys Ala Ser
                885                 890                 895

Ser Ala Glu Lys Asp Ser Val Leu Asn Ile Ala Arg Gly Lys Lys Asp
            900                 905                 910

Gly Glu Lys Thr Lys Arg Val Ser Ser Arg Lys Lys Pro Ser Leu Glu
        915                 920                 925

Ala Thr Ser Asp Glu Lys Asp Ser Phe Ser Asn Ile Thr Arg Glu Lys
    930                 935                 940
```

```
Lys Asp Gly Glu Ile Ser Arg Lys Val Ser Ser Gln Lys Pro Pro Ala
945                 950                 955                 960

Leu Lys Gly Thr Ser Asp Glu Glu Asp Ser Val Leu Gly Ile Ala Arg
                965                 970                 975

Glu Asn Lys Asp Gly Glu Lys Ser Arg Thr Val Ser Ser Glu Lys Pro
            980                 985                 990

Pro Gly Leu Lys Ala Thr Ser Asp  Glu Lys Asp Ser Val  Leu Asn
Ile
        995                 1000                1005

Ala Arg  Gly Lys Lys Asp Gly  Glu Lys Thr Arg Thr  Val Ser Ser
    1010                1015                1020

Gln Lys  Pro Pro Thr Leu Lys  Ala Thr Ser Asp Glu  Glu Asp Ser
    1025                1030                1035

Val Leu  Ser Ile Ala Arg Glu  Asn Lys Asp Gly Glu  Lys Ser Arg
    1040                1045                1050

Thr Val  Ser Ser Glu Lys Pro  Ser Gly Leu Lys Ala  Thr Ser Ala
    1055                1060                1065

Glu Lys  Asp Ser Val Leu Asn  Ile Ala Arg Gly Lys  Lys Tyr Gly
    1070                1075                1080

Glu Lys  Thr Lys Arg Val Ser  Ser Arg Lys Lys Pro  Ala Leu Lys
    1085                1090                1095

Ala Thr  Ser Asp Glu Lys Asp  Ser Val Leu Tyr Ile  Ala Arg Glu
    1100                1105                1110

Lys Lys  Asp Gly Glu Lys Ser  Arg Thr Val Ser Ser  Pro Lys Gln
    1115                1120                1125

Pro Ala  Leu Lys Ala Ile Cys  Asp Lys Glu Asp Ser  Val Pro Asn
    1130                1135                1140

Met Ala  Thr Glu Lys Lys Asp  Glu Gln Ile Ser Gly  Thr Val Ser
    1145                1150                1155
```

```
Cys Gln  Lys Gln Pro Ala Leu  Lys Ala Thr Ser Asp  Lys Lys Asp
    1160                1165                1170

Ser Val  Ser Asn Ile Pro Thr  Glu Ile Lys Asp Gly  Gln Gln Ser
    1175                1180                1185

Gly Thr  Val Ser Ser Gln Lys  Gln Pro Ala Trp Lys  Ala Thr Ser
    1190                1195                1200

Val Lys  Lys Asp Ser Val Ser  Asn Ile Ala Thr Glu  Ile Lys Asp
    1205                1210                1215

Gly Gln  Ile Arg Gly Thr Gly  Ile Leu Glu Tyr Thr  Phe Asn Val
    1220                1225                1230

Met Phe  Asp Gln Ile Glu Glu  Lys Phe Thr Ser Leu  Asn Lys Ser
    1235                1240                1245

Ala Gly  Val Ser Pro Gln Lys  Gln Ser Ala Gln Lys  Val Ile Phe
    1250                1255                1260

Lys Lys  Lys Val Ser Leu Leu  Asn Ile Ala Thr Arg  Ile Thr Gly
    1265                1270                1275

Gly Trp  Lys Ser Gly Thr Glu  Tyr Pro Glu Asn Leu  Pro Thr Leu
    1280                1285                1290

Lys Ala  Thr Ile Glu Asn Lys  Asn Ser Val Leu Asn  Thr Ala Thr
    1295                1300                1305

Lys Met  Lys Asp Val Gln Thr  Ser Thr Pro Ala Glu  Gln Asp Leu
    1310                1315                1320

Glu Met  Ala Ser Glu Gly Glu  Gln Lys Arg Leu Glu  Glu Tyr Glu
    1325                1330                1335

Asn Asn  Gln Pro Gln Val Lys  Asn Gln Ile His Ser  Arg Asp Asp
    1340                1345                1350

Leu Asp  Asp Ile Ile Gln Ser  Ser Gln Thr Val Ser  Glu Asp Gly
    1355                1360                1365

Asp Ser  Leu Cys Cys Asn Cys  Lys Asn Val Ile Leu  Leu Ile Asp
```

1370 1375 1380

Gln His Glu Met Lys Cys Lys Asp Cys Val His Leu Leu Lys Ile
1385 1390 1395

Lys Asn Thr Phe Cys Leu Trp Lys Arg Leu Ile Lys Leu Lys Asp
1400 1405 1410

Asn His Cys Glu Gln Leu Arg Val Lys Ile Arg Lys Leu Lys Asn
1415 1420 1425

Lys Ala Ser Val Leu Gln Lys Arg Ile Ser Glu Lys Glu Glu Ile
1430 1435 1440

Lys Ser Gln Leu Lys His Glu Ile Leu Glu Leu Glu Lys Glu Leu
1445 1450 1455

Cys Ser Leu Arg Phe Ala Ile Gln Gln Glu Lys Lys Lys Arg Arg
1460 1465 1470

Asn Val Glu Glu Val His Gln Lys Val Arg Glu Lys Leu Arg Ile
1475 1480 1485

Thr Glu Glu Gln Tyr Arg Ile Glu Ala Asp Val Thr Lys Pro Ile
1490 1495 1500

Lys Pro Ala Leu Lys Ser Ala Glu Val Glu Leu Lys Thr Gly Gly
1505 1510 1515

Asn Asn Ser Asn Gln Val Ser Glu Thr Asp Glu Lys Glu Asp Leu
1520 1525 1530

Leu His Glu Asn Arg Leu Met Gln Asp Glu Ile Ala Arg Leu Arg
1535 1540 1545

Leu Glu Lys Asp Thr Ile Lys Asn Gln Asn Leu Glu Lys Lys Tyr
1550 1555 1560

Leu Lys Asp Phe Glu Ile Val Lys Arg Lys His Glu Asp Leu Gln
1565 1570 1575

Lys Ala Leu Lys Arg Asn Gly Glu Thr Leu Ala Lys Thr Ile Ala
1580 1585 1590

```
Cys Tyr  Ser Gly Gln Leu Ala  Ala Leu Thr Asp Glu  Asn Thr Thr
    1595                1600                1605

Leu Arg  Ser Lys Leu Glu Lys  Gln Arg Glu Ser Arg  Gln Arg Leu
    1610                1615                1620

Glu Thr  Glu Met Gln Ser Tyr  His Cys Arg Leu Asn  Ala Ala Arg
    1625                1630                1635

Cys Asp  His Asp Gln Ser His  Ser Ser Lys Arg Asp  Gln Glu Leu
    1640                1645                1650

Ala Phe  Gln Gly Thr Val Asp  Lys Cys Arg His Leu  Gln Glu Asn
    1655                1660                1665

Leu Asn  Ser His Val Leu Ile  Leu Ser Leu Gln Leu  Ser Lys Ala
    1670                1675                1680

Glu Ser  Lys Ser Arg Val Leu  Lys Thr Glu Leu His  Tyr Thr Gly
    1685                1690                1695

Glu Ala  Leu Lys Glu Lys Ala  Leu Val Phe Glu His  Val Gln Ser
    1700                1705                1710

Glu Leu  Lys Gln Lys Gln Ser  Gln Met Lys Asp Ile  Glu Lys Met
    1715                1720                1725

Tyr Lys  Ser Gly Tyr Asn Thr  Met Glu Lys Cys Ile  Glu Lys Gln
    1730                1735                1740

Glu Arg  Phe Cys Gln Leu Lys  Lys Gln Asn Met Leu  Leu Gln Gln
    1745                1750                1755

Gln Leu  Asp Asp Ala Arg Asn  Lys Ala Asp Asn Gln  Glu Lys Ala
    1760                1765                1770

Ile Leu  Asn Ile Gln Ala Arg  Cys Asp Ala Arg Val  Gln Asn Leu
    1775                1780                1785

Gln Ala  Glu Cys Arg Lys His  Arg Leu Leu Leu Glu  Glu Asp Asn
    1790                1795                1800
```

```
Lys Met  Leu Val Asn Glu Leu  Asn His Ser Lys Glu  Lys Glu Cys
    1805                1810                1815

Gln Tyr  Glu Lys Glu Lys Ala  Glu Arg Glu Val Ala  Val Arg Gln
    1820                1825                1830

Leu Gln  Gln Lys Arg Asp Asp  Val Leu Asn Lys Gly  Ser Ala Thr
    1835                1840                1845

Lys Ala  Leu Leu Asp Ala Ser  Ser Arg His Cys Thr  Tyr Leu Glu
    1850                1855                1860

Asn Gly  Met Gln Asp Ser Arg  Lys Lys Leu Asp Gln  Met Arg Ser
    1865                1870                1875

Gln Phe  Gln Glu Ile Gln Asp  Gln Leu Thr Ala Thr  Ile Arg Cys
    1880                1885                1890

Thr Lys  Glu Met Glu Gly Asp  Thr Gln Lys Leu Glu  Val Glu His
    1895                1900                1905

Val Met  Met Arg Lys Ile Ile  Lys Lys Gln Asp Asp  Gln Ile Glu
    1910                1915                1920

Arg Leu  Glu Lys Ile Leu Gln  His Ser Ser Leu Met  Leu Gln Val
    1925                1930                1935

Phe Glu  Ser
    1940


<210> 5242
<211> 1941
<212> PRT
<213> Homo sapiens

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Met Glu Asp Gly Lys Arg Glu Arg Trp Pro Thr Leu Met Glu Arg Leu
1               5                  10                  15

Cys Ser Asp Gly Phe Ala Phe Pro Gln Tyr Pro Ile Lys Pro Tyr His
            20                  25                  30

Leu Lys Arg Ile His Arg Ala Val Leu His Gly Asn Leu Glu Lys Leu
        35                  40                  45

Lys Tyr Leu Leu Leu Thr Tyr Tyr Asp Ala Asn Lys Arg Asp Arg Lys
    50                  55                  60

Glu Arg Thr Ala Leu His Leu Ala Cys Ala Thr Gly Gln Pro Glu Met
65                  70                  75                  80

Val His Leu Leu Val Ser Arg Arg Cys Glu Leu Asn Leu Cys Asp Arg
                85                  90                  95

Glu Asp Arg Thr Pro Leu Ile Lys Ala Val Gln Leu Arg Gln Glu Ala
            100                 105                 110

Cys Ala Thr Leu Leu Leu Gln Asn Gly Ala Asn Pro Asn Ile Thr Asp
        115                 120                 125

Phe Phe Gly Arg Thr Ala Leu His Tyr Ala Val Tyr Asn Glu Asp Thr
    130                 135                 140

Ser Met Ile Glu Lys Leu Leu Ser His Gly Thr Asn Ile Glu Glu Cys
145                 150                 155                 160

Ser Lys Cys Glu Tyr Gln Pro Leu Leu Phe Ala Val Ser Arg Arg Lys
                165                 170                 175

Val Lys Met Val Glu Phe Leu Leu Lys Lys Lys Ala Asn Val Asn Ala
            180                 185                 190
```

```
Ile Asp Tyr Leu Gly Arg Ser Ala Leu Ile His Ala Val Thr Leu Gly
        195                 200                 205

Glu Lys Asp Ile Val Ile Leu Leu Leu Gln His Asn Ile Asp Val Leu
    210                 215                 220

Ser Arg Asp Ala Phe Arg Lys Ile Ala Gly Asp Tyr Ala Ile Glu Ala
225                 230                 235                 240

Lys Asn Arg Val Ile Phe Asp Leu Ile Tyr Glu Tyr Glu Arg Lys Arg
                245                 250                 255

Tyr Glu Asp Leu Pro Ile Asn Ser Asn Pro Val Ser Ser Gln Lys Gln
            260                 265                 270

Pro Ala Leu Lys Ala Thr Ser Gly Lys Glu Asp Ser Ile Ser Asn Ile
        275                 280                 285

Ala Thr Glu Ile Lys Asp Gly Gln Lys Ser Gly Thr Val Ser Ser Gln
    290                 295                 300

Lys Gln Pro Ala Leu Lys Asp Thr Ser Asp Lys Asp Asp Ser Val Ser
305                 310                 315                 320

Asn Thr Ala Thr Glu Ile Lys Asp Glu Gln Lys Ser Gly Thr Val Leu
                325                 330                 335

Pro Ala Val Glu Gln Cys Leu Asn Arg Ser Leu Tyr Arg Pro Asp Ala
            340                 345                 350

Val Ala Gln Pro Val Thr Glu Asn Glu Phe Ser Leu Glu Ser Glu Ile
        355                 360                 365

Ile Ser Lys Leu Tyr Ile Pro Lys Arg Lys Ile Ile Ser Pro Arg Ser
    370                 375                 380

Ile Lys Asp Val Leu Pro Pro Val Glu Glu Ala Val Asp Arg Cys Leu
385                 390                 395                 400

Tyr Leu Leu Asp Arg Phe Ala Gln Pro Val Thr Lys Asp Lys Phe Ala
                405                 410                 415
```

```
Leu Glu Ser Glu Asn Ile Ser Glu Pro Tyr Phe Thr Asn Arg Arg Thr
            420                 425                 430

Ile Ser Gln Gln Ser Ala Glu Asn Leu Asp Ala Ala Cys Gly Ile Asp
        435                 440                 445

Lys Thr Glu Asn Gly Asn Met Phe Glu Asp Gln Asn Val Asp Lys Glu
    450                 455                 460

Gly Lys Ala Leu Pro Ala Thr Gly Gln Lys Ala Asn Val Ser Pro Glu
465                 470                 475                 480

Gln Pro Pro Leu Phe Thr His Thr Val Lys Asp Arg Asp His Ile Ser
                485                 490                 495

Thr Arg Phe Leu Gly Gly Met Asp Ser Leu Thr Ser Ser Glu Glu Ser
            500                 505                 510

Ser Glu Arg Pro Pro Leu Ser Thr Leu Thr Leu Lys Glu Ala Asp Pro
        515                 520                 525

Ser Ser Lys Ala Ala Met Arg Arg Lys Asp Ser Pro Pro Pro Gly Lys
    530                 535                 540

Val Ser Ser Gln Lys Gln Pro Ala Glu Lys Ala Thr Ser Asp Asp Lys
545                 550                 555                 560

Asp Ser Val Ser Asn Ile Ala Thr Glu Ile Lys Glu Gly Pro Ile Ser
                565                 570                 575

Gly Thr Val Ser Ser Gln Lys Gln Pro Ala Glu Lys Ala Thr Ser Asp
            580                 585                 590

Glu Lys Asp Ser Val Ser Asn Ile Ala Thr Glu Ile Lys Lys Gly Gln
        595                 600                 605

Gln Ser Gly Thr Val Ser Pro Gln Lys Gln Ser Ala Trp Lys Val Ile
    610                 615                 620

Phe Lys Lys Lys Val Ser Leu Leu Asn Ile Ala Thr Arg Ile Met Gly
625                 630                 635                 640
```

```
Gly Gly Lys Ser Gly Thr Val Ser Ser Gln Lys Gln Pro Ala Ser Lys
                645                 650                 655

Ala Thr Ser Asp Lys Thr Asp Ser Ala Leu Asn Ile Ala Thr Glu Ile
            660                 665                 670

Lys Asp Gly Leu Gln Cys Gly Thr Val Ser Ser Gln Lys Gln Pro Ala
        675                 680                 685

Leu Lys Ala Thr Thr Asp Glu Glu Asp Ser Val Ser Asn Ile Ala Thr
    690                 695                 700

Glu Ile Lys Asp Gly Glu Lys Ser Gly Thr Val Ser Ser Gln Lys Gln
705                 710                 715                 720

Pro Ala Leu Lys Ala Thr Thr Asp Glu Glu Asp Ser Val Ser Asn Ile
                725                 730                 735

Ala Thr Glu Ile Lys Asp Gly Glu Lys Ser Gly Thr Val Ser Ser Gln
            740                 745                 750

Lys Gln Pro Ala Leu Lys Ala Thr Thr Asp Glu Lys Asp Ser Val Ser
        755                 760                 765

Asn Ile Ala Thr Glu Ile Lys Asp Gly Glu Lys Ser Gly Thr Val Ser
    770                 775                 780

Ser Gln Lys Pro Pro Ala Leu Thr Ala Thr Ser Asp Glu Glu Gly Ser
785                 790                 795                 800

Val Leu Ser Ile Ala Arg Glu Asn Lys Asp Gly Glu Lys Ser Arg Thr
                805                 810                 815

Val Ser Ser Arg Lys Lys Pro Ala Leu Lys Ala Thr Ser Asp Glu Lys
            820                 825                 830

Asp Ser Phe Ser Asn Ile Thr Arg Gly Lys Lys Asp Gly Glu Ile Ser
        835                 840                 845

Arg Lys Val Ser Ser Gln Lys Pro Pro Thr Leu Lys Gly Thr Ser Asp
    850                 855                 860

Glu Glu Asp Ser Val Leu Gly Ile Ala Arg Glu Asn Lys Asp Gly Glu
```

865 870 875 880

Lys Ser Arg Thr Val Ser Ser Glu Lys Pro Pro Gly Leu Lys Ala Ser
885 890 895

Ser Ala Glu Lys Asp Ser Val Leu Asn Ile Ala Arg Gly Lys Lys Asp
900 905 910

Gly Glu Lys Thr Lys Arg Val Ser Ser Arg Lys Lys Pro Ser Leu Glu
915 920 925

Ala Thr Ser Asp Glu Lys Asp Ser Phe Ser Asn Ile Thr Arg Glu Lys
930 935 940

Lys Asp Gly Glu Ile Ser Arg Lys Val Ser Ser Gln Lys Pro Pro Ala
945 950 955 960

Leu Lys Gly Thr Ser Asp Glu Glu Asp Ser Val Leu Gly Ile Ala Arg
965 970 975

Glu Asn Lys Asp Gly Glu Lys Ser Arg Thr Val Ser Ser Glu Lys Pro
980 985 990

Pro Gly Leu Lys Ala Thr Ser Asp Glu Lys Asp Ser Val Leu Asn
Ile
995 1000 1005

Ala Arg Gly Lys Lys Asp Gly Glu Lys Thr Arg Thr Val Ser Ser
1010 1015 1020

Gln Lys Pro Pro Thr Leu Lys Ala Thr Ser Asp Glu Glu Asp Ser
1025 1030 1035

Val Leu Ser Ile Ala Arg Glu Asn Lys Asp Gly Glu Lys Ser Arg
1040 1045 1050

Thr Val Ser Ser Glu Lys Pro Ser Gly Leu Lys Ala Thr Ser Ala
1055 1060 1065

Glu Lys Asp Ser Val Leu Asn Ile Ala Arg Gly Lys Lys Tyr Gly
1070 1075 1080

Glu Lys Thr Lys Arg Val Ser Ser Arg Lys Lys Pro Ala Leu Lys

1085 1090 1095

Ala Thr Ser Asp Glu Lys Asp Ser Val Leu Tyr Ile Ala Arg Glu
1100 1105 1110

Lys Lys Asp Gly Glu Lys Ser Arg Thr Val Ser Ser Pro Lys Gln
1115 1120 1125

Pro Ala Leu Lys Ala Ile Cys Asp Lys Glu Asp Ser Val Pro Asn
1130 1135 1140

Met Ala Thr Glu Lys Lys Asp Glu Gln Ile Ser Gly Thr Val Ser
1145 1150 1155

Cys Gln Lys Gln Pro Ala Leu Lys Ala Thr Ser Asp Lys Lys Asp
1160 1165 1170

Ser Val Ser Asn Ile Pro Thr Glu Ile Lys Asp Gly Gln Gln Ser
1175 1180 1185

Gly Thr Val Ser Ser Gln Lys Gln Pro Ala Trp Lys Ala Thr Ser
1190 1195 1200

Val Lys Lys Asp Ser Val Ser Asn Ile Ala Thr Glu Ile Lys Asp
1205 1210 1215

Gly Gln Ile Arg Gly Thr Gly Ile Leu Glu Tyr Thr Phe Asn Val
1220 1225 1230

Met Phe Asp Gln Ile Glu Glu Lys Phe Thr Ser Leu Asn Lys Ser
1235 1240 1245

Ala Gly Val Ser Pro Gln Lys Gln Ser Ala Gln Lys Val Ile Phe
1250 1255 1260

Lys Lys Lys Val Ser Leu Leu Asn Ile Ala Thr Arg Ile Thr Gly
1265 1270 1275

Gly Trp Lys Ser Gly Thr Glu Tyr Pro Glu Asn Leu Pro Thr Leu
1280 1285 1290

Lys Ala Thr Ile Glu Asn Lys Asn Ser Val Leu Asn Thr Ala Thr
1295 1300 1305

```
Lys Met  Lys Asp Val Gln Thr  Ser Thr Pro Ala Glu  Gln Asp Leu
    1310                 1315                 1320

Glu Met  Ala Ser Glu Gly Glu  Gln Lys Arg Leu Glu  Glu Tyr Glu
    1325                 1330                 1335

Asn Asn  Gln Pro Gln Val Lys  Asn Gln Ile His Ser  Arg Asp Asp
    1340                 1345                 1350

Leu Asp  Asp Ile Ile Gln Ser  Ser Gln Thr Val Ser  Glu Asp Gly
    1355                 1360                 1365

Asp Ser  Leu Cys Cys Asn Cys  Lys Asn Val Ile Leu  Leu Ile Asp
    1370                 1375                 1380

Gln His  Glu Met Lys Cys Lys  Asp Cys Val His Leu  Leu Lys Ile
    1385                 1390                 1395

Lys Asn  Thr Phe Cys Leu Trp  Lys Arg Leu Ile Lys  Leu Lys Asp
    1400                 1405                 1410

Asn His  Cys Glu Gln Leu Arg  Val Lys Ile Arg Lys  Leu Lys Asn
    1415                 1420                 1425

Lys Ala  Ser Val Leu Gln Lys  Arg Ile Ser Glu Lys  Glu Glu Ile
    1430                 1435                 1440

Lys Ser  Gln Leu Lys His Glu  Ile Leu Glu Leu Glu  Lys Glu Leu
    1445                 1450                 1455

Cys Ser  Leu Arg Phe Ala Ile  Gln Gln Glu Lys Lys  Lys Arg Arg
    1460                 1465                 1470

Asn Val  Glu Glu Val His Gln  Lys Val Arg Glu Lys  Leu Arg Ile
    1475                 1480                 1485

Thr Glu  Glu Gln Tyr Arg Ile  Glu Ala Asp Val Thr  Lys Pro Ile
    1490                 1495                 1500

Lys Pro  Ala Leu Lys Ser Ala  Glu Val Glu Leu Lys  Thr Gly Gly
    1505                 1510                 1515
```

Asn Asn Ser Asn Gln Val Ser Glu Thr Asp Glu Lys Glu Asp Leu
1520 1525 1530

Leu His Glu Asn Arg Leu Met Gln Asp Glu Ile Ala Arg Leu Arg
1535 1540 1545

Leu Glu Lys Asp Thr Ile Lys Asn Gln Asn Leu Glu Lys Lys Tyr
1550 1555 1560

Leu Lys Asp Phe Glu Ile Val Lys Arg Lys His Glu Asp Leu Gln
1565 1570 1575

Lys Ala Leu Lys Arg Asn Gly Glu Thr Leu Ala Lys Thr Ile Ala
1580 1585 1590

Cys Tyr Ser Gly Gln Leu Ala Ala Leu Thr Asp Glu Asn Thr Thr
1595 1600 1605

Leu Arg Ser Lys Leu Glu Lys Gln Arg Glu Ser Arg Gln Arg Leu
1610 1615 1620

Glu Thr Glu Met Gln Ser Tyr His Cys Arg Leu Asn Ala Ala Arg
1625 1630 1635

Cys Asp His Asp Gln Ser His Ser Ser Lys Arg Asp Gln Glu Leu
1640 1645 1650

Ala Phe Gln Gly Thr Val Asp Lys Cys Arg His Leu Gln Glu Asn
1655 1660 1665

Leu Asn Ser His Val Leu Ile Leu Ser Leu Gln Leu Ser Lys Ala
1670 1675 1680

Glu Ser Lys Ser Arg Val Leu Lys Thr Glu Leu His Tyr Thr Gly
1685 1690 1695

Glu Ala Leu Lys Glu Lys Ala Leu Val Phe Glu His Val Gln Ser
1700 1705 1710

Glu Leu Lys Gln Lys Gln Ser Gln Met Lys Asp Ile Glu Lys Met
1715 1720 1725

Tyr Lys Ser Gly Tyr Asn Thr Met Glu Lys Cys Ile Glu Lys Gln
1730 1735 1740

Glu Arg Phe Cys Gln Leu Lys Lys Gln Asn Met Leu Leu Gln Gln
1745 1750 1755

Gln Leu Asp Asp Ala Arg Asn Lys Ala Asp Asn Gln Glu Lys Ala
1760 1765 1770

Ile Leu Asn Ile Gln Ala Arg Cys Asp Ala Arg Val Gln Asn Leu
1775 1780 1785

Gln Ala Glu Cys Arg Lys His Arg Leu Leu Leu Glu Glu Asp Asn
1790 1795 1800

Lys Met Leu Val Asn Glu Leu Asn His Ser Lys Glu Lys Glu Cys
1805 1810 1815

Gln Tyr Glu Lys Glu Lys Ala Glu Arg Glu Val Ala Val Arg Gln
1820 1825 1830

Leu Gln Gln Lys Arg Asp Asp Val Leu Asn Lys Gly Ser Ala Thr
1835 1840 1845

Lys Ala Leu Leu Asp Ala Ser Ser Arg His Cys Thr Tyr Leu Glu
1850 1855 1860

Asn Gly Met Gln Asp Ser Arg Lys Lys Leu Asp Gln Met Arg Ser
1865 1870 1875

Gln Phe Gln Glu Ile Gln Asp Gln Leu Thr Ala Thr Ile Arg Cys
1880 1885 1890

Thr Lys Glu Met Glu Gly Asp Thr Gln Lys Leu Glu Val Glu His
1895 1900 1905

Val Met Met Arg Lys Ile Ile Lys Lys Gln Asp Asp Gln Ile Glu
1910 1915 1920

Arg Leu Glu Lys Ile Leu Gln His Ser Ser Leu Met Leu Gln Val
1925 1930 1935

Phe Glu Ser

1940

<210> 5243
<211> 309
<212> PRT
<213> Homo sapiens

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<400> 5243
Met Glu Asp Gly Lys Arg Glu Arg Trp Pro Thr Leu Met Glu Arg Leu
1 5 10 15

Cys Ser Asp Gly Phe Ala Phe Pro Gln Tyr Pro Ile Lys Pro Tyr His
20 25 30

Leu Lys Arg Ile His Arg Ala Val Leu His Gly Asn Leu Glu Lys Leu
35 40 45

Lys Tyr Leu Leu Leu Thr Tyr Tyr Asp Ala Asn Lys Arg Asp Arg Lys
50 55 60

Glu Arg Thr Ala Leu His Leu Ala Cys Ala Thr Gly Gln Pro Glu Met
65 70 75 80

Val His Leu Leu Val Ser Arg Arg Cys Glu Leu Asn Leu Cys Asp Arg
85 90 95

Glu Asp Arg Thr Pro Leu Ile Lys Ala Val Gln Leu Arg Gln Glu Ala
100 105 110

Cys Ala Thr Leu Leu Leu Gln Asn Gly Ala Asn Pro Asn Ile Thr Asp
115 120 125

```
Phe Phe Gly Arg Thr Ala Leu His Tyr Ala Val Tyr Asn Glu Asp Thr
    130                 135                 140

Ser Met Ile Glu Lys Leu Leu Ser His Gly Thr Asn Ile Glu Glu Cys
145                 150                 155                 160

Ser Lys Cys Glu Tyr Gln Pro Leu Leu Phe Ala Val Ser Arg Arg Lys
                165                 170                 175

Val Lys Met Val Glu Phe Leu Leu Lys Lys Lys Ala Asn Val Asn Ala
            180                 185                 190

Ile Asp Tyr Leu Gly Arg Ser Ala Leu Ile His Ala Val Thr Leu Gly
        195                 200                 205

Glu Lys Asp Ile Val Ile Leu Leu Leu Gln His Asn Ile Asp Val Leu
    210                 215                 220

Ser Arg Asp Ala Phe Arg Lys Ile Ala Gly Asp Tyr Ala Ile Glu Ala
225                 230                 235                 240

Lys Asn Arg Val Ile Phe Asp Leu Ile Tyr Glu Tyr Glu Arg Lys Arg
                245                 250                 255

Tyr Glu Asp Leu Pro Ile Asn Ser Asn Pro Val Ser Ser Gln Lys Gln
            260                 265                 270

Pro Ala Leu Ala Thr Glu Gln Asp Ser Met Ser Lys Ile Lys Lys Arg
        275                 280                 285

Lys Leu Ile Val Met Lys Lys Lys Ser Met Val Ile Gln Arg Phe Leu
    290                 295                 300

Val Thr Phe Cys Lys
305
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<400> 5244
Met Glu Arg Leu Cys Ser Asp Gly Phe Ala Phe Pro His Tyr Tyr Ile
1   5   10   15

Lys Pro Tyr His Leu Lys Arg Ile His Arg Ala Val Leu Arg Gly Asn
            20   25   30

Leu Glu Lys Leu Lys Tyr Leu Leu Leu Thr Tyr Tyr Asp Ala Asn Lys
        35   40   45

Arg Asp Arg Lys Glu Arg Thr Ala Leu His Leu Ala Cys Ala Thr Gly
    50   55   60

Gln Pro Glu Met Val His Leu Leu Val Ser Arg Arg Cys Glu Leu Asn
65   70   75   80

Leu Cys Asp Arg Glu Asp Arg Thr Pro Leu Ile Lys Ala Val Gln Leu
                85   90   95

Arg Gln Glu Ala Cys Ala Thr Leu Leu Leu Gln Asn Gly Ala Asp Pro
            100   105   110

Asn Ile Thr Asp Val Phe Gly Arg Thr Ala Leu His Tyr Ala Val Tyr
        115   120   125

Asn Glu Asp Thr Ser Met Ile Glu Lys Leu Leu Ser His Gly Thr Asn
    130   135   140

Ile Glu Glu Cys Ser Lys Asn Glu Tyr Gln Pro Leu Leu Leu Ala Val
145   150   155   160

```
Ser Arg Arg Lys Val Lys Met Val Glu Phe Leu Leu Lys Lys Lys Ala
                165                 170                 175

Asn Val Asn Ala Ile Asp Tyr Leu Gly Arg Ser Ala Leu Ile Leu Ala
            180                 185                 190

Val Thr Leu Gly Glu Lys Asp Ile Val Ile Leu Leu Leu Gln His Asn
        195                 200                 205

Ile Asp Val Phe Ser Arg Asp Val Tyr Gly Lys Leu Ala Glu Asp Tyr
    210                 215                 220

Ala Ser Glu Ala Glu Asn Arg Val Ile Phe Asp Leu Ile Tyr Glu Tyr
225                 230                 235                 240

Lys Arg Lys Arg Tyr Glu Asp Leu Pro Ile Asn Ser Asn Pro Val Ser
                245                 250                 255

Pro Gln Lys Gln Arg Ala Glu Lys Ala Thr Ser Asp Asp Lys Asp Ser
            260                 265                 270

Val Ser Asn Ile Ala Thr Glu Ile Lys Glu Gly Pro Ile Ser Gly Thr
        275                 280                 285

Val Ser Ser Gln Lys Gln Pro Ala Glu Lys Ala Thr Ser Asp Glu Lys
    290                 295                 300

Asp Ser Val Ser Asn Ile Ala Thr Glu Ile Lys Glu Gly Gln Gln Ser
305                 310                 315                 320

Gly Thr Val Ser Pro Gln Lys Gln Ser Ala Gln Lys Val Ile Phe Lys
                325                 330                 335

Lys Lys Val Ser Leu Leu Asn Ile Ala Thr Arg Ile Met Gly Gly Gly
            340                 345                 350

Lys Ser Gly Thr Val Ser Ser Gln Lys Gln Pro Ala Ser Lys Thr Ala
        355                 360                 365

Ser Asp Lys Thr Asp Ser Ala Leu Asn Thr Ala Thr Glu Ile Lys Asp
    370                 375                 380
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Gly Leu Gln Cys Gly Thr Val Ser Ser Gln Lys Gln Gln Ala Leu Lys
385                 390                 395                 400

Ala Thr Thr Asp Glu Glu Gly Ser Val Ser Asn Ile Ala Thr Glu Ile
                405                 410                 415

Lys Asp Gly Glu Lys Ser Gly Thr Val Ser Ser Gln Lys Lys Pro Ala
            420                 425                 430

Leu Lys Ala Thr Ser Asp Glu Lys Asp Ser Phe Ser Asn Ile Thr Arg
        435                 440                 445

Glu Lys Lys Asp Gly Glu Ile Ser Arg Thr Val Ser Ser Gln Lys Pro
    450                 455                 460

Pro Ala Leu Lys Ala Thr Ser Val Lys Glu Asp Ser Val Leu Asn Ile
465                 470                 475                 480

Ala Arg Glu Lys Lys Asp Gly Glu Lys Ser Arg Thr Val Ser Phe Glu
                485                 490                 495

Gln Pro Pro Gly Leu Lys Ala Thr Arg Asp Glu Lys Asp Ser Leu Leu
            500                 505                 510

Asn Ile Ala Arg Gly Lys Lys Asp Gly Glu Lys Thr Arg Arg Val Ser
        515                 520                 525

Ser His Lys Gln Pro Ser Leu Lys Ala Thr Ser Asp Lys Glu Asp Ser
    530                 535                 540

Val Pro Asn Met Ala Thr Glu Thr Lys Asp Glu Gln Ile Ser Gly Thr
545                 550                 555                 560

Val Ser Cys Gln Lys Gln Pro Ala Leu Lys Ala Thr Ser Asp Lys Lys
                565                 570                 575

Asp Ser Val Ser Asn Ile Pro Thr Glu Ile Lys Asp Gly Gln Gln Ser
            580                 585                 590

Gly Thr Val Ser Ser Gln Lys Gln Pro Ala Trp Lys Ala Thr Ser Val
        595                 600                 605
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Lys Lys Asp Ser Val Ser Asn Ile Ala Thr Glu Ile Lys Asp Gly Gln
    610                 615                 620

Ile Arg Gly Thr Val Ser Ser Gln Arg Arg Pro Ala Leu Lys Thr Thr
625                 630                 635                 640

Gly Asp Glu Lys Asp Ser Val Ser Asn Ile Ala Arg Glu Ile Lys Asp
                645                 650                 655

Gly Glu Lys Ser Gly Thr Val Ser Pro Gln Lys Gln Ser Ala Gln Lys
            660                 665                 670

Val Ile Phe Lys Lys Lys Val Ser Leu Leu Asn Ile Ala Thr Arg Ile
        675                 680                 685

Thr Gly Gly Gly Lys Ser Gly Thr Glu Tyr Pro Glu Asn Leu Arg Thr
    690                 695                 700

Leu Lys Ala Thr Ile Glu Asn Lys Asp Ser Val Leu Asn Thr Ala Thr
705                 710                 715                 720

Lys Met Lys Glu Val Gln Thr Ser Thr Pro Ala Glu Gln Asp Leu Glu
                725                 730                 735

Met Ala Ser Glu Gly Glu Gln Lys Arg Leu Glu Glu Tyr Glu Asn Asn
            740                 745                 750

Gln Pro Gln Val Lys Asn Gln Ile His Ser Arg Asp Asp Leu Asp Asp
        755                 760                 765

Ile Ile Gln Ser Ser Gln Thr Val Ser Glu Asp Gly Asp Ser Leu Cys
    770                 775                 780

Cys Asn Cys Lys Asn Val Ile Leu Leu Ile Asp Gln His Glu Met Lys
785                 790                 795                 800

Cys Lys Asp Cys Val His Leu Leu Lys Ile Lys Asn Thr Phe Cys Leu
                805                 810                 815

Trp Lys Arg Leu Ile Lys Leu Lys Asp Asn His Cys Glu Gln Leu Arg
            820                 825                 830

Val Lys Ile Arg Lys Leu Lys Asn Lys Ala Ser Val Leu Gln Lys Arg
```

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        835                 840                 845

Ile Ser Glu Lys Glu Glu Ile Lys Ser Gln Leu Lys His Glu Ile Leu
    850                 855                 860

Glu Leu Glu Lys Glu Leu Cys Ser Leu Arg Phe Ala Ile Gln Gln Glu
865                 870                 875                 880

Lys Lys Lys Arg Arg Asn Val Glu Glu Leu His Gln Lys Val Arg Glu
                885                 890                 895

Lys Leu Arg Ile Thr Glu Glu Gln Tyr Arg Ile Glu Ala Asp Val Thr
            900                 905                 910

Lys Pro Ile Lys Pro Ala Leu Lys Ser Ala Glu Val Glu Leu Lys Thr
        915                 920                 925

Gly Gly Asn Asn Ser Asn Gln Val Ser Glu Thr Asp Glu Lys Glu Asp
    930                 935                 940

Leu Leu His Glu Asn Arg Leu Met Gln Asp Glu Ile Ala Arg Leu Arg
945                 950                 955                 960

Leu Glu Lys Asp Thr Ile Lys Asn Gln Asn Leu Glu Lys Lys Tyr Leu
                965                 970                 975

Lys Asp Phe Glu Ile Val Lys Arg Lys His Glu Asp Leu Gln Lys Ala
            980                 985                 990

Leu Lys Arg Asn Gly Glu Thr Leu  Ala Lys Thr Ile Ala  Cys Tyr
Ser
        995                 1000                1005

Gly Gln  Leu Ala Ala Leu Thr  Asp Glu Asn Thr Thr  Leu Arg Ser
    1010                1015                1020

Lys Leu  Glu Lys Gln Arg Glu  Ser Arg Gln Arg Leu  Glu Thr Glu
    1025                1030                1035

Met Gln  Ser Tyr Arg Cys Arg  Leu Asn Ala Ala Arg  Cys Asp His
    1040                1045                1050

Asp Gln  Ser His Ser Ser Lys  Arg Asp Gln Glu Leu  Ala Phe Gln
```

1055 1060 1065

Gly Thr Val Asp Lys Cys Arg His Leu Gln Glu Asn Leu Asn Ser
1070 1075 1080

His Val Leu Ile Leu Ser Leu Gln Leu Ser Lys Ala Glu Ser Lys
1085 1090 1095

Ser Arg Val Leu Lys Thr Glu Leu His Tyr Thr Gly Glu Ala Leu
1100 1105 1110

Lys Glu Lys Ala Leu Val Phe Glu His Val Gln Ser Glu Leu Lys
1115 1120 1125

Gln Lys Gln Ser Gln Met Lys Asp Ile Glu Lys Met Tyr Lys Ser
1130 1135 1140

Gly Tyr Asn Thr Met Glu Lys Cys Ile Glu Lys Gln Glu Arg Phe
1145 1150 1155

Cys Gln Leu Lys Lys Gln Asn Met Leu Leu Gln Gln Gln Leu Asp
1160 1165 1170

Asp Ala Arg Asn Lys Ala Asp Asn Gln Glu Lys Ala Ile Leu Asn
1175 1180 1185

Ile Gln Ala Arg Cys Asp Ala Arg Val Gln Asn Leu Gln Ala Glu
1190 1195 1200

Cys Arg Lys His Arg Leu Leu Leu Glu Glu Asp Asn Lys Met Leu
1205 1210 1215

Val Asn Glu Leu Asn His Ser Lys Glu Lys Glu Cys Gln Tyr Glu
1220 1225 1230

Lys Glu Lys Ala Glu Arg Glu Val Ala Val Arg Gln Leu Gln Gln
1235 1240 1245

Lys Arg Asp Asp Val Leu Asn Lys Gly Ser Ala Thr Lys Ala Leu
1250 1255 1260

Leu Asp Ala Ser Ser Arg His Cys Thr Tyr Leu Glu Asn Gly Met
1265 1270 1275

```
Gln Asp  Ser Arg Lys Lys Leu  Asp Gln Met Arg Ser  Gln Phe Gln
    1280                1285                1290


Glu Ile  Gln Asp Gln Leu Thr  Ala Thr Ile Arg Cys  Thr Lys Glu
    1295                1300                1305


Met Glu  Gly Asp Thr Gln Lys  Leu Glu Val Glu His  Val Met Met
    1310                1315                1320


Arg Lys  Ile Ile Lys Lys Gln  Asp Asp Gln Ile Glu  Arg Leu Glu
    1325                1330                1335


Lys Ile  Leu Gln His Ser Ser  Leu Met Leu Gln Val  Phe Glu Ser
    1340                1345                1350


<210> 5245
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<212> PRT
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Met Glu Arg Leu Cys Ser Asp Gly Phe Ala Phe Pro His Tyr Tyr Ile
1               5                  10                  15


Lys Pro Tyr His Leu Lys Arg Ile His Arg Ala Val Leu Arg Gly Asn
            20                  25                  30


Leu Glu Lys Leu Lys Tyr Leu Leu Leu Thr Tyr Tyr Asp Ala Asn Lys
        35                  40                  45
```

```
Arg Asp Arg Lys Glu Arg Thr Ala Leu His Leu Ala Cys Ala Thr Gly
    50                  55                  60

Gln Pro Glu Met Val His Leu Leu Val Ser Arg Arg Cys Glu Leu Asn
65                  70                  75                  80

Leu Cys Asp Arg Glu Asp Arg Thr Pro Leu Ile Lys Ala Val Gln Leu
                85                  90                  95

Arg Gln Glu Ala Cys Ala Thr Leu Leu Leu Gln Asn Gly Ala Asp Pro
            100                 105                 110

Asn Ile Thr Asp Val Phe Gly Arg Thr Ala Leu His Tyr Ala Val Tyr
        115                 120                 125

Asn Glu Asp Thr Ser Met Ile Glu Lys Leu Leu Ser His Gly Thr Asn
    130                 135                 140

Ile Glu Glu Cys Ser Lys Cys Leu Leu Arg Asn Asn Glu Leu Arg Arg
145                 150                 155                 160

Leu Gln Val Thr Thr Lys Ile Leu Phe Gln Ile
                165                 170


<210> 5246
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<212> PRT
<213> Homo sapiens

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<400> 5246
Met Glu Arg Leu Cys Ser Asp Gly Phe Ala Phe Pro His Tyr Tyr Ile
1 5 10 15

Lys Pro Tyr His Leu Lys Arg Ile His Arg Ala Val Leu Arg Gly Asn
20 25 30

Leu Glu Lys Leu Lys Tyr Leu Leu Leu Thr Tyr Tyr Asp Ala Asn Lys
35 40 45

Arg Asp Arg Lys Glu Arg Thr Ala Leu His Leu Ala Cys Ala Thr Gly
50 55 60

Gln Pro Glu Met Val His Leu Leu Val Ser Arg Arg Cys Glu Leu Asn
65 70 75 80

Leu Cys Asp Arg Glu Asp Arg Thr Pro Leu Ile Lys Ala Val Gln Leu
85 90 95

Arg Gln Glu Ala Cys Ala Thr Leu Leu Leu Gln Asn Gly Ala Asp Pro
100 105 110

Asn Ile Thr Asp Val Phe Gly Arg Thr Ala Leu His Tyr Ala Val Tyr
115 120 125

Asn Glu Asp Thr Ser Met Ile Glu Lys Leu Leu Ser His Gly Thr Asn
130 135 140

Ile Glu Glu Cys Ser Lys Asn Glu Tyr Gln Pro Leu Leu Leu Ala Val
145 150 155 160

Ser Arg Arg Lys Val Lys Met Val Glu Phe Leu Leu Lys Lys Lys Ala
165 170 175

Asn Val Asn Ala Ile Asp Tyr Leu Gly Arg Ser Ala Leu Ile Leu Ala
180 185 190

Val Thr Leu Gly Glu Lys Asp Ile Val Ile Leu Leu Leu Gln His Asn
195 200 205

Ile Asp Val Phe Ser Arg Asp Val Tyr Gly Lys Leu Ala Glu Asp Tyr
210 215 220

```
Ala Ser Glu Ala Glu Asn Arg Val Ile Phe Asp Leu Ile Tyr Glu Tyr
225                 230                 235                 240

Lys Arg Lys Arg Tyr Glu Asp Leu Pro Ile Asn Ser Asn Pro Val Ser
                245                 250                 255

Pro Gln Lys Gln Arg Ala Glu Lys Ala Thr Ser Asp Asp Lys Asp Ser
            260                 265                 270

Val Ser Asn Ile Ala Thr Glu Ile Lys Glu Gly Pro Ile Ser Gly Thr
        275                 280                 285

Val Ser Ser Gln Lys Gln Pro Ala Glu Lys Ala Thr Ser Asp Glu Lys
    290                 295                 300

Asp Ser Val Ser Asn Ile Ala Thr Glu Ile Lys Glu Gly Gln Gln Ser
305                 310                 315                 320

Gly Thr Val Ser Pro Gln Lys Gln Ser Ala Gln Lys Val Ile Phe Lys
                325                 330                 335

Lys Lys Val Ser Leu Leu Asn Ile Ala Thr Arg Ile Met Gly Gly Gly
            340                 345                 350

Lys Ser Gly Thr Val Ser Ser Gln Lys Gln Pro Ala Ser Lys Thr Ala
        355                 360                 365

Ser Asp Lys Thr Asp Ser Ala Leu Asn Thr Ala Thr Glu Ile Lys Asp
    370                 375                 380

Gly Leu Gln Cys Gly Thr Val Ser Ser Gln Lys Gln Gln Ala Leu Lys
385                 390                 395                 400

Ala Thr Thr Asp Glu Glu Gly Ser Val Ser Asn Ile Ala Thr Glu Ile
                405                 410                 415

Lys Asp Gly Glu Lys Ser Gly Thr Val Ser Ser Gln Lys Lys Pro Ala
            420                 425                 430

Leu Lys Ala Thr Ser Asp Glu Lys Asp Ser Phe Ser Asn Ile Thr Arg
        435                 440                 445
```

```
Glu Lys Lys Asp Gly Glu Ile Ser Arg Thr Val Ser Ser Gln Lys Pro
    450                 455                 460

Pro Ala Leu Lys Ala Thr Ser Val Lys Glu Asp Ser Val Leu Asn Ile
465                 470                 475                 480

Ala Arg Glu Lys Lys Asp Gly Glu Lys Ser Arg Thr Val Ser Phe Glu
                485                 490                 495

Gln Pro Pro Gly Leu Lys Ala Thr Arg Asp Glu Lys Asp Ser Leu Leu
            500                 505                 510

Asn Ile Ala Arg Gly Lys Lys Asp Gly Glu Lys Thr Arg Arg Val Ser
        515                 520                 525

Ser His Lys Gln Pro Ser Leu Lys Ala Thr Ser Asp Lys Glu Asp Ser
    530                 535                 540

Val Pro Asn Met Ala Thr Glu Thr Lys Asp Glu Gln Ile Ser Gly Thr
545                 550                 555                 560

Val Ser Cys Gln Lys Gln Pro Ala Leu Lys Ala Thr Ser Asp Lys Lys
                565                 570                 575

Asp Ser Val Ser Asn Ile Pro Thr Glu Ile Lys Asp Gly Gln Gln Ser
            580                 585                 590

Gly Thr Val Ser Ser Gln Lys Gln Pro Ala Trp Lys Ala Thr Ser Val
        595                 600                 605

Lys Lys Asp Ser Val Ser Asn Ile Ala Thr Glu Ile Lys Asp Gly Gln
    610                 615                 620

Ile Arg Gly Thr Val Ser Ser Gln Arg Arg Pro Ala Leu Lys Thr Thr
625                 630                 635                 640

Gly Asp Glu Lys Asp Ser Val Ser Asn Ile Ala Arg Glu Ile Lys Asp
                645                 650                 655

Gly Glu Lys Ser Gly Thr Val Ser Pro Gln Lys Gln Ser Ala Gln Lys
            660                 665                 670

Val Ile Phe Lys Lys Lys Val Ser Leu Leu Asn Ile Ala Thr Arg Ile
```

675 680 685

Thr Gly Gly Gly Lys Ser Gly Thr Glu Tyr Pro Glu Asn Leu Arg Thr
690 695 700

Leu Lys Ala Thr Ile Glu Asn Lys Asp Ser Val Leu Asn Thr Ala Thr
705 710 715 720

Lys Met Lys Glu Val Gln Thr Ser Thr Pro Ala Glu Gln Asp Leu Glu
725 730 735

Met Ala Ser Glu Gly Glu Gln Lys Arg Leu Glu Glu Tyr Glu Asn Asn
740 745 750

Gln Pro Gln Val Lys Asn Gln Ile His Ser Arg Asp Asp Leu Asp Asp
755 760 765

Ile Ile Gln Ser Ser Gln Thr Val Ser Glu Asp Gly Asp Ser Leu Cys
770 775 780

Cys Asn Cys Lys Asn Val Ile Leu Leu Ile Asp Gln His Glu Met Lys
785 790 795 800

Cys Lys Asp Cys Val His Leu Leu Lys Ile Lys Asn Thr Phe Cys Leu
805 810 815

Trp Lys Arg Leu Ile Lys Leu Lys Asp Asn His Cys Glu Gln Leu Arg
820 825 830

Val Lys Ile Arg Lys Leu Lys Asn Lys Ala Ser Val Leu Gln Lys Arg
835 840 845

Ile Ser Glu Lys Glu Glu Ile Lys Ser Gln Leu Lys His Glu Ile Leu
850 855 860

Glu Leu Glu Lys Glu Leu Cys Ser Leu Arg Phe Ala Ile Gln Gln Glu
865 870 875 880

Lys Lys Lys Arg Arg Asn Val Glu Glu Leu His Gln Lys Val Arg Glu
885 890 895

Lys Leu Arg Ile Thr Glu Glu Gln Tyr Arg Ile Glu Ala Asp Val Thr
900 905 910

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Lys Pro Ile Lys Pro Ala Leu Lys Ser Ala Glu Val Glu Leu Lys Thr
        915                 920                 925

Gly Gly Asn Asn Ser Asn Gln Val Ser Glu Thr Asp Glu Lys Glu Asp
    930                 935                 940

Leu Leu His Glu Asn Arg Leu Met Gln Asp Glu Ile Ala Arg Leu Arg
945                 950                 955                 960

Leu Glu Lys Asp Thr Ile Lys Asn Gln Asn Leu Glu Lys Lys Tyr Leu
                965                 970                 975

Lys Asp Phe Glu Ile Val Lys Arg Lys His Glu Asp Leu Gln Lys Ala
            980                 985                 990

Leu Lys Arg Asn Gly Glu Thr Leu  Ala Lys Thr Ile Ala  Cys Tyr
Ser
        995                 1000                1005

Gly Gln  Leu Ala Ala Leu Thr  Asp Glu Asn Thr Thr  Leu Arg Ser
    1010                1015                1020

Lys Leu  Glu Lys Gln Arg Glu  Ser Arg Gln Arg Leu  Glu Thr Glu
    1025                1030                1035

Met Gln  Ser Tyr Arg Cys Arg  Leu Asn Ala Ala Arg  Cys Asp His
    1040                1045                1050

Asp Gln  Ser His Ser Ser Lys  Arg Asp Gln Glu Leu  Ala Phe Gln
    1055                1060                1065

Gly Thr  Val Asp Lys Cys Arg  His Leu Gln Glu Asn  Leu Asn Ser
    1070                1075                1080

His Val  Leu Ile Leu Ser Leu  Gln Leu Ser Lys Ala  Glu Ser Lys
    1085                1090                1095

Ser Arg  Val Leu Lys Thr Glu  Leu His Tyr Thr Gly  Glu Ala Leu
    1100                1105                1110

Lys Glu  Lys Ala Leu Val Phe  Glu His Val Gln Ser  Glu Leu Lys
    1115                1120                1125
```

```
Gln Lys  Gln Ser Gln Met Lys  Asp Ile Glu Lys Met  Tyr Lys Ser
    1130                1135                1140

Gly Tyr  Asn Thr Met Glu Lys  Cys Ile Glu Lys Gln  Glu Arg Phe
    1145                1150                1155

Cys Gln  Leu Lys Lys Gln Asn  Met Leu Leu Gln Gln  Gln Leu Asp
    1160                1165                1170

Asp Ala  Arg Asn Lys Ala Asp  Asn Gln Glu Lys Ala  Ile Leu Asn
    1175                1180                1185

Ile Gln  Ala Arg Cys Asp Ala  Arg Val Gln Asn Leu  Gln Ala Glu
    1190                1195                1200

Cys Arg  Lys His Arg Leu Leu  Leu Glu Glu Asp Asn  Lys Met Leu
    1205                1210                1215

Val Asn  Glu Leu Asn His Ser  Lys Glu Lys Glu Cys  Gln Tyr Glu
    1220                1225                1230

Lys Glu  Lys Ala Glu Arg Glu  Val Ala Val Arg Gln  Leu Gln Gln
    1235                1240                1245

Lys Arg  Asp Asp Val Leu Asn  Lys Gly Ser Ala Thr  Lys Ala Leu
    1250                1255                1260

Leu Asp  Ala Ser Ser Arg His  Cys Thr Tyr Leu Glu  Asn Gly Met
    1265                1270                1275

Gln Asp  Ser Arg Lys Lys Leu  Asp Gln Met Arg Ser  Gln Phe Gln
    1280                1285                1290

Glu Ile  Gln Asp Gln Leu Thr  Ala Thr Ile Arg Cys  Thr Lys Glu
    1295                1300                1305

Met Glu  Gly Asp Thr Gln Lys  Leu Glu Val Glu His  Val Met Met
    1310                1315                1320

Arg Lys  Ile Ile Lys Lys Gln  Asp Asp Gln Ile Glu  Arg Leu Glu
    1325                1330                1335
```

Lys Ile Leu Gln His Ser Ser Leu Met Leu Gln Val Phe Glu Ser
1340 1345 1350

<210> 5247
<211> 137
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1142; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD36B; "

<220>
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ankyrin repeat domain 36B; "

<220>
<221> source
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<400> 5247
Met Leu Val Asn Glu Leu Asn His Ser Lys Glu Lys Glu Cys Gln Tyr
1 5 10 15

Glu Lys Glu Lys Ala Glu Arg Glu Val Ala Val Arg Gln Leu Gln Gln
20 25 30

Lys Arg Asp Asp Val Leu Asn Lys Gly Ser Ala Thr Lys Ala Leu Leu
35 40 45

Asp Ala Ser Ser Arg His Cys Thr Tyr Leu Glu Asn Gly Met Gln Asp
50 55 60

Ser Arg Lys Lys Leu Asp Gln Met Arg Ser Gln Phe Gln Glu Ile Gln
65 70 75 80

Asp Gln Leu Thr Ala Thr Ile Arg Cys Thr Lys Glu Met Glu Gly Asp
85 90 95

Thr Gln Lys Leu Glu Val Glu His Val Met Met Arg Lys Ile Ile Lys
100 105 110

Lys Gln Asp Asp Gln Ile Glu Arg Leu Glu Lys Ile Leu Gln His Ser

```
        115                 120                 125

Ser Leu Met Leu Gln Val Phe Glu Ser
    130                 135


<210> 5248
<211> 239
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Uniprot ID:  Q8N2N9; "

<220>
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<223> /note="ENSP ID: ENSP00000482644"

<400> 5248
Met Glu Arg Leu Cys Ser Asp Gly Phe Ala Phe Pro His Tyr Tyr Ile
1               5                   10                  15


Lys Pro Tyr His Leu Lys Arg Ile His Arg Ala Val Leu Arg Gly Asn
            20                  25                  30


Leu Glu Lys Leu Lys Tyr Leu Leu Leu Thr Tyr Tyr Asp Ala Asn Lys
        35                  40                  45


Arg Asp Arg Lys Glu Arg Thr Ala Leu His Leu Ala Cys Ala Thr Gly
    50                  55                  60


Gln Pro Glu Met Val His Leu Leu Val Ser Arg Arg Cys Glu Leu Asn
65                  70                  75                  80


Leu Cys Asp Arg Glu Asp Arg Thr Pro Leu Ile Lys Ala Val Gln Leu
                85                  90                  95
```

```
Arg Gln Glu Ala Cys Ala Thr Leu Leu Leu Gln Asn Gly Ala Asp Pro
            100                 105                 110

Asn Ile Thr Asp Val Phe Gly Arg Thr Ala Leu His Tyr Ala Val Tyr
        115                 120                 125

Asn Glu Asp Thr Ser Met Ile Glu Lys Leu Leu Ser His Gly Thr Asn
    130                 135                 140

Ile Glu Glu Cys Ser Lys Asn Glu Tyr Gln Pro Leu Leu Leu Ala Val
145                 150                 155                 160

Ser Arg Arg Lys Val Lys Met Val Glu Phe Leu Leu Lys Lys Lys Ala
                165                 170                 175

Asn Val Asn Ala Ile Asp Tyr Leu Gly Arg Ser Ala Leu Ile Leu Ala
            180                 185                 190

Val Thr Leu Gly Glu Lys Asp Ile Val Ile Leu Leu Leu Gln His Asn
        195                 200                 205

Ile Asp Val Phe Ser Arg Asp Val Tyr Gly Lys Leu Ala Glu Asp Tyr
    210                 215                 220

Ala Ser Glu Ala Glu Asn Arg Val Val Ser Ser Glu Thr Thr Ser
225                 230                 235
```

<210> 5249
<211> 1032
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<400> 5249

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Met Gly Gly Gly Lys Ser Gly Thr Val Ser Ser Gln Lys Gln Pro Ala
1               5                  10                  15

Ser Lys Thr Ala Ser Asp Lys Thr Asp Ser Ala Leu Asn Thr Ala Thr
            20                  25                  30

Glu Ile Lys Asp Gly Leu Gln Cys Gly Thr Val Ser Ser Gln Lys Gln
        35                  40                  45

Gln Ala Leu Lys Ala Thr Thr Asp Glu Glu Gly Ser Val Ser Asn Ile
    50                  55                  60

Ala Thr Glu Ile Lys Asp Gly Glu Lys Ser Gly Thr Val Ser Ser Gln
65                  70                  75                  80

Lys Lys Pro Ala Leu Lys Ala Thr Ser Asp Glu Lys Asp Ser Phe Ser
                85                  90                  95

Asn Ile Thr Arg Glu Lys Lys Asp Gly Glu Ile Ser Arg Thr Val Ser
            100                 105                 110

Ser Gln Lys Pro Pro Ala Leu Lys Ala Thr Ser Val Lys Glu Asp Ser
        115                 120                 125

Val Leu Asn Ile Ala Arg Glu Lys Lys Asp Gly Glu Lys Ser Arg Thr
    130                 135                 140

Val Ser Phe Glu Gln Pro Pro Gly Leu Lys Ala Thr Arg Asp Glu Lys
145                 150                 155                 160

Asp Ser Leu Leu Asn Ile Ala Arg Gly Lys Lys Asp Gly Glu Lys Thr
                165                 170                 175

Arg Arg Val Arg Val Asp Lys Lys Phe Ser Ser Leu Asn Lys Ser Ala
            180                 185                 190

Gly Gly Ser Leu Lys Leu His Ile Leu Ile Gln His Lys Gly Gly Arg
        195                 200                 205

Arg Lys Arg Gly Met Ser Ser His Lys Gln Pro Ser Leu Lys Ala Thr
    210                 215                 220
```

```
Ser Asp Lys Glu Asp Ser Val Pro Asn Met Ala Thr Glu Thr Lys Asp
225                 230                 235                 240

Glu Gln Ile Ser Gly Thr Val Ser Cys Gln Lys Gln Pro Ala Leu Lys
                245                 250                 255

Ala Thr Ser Asp Lys Lys Asp Ser Val Ser Asn Ile Pro Thr Glu Ile
            260                 265                 270

Lys Asp Gly Gln Gln Ser Gly Thr Val Ser Ser Gln Lys Gln Pro Ala
        275                 280                 285

Trp Lys Ala Thr Ser Val Lys Lys Asp Ser Val Ser Asn Ile Ala Thr
    290                 295                 300

Glu Ile Lys Asp Gly Gln Ile Arg Gly Thr Gly Ile Leu Glu Tyr Thr
305                 310                 315                 320

Phe Asn Val Met Phe Asp Gln Ile Glu Glu Lys Phe Thr Ser Pro Asn
                325                 330                 335

Lys Ser Ala Gly Gly Val Ser Pro Gln Lys Gln Ser Ala Gln Lys Val
            340                 345                 350

Ile Phe Lys Lys Lys Val Ser Leu Leu Asn Ile Ala Thr Arg Ile Thr
        355                 360                 365

Gly Gly Gly Lys Ser Gly Thr Glu Tyr Pro Glu Asn Leu Arg Thr Leu
    370                 375                 380

Lys Ala Thr Ile Glu Asn Lys Asp Ser Val Leu Asn Thr Ala Thr Lys
385                 390                 395                 400

Met Lys Glu Val Gln Thr Ser Thr Pro Ala Glu Gln Asp Leu Glu Met
                405                 410                 415

Ala Ser Glu Gly Glu Gln Lys Arg Leu Glu Glu Tyr Glu Asn Asn Gln
            420                 425                 430

Pro Gln Val Lys Asn Gln Ile His Ser Arg Asp Asp Leu Asp Asp Ile
        435                 440                 445
```

```
Ile Gln Ser Ser Gln Thr Val Ser Glu Asp Gly Asp Ser Leu Cys Cys
    450                 455                 460

Asn Cys Lys Asn Val Ile Leu Leu Ile Asp Gln His Glu Met Lys Cys
465                 470                 475                 480

Lys Asp Cys Val His Leu Leu Lys Ile Lys Asn Thr Phe Cys Leu Trp
                485                 490                 495

Lys Arg Leu Ile Lys Leu Lys Asp Asn His Cys Glu Gln Leu Arg Val
            500                 505                 510

Lys Ile Arg Lys Leu Lys Asn Lys Ala Ser Val Leu Gln Lys Arg Ile
        515                 520                 525

Ser Glu Lys Glu Glu Ile Lys Ser Gln Leu Lys His Glu Ile Leu Glu
    530                 535                 540

Leu Glu Lys Glu Leu Cys Ser Leu Arg Phe Ala Ile Gln Gln Glu Lys
545                 550                 555                 560

Lys Lys Arg Arg Asn Val Glu Glu Leu His Gln Lys Val Arg Glu Lys
                565                 570                 575

Leu Arg Ile Thr Glu Glu Gln Tyr Arg Ile Glu Ala Asp Val Thr Lys
            580                 585                 590

Pro Ile Lys Pro Ala Leu Lys Ser Ala Glu Val Glu Leu Lys Thr Gly
        595                 600                 605

Gly Asn Asn Ser Asn Gln Val Ser Glu Thr Asp Glu Lys Glu Asp Leu
    610                 615                 620

Leu His Glu Asn Arg Leu Met Gln Asp Glu Ile Ala Arg Leu Arg Leu
625                 630                 635                 640

Glu Lys Asp Thr Ile Lys Asn Gln Asn Leu Glu Lys Lys Tyr Leu Lys
                645                 650                 655

Asp Phe Glu Ile Val Lys Arg Lys His Glu Asp Leu Gln Lys Ala Leu
            660                 665                 670
```

```
Lys Arg Asn Gly Glu Thr Leu Ala Lys Thr Ile Ala Cys Tyr Ser Gly
        675                 680                 685

Gln Leu Ala Ala Leu Thr Asp Glu Asn Thr Thr Leu Arg Ser Lys Leu
    690                 695                 700

Glu Lys Gln Arg Glu Ser Arg Gln Arg Leu Glu Thr Glu Met Gln Ser
705                 710                 715                 720

Tyr Arg Cys Arg Leu Asn Ala Ala Arg Cys Asp His Asp Gln Ser His
                725                 730                 735

Ser Ser Lys Arg Asp Gln Glu Leu Ala Phe Gln Gly Thr Val Asp Lys
            740                 745                 750

Cys Arg His Leu Gln Glu Asn Leu Asn Ser His Val Leu Ile Leu Ser
        755                 760                 765

Leu Gln Leu Ser Lys Ala Glu Ser Lys Ser Arg Val Leu Lys Thr Glu
    770                 775                 780

Leu His Tyr Thr Gly Glu Ala Leu Lys Glu Lys Ala Leu Val Phe Glu
785                 790                 795                 800

His Val Gln Ser Glu Leu Lys Gln Lys Gln Ser Gln Met Lys Asp Ile
                805                 810                 815

Glu Lys Met Tyr Lys Ser Gly Tyr Asn Thr Met Glu Lys Cys Ile Glu
            820                 825                 830

Lys Gln Glu Arg Phe Cys Gln Leu Lys Lys Gln Asn Met Leu Leu Gln
        835                 840                 845

Gln Gln Leu Asp Asp Ala Arg Asn Lys Ala Asp Asn Gln Glu Lys Ala
    850                 855                 860

Ile Leu Asn Ile Gln Ala Arg Cys Asp Ala Arg Val Gln Asn Leu Gln
865                 870                 875                 880

Ala Glu Cys Arg Lys His Arg Leu Leu Leu Glu Glu Asp Asn Lys Met
                885                 890                 895

Leu Val Asn Glu Leu Asn His Ser Lys Glu Lys Glu Cys Gln Tyr Glu
```

900 905 910

Lys Glu Lys Ala Glu Arg Glu Val Ala Val Arg Gln Leu Gln Gln Lys
915 920 925

Arg Asp Asp Val Leu Asn Lys Gly Ser Ala Thr Lys Ala Leu Leu Asp
930 935 940

Ala Ser Ser Arg His Cys Thr Tyr Leu Glu Asn Gly Met Gln Asp Ser
945 950 955 960

Arg Lys Lys Leu Asp Gln Met Arg Ser Gln Phe Gln Glu Ile Gln Asp
965 970 975

Gln Leu Thr Ala Thr Ile Arg Cys Thr Lys Glu Met Glu Gly Asp Thr
980 985 990

Gln Lys Leu Glu Val Glu His Val Met Met Arg Lys Ile Ile Lys Lys
995 1000 1005

Gln Asp Asp Gln Ile Glu Arg Leu Glu Lys Ile Leu Gln His Ser
1010 1015 1020

Ser Leu Met Leu Gln Val Phe Glu Ser
1025 1030

<210> 5250
<211> 618
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1143; "

<220>
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<220>
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<223> /note="Gene Name:
ankyrin repeat domain 36C; "

<220>
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<223> /note="Uniprot ID: Q5JPF3; "

<220>
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<223> /note="ENSP ID: ENSP00000295246"

<400> 5250
Met Arg Arg Lys Asp Ser Pro Pro Pro Gly Lys Val Ser Ser Gln Lys
1   5   10   15

Gln Pro Ala Glu Lys Ala Thr Ser Asp Asp Lys Asp Ser Val Ser Asn
            20   25   30

Ile Ala Thr Glu Ile Lys Glu Gly Pro Ile Ser Gly Thr Val Ser Ser
        35   40   45

Gln Lys Gln Pro Ala Glu Lys Ala Thr Ser Asp Glu Lys Asp Ser Val
    50   55   60

Ser Asn Ile Ala Thr Glu Ile Lys Glu Gly Gln Gln Ser Gly Thr Val
65   70   75   80

Ser Pro Gln Lys Gln Ser Ala Trp Lys Val Ile Phe Lys Lys Lys Val
                85   90   95

Ser Leu Leu Asn Ile Ala Thr Arg Ile Thr Gly Gly Gly Lys Ser Gly
            100   105   110

Thr Val Ser Ser Gln Lys Gln Pro Pro Ser Lys Ala Thr Ser Asp Lys
        115   120   125

Thr Asp Ser Ala Leu Asn Ile Ala Thr Glu Ile Lys Asp Gly Leu Gln
    130   135   140

Cys Gly Thr Val Ser Ser Gln Lys Gln Pro Ala Leu Lys Ala Thr Thr
145   150   155   160

Asp Glu Glu Asp Ser Val Ser Asn Ile Ala Thr Glu Ile Lys Asp Gly
                165   170   175

Glu Lys Ser Gly Thr Val Ser Ser Gln Lys Gln Pro Ala Leu Lys Ala
            180   185   190

Thr Thr Asp Glu Glu Asp Ser Val Ser Ile Ile Ala Thr Glu Ile Lys
        195   200   205

```
Asp Gly Glu Lys Ser Gly Thr Val Ser Ser Arg Lys Lys Pro Ala Leu
    210                 215                 220

Lys Ala Thr Ser Asp Glu Lys Asp Ser Phe Ser Asn Ile Thr Arg Glu
225                 230                 235                 240

Lys Lys Asp Gly Glu Ile Ser Arg Thr Val Thr Ser Glu Lys Pro Ala
                245                 250                 255

Gly Leu Lys Ala Thr Ser Asp Glu Glu Asp Ser Val Leu Asn Ile Ala
            260                 265                 270

Arg Gly Lys Glu Asp Gly Glu Lys Thr Arg Arg Val Ser Ser Arg Lys
        275                 280                 285

Lys Pro Ala Leu Lys Ala Thr Ser Asp Glu Lys Asp Ser Phe Ser Asn
    290                 295                 300

Ile Thr Arg Glu Lys Lys Asp Gly Glu Thr Ser Arg Thr Val Ser Ser
305                 310                 315                 320

Gln Lys Pro Pro Ala Leu Lys Ala Thr Ser Asp Glu Glu Asp Ser Val
                325                 330                 335

Leu Asn Ile Ala Arg Glu Lys Lys Asp Gly Glu Lys Ser Arg Thr Val
            340                 345                 350

Ser Ser Glu Lys Pro Ser Gly Leu Lys Ala Thr Ser Asp Glu Lys Asp
        355                 360                 365

Ser Val Leu Asn Ile Ala Arg Gly Lys Lys His Gly Glu Lys Thr Arg
    370                 375                 380

Arg Val Ser Ser His Lys Gln Pro Ala Leu Lys Ala Thr Ser Asp Lys
385                 390                 395                 400

Glu Asn Ser Val Pro Asn Met Ala Thr Glu Thr Lys Asp Glu Gln Ile
                405                 410                 415

Ser Gly Thr Val Ser Ser Gln Lys Gln Pro Ala Leu Lys Ala Thr Ser
            420                 425                 430
```

```
Asp Lys Lys Asp Ser Val Ser Asn Ile Pro Thr Glu Ile Lys Asp Gly
        435                 440                 445

Gln Gln Ser Gly Thr Val Ser Ser Gln Lys Gln Leu Ala Trp Lys Ala
    450                 455                 460

Thr Ser Val Lys Lys Asp Ser Val Ser Asn Ile Ala Thr Glu Ile Lys
465                 470                 475                 480

Asp Gly Gln Ile Arg Gly Thr Val Ser Ser Gln Arg Gln Pro Ala Leu
                485                 490                 495

Lys Ala Thr Gly Asp Glu Lys Asp Ser Val Ser Asn Ile Ala Arg Glu
            500                 505                 510

Ile Lys Asp Gly Glu Lys Ser Gly Thr Val Ser Pro Gln Lys Gln Ser
        515                 520                 525

Ala Gln Lys Val Ile Phe Lys Lys Lys Val Ser Leu Leu Asn Ile Ala
    530                 535                 540

Thr Arg Ile Thr Gly Gly Trp Lys Ser Gly Thr Glu Tyr Pro Glu Asn
545                 550                 555                 560

Leu Pro Thr Leu Lys Ala Thr Ile Glu Asn Lys Asn Ser Val Leu Asn
                565                 570                 575

Thr Ala Thr Lys Met Lys Asp Val Gln Thr Ser Thr Pro Glu Gln Asp
            580                 585                 590

Leu Glu Met Ala Ser Glu Gly Glu Gln Lys Arg Leu Glu Glu Tyr Glu
        595                 600                 605

Asn Asn Gln Pro Gln Ile Val Phe Thr Tyr
    610                 615


<210> 5251
<211> 1778
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1143; "
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<220>
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<223> /note="Uniprot ID: Q5JPF3; "

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<223> /note="ENSP ID: ENSP00000403302"

<400> 5251
Met Asp Asp Lys Glu Pro Lys Arg Trp Pro Thr Leu Arg Asp Arg Leu
1 5 10 15

Cys Ser Asp Gly Phe Leu Phe Pro Gln Tyr Pro Ile Lys Pro Tyr His
20 25 30

Leu Lys Gly Ile His Arg Ala Val Phe Tyr Arg Asp Leu Glu Glu Leu
35 40 45

Lys Phe Val Leu Leu Thr Arg Tyr Asp Ile Asn Lys Arg Asp Arg Lys
50 55 60

Glu Arg Thr Ala Leu His Leu Ala Cys Ala Thr Gly Gln Pro Glu Met
65 70 75 80

Val His Leu Leu Val Ser Arg Arg Cys Glu Leu Asn Leu Cys Asp Arg
85 90 95

Glu Asp Arg Thr Pro Leu Ile Lys Ala Val Gln Leu Arg Gln Glu Ala
100 105 110

Cys Ala Thr Leu Leu Leu Gln Asn Gly Ala Asp Pro Asn Ile Thr Asp
115 120 125

Val Phe Gly Arg Thr Ala Leu His Tyr Ala Val Tyr Asn Glu Asp Thr
130 135 140

Ser Met Ile Glu Lys Leu Leu Ser Tyr Gly Ala Asn Ile Glu Glu Cys
145 150 155 160

```
Ser Glu Asp Glu Tyr Pro Pro Leu Phe Leu Ala Val Ser Gln Arg Lys
                165                 170                 175

Val Lys Met Val Glu Phe Leu Leu Lys Lys Lys Ala Asn Ile Asn Ala
            180                 185                 190

Val Asp Tyr Leu Gly Arg Ser Ala Leu Ile His Ala Val Thr Leu Gly
        195                 200                 205

Glu Lys Asp Ile Val Ile Leu Leu Leu Gln His Asn Ile Asp Val Phe
    210                 215                 220

Ser Arg Asp Val Tyr Gly Lys Leu Ala Glu Asp Tyr Ala Ser Glu Ala
225                 230                 235                 240

Lys Asn Arg Val Ile Phe Glu Leu Ile Tyr Glu Tyr Glu Arg Lys Lys
                245                 250                 255

His Glu Glu Leu Ser Ile Asn Ser Asn Pro Val Ser Ser Gln Lys Gln
            260                 265                 270

Pro Ala Leu Lys Ala Thr Ser Gly Lys Glu Asp Ser Ile Ser Asn Ile
        275                 280                 285

Ala Thr Glu Ile Lys Asp Gly Gln Lys Ser Gly Thr Val Ser Ser Gln
    290                 295                 300

Lys Gln Pro Ala Leu Lys Gly Thr Ser Asp Lys Asn Asp Ser Val Ser
305                 310                 315                 320

Asn Thr Ala Thr Glu Ile Lys Asp Glu Gln Lys Ser Gly Thr Val Ser
                325                 330                 335

Ser Gln Lys Gln Pro Ala Leu Lys Asp Thr Ser Asp Lys Asn Asp Ser
            340                 345                 350

Val Ser Asn Thr Ala Thr Glu Ile Lys Asp Glu Gln Lys Ser Gly Thr
        355                 360                 365

Val Leu Pro Ala Val Glu Gln Cys Leu Asn Arg Ser Leu Tyr Arg Pro
    370                 375                 380
```

```
Asp Ala Val Ala Gln Pro Val Thr Glu Asp Glu Phe Ala Leu Glu Ser
385                 390                 395                 400

Glu Ile Ile Ser Lys Leu Tyr Ile Pro Lys Arg Lys Ile Ile Ser Pro
                405                 410                 415

Arg Ser Ile Glu Asp Val Leu Pro Pro Val Glu Glu Ala Val Asp Arg
            420                 425                 430

Cys Leu Tyr Leu Leu Asp Arg Phe Ala Gln Ala Val Thr Lys Asp Lys
        435                 440                 445

Phe Ala Leu Glu Ser Glu Asn Ile Ser Glu Pro Tyr Phe Thr Asn Arg
    450                 455                 460

Arg Thr Ile Ser Gln Gln Ser Ala Glu Lys Leu Asp Ala Ala Cys Gly
465                 470                 475                 480

Ile Asp Lys Thr Glu Asn Gly Thr Leu Phe Glu Asp Gln Asn Val Asp
                485                 490                 495

Lys Glu Gly Lys Ala Leu Pro Ala Thr Gly Gln Lys Ala Asn Val Ser
            500                 505                 510

Pro Glu Gln Pro Pro Leu Phe Thr His Thr Val Lys Asp Ser Asp His
        515                 520                 525

Ile Ser Thr Arg Phe Leu Gly Ser Met Asp Ser Leu Thr Ser Ser Glu
    530                 535                 540

Glu Ser Ser Glu Arg Pro Pro Leu Ser Thr Leu Thr Leu Lys Glu Ala
545                 550                 555                 560

Asp Pro Ser Ser Lys Ala Ala Met Arg Arg Lys Asp Ser Pro Pro Pro
                565                 570                 575

Gly Lys Val Ser Ser Gln Lys Gln Pro Ala Glu Lys Ala Thr Ser Asp
            580                 585                 590

Asp Lys Asp Ser Val Ser Asn Ile Ala Thr Glu Ile Lys Glu Gly Pro
        595                 600                 605

Ile Ser Gly Thr Val Ser Ser Gln Lys Gln Pro Ala Glu Lys Ala Thr
```

610 615 620

Ser Asp Glu Lys Asp Ser Val Ser Asn Ile Ala Thr Glu Ile Lys Glu
625 630 635 640

Gly Gln Gln Ser Gly Thr Val Ser Pro Gln Lys Gln Ser Ala Trp Lys
645 650 655

Val Ile Phe Lys Lys Lys Val Ser Leu Leu Asn Ile Ala Thr Arg Ile
660 665 670

Thr Gly Gly Gly Lys Ser Gly Thr Val Ser Ser Gln Lys Gln Pro Pro
675 680 685

Ser Lys Ala Thr Ser Asp Lys Thr Asp Ser Ala Leu Asn Ile Ala Thr
690 695 700

Glu Ile Lys Asp Gly Leu Gln Cys Gly Thr Val Ser Ser Gln Lys Gln
705 710 715 720

Pro Ala Leu Lys Ala Thr Thr Asp Glu Glu Asp Ser Val Ser Asn Ile
725 730 735

Ala Thr Glu Ile Lys Asp Gly Glu Lys Ser Gly Thr Val Ser Ser Gln
740 745 750

Lys Gln Pro Ala Leu Lys Ala Thr Thr Asp Glu Glu Asp Ser Val Ser
755 760 765

Ile Ile Ala Thr Glu Ile Lys Asp Gly Glu Lys Ser Gly Thr Val Ser
770 775 780

Ser Arg Lys Lys Pro Ala Leu Lys Ala Thr Ser Asp Glu Lys Asp Ser
785 790 795 800

Phe Ser Asn Ile Thr Arg Glu Lys Lys Asp Gly Glu Ile Ser Arg Thr
805 810 815

Val Thr Ser Glu Lys Pro Ala Gly Leu Lys Ala Thr Ser Asp Glu Glu
820 825 830

Asp Ser Val Leu Asn Ile Ala Arg Gly Lys Glu Asp Gly Glu Lys Thr
835 840 845

```
Arg Arg Val Ser Ser Arg Lys Lys Pro Ala Leu Lys Ala Thr Ser Asp
    850                 855                 860

Glu Lys Asp Ser Phe Ser Asn Ile Thr Arg Glu Lys Lys Asp Gly Glu
865                 870                 875                 880

Thr Ser Arg Thr Val Ser Ser Gln Lys Pro Pro Ala Leu Lys Ala Thr
                885                 890                 895

Ser Asp Glu Glu Asp Ser Val Leu Asn Ile Ala Arg Glu Lys Lys Asp
            900                 905                 910

Gly Glu Lys Ser Arg Thr Val Ser Ser Glu Lys Pro Ser Gly Leu Lys
        915                 920                 925

Ala Thr Ser Asp Glu Lys Asp Ser Val Leu Asn Ile Ala Arg Gly Lys
    930                 935                 940

Lys His Gly Glu Lys Thr Arg Arg Val Ser Ser His Lys Gln Pro Ala
945                 950                 955                 960

Leu Lys Ala Thr Ser Asp Lys Glu Asn Ser Val Pro Asn Met Ala Thr
                965                 970                 975

Glu Thr Lys Asp Glu Gln Ile Ser Gly Thr Val Ser Ser Gln Lys Gln
            980                 985                 990

Pro Ala Leu Lys Ala Thr Ser Asp  Lys Lys Asp Ser Val  Ser Asn
Ile
        995                 1000                1005

Pro Thr  Glu Ile Lys Asp Gly  Gln Gln Ser Gly Thr  Val Ser Ser
    1010                1015                1020

Gln Lys  Gln Leu Ala Trp Lys  Ala Thr Ser Val Lys  Lys Asp Ser
    1025                1030                1035

Val Ser  Asn Ile Ala Thr Glu  Ile Lys Asp Gly Gln  Ile Arg Gly
    1040                1045                1050

Thr Val  Ser Ser Gln Arg Gln  Pro Ala Leu Lys Ala  Thr Gly Asp
    1055                1060                1065
```

```
Glu Lys  Asp Ser Val Ser Asn  Ile Ala Arg Glu Ile  Lys Asp Gly
    1070                1075                1080

Glu Lys  Ser Gly Thr Val Ser  Pro Gln Lys Gln Ser  Ala Gln Lys
    1085                1090                1095

Val Ile  Phe Lys Lys Lys Val  Ser Leu Leu Asn Ile  Ala Thr Arg
    1100                1105                1110

Ile Thr  Gly Gly Trp Lys Ser  Gly Thr Glu Tyr Pro  Glu Asn Leu
    1115                1120                1125

Pro Thr  Leu Lys Ala Thr Ile  Glu Asn Lys Asn Ser  Val Leu Asn
    1130                1135                1140

Thr Ala  Thr Lys Met Lys Asp  Val Gln Thr Ser Thr  Pro Glu Gln
    1145                1150                1155

Asp Leu  Glu Met Ala Ser Glu  Gly Glu Gln Lys Arg  Leu Glu Glu
    1160                1165                1170

Tyr Glu  Asn Asn Gln Pro Gln  Val Lys Asn Gln Ile  His Ser Arg
    1175                1180                1185

Asp Asp  Leu Asp Asp Ile Ile  Gln Ser Ser Gln Thr  Val Ser Glu
    1190                1195                1200

Asp Gly  Asp Ser Leu Cys Cys  Asn Cys Lys Asn Val  Ile Leu Leu
    1205                1210                1215

Ile Asp  Gln His Glu Met Lys  Cys Lys Asp Cys Val  His Leu Leu
    1220                1225                1230

Lys Ile  Lys Lys Thr Phe Cys  Leu Cys Lys Arg Leu  Thr Glu Leu
    1235                1240                1245

Lys Asp  Asn His Cys Glu Gln  Leu Arg Val Lys Ile  Arg Lys Leu
    1250                1255                1260

Lys Asn  Lys Ala Ser Val Leu  Gln Lys Arg Leu Ser  Glu Lys Glu
    1265                1270                1275
```

```
Glu Ile  Lys Ser Gln Leu Lys  His Glu Thr Leu Glu  Leu Glu Lys
    1280                1285                1290

Glu Leu  Cys Ser Leu Arg Phe  Ala Ile Gln Gln Glu  Lys Lys Lys
    1295                1300                1305

Arg Arg  Asn Val Glu Glu Leu  His Gln Lys Val Arg  Glu Lys Leu
    1310                1315                1320

Arg Ile  Thr Glu Glu Gln Tyr  Arg Ile Glu Ala Asp  Val Thr Lys
    1325                1330                1335

Pro Ile  Lys Pro Ala Leu Lys  Ser Ala Glu Val Glu  Leu Lys Thr
    1340                1345                1350

Gly Gly  Asn Asn Ser Asn Gln  Val Ser Glu Thr Asp  Glu Lys Glu
    1355                1360                1365

Asp Leu  Leu His Glu Asn Arg  Leu Met Gln Asp Glu  Ile Ala Arg
    1370                1375                1380

Leu Arg  Leu Glu Lys Asp Thr  Ile Lys Asn Gln Asn  Leu Glu Lys
    1385                1390                1395

Lys Tyr  Leu Lys Asp Phe Glu  Ile Val Lys Arg Lys  His Glu Asp
    1400                1405                1410

Leu Gln  Lys Ala Leu Lys Arg  Asn Glu Glu Thr Leu  Ala Glu Thr
    1415                1420                1425

Ile Ala  Cys Tyr Ser Gly Gln  Leu Ala Ala Leu Thr  Asp Glu Asn
    1430                1435                1440

Thr Thr  Leu Arg Ser Lys Leu  Glu Lys Gln Arg Glu  Ser Gly Gln
    1445                1450                1455

Arg Leu  Glu Thr Glu Met Gln  Ser Tyr Arg Cys Arg  Leu Asn Ala
    1460                1465                1470

Ala Leu  Cys Asp His Asp Gln  Ser His Ser Ser Lys  Arg Asp Gln
    1475                1480                1485
```

```
Glu Leu  Ala Phe Gln Gly Thr  Val Asp Lys Cys Cys  His Leu Gln
    1490                 1495                 1500

Glu Asn  Leu Asn Ser His Val  Leu Ile Leu Ser Leu  Gln Leu Ser
    1505                 1510                 1515

Lys Ala  Glu Ser Lys Phe Arg  Val Leu Glu Thr Glu  Leu His Tyr
    1520                 1525                 1530

Thr Gly  Glu Ala Leu Lys Glu  Lys Ala Leu Val Phe  Glu His Val
    1535                 1540                 1545

Gln Ser  Glu Leu Lys Gln Lys  Gln Ser Gln Met Lys  Asp Ile Glu
    1550                 1555                 1560

Lys Met  Tyr Lys Ser Gly Tyr  Asn Thr Met Glu Lys  Cys Ile Glu
    1565                 1570                 1575

Lys Gln  Glu Arg Phe Cys Gln  Leu Lys Lys Gln Asn  Met Leu Leu
    1580                 1585                 1590

Gln Gln  Gln Leu Asp Asp Ala  Arg Asn Lys Ala Asp  Asn Gln Glu
    1595                 1600                 1605

Lys Ala  Ile Leu Asn Ile Gln  Ala Arg Cys Asp Ala  Arg Val Glu
    1610                 1615                 1620

Asn Leu  Gln Ala Glu Cys Arg  Lys His Arg Leu Leu  Leu Glu Glu
    1625                 1630                 1635

Asp Asn  Lys Met Leu Val Asn  Glu Leu Asn His Ser  Lys Glu Lys
    1640                 1645                 1650

Lys Cys  Gln Tyr Glu Lys Glu  Lys Ala Glu Arg Glu  Val Ala Val
    1655                 1660                 1665

Arg Gln  Leu Gln Gln Lys Gln  Asp Asp Val Leu Asn  Lys Arg Ser
    1670                 1675                 1680

Ala Thr  Lys Ala Leu Leu Asp  Ala Ser Ser Arg His  Cys Ile Tyr
    1685                 1690                 1695

Leu Glu  Asn Gly Met Gln Asp  Ser Arg Lys Lys Leu  Asp Gln Met
```

```
    1700                1705                1710

Arg Ser  Gln Phe Gln Glu Ile  Gln Asp Gln Leu Thr  Ala Thr Ile
    1715                1720                1725

Arg Cys  Thr Lys Glu Met Glu  Gly Asp Ala Gln Lys  Leu Glu Val
    1730                1735                1740

Glu Asn  Val Met Met Arg Lys  Ile Ile Lys Lys Gln  Asp Glu Gln
    1745                1750                1755

Ile Glu  Arg Phe Glu Lys Ile  Leu Gln His Ser Ser  Leu Met Leu
    1760                1765                1770

Gln Val  Phe Glu Ser
    1775
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<210> 5252
<211> 532
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1143; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD36C; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 36C; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431824"

<400> 5252

```
Met Asp Asp Lys Glu Pro Lys Arg Trp Pro Thr Leu Arg Asp Arg Leu
1               5                  10                  15

Cys Ser Asp Gly Phe Leu Phe Pro Gln Tyr Pro Ile Lys Pro Tyr His
            20                  25                  30

Leu Lys Gly Ile His Arg Ala Val Phe Tyr Arg Asp Leu Glu Glu Leu
        35                  40                  45
```

```
Lys Phe Val Leu Leu Thr Arg Tyr Asp Ile Asn Lys Arg Asp Arg Lys
    50                  55                  60

Glu Arg Thr Ala Leu His Leu Ala Cys Ala Thr Gly Gln Pro Glu Met
65                  70                  75                  80

Val His Leu Leu Val Ser Arg Arg Cys Glu Leu Asn Leu Cys Asp Arg
                85                  90                  95

Glu Asp Arg Thr Pro Leu Ile Lys Ala Val Gln Leu Arg Gln Glu Ala
            100                 105                 110

Cys Ala Thr Leu Leu Leu Gln Asn Gly Ala Asp Pro Asn Ile Thr Asp
        115                 120                 125

Val Phe Gly Arg Thr Ala Leu His Tyr Ala Val Tyr Asn Glu Asp Thr
    130                 135                 140

Ser Met Ile Glu Lys Leu Leu Ser Tyr Gly Ala Asn Ile Glu Glu Cys
145                 150                 155                 160

Ser Glu Asp Glu Tyr Pro Pro Leu Phe Leu Ala Val Ser Gln Arg Lys
                165                 170                 175

Val Lys Met Val Glu Phe Leu Leu Lys Lys Lys Ala Asn Ile Asn Ala
            180                 185                 190

Val Asp Tyr Leu Gly Arg Ser Ala Leu Ile His Ala Val Thr Leu Gly
        195                 200                 205

Glu Lys Asp Ile Val Ile Leu Leu Leu Gln His Asn Ile Asp Val Phe
    210                 215                 220

Ser Arg Asp Val Tyr Gly Lys Leu Ala Glu Asp Tyr Ala Ser Glu Ala
225                 230                 235                 240

Lys Asn Arg Val Ile Phe Glu Leu Ile Tyr Glu Tyr Glu Arg Lys Lys
                245                 250                 255

His Glu Glu Leu Ser Ile Asn Ser Asn Pro Val Ser Ser Gln Lys Gln
            260                 265                 270
```

```
Pro Ala Leu Lys Ala Thr Ser Gly Lys Glu Asp Ser Ile Ser Asn Ile
        275                 280                 285

Ala Thr Glu Ile Lys Asp Gly Gln Lys Ser Gly Thr Val Ser Ser Gln
    290                 295                 300

Lys Gln Pro Ala Leu Lys Gly Thr Ser Asp Lys Asn Asp Ser Val Ser
305                 310                 315                 320

Asn Thr Ala Thr Glu Ile Lys Asp Glu Gln Lys Ser Gly Thr Val Ser
                325                 330                 335

Ser Gln Lys Gln Pro Ala Leu Lys Asp Thr Ser Asp Lys Asn Asp Ser
            340                 345                 350

Val Ser Asn Thr Ala Thr Glu Ile Lys Asp Glu Gln Lys Ser Gly Thr
        355                 360                 365

Val Leu Pro Ala Val Glu Gln Cys Leu Asn Arg Ser Leu Tyr Arg Pro
    370                 375                 380

Asp Ala Val Ala Gln Pro Val Thr Glu Asp Glu Phe Ala Leu Glu Ser
385                 390                 395                 400

Glu Ile Ile Ser Lys Leu Tyr Ile Pro Lys Arg Lys Ile Ile Ser Pro
                405                 410                 415

Arg Ser Ile Glu Asp Val Leu Pro Pro Val Glu Glu Ala Val Asp Arg
            420                 425                 430

Cys Leu Tyr Leu Leu Asp Arg Phe Ala Gln Ala Val Thr Lys Asp Lys
        435                 440                 445

Phe Ala Leu Glu Ser Glu Asn Ile Ser Glu Pro Tyr Phe Thr Asn Arg
    450                 455                 460

Arg Thr Ile Ser Gln Gln Ser Ala Glu Lys Leu Asp Ala Ala Cys Gly
465                 470                 475                 480

Ile Asp Lys Thr Glu Asn Gly Thr Leu Phe Glu Asp Gln Asn Val Asp
                485                 490                 495

Lys Glu Gly Lys Ala Leu Pro Ala Thr Gly Gln Lys Ala Asn Val Ser
```

500 505 510

Pro Glu Gln Pro Pro Leu Phe Thr Asn Leu Leu Ser Asp Leu Leu Tyr
515 520 525

Pro Arg Leu Leu
530

<210> 5253
<211> 61
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1143; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD36C; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 36C; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000433685"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5253
Xaa Glu Lys Leu Asp Ala Ala Cys Gly Ile Asp Lys Thr Glu Asn Gly
1 5 10 15

Thr Leu Phe Glu Asp Gln Asn Val Asp Lys Glu Gly Lys Ala Leu Pro
20 25 30

Ala Thr Gly Gln Lys Ala Asn Val Ser Pro Glu Gln Pro Pro Leu Phe
35 40 45

Thr Asn Leu Leu Ser Asp Leu Leu Tyr Pro Arg Leu Leu
50 55 60

<210> 5254

<211> 163
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1143; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD36C; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 36C; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000482131"

<400> 5254

```
Met Asp Asp Lys Glu Pro Lys Arg Trp Pro Thr Leu Arg Asp Arg Leu
1               5                  10                  15

Cys Ser Asp Gly Phe Leu Phe Pro Gln Tyr Pro Ile Lys Pro Tyr His
            20                  25                  30

Leu Lys Gly Ile His Arg Ala Val Phe Tyr Arg Asp Leu Glu Glu Leu
        35                  40                  45

Lys Phe Val Leu Leu Thr Arg Tyr Asp Ile Asn Lys Arg Asp Arg Lys
    50                  55                  60

Glu Arg Thr Ala Leu His Leu Ala Cys Ala Thr Gly Gln Pro Glu Met
65                  70                  75                  80

Val His Leu Leu Val Ser Arg Arg Cys Glu Leu Asn Leu Cys Asp Arg
                85                  90                  95

Glu Asp Arg Thr Pro Leu Ile Lys Ala Val Gln Leu Arg Gln Glu Ala
            100                 105                 110

Cys Ala Thr Leu Leu Leu Gln Asn Gly Ala Asp Pro Asn Ile Thr Asp
        115                 120                 125

Val Phe Gly Arg Thr Ala Leu His Tyr Ala Val Tyr Asn Glu Asp Thr
    130                 135                 140
```

Ser Met Ile Glu Lys Leu Leu Ser Tyr Gly Ala Asn Ile Glu Glu Cys
145 150 155 160

Ser Glu Val

<210> 5255
<211> 137
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1143; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD36C; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 36C; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000485004"

<400> 5255
Met Leu Val Asn Glu Leu Asn His Ser Lys Glu Lys Lys Cys Gln Tyr
1 5 10 15

Glu Lys Glu Lys Ala Glu Arg Glu Val Ala Val Arg Gln Leu Gln Gln
20 25 30

Lys Gln Asp Asp Val Leu Asn Lys Arg Ser Ala Thr Lys Ala Leu Leu
35 40 45

Asp Ala Ser Ser Arg His Cys Ile Tyr Leu Glu Asn Gly Met Gln Asp
50 55 60

Ser Arg Lys Lys Leu Asp Gln Met Arg Ser Gln Phe Gln Glu Ile Gln
65 70 75 80

Asp Gln Leu Thr Ala Thr Ile Arg Cys Thr Lys Glu Met Glu Gly Asp
85 90 95

Ala Gln Lys Leu Glu Val Glu Asn Val Met Met Arg Lys Ile Ile Lys

100 105 110

Lys Gln Asp Glu Gln Ile Glu Arg Phe Glu Lys Ile Leu Gln His Ser
115 120 125

Ser Leu Met Leu Gln Val Phe Glu Ser
130 135

<210> 5256
<211> 158
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1144; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD37; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 37; "

<220>
<221> source
<223> /note="Uniprot ID: Q7Z713; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000335147"

<400> 5256
Met Leu Leu Leu Asp Cys Asn Pro Glu Val Asp Gly Leu Lys His Leu
1 5 10 15

Leu Glu Thr Gly Ala Ser Val Asn Ala Pro Pro Asp Pro Cys Lys Gln
20 25 30

Ser Pro Val His Leu Ala Ala Gly Ser Gly Leu Ala Cys Phe Leu Leu
35 40 45

Trp Gln Leu Gln Thr Gly Ala Asp Leu Asn Gln Gln Asp Val Leu Gly
50 55 60

Glu Ala Pro Leu His Lys Ala Ala Lys Val Gly Ser Leu Glu Cys Leu
65 70 75 80

```
Ser Leu Leu Val Ala Ser Asp Ala Gln Ile Asp Leu Cys Asn Lys Asn
                85                  90                  95


Gly Gln Thr Ala Glu Asp Leu Ala Trp Ser Cys Gly Phe Pro Asp Cys
            100                 105                 110


Ala Lys Phe Leu Thr Thr Ile Lys Cys Met Gln Thr Ile Lys Ala Ser
        115                 120                 125


Glu His Pro Asp Arg Asn Asp Cys Val Ala Val Leu Arg Gln Lys Arg
    130                 135                 140


Ser Leu Gly Ser Val Glu Asn Thr Ser Gly Lys Arg Lys Cys
145                 150                 155


<210> 5257
<211> 44
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1144; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD37; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 37; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000421529"

<400> 5257
Met Leu Leu Leu Asp Cys Asn Pro Glu Val Asp Gly Leu Lys His Leu
1               5                   10                  15


Leu Glu Thr Gly Ala Ser Val Asn Ala Pro Pro Asp Pro Cys Lys Gln
            20                  25                  30


Ser Pro Val His Leu Ala Ala Gly Ser Gly Leu Ala
        35                  40


<210> 5258
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<211> 183
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1145; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD39; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 39; "

<220>
<221> source
<223> /note="Uniprot ID: Q53RE8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000377170"

<400> 5258

Met	Ala	Thr	Pro	Arg	Pro	Cys	Ala	Asp	Gly	Pro	Cys	Cys	Ser	His	Pro
1				5					10						15
Ser	Ala	Val	Leu	Gly	Val	Gln	Gln	Thr	Leu	Glu	Glu	Met	Asp	Phe	Glu
			20					25					30		
Arg	Gly	Ile	Trp	Ser	Ala	Ala	Leu	Asn	Gly	Asp	Leu	Gly	Arg	Val	Lys
		35					40					45			
His	Leu	Ile	Gln	Lys	Ala	Glu	Asp	Pro	Ser	Gln	Pro	Asp	Ser	Ala	Gly
	50					55					60				
Tyr	Thr	Ala	Leu	His	Tyr	Ala	Ser	Arg	Asn	Gly	His	Tyr	Ala	Val	Cys
65					70					75					80
Gln	Phe	Leu	Leu	Glu	Ser	Gly	Ala	Lys	Cys	Asp	Ala	Gln	Thr	His	Gly
				85					90					95	
Gly	Ala	Thr	Ala	Leu	His	Arg	Ala	Ser	Tyr	Cys	Gly	His	Thr	Glu	Ile
			100					105					110		
Ala	Arg	Leu	Leu	Leu	Ser	His	Gly	Ser	Asn	Pro	Arg	Val	Val	Asp	Asp
		115					120					125			

```
Asp Gly Met Thr Ser Leu His Lys Ala Ala Glu Arg Gly His Gly Asp
    130                 135                 140

Ile Cys Ser Leu Leu Leu Gln His Ser Pro Ala Leu Lys Ala Ile Arg
145                 150                 155                 160

Asp Arg Lys Ala Arg Leu Ala Cys Asp Leu Leu Pro Cys Asn Ser Asp
                165                 170                 175

Leu Arg Asp Leu Leu Ser Ser
            180


<210> 5259
<211> 183
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1145; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD39; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 39; "

<220>
<221> source
<223> /note="Uniprot ID:  Q53RE8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000398321"

<400> 5259
Met Ala Thr Pro Arg Pro Cys Ala Asp Gly Pro Cys Cys Ser His Pro
1               5                   10                  15

Ser Ala Val Leu Gly Val Gln Gln Thr Leu Glu Glu Met Asp Phe Glu
            20                  25                  30

Arg Gly Ile Trp Ser Ala Ala Leu Asn Gly Asp Leu Gly Arg Val Lys
        35                  40                  45

His Leu Ile Gln Lys Ala Glu Asp Pro Ser Gln Pro Asp Ser Ala Gly
```

```
    50                  55                  60

Tyr Thr Ala Leu His Tyr Ala Ser Arg Asn Gly His Tyr Ala Val Cys
65                  70                  75                  80

Gln Phe Leu Leu Glu Ser Gly Ala Lys Cys Asp Ala Gln Thr His Gly
                85                  90                  95

Gly Ala Thr Ala Leu His Arg Ala Ser Tyr Cys Gly His Thr Glu Ile
            100                 105                 110

Ala Arg Leu Leu Leu Ser His Gly Ser Asn Pro Arg Val Val Asp Asp
        115                 120                 125

Asp Gly Met Thr Ser Leu His Lys Ala Ala Glu Arg Gly His Gly Asp
    130                 135                 140

Ile Cys Ser Leu Leu Leu Gln His Ser Pro Ala Leu Lys Ala Ile Arg
145                 150                 155                 160

Asp Arg Lys Ala Arg Leu Ala Cys Asp Leu Leu Pro Cys Asn Ser Asp
                165                 170                 175

Leu Arg Asp Leu Leu Ser Ser
            180


<210> 5260
<211> 368
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1146; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD40; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 40; "

<220>
<221> source
<223> /note="Uniprot ID:  Q6AI12; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000285243"

<400> 5260
Met Asn Ala Leu Leu Glu Gln Lys Glu Gln Gln Glu Arg Leu Arg Glu
1   5   10   15

Ala Ala Ala Leu Gly Asp Ile Arg Glu Val Gln Lys Leu Val Glu Ser
            20   25   30

Gly Val Asp Val Asn Ser Gln Asn Glu Val Asn Gly Trp Thr Cys Leu
        35   40   45

His Trp Ala Cys Lys Arg Asn His Gly Gln Val Val Ser Tyr Leu Leu
    50   55   60

Lys Ser Gly Ala Asp Lys Glu Ile Leu Thr Thr Lys Gly Glu Met Pro
65   70   75   80

Val Gln Leu Thr Ser Arg Arg Glu Ile Arg Lys Ile Met Gly Val Glu
                85   90   95

Glu Glu Asp Asp Asp Asp Asp Asp Asp Asp Asn Leu Pro Gln Leu Lys
            100   105   110

Lys Glu Ser Glu Leu Pro Phe Val Pro Asn Tyr Leu Ala Asn Pro Ala
        115   120   125

Phe Pro Phe Ile Tyr Thr Pro Thr Ala Glu Asp Ser Ala Gln Met Gln
    130   135   140

Asn Gly Gly Pro Ser Thr Pro Pro Ala Ser Pro Pro Ala Asp Gly Ser
145   150   155   160

Pro Pro Leu Leu Pro Pro Gly Glu Pro Pro Leu Leu Gly Thr Phe Pro
                165   170   175

Arg Asp His Thr Ser Leu Ala Leu Val Gln Asn Gly Asp Val Ser Ala
            180   185   190

Pro Ser Ala Ile Leu Arg Thr Pro Glu Ser Thr Lys Pro Gly Pro Val
        195   200   205

```
Cys Gln Pro Pro Val Ser Gln Ser Arg Ser Leu Phe Ser Ser Val Pro
    210                 215                 220

Ser Lys Pro Pro Met Ser Leu Glu Pro Gln Asn Gly Thr Tyr Ala Gly
225                 230                 235                 240

Pro Ala Pro Ala Phe Gln Pro Phe Phe Phe Thr Gly Ala Phe Pro Phe
                245                 250                 255

Asn Met Gln Glu Leu Val Leu Lys Val Arg Ile Gln Asn Pro Ser Leu
            260                 265                 270

Arg Glu Asn Asp Phe Ile Glu Ile Glu Leu Asp Arg Gln Glu Leu Thr
        275                 280                 285

Tyr Gln Glu Leu Leu Arg Val Cys Cys Cys Glu Leu Gly Val Asn Pro
    290                 295                 300

Asp Gln Val Glu Lys Ile Arg Lys Leu Pro Asn Thr Leu Leu Arg Lys
305                 310                 315                 320

Asp Lys Asp Val Ala Arg Leu Gln Asp Phe Gln Glu Leu Glu Leu Val
                325                 330                 335

Leu Met Ile Ser Glu Asn Asn Phe Leu Phe Arg Asn Ala Ala Ser Thr
            340                 345                 350

Leu Thr Glu Arg Pro Cys Tyr Asn Arg Arg Ala Ser Lys Leu Thr Tyr
        355                 360                 365


<210> 5261
<211> 122
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1146; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD40; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 40; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000468442"

<400> 5261
Met Pro Val Gln Leu Thr Ser Arg Arg Glu Ile Arg Lys Ile Met Gly
1   5   10   15

Val Glu Glu Glu Asp Asp Asp Asp Asp Asp Asp Asp Asn Leu Pro Gln
            20   25   30

Leu Lys Lys Glu Ser Glu Leu Pro Phe Val Pro Asn Tyr Leu Ala Asn
        35   40   45

Pro Ala Phe Pro Phe Ile Tyr Thr Pro Thr Ala Glu Asp Ser Ala Gln
    50   55   60

Met Gln Asn Gly Gly Pro Ser Thr Pro Pro Ala Ser Pro Pro Ala Asp
65   70   75   80

Gly Ser Pro Pro Leu Leu Pro Pro Gly Glu Pro Pro Leu Leu Gly Thr
                85   90   95

Phe Pro Arg Asp His Thr Ser Leu Ala Leu Val Gln Asn Gly Asp Val
            100   105   110

Ser Ala Pro Ser Ala Ile Leu Arg Thr Pro
        115   120

<210> 5262
<211> 517
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1147; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD42; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 42; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000260047"

<400> 5262
Met Pro Gly Val Ala Asn Ser Gly Pro Ser Thr Ser Ser Arg Glu Thr
1 5 10 15

Ala Asn Pro Cys Ser Arg Lys Lys Val His Phe Gly Ser Ile His Asp
20 25 30

Ala Val Arg Ala Gly Asp Val Lys Gln Leu Ser Glu Ile Val Val Arg
35 40 45

Gly Ala Ser Ile Asn Glu Leu Asp Val Leu His Lys Phe Thr Pro Leu
50 55 60

His Trp Ala Ala His Ser Gly Ser Leu Glu Cys Leu His Trp Leu Leu
65 70 75 80

Trp His Gly Ala Asp Ile Thr His Val Thr Thr Arg Gly Trp Thr Ala
85 90 95

Ser His Ile Ala Ala Ile Arg Gly Gln Asp Ala Cys Val Gln Ala Leu
100 105 110

Ile Met Asn Gly Ala Asn Leu Thr Ala Gln Asp Asp Arg Gly Cys Thr
115 120 125

Pro Leu His Leu Ala Ala Thr His Gly His Ser Phe Thr Leu Gln Ile
130 135 140

Met Leu Arg Ser Gly Asp Pro Ser Val Thr Asp Lys Arg Glu Trp Arg
145 150 155 160

Pro Val His Tyr Ala Ala Phe His Gly Arg Leu Gly Cys Leu Gln Leu
165 170 175

Leu Val Lys Trp Gly Cys Ser Ile Glu Asp Val Asp Tyr Asn Gly Asn
180 185 190

Leu Pro Val His Leu Ala Ala Met Glu Gly His Leu His Cys Phe Lys
195 200 205

Phe Leu Val Ser Arg Met Ser Ser Ala Thr Gln Val Leu Lys Ala Phe

```
    210                 215                 220

Asn Asp Asn Gly Glu Asn Val Leu Asp Leu Ala Gln Arg Phe Phe Lys
225                 230                 235                 240

Gln Asn Ile Leu Gln Phe Ile Gln Gly Ala Glu Tyr Glu Gly Lys Asp
                245                 250                 255

Leu Glu Asp Gln Glu Thr Leu Ala Phe Pro Gly His Val Ala Ala Phe
            260                 265                 270

Lys Gly Asp Leu Gly Met Leu Lys Lys Leu Val Glu Asp Gly Val Ile
        275                 280                 285

Asn Ile Asn Glu Arg Ala Asp Asn Gly Ser Thr Pro Met His Lys Ala
    290                 295                 300

Ala Gly Gln Gly His Ile Glu Cys Leu Gln Trp Leu Ile Lys Met Gly
305                 310                 315                 320

Ala Asp Ser Asn Ile Thr Asn Lys Ala Gly Glu Arg Pro Ser Asp Val
                325                 330                 335

Ala Lys Arg Phe Ala His Leu Ala Ala Val Lys Leu Leu Glu Glu Leu
            340                 345                 350

Gln Lys Tyr Asp Ile Asp Asp Glu Asn Glu Ile Asp Glu Asn Asp Val
        355                 360                 365

Lys Tyr Phe Ile Arg His Gly Val Glu Gly Ser Thr Asp Ala Lys Asp
    370                 375                 380

Asp Leu Cys Leu Ser Asp Leu Asp Lys Thr Asp Ala Arg Met Arg Ala
385                 390                 395                 400

Tyr Lys Lys Ile Val Glu Leu Arg His Leu Leu Glu Ile Ala Glu Ser
                405                 410                 415

Asn Tyr Lys His Leu Gly Gly Ile Thr Glu Glu Asp Leu Lys Gln Lys
            420                 425                 430

Lys Glu Gln Leu Glu Ser Glu Lys Thr Ile Lys Glu Leu Gln Gly Gln
        435                 440                 445
```

```
Leu Glu Tyr Glu Arg Leu Arg Arg Glu Lys Leu Glu Cys Gln Leu Asp
    450                 455                 460

Glu Tyr Arg Ala Glu Val Asp Gln Leu Arg Glu Thr Leu Glu Lys Ile
465                 470                 475                 480

Gln Val Pro Asn Phe Val Ala Met Glu Asp Ser Ala Ser Cys Glu Ser
                485                 490                 495

Asn Lys Glu Lys Arg Arg Val Lys Lys Lys Val Ser Ser Gly Gly Val
            500                 505                 510

Phe Val Arg Arg Tyr
        515


<210> 5263
<211> 198
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1147; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD42; "

<220>
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<223> /note="Gene Name:
      ankyrin repeat domain 42; "

<220>
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<223> /note="Uniprot ID:  Q8N9B4; "

<220>
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<223> /note="ENSP ID: ENSP00000377049"

<400> 5263
Met Pro Gly Val Ala Asn Ser Gly Pro Ser Thr Ser Ser Arg Glu Thr
1               5                   10                  15

Ala Asn Pro Cys Ser Arg Lys Lys Val His Phe Gly Ser Ile His Asp
            20                  25                  30
```

```
Ala Val Arg Ala Gly Asp Val Lys Gln Leu Ser Glu Ile Val Val Arg
        35                  40                  45

Gly Ala Ser Ile Asn Glu Leu Asp Val Leu His Lys Phe Thr Pro Leu
    50                  55                  60

His Trp Ala Ala His Ser Gly Ser Leu Glu Cys Leu His Trp Leu Leu
65                  70                  75                  80

Trp His Gly Ala Asp Ile Thr His Val Thr Thr Arg Gly Trp Thr Ala
                85                  90                  95

Ser His Ile Ala Ala Ile Arg Gly Gln Asp Ala Cys Val Gln Ala Leu
            100                 105                 110

Ile Met Asn Gly Ala Asn Leu Thr Ala Gln Asp Asp Arg Gly Cys Thr
        115                 120                 125

Pro Leu His Leu Ala Ala Thr His Gly His Ser Phe Thr Leu Gln Ile
    130                 135                 140

Met Leu Arg Ser Gly Val Asp Pro Ser Val Thr Asp Lys Arg Glu Trp
145                 150                 155                 160

Arg Pro Val His Tyr Ala Ala Phe His Gly Arg Leu Gly Cys Leu Gln
                165                 170                 175

Leu Leu Val Lys Trp Gly Cys Ser Ile Glu Asp Val Asp Tyr Asn Gly
            180                 185                 190

Asn Leu Pro Glu Pro Pro
        195


<210> 5264
<211> 389
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1147; "

<220>
<221> source
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<220>
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ankyrin repeat domain 42; "

<220>
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<223> /note="Uniprot ID: Q8N9B4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000377051"

<400> 5264

```
Met Pro Gly Val Ala Asn Ser Gly Pro Ser Thr Ser Ser Arg Glu Thr
1               5                  10                  15

Ala Asn Pro Cys Ser Arg Lys Lys Val His Phe Gly Ser Ile His Asp
            20                  25                  30

Ala Val Arg Ala Gly Asp Val Lys Gln Leu Ser Glu Ile Val Cys Leu
        35                  40                  45

His Trp Leu Leu Trp His Gly Ala Asp Ile Thr His Val Thr Thr Arg
    50                  55                  60

Gly Trp Thr Ala Ser His Ile Ala Ala Ile Arg Gly Gln Asp Ala Cys
65                  70                  75                  80

Val Gln Ala Leu Ile Met Asn Gly Ala Asn Leu Thr Ala Gln Asp Asp
                85                  90                  95

Arg Gly Cys Thr Pro Leu His Leu Ala Ala Thr His Gly His Ser Phe
            100                 105                 110

Thr Leu Gln Ile Met Leu Arg Ser Gly Val Asp Pro Ser Val Thr Asp
        115                 120                 125

Lys Arg Glu Trp Arg Pro Val His Tyr Ala Ala Phe His Gly Arg Leu
    130                 135                 140

Gly Cys Leu Gln Leu Leu Val Lys Trp Gly Cys Ser Ile Glu Asp Val
145                 150                 155                 160

Asp Tyr Asn Gly Asn Leu Pro Val His Leu Ala Ala Met Glu Gly His
                165                 170                 175
```

```
Leu His Cys Phe Lys Phe Leu Val Ser Arg Met Ser Ser Ala Thr Gln
            180                 185                 190

Val Leu Lys Ala Phe Asn Asp Asn Gly Glu Asn Val Leu Asp Leu Ala
        195                 200                 205

Gln Arg Phe Phe Lys Gln Asn Ile Leu Gln Phe Ile Gln Gly Ala Glu
    210                 215                 220

Tyr Glu Gly Lys Asp Leu Glu Asp Gln Glu Thr Leu Ala Phe Pro Gly
225                 230                 235                 240

His Val Ala Ala Phe Lys Gly Asp Leu Gly Met Leu Lys Lys Leu Val
                245                 250                 255

Glu Asp Gly Val Ile Asn Ile Asn Glu Arg Ala Asp Asn Gly Ser Thr
            260                 265                 270

Pro Met His Lys Ala Ala Gly Gln Gly His Ile Glu Cys Leu Gln Trp
        275                 280                 285

Leu Ile Lys Met Gly Ala Asp Ser Asn Ile Thr Asn Lys Ala Gly Glu
    290                 295                 300

Arg Pro Ser Asp Val Ala Lys Arg Phe Ala His Leu Ala Ala Val Lys
305                 310                 315                 320

Leu Leu Glu Glu Leu Gln Lys Tyr Asp Ile Asp Asp Glu Asn Glu Ile
                325                 330                 335

Asp Glu Asn Asp Val Lys Tyr Phe Ile Arg His Gly Val Glu Gly Ser
            340                 345                 350

Thr Asp Ala Lys Asp Asp Leu Cys Leu Ser Asp Leu Asp Lys Thr Asp
        355                 360                 365

Ala Arg Arg Pro Ser Lys Asn Cys Arg Ala Ser Trp Ser Met Asn Asp
    370                 375                 380

Tyr Val Glu Lys Asn
385
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<210> 5265
<211> 85
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
ankyrin repeat domain 42; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000432375"

<400> 5265
Met Asn Gly Ala Asn Leu Thr Ala Gln Asp Asp Arg Gly Cys Thr Pro
1 5 10 15

Leu His Leu Ala Ala Thr His Gly His Ser Phe Thr Leu Gln Ile Met
20 25 30

Leu Arg Ser Gly Val Asp Pro Ser Val Thr Asp Lys Arg Glu Trp Arg
35 40 45

Pro Val His Tyr Ala Ala Phe His Gly Arg Leu Gly Cys Leu Gln Leu
50 55 60

Leu Val Lys Trp Gly Cys Ser Ile Glu Asp Val Asp Tyr Asn Gly Asn
65 70 75 80

Leu Pro Glu Pro Pro
85

<210> 5266
<211> 230
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
ankyrin repeat domain 42; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000433585"

<400> 5266

```
Met Pro Gly Val Ala Asn Ser Gly Pro Ser Thr Ser Ser Arg Glu Thr
1               5                  10                  15

Ala Asn Pro Cys Ser Arg Lys Lys Val His Phe Gly Ser Ile His Asp
            20                  25                  30

Ala Val Arg Ala Gly Asp Val Lys Gln Leu Ser Glu Ile Val Val Arg
        35                  40                  45

Gly Ala Ser Ile Asn Glu Leu Asp Val Leu His Lys Phe Thr Pro Leu
    50                  55                  60

His Trp Ala Ala His Ser Gly Ser Leu Glu Cys Leu His Trp Leu Leu
65                  70                  75                  80

Trp His Gly Ala Asp Ile Thr His Val Thr Thr Arg Gly Trp Thr Ala
                85                  90                  95

Ser His Ile Ala Ala Ile Arg Gly Gln Asp Ala Cys Val Gln Ala Leu
            100                 105                 110

Ile Met Asn Gly Ala Asn Leu Thr Ala Gln Asp Asp Arg Gly Cys Thr
        115                 120                 125

Pro Leu His Leu Ala Ala Thr His Gly His Ser Phe Thr Leu Gln Ile
    130                 135                 140

Met Leu Arg Ser Gly Val Asp Pro Ser Val Thr Asp Lys Arg Glu Trp
145                 150                 155                 160

Arg Pro Val His Tyr Ala Ala Phe His Gly Arg Leu Gly Cys Leu Gln
                165                 170                 175
```

```
Leu Leu Val Lys Trp Gly Cys Ser Ile Glu Asp Val Asp Tyr Asn Gly
            180                 185                 190

Asn Leu Pro Gly Gly Ser His Leu Leu Leu Ser Ile Met Ala Thr Leu
        195                 200                 205

Arg Pro Leu Val Lys Pro Arg Ile Ile Lys Lys Arg Thr Lys Lys Phe
    210                 215                 220

Phe Arg His Gln Thr Asp
225                 230


<210> 5267
<211> 502
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1147; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD42; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 42; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000434666"

<400> 5267
Met Pro Gly Val Ala Asn Ser Gly Pro Ser Thr Ser Ser Arg Glu Thr
1               5                   10                  15

Ala Asn Pro Cys Ser Arg Lys Lys Val His Phe Gly Ser Ile His Asp
            20                  25                  30

Ala Val Arg Ala Gly Asp Val Lys Gln Leu Ser Glu Ile Val Val Arg
        35                  40                  45

Gly Ala Ser Ile Asn Glu Leu Asp Val Leu His Lys Phe Thr Pro Leu
    50                  55                  60

His Trp Ala Ala His Ser Gly Ser Leu Glu Cys Leu His Trp Leu Leu
65                  70                  75                  80
```

```
Trp His Gly Ala Asp Ile Thr His Val Thr Thr Arg Gly Trp Thr Ala
                 85                  90                  95

Ser His Ile Ala Ala Ile Arg Gly Gln Asp Ala Cys Val Gln Ala Leu
            100                 105                 110

Ile Met Asn Gly Ala Asn Leu Thr Ala Gln Asp Asp Arg Gly Cys Thr
        115                 120                 125

Pro Leu His Leu Ala Ala Thr His Gly His Ser Phe Thr Leu Gln Ile
    130                 135                 140

Met Leu Arg Ser Gly Val Asp Pro Ser Val Thr Asp Lys Arg Glu Trp
145                 150                 155                 160

Arg Pro Val His Tyr Ala Ala Phe His Gly Arg Leu Gly Cys Leu Gln
                165                 170                 175

Leu Leu Val Lys Trp Gly Cys Ser Ile Glu Asp Val Asp Tyr Asn Gly
            180                 185                 190

Asn Leu Pro Val His Leu Ala Ala Met Glu Gly His Leu His Cys Phe
        195                 200                 205

Lys Phe Leu Val Ser Arg Met Ser Ser Ala Thr Gln Val Leu Lys Ala
    210                 215                 220

Phe Asn Asp Asn Gly Glu Asn Val Leu Asp Leu Ala Gln Arg Phe Phe
225                 230                 235                 240

Lys Gln Asn Ile Leu Gln Phe Ile Gln Gly Ala Glu Tyr Glu Gly Lys
                245                 250                 255

Asp Leu Glu Asp Gln Glu Thr Leu Ala Phe Pro Gly His Val Ala Ala
            260                 265                 270

Phe Lys Gly Asp Leu Gly Met Leu Lys Lys Leu Val Glu Asp Gly Val
        275                 280                 285

Ile Asn Ile Asn Glu Arg Ala Asp Asn Gly Ser Thr Pro Met His Lys
    290                 295                 300
```

```
Ala Ala Gly Gln Gly His Ile Glu Cys Leu Gln Trp Leu Ile Lys Met
305                 310                 315                 320

Gly Ala Asp Ser Asn Ile Thr Asn Lys Ala Gly Glu Arg Pro Ser Asp
                325                 330                 335

Val Ala Lys Arg Phe Ala His Leu Ala Ala Val Lys Leu Leu Glu Glu
            340                 345                 350

Leu Gln Lys Tyr Asp Ile Asp Asp Glu Asn Glu Ile Asp Glu Asn Asp
        355                 360                 365

Val Lys Tyr Phe Ile Arg His Gly Val Glu Gly Ser Thr Asp Ala Lys
    370                 375                 380

Asp Asp Leu Cys Leu Ser Asp Leu Asp Lys Thr Asp Ala Arg Met Arg
385                 390                 395                 400

Ala Tyr Lys Lys Ile Val Glu Leu Arg His Leu Leu Glu Ile Ala Glu
                405                 410                 415

Ser Asn Tyr Lys His Leu Gly Gly Ile Thr Glu Glu Asp Leu Lys Gln
            420                 425                 430

Lys Lys Glu Gln Leu Glu Ser Glu Lys Thr Ile Lys Glu Leu Gln Gly
        435                 440                 445

Gln Leu Glu Tyr Glu Arg Leu Arg Arg Glu Lys Leu Glu Cys Gln Leu
    450                 455                 460

Asp Glu Tyr Arg Ala Glu Val Asp Gln Leu Arg Glu Thr Leu Glu Lys
465                 470                 475                 480

Ile Gln Val Pro Asn Phe Val Ala Met Thr Ala Leu Leu Val Ser Gln
                485                 490                 495

Thr Lys Arg Arg Gly Glu
            500
```

<210> 5268
<211> 142
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1147; "

<220>
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<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 42; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000435197"

<400> 5268
Asp Leu Gly Met Leu Lys Lys Leu Val Glu Asp Gly Val Ile Asn Ile
1 5 10 15

Asn Glu Arg Ala Asp Asn Gly Ser Thr Pro Met His Lys Ala Ala Gly
20 25 30

Gln Gly His Ile Glu Cys Leu Gln Trp Leu Ile Lys Met Gly Ala Asp
35 40 45

Ser Asn Ile Thr Asn Lys Ala Gly Glu Arg Pro Ser Asp Val Ala Lys
50 55 60

Arg Thr Ile Lys Glu Leu Gln Gly Gln Leu Glu Tyr Glu Arg Leu Arg
65 70 75 80

Arg Glu Lys Leu Glu Cys Gln Leu Asp Glu Tyr Arg Ala Glu Val Asp
85 90 95

Gln Leu Arg Glu Thr Leu Glu Lys Ile Gln Val Pro Asn Phe Val Ala
100 105 110

Met Glu Asp Ser Ala Ser Cys Glu Ser Asn Lys Glu Lys Arg Arg Val
115 120 125

Lys Lys Lys Val Ser Ser Gly Gly Val Phe Val Arg Arg Tyr
130 135 140

<210> 5269
<211> 527

<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1147; "

<220>
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<223> /note="Gene Name:
ankyrin repeat domain 42; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000435790"

<400> 5269
Met Pro Gly Val Ala Asn Ser Gly Pro Ser Thr Ser Ser Arg Glu Thr
1 5 10 15

Ala Asn Pro Cys Ser Arg Lys Lys Val His Phe Gly Ser Ile His Asp
20 25 30

Ala Val Arg Ala Gly Asp Val Lys Gln Leu Ser Glu Ile Val Val Arg
35 40 45

Gly Ala Ser Ile Asn Glu Leu Asp Val Leu His Lys Phe Thr Pro Leu
50 55 60

His Trp Ala Ala His Ser Gly Ser Leu Glu Cys Leu His Trp Leu Leu
65 70 75 80

Trp His Gly Ala Asp Ile Thr His Val Thr Thr Arg Gly Trp Thr Ala
85 90 95

Ser His Ile Ala Ala Ile Arg Gly Gln Asp Ala Cys Val Gln Ala Leu
100 105 110

Ile Met Asn Gly Ala Asn Leu Thr Ala Gln Asp Asp Arg Gly Cys Thr
115 120 125

Pro Leu His Leu Ala Ala Thr His Gly His Ser Phe Thr Leu Gln Ile
130 135 140

```
Met Leu Arg Ser Gly Val Asp Pro Ser Val Thr Asp Lys Arg Glu Trp
145                 150                 155                 160

Arg Pro Val His Tyr Ala Ala Phe His Gly Arg Leu Gly Cys Leu Gln
                165                 170                 175

Leu Leu Val Lys Trp Gly Cys Ser Ile Glu Asp Val Asp Tyr Asn Gly
            180                 185                 190

Asn Leu Pro Val His Leu Ala Ala Met Glu Gly His Leu His Cys Phe
        195                 200                 205

Lys Phe Leu Val Ser Arg Met Ser Ser Ala Thr Gln Val Leu Lys Ala
    210                 215                 220

Phe Asn Asp Asn Gly Glu Asn Val Leu Asp Leu Ala Gln Arg Phe Phe
225                 230                 235                 240

Lys Gln Asn Ile Leu Gln Phe Ile Gln Gly Ala Glu Tyr Glu Gly Lys
                245                 250                 255

Asp Leu Glu Asp Gln Glu Thr Leu Ala Phe Pro Gly His Val Ala Ala
            260                 265                 270

Phe Lys Gly Asp Leu Gly Met Leu Lys Lys Leu Val Glu Asp Gly Val
        275                 280                 285

Ile Asn Ile Asn Glu Arg Ala Asp Asn Gly Ser Thr Pro Met His Lys
    290                 295                 300

Ala Ala Gly Gln Gly His Ile Glu Cys Leu Gln Trp Leu Ile Lys Met
305                 310                 315                 320

Gly Ala Asp Ser Asn Ile Thr Asn Lys Ala Gly Glu Arg Pro Ser Asp
                325                 330                 335

Val Ala Lys Arg Phe Ala His Leu Ala Ala Val Lys Leu Leu Glu Glu
            340                 345                 350

Leu Gln Lys Tyr Asp Ile Asp Asp Glu Asn Glu Ile Asp Glu Asn Asp
        355                 360                 365

Val Lys Tyr Phe Ile Arg His Gly Val Glu Gly Ser Thr Asp Ala Lys
```

```
    370                 375                 380

Asp Asp Leu Cys Leu Ser Asp Leu Asp Lys Thr Asp Ala Arg Met Arg
385                 390                 395                 400

Ala Tyr Lys Lys Ile Val Glu Leu Arg His Leu Leu Glu Ile Ala Glu
                405                 410                 415

Ser Asn Tyr Lys His Leu Gly Gly Ile Thr Glu Glu Asp Leu Lys Gln
            420                 425                 430

Lys Lys Glu Gln Leu Glu Ser Glu Lys Thr Ile Lys Glu Leu Gln Gly
        435                 440                 445

Gln Leu Glu Tyr Glu Arg Leu Arg Arg Glu Lys Leu Glu Cys Gln Leu
    450                 455                 460

Asp Glu Tyr Arg Ala Glu Val Asp Gln Leu Arg Glu Thr Leu Glu Lys
465                 470                 475                 480

Ile Gln Val Pro Asn Phe Val Ala Met Val Gly Val Leu Phe Asn Thr
                485                 490                 495

Phe Ile Phe Leu Lys Lys Tyr Ile Gln Glu Trp Pro Arg Val Gln Ala
            500                 505                 510

Leu Gly Trp Gly Ser Leu Asp Leu Asn Pro Gly Tyr Ser Leu Phe
        515                 520                 525


<210> 5270
<211> 993
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1148; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD44; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 44; "
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<220>
<221> source
<223> /note="Uniprot ID: Q8N8A2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000282272"

<400> 5270
Met Ala Val Leu Lys Leu Thr Asp Gln Pro Pro Leu Val Gln Ala Ile
1   5   10   15

Phe Ser Gly Asp Pro Glu Glu Ile Arg Met Leu Ile His Lys Thr Glu
            20   25   30

Asp Val Asn Thr Leu Asp Ser Glu Lys Arg Thr Pro Leu His Val Ala
        35   40   45

Ala Phe Leu Gly Asp Ala Glu Ile Ile Glu Leu Leu Ile Leu Ser Gly
    50   55   60

Ala Arg Val Asn Ala Lys Asp Asn Met Trp Leu Thr Pro Leu His Arg
65   70   75   80

Ala Val Ala Ser Arg Ser Glu Glu Ala Val Gln Val Leu Ile Lys His
                85   90   95

Ser Ala Asp Val Asn Ala Arg Asp Lys Asn Trp Gln Thr Pro Leu His
            100   105   110

Val Ala Ala Ala Asn Lys Ala Val Lys Cys Ala Glu Val Ile Ile Pro
        115   120   125

Leu Leu Ser Ser Val Asn Val Ser Asp Arg Gly Gly Arg Thr Ala Leu
    130   135   140

His His Ala Ala Leu Asn Gly His Val Glu Met Val Asn Leu Leu Leu
145   150   155   160

Ala Lys Gly Ala Asn Ile Asn Ala Phe Asp Lys Lys Asp Arg Arg Ala
                165   170   175

Leu His Trp Ala Ala Tyr Met Gly His Leu Asp Val Val Ala Leu Leu
            180   185   190

```
Ile Asn His Gly Ala Glu Val Thr Cys Lys Asp Lys Lys Gly Tyr Thr
        195                 200                 205

Pro Leu His Ala Ala Ala Ser Asn Gly Gln Ile Asn Val Val Lys His
    210                 215                 220

Leu Leu Asn Leu Gly Val Glu Ile Asp Glu Ile Asn Val Tyr Gly Asn
225                 230                 235                 240

Thr Ala Leu His Ile Ala Cys Tyr Asn Gly Gln Asp Ala Val Val Asn
                245                 250                 255

Glu Leu Ile Asp Tyr Gly Ala Asn Val Asn Gln Pro Asn Asn Asn Gly
            260                 265                 270

Phe Thr Pro Leu His Phe Ala Ala Ala Ser Thr His Gly Ala Leu Cys
        275                 280                 285

Leu Glu Leu Leu Val Asn Asn Gly Ala Asp Val Asn Ile Gln Ser Lys
    290                 295                 300

Asp Gly Lys Ser Pro Leu His Met Thr Ala Val His Gly Arg Phe Thr
305                 310                 315                 320

Arg Ser Gln Thr Leu Ile Gln Asn Gly Gly Glu Ile Asp Cys Val Asp
                325                 330                 335

Lys Asp Gly Asn Thr Pro Leu His Val Ala Ala Arg Tyr Gly His Glu
            340                 345                 350

Leu Leu Ile Asn Thr Leu Ile Thr Ser Gly Ala Asp Thr Ala Lys Cys
        355                 360                 365

Gly Ile His Ser Met Phe Pro Leu His Leu Ala Ala Leu Asn Ala His
    370                 375                 380

Ser Asp Cys Cys Arg Lys Leu Leu Ser Ser Gly Phe Glu Ile Asp Thr
385                 390                 395                 400

Pro Asp Lys Phe Gly Arg Thr Cys Leu His Ala Ala Ala Ala Gly Gly
                405                 410                 415

Asn Val Glu Cys Ile Lys Leu Leu Gln Ser Ser Gly Ala Asp Phe His
```

```
            420                 425                 430

Lys Lys Asp Lys Cys Gly Arg Thr Pro Leu His Tyr Ala Ala Ala Asn
        435                 440                 445

Cys His Phe His Cys Ile Glu Thr Leu Val Thr Thr Gly Ala Asn Val
    450                 455                 460

Asn Glu Thr Asp Asp Trp Gly Arg Thr Ala Leu His Tyr Ala Ala Ala
465                 470                 475                 480

Ser Asp Met Asp Arg Asn Lys Thr Ile Leu Gly Asn Ala His Asp Asn
                485                 490                 495

Ser Glu Glu Leu Glu Arg Ala Arg Glu Leu Lys Glu Lys Glu Ala Thr
            500                 505                 510

Leu Cys Leu Glu Phe Leu Leu Gln Asn Asp Ala Asn Pro Ser Ile Arg
        515                 520                 525

Asp Lys Glu Gly Tyr Asn Ser Ile His Tyr Ala Ala Ala Tyr Gly His
    530                 535                 540

Arg Gln Cys Leu Glu Leu Leu Leu Glu Arg Thr Asn Ser Gly Phe Glu
545                 550                 555                 560

Glu Ser Asp Ser Gly Ala Thr Lys Ser Pro Leu His Leu Ala Ala Tyr
                565                 570                 575

Asn Gly His His Gln Ala Leu Glu Val Leu Leu Gln Ser Leu Val Asp
            580                 585                 590

Leu Asp Ile Arg Asp Glu Lys Gly Arg Thr Ala Leu Asp Leu Ala Ala
        595                 600                 605

Phe Lys Gly His Thr Glu Cys Val Glu Ala Leu Ile Asn Gln Gly Ala
    610                 615                 620

Ser Ile Phe Val Lys Asp Asn Val Thr Lys Arg Thr Pro Leu His Ala
625                 630                 635                 640

Ser Val Ile Asn Gly His Thr Leu Cys Leu Arg Leu Leu Leu Glu Ile
                645                 650                 655
```

```
Ala Asp Asn Pro Glu Ala Val Asp Val Lys Asp Ala Lys Gly Gln Thr
            660                 665                 670

Pro Leu Met Leu Ala Val Ala Tyr Gly His Ile Asp Ala Val Ser Leu
        675                 680                 685

Leu Leu Glu Lys Glu Ala Asn Val Asp Thr Val Asp Ile Leu Gly Cys
    690                 695                 700

Thr Ala Leu His Arg Gly Ile Met Thr Gly His Glu Glu Cys Val Gln
705                 710                 715                 720

Met Leu Leu Glu Gln Glu Val Ser Ile Leu Cys Lys Asp Ser Arg Gly
                725                 730                 735

Arg Thr Pro Leu His Tyr Ala Ala Ala Arg Gly His Ala Thr Trp Leu
            740                 745                 750

Ser Glu Leu Leu Gln Met Ala Leu Ser Glu Glu Asp Cys Cys Phe Lys
        755                 760                 765

Asp Asn Gln Gly Tyr Thr Pro Leu His Trp Ala Cys Tyr Asn Gly Asn
    770                 775                 780

Glu Asn Cys Ile Glu Val Leu Leu Glu Gln Lys Cys Phe Arg Lys Phe
785                 790                 795                 800

Ile Gly Asn Pro Phe Thr Pro Leu His Cys Ala Ile Ile Asn Asp His
                805                 810                 815

Gly Asn Cys Ala Ser Leu Leu Leu Gly Ala Ile Asp Ser Ser Ile Val
            820                 825                 830

Ser Cys Arg Asp Asp Lys Gly Arg Thr Pro Leu His Ala Ala Ala Phe
        835                 840                 845

Ala Asp His Val Glu Cys Leu Gln Leu Leu Leu Arg His Ser Ala Pro
    850                 855                 860

Val Asn Ala Val Asp Asn Ser Gly Lys Thr Ala Leu Met Met Ala Ala
865                 870                 875                 880
```

```
Glu Asn Gly Gln Ala Gly Ala Val Asp Ile Leu Val Asn Ser Ala Gln
                885                 890                 895

Ala Asp Leu Thr Val Lys Asp Lys Asp Leu Asn Thr Pro Leu His Leu
            900                 905                 910

Ala Cys Ser Lys Gly His Glu Lys Cys Ala Leu Leu Ile Leu Asp Lys
        915                 920                 925

Ile Gln Asp Glu Ser Leu Ile Asn Glu Lys Asn Asn Ala Leu Gln Thr
    930                 935                 940

Pro Leu His Val Ala Ala Arg Asn Gly Leu Lys Val Val Val Glu Glu
945                 950                 955                 960

Leu Leu Ala Lys Gly Ala Cys Val Leu Ala Val Asp Glu Asn Ala Ser
                965                 970                 975

Arg Ser Asn Gly Pro Arg Ser Thr Pro Gly Thr Ala Val Gln Lys Glu
            980                 985                 990

Glu
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<210> 5271
<211> 919
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1148; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD44; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 44; "

<220>
<221> source
<223> /note="Uniprot ID: Q8N8A2; "

<220>
<221> source

<223> /note="ENSP ID: ENSP00000331516"

<400> 5271

```
Met Leu Ile His Lys Thr Glu Asp Val Asn Thr Leu Asp Ser Glu Lys
1               5                  10                  15

Arg Thr Pro Leu His Val Ala Ala Phe Leu Gly Asp Ala Glu Ile Ile
            20                  25                  30

Glu Leu Leu Ile Leu Ser Gly Ala Arg Val Asn Ala Lys Asp Asn Met
        35                  40                  45

Trp Leu Thr Pro Leu His Arg Ala Val Ala Ser Arg Ser Glu Glu Ala
    50                  55                  60

Val Gln Val Leu Ile Lys His Ser Ala Asp Val Asn Ala Arg Asp Lys
65                  70                  75                  80

Asn Trp Gln Thr Pro Leu His Val Ala Ala Ala Asn Lys Ala Val Lys
                85                  90                  95

Cys Ala Glu Val Ile Ile Pro Leu Leu Ser Ser Val Asn Val Ser Asp
            100                 105                 110

Arg Gly Gly Arg Thr Ala Leu His His Ala Ala Leu Asn Gly His Val
        115                 120                 125

Glu Met Val Asn Leu Leu Leu Ala Lys Gly Ala Asn Ile Asn Ala Phe
    130                 135                 140

Asp Lys Lys Asp Arg Arg Ala Leu His Trp Ala Ala Tyr Met Gly His
145                 150                 155                 160

Leu Asp Val Val Ala Leu Leu Ile Asn His Gly Ala Glu Val Thr Cys
                165                 170                 175

Lys Asp Lys Lys Gly Tyr Thr Pro Leu His Ala Ala Ala Ser Asn Gly
            180                 185                 190

Gln Ile Asn Val Val Lys His Leu Leu Asn Leu Gly Val Glu Ile Asp
        195                 200                 205

Glu Ile Asn Val Tyr Gly Asn Thr Ala Leu His Ile Ala Cys Tyr Asn
    210                 215                 220
```

```
Gly Gln Asp Ala Val Val Asn Glu Leu Ile Asp Tyr Gly Ala Asn Val
225                 230                 235                 240

Asn Gln Pro Asn Asn Asn Gly Phe Thr Pro Leu His Phe Ala Ala Ala
                245                 250                 255

Ser Thr His Gly Ala Leu Cys Leu Glu Leu Leu Val Asn Asn Gly Ala
            260                 265                 270

Asp Val Asn Ile Gln Ser Lys Asp Gly Lys Ser Pro Leu His Met Thr
        275                 280                 285

Ala Val His Gly Arg Phe Thr Arg Ser Gln Thr Leu Ile Gln Asn Gly
    290                 295                 300

Gly Glu Ile Asp Cys Val Asp Lys Asp Gly Asn Thr Pro Leu His Val
305                 310                 315                 320

Ala Ala Arg Tyr Gly His Glu Leu Leu Ile Asn Thr Leu Ile Thr Ser
                325                 330                 335

Gly Ala Asp Thr Ala Lys Cys Gly Ile His Ser Met Phe Pro Leu His
            340                 345                 350

Leu Ala Ala Leu Asn Ala His Ser Asp Cys Cys Arg Lys Leu Leu Ser
        355                 360                 365

Ser Gly Phe Glu Ile Asp Thr Pro Asp Lys Phe Gly Arg Thr Cys Leu
    370                 375                 380

His Ala Ala Ala Ala Gly Gly Asn Val Glu Cys Ile Lys Leu Leu Gln
385                 390                 395                 400

Ser Ser Gly Ala Asp Phe His Lys Lys Asp Lys Cys Gly Arg Thr Pro
                405                 410                 415

Leu His Tyr Ala Ala Ala Asn Cys His Phe His Cys Ile Glu Thr Leu
            420                 425                 430

Val Thr Thr Gly Ala Asn Val Asn Glu Thr Asp Asp Trp Gly Arg Thr
        435                 440                 445
```

```
Ala Leu His Tyr Ala Ala Ala Ser Asp Met Asp Arg Asn Lys Thr Ile
    450                 455                 460

Leu Gly Asn Ala His Asp Asn Ser Glu Glu Leu Glu Arg Ala Arg Glu
465                 470                 475                 480

Leu Lys Glu Lys Glu Ala Thr Leu Cys Leu Glu Phe Leu Leu Gln Asn
                485                 490                 495

Asp Ala Asn Pro Ser Ile Arg Asp Lys Glu Gly Tyr Asn Ser Ile His
            500                 505                 510

Tyr Ala Ala Ala Tyr Gly His Arg Gln Cys Leu Glu Leu Leu Leu Glu
        515                 520                 525

Arg Thr Asn Ser Gly Phe Glu Glu Ser Asp Ser Gly Ala Thr Lys Ser
    530                 535                 540

Pro Leu His Leu Ala Ala Tyr Asn Gly His His Gln Ala Leu Glu Val
545                 550                 555                 560

Leu Leu Gln Ser Leu Val Asp Leu Asp Ile Arg Asp Glu Lys Gly Arg
                565                 570                 575

Thr Ala Leu Asp Leu Ala Ala Phe Lys Gly His Thr Glu Cys Val Glu
            580                 585                 590

Ala Leu Ile Asn Gln Gly Ala Ser Ile Phe Val Lys Asp Asn Val Thr
        595                 600                 605

Lys Arg Thr Pro Leu His Ala Ser Val Ile Asn Gly His Thr Leu Cys
    610                 615                 620

Leu Arg Leu Leu Leu Glu Ile Ala Asp Asn Pro Glu Ala Val Asp Val
625                 630                 635                 640

Lys Asp Ala Lys Gly Gln Thr Pro Leu Met Leu Ala Val Ala Tyr Gly
                645                 650                 655

His Ile Asp Ala Val Ser Leu Leu Leu Glu Lys Glu Ala Asn Val Asp
            660                 665                 670
```

```
Thr Val Asp Ile Leu Gly Cys Thr Ala Leu His Arg Gly Ile Met Thr
        675                 680                 685

Gly His Glu Glu Cys Val Gln Met Leu Leu Glu Gln Glu Val Ser Ile
    690                 695                 700

Leu Cys Lys Asp Ser Arg Gly Arg Thr Pro Leu His Tyr Ala Ala Ala
705                 710                 715                 720

Arg Gly His Ala Thr Trp Leu Ser Glu Leu Leu Gln Met Ala Leu Ser
                725                 730                 735

Glu Glu Asp Cys Cys Phe Lys Asp Asn Gln Gly Tyr Thr Pro Leu His
            740                 745                 750

Trp Ala Cys Tyr Asn Gly Asn Glu Asn Cys Ile Glu Val Leu Leu Glu
        755                 760                 765

Gln Lys Cys Phe Arg Lys Phe Ile Gly Asn Pro Phe Thr Pro Leu His
    770                 775                 780

Cys Ala Ile Ile Asn Asp His Gly Asn Cys Ala Ser Leu Leu Leu Gly
785                 790                 795                 800

Ala Ile Asp Ser Ser Ile Val Ser Cys Arg Asp Asp Lys Gly Arg Thr
                805                 810                 815

Pro Leu His Ala Ala Ala Phe Ala Asp His Val Glu Cys Leu Gln Leu
            820                 825                 830

Leu Leu Arg His Ser Ala Pro Val Asn Ala Val Asp Asn Ser Gly Lys
        835                 840                 845

Thr Ala Leu Met Met Ala Ala Glu Asn Gly Gln Ala Gly Ala Val Asp
    850                 855                 860

Ile Leu Val Asn Ser Ala Gln Ala Asp Leu Thr Val Lys Asp Lys Asp
865                 870                 875                 880

Leu Asn Thr Pro Leu His Leu Ala Cys Ser Lys Gly His Glu Lys Cys
                885                 890                 895

Ala Leu Leu Ile Leu Asp Lys Ile Gln Asp Glu Ser Leu Ile Asn Glu
```

900 905 910

Lys Asn Asn Ala Leu Gln Thr
915

<210> 5272
<211> 579
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1148; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD44; "

<220>
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<223> /note="Gene Name:
ankyrin repeat domain 44; "

<220>
<221> source
<223> /note="Uniprot ID: Q8N8A2; "

<220>
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<223> /note="ENSP ID: ENSP00000387141"

<400> 5272
Met Ala Val Leu Lys Leu Thr Asp Gln Pro Pro Leu Val Gln Ala Ile
1 5 10 15

Phe Ser Gly Asp Pro Glu Glu Ile Arg Met Leu Ile His Lys Thr Glu
20 25 30

Asp Val Asn Thr Leu Asp Ser Glu Lys Arg Thr Pro Leu His Val Ala
35 40 45

Ala Phe Leu Gly Asp Ala Glu Ile Ile Glu Leu Leu Ile Leu Ser Gly
50 55 60

Ala Arg Val Asn Ala Lys Asp Asn Met Trp Leu Thr Pro Leu His Arg
65 70 75 80

Ala Val Ala Ser Arg Ser Glu Glu Ala Val Gln Val Leu Ile Lys His
85 90 95

```
Ser Ala Asp Val Asn Ala Arg Asp Lys Asn Trp Gln Thr Pro Leu His
            100                 105                 110

Val Ala Ala Ala Asn Lys Ala Val Lys Cys Ala Glu Val Ile Ile Pro
        115                 120                 125

Leu Leu Ser Ser Val Asn Val Ser Asp Arg Gly Gly Arg Thr Ala Leu
    130                 135                 140

His His Ala Ala Leu Asn Gly His Val Glu Met Val Asn Leu Leu Leu
145                 150                 155                 160

Ala Lys Gly Ala Asn Ile Asn Ala Phe Asp Lys Lys Asp Arg Arg Ala
                165                 170                 175

Leu His Trp Ala Ala Tyr Met Gly His Leu Asp Val Val Ala Leu Leu
            180                 185                 190

Ile Asn His Gly Ala Glu Val Thr Cys Lys Asp Lys Lys Gly Tyr Thr
        195                 200                 205

Pro Leu His Ala Ala Ala Ser Asn Gly Gln Ile Asn Val Val Lys His
    210                 215                 220

Leu Leu Asn Leu Gly Val Glu Ile Asp Glu Ile Asn Val Tyr Gly Asn
225                 230                 235                 240

Thr Ala Leu His Ile Ala Cys Tyr Asn Gly Gln Asp Ala Val Val Asn
                245                 250                 255

Glu Leu Ile Asp Tyr Gly Ala Asn Val Asn Gln Pro Asn Asn Asn Gly
            260                 265                 270

Phe Thr Pro Leu His Phe Ala Ala Ala Ser Thr His Gly Ala Leu Cys
        275                 280                 285

Leu Glu Leu Leu Val Asn Asn Gly Ala Asp Val Asn Ile Gln Ser Lys
    290                 295                 300

Asp Gly Lys Ser Pro Leu His Met Thr Ala Val His Gly Arg Phe Thr
305                 310                 315                 320
```

```
Arg Ser Gln Thr Leu Ile Gln Asn Gly Gly Glu Ile Asp Cys Val Asp
                325                 330                 335

Lys Asp Gly Asn Thr Pro Leu His Val Ala Ala Arg Tyr Gly His Glu
            340                 345                 350

Leu Leu Ile Asn Thr Leu Ile Thr Ser Gly Ala Asp Thr Ala Lys Cys
        355                 360                 365

Gly Ile His Ser Met Phe Pro Leu His Leu Ala Ala Leu Asn Ala His
    370                 375                 380

Ser Asp Cys Cys Arg Lys Leu Leu Ser Ser Gly Phe Glu Ile Asp Thr
385                 390                 395                 400

Pro Asp Lys Phe Gly Arg Thr Cys Leu His Ala Ala Ala Ala Gly Gly
                405                 410                 415

Asn Val Glu Cys Ile Lys Leu Leu Gln Ser Ser Gly Ala Asp Phe His
            420                 425                 430

Lys Lys Asp Lys Cys Gly Arg Thr Pro Leu His Tyr Ala Ala Ala Asn
        435                 440                 445

Cys His Phe His Cys Ile Glu Thr Leu Val Thr Thr Gly Ala Asn Val
    450                 455                 460

Asn Glu Thr Asp Asp Trp Gly Arg Thr Ala Leu His Tyr Ala Ala Ala
465                 470                 475                 480

Ser Asp Met Asp Arg Asn Lys Thr Ile Leu Gly Asn Ala His Asp Asn
                485                 490                 495

Ser Glu Glu Leu Glu Arg Ala Arg Glu Leu Lys Glu Lys Glu Ala Thr
            500                 505                 510

Leu Cys Leu Glu Phe Leu Leu Gln Asn Asp Ala Asn Pro Ser Ile Arg
        515                 520                 525

Asp Lys Glu Gly Tyr Asn Ser Ile His Tyr Ala Ala Ala Tyr Gly His
    530                 535                 540

Arg Gln Cys Leu Glu Leu Val Ser Cys Phe Val Leu Phe Ser Leu Thr
```

545 550 555 560

His Thr His Thr His Thr Pro Asn His Arg Gly Ile Asn Cys Phe Phe
565 570 575

Pro Glu Leu

<210> 5273
<211> 367
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1148; "

<220>
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<223> /note="Gene Symbol: ANKRD44; "

<220>
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<223> /note="Gene Name:
ankyrin repeat domain 44; "

<220>
<221> source
<223> /note="Uniprot ID: Q8N8A2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000387233"

<400> 5273
Met Ala Val Leu Lys Leu Thr Asp Gln Pro Pro Leu Val Gln Ala Ile
1 5 10 15

Phe Ser Gly Asp Pro Glu Glu Ile Arg Met Leu Ile His Lys Thr Glu
20 25 30

Asp Val Asn Thr Leu Asp Ser Glu Lys Arg Thr Pro Leu His Val Ala
35 40 45

Ala Phe Leu Gly Asp Ala Glu Ile Ile Glu Leu Leu Ile Leu Ser Gly
50 55 60

Ala Arg Val Asn Ala Lys Asp Asn Met Trp Leu Thr Pro Leu His Arg
65 70 75 80

```
Ala Val Ala Ser Arg Ser Glu Glu Ala Val Gln Val Leu Ile Lys His
                 85                  90                  95

Ser Ala Asp Val Asn Ala Arg Asp Lys Asn Trp Gln Thr Pro Leu His
            100                 105                 110

Val Ala Ala Ala Asn Lys Ala Val Lys Cys Ala Glu Val Ile Ile Pro
        115                 120                 125

Leu Leu Ser Ser Val Asn Val Ser Asp Arg Gly Gly Arg Thr Ala Leu
    130                 135                 140

His His Ala Ala Leu Asn Gly His Val Glu Met Val Asn Leu Leu Leu
145                 150                 155                 160

Ala Lys Gly Ala Asn Ile Asn Ala Phe Asp Lys Lys Asp Arg Arg Ala
                165                 170                 175

Leu His Trp Ala Ala Tyr Met Gly His Leu Asp Val Val Ala Leu Leu
            180                 185                 190

Ile Asn His Gly Ala Glu Val Thr Cys Lys Asp Lys Lys Gly Tyr Thr
        195                 200                 205

Pro Leu His Ala Ala Ala Ser Asn Gly Gln Ile Asn Val Val Lys His
    210                 215                 220

Leu Leu Asn Leu Gly Val Glu Ile Asp Glu Ile Asn Val Tyr Gly Asn
225                 230                 235                 240

Thr Ala Leu His Ile Ala Cys Tyr Asn Gly Gln Asp Ala Val Val Asn
                245                 250                 255

Glu Leu Ile Asp Tyr Gly Ala Asn Val Asn Gln Pro Asn Asn Asn Gly
            260                 265                 270

Phe Thr Pro Leu His Phe Ala Ala Ala Ser Thr His Gly Ala Leu Cys
        275                 280                 285

Leu Glu Leu Leu Val Asn Asn Gly Ala Asp Val Asn Ile Gln Ser Lys
    290                 295                 300
```

```
Asp Gly Lys Ser Pro Leu His Met Thr Ala Val His Gly Arg Phe Thr
305                 310                 315                 320


Arg Ser Gln Thr Leu Ile Gln Asn Gly Gly Glu Ile Asp Cys Val Asp
                325                 330                 335


Lys Asp Gly Asn Thr Pro Leu His Val Ala Ala Arg Tyr Gly His Glu
            340                 345                 350


Leu Leu Ile Asn Thr Leu Ile Thr Ser Gly Ala Asp Thr Ala Lys
        355                 360                 365


<210> 5274
<211> 76
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1148; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD44; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 44; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000399895"

<400> 5274
Met Leu Ile His Lys Thr Glu Asp Val Asn Thr Leu Asp Ser Glu Lys
1               5                   10                  15


Arg Thr Pro Leu His Val Ala Ala Phe Leu Gly Asp Ala Glu Ile Ile
            20                  25                  30


Glu Leu Leu Ile Leu Ser Gly Ala Arg Val Asn Ala Lys Asp Asn Met
        35                  40                  45


Trp Leu Thr Pro Leu His Arg Ala Val Ala Ser Arg Ser Glu Glu Ala
    50                  55                  60


Val Gln Val Leu Ile Lys His Ser Ala Asp Val Asn
65                  70                  75
```

<210> 5275
<211> 791
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1148; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD44; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 44; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000403415"

<400> 5275

```
Lys Lys Gly Tyr Thr Pro Leu His Ala Ala Ala Ser Asn Gly Gln Ile
1               5                  10                  15


Asn Val Val Lys His Leu Leu Asn Leu Gly Val Glu Ile Asp Glu Ile
            20                  25                  30


Asn Val Tyr Gly Asn Thr Ala Leu His Ile Ala Cys Tyr Asn Gly Gln
        35                  40                  45


Asp Ala Val Val Asn Glu Leu Ile Asp Tyr Gly Ala Asn Val Asn Gln
    50                  55                  60


Pro Asn Asn Asn Gly Phe Thr Pro Leu His Phe Ala Ala Ala Ser Thr
65                  70                  75                  80


His Gly Ala Leu Cys Leu Glu Leu Leu Val Asn Asn Gly Ala Asp Val
                85                  90                  95


Asn Ile Gln Ser Lys Asp Gly Lys Ser Pro Leu His Met Thr Ala Val
            100                 105                 110


His Gly Arg Phe Thr Arg Ser Gln Thr Leu Ile Gln Asn Gly Gly Glu
        115                 120                 125
```

```
Ile Asp Cys Val Asp Lys Asp Gly Asn Thr Pro Leu His Val Ala Ala
    130                 135                 140

Arg Tyr Gly His Glu Leu Leu Ile Asn Thr Leu Ile Thr Ser Gly Ala
145                 150                 155                 160

Asp Thr Ala Lys Cys Gly Ile His Ser Met Phe Pro Leu His Leu Ala
                165                 170                 175

Ala Leu Asn Ala His Ser Asp Cys Cys Arg Lys Leu Leu Ser Ser Gly
            180                 185                 190

Gln Lys Tyr Ser Ile Val Ser Leu Phe Ser Asn Glu His Val Leu Ser
        195                 200                 205

Ala Gly Phe Glu Ile Asp Thr Pro Asp Lys Phe Gly Arg Thr Cys Leu
    210                 215                 220

His Ala Ala Ala Ala Gly Gly Asn Val Glu Cys Ile Lys Leu Leu Gln
225                 230                 235                 240

Ser Ser Gly Ala Asp Phe His Lys Lys Asp Lys Cys Gly Arg Thr Pro
                245                 250                 255

Leu His Tyr Ala Ala Ala Asn Cys His Phe His Cys Ile Glu Thr Leu
            260                 265                 270

Val Thr Thr Gly Ala Asn Val Asn Glu Thr Asp Asp Trp Gly Arg Thr
        275                 280                 285

Ala Leu His Tyr Ala Ala Ala Ser Asp Met Asp Arg Asn Lys Thr Ile
    290                 295                 300

Leu Gly Asn Ala His Asp Asn Ser Glu Glu Leu Glu Arg Ala Arg Glu
305                 310                 315                 320

Leu Lys Glu Lys Glu Ala Thr Leu Cys Leu Glu Phe Leu Leu Gln Asn
                325                 330                 335

Asp Ala Asn Pro Ser Ile Arg Asp Lys Glu Gly Tyr Asn Ser Ile His
            340                 345                 350

Tyr Ala Ala Ala Tyr Gly His Arg Gln Cys Leu Glu Leu Leu Leu Glu
```

355 360 365

Arg Thr Asn Ser Gly Phe Glu Glu Ser Asp Ser Gly Ala Thr Lys Ser
370 375 380

Pro Leu His Leu Ala Ala Tyr Asn Gly His His Gln Ala Leu Glu Val
385 390 395 400

Leu Leu Gln Ser Leu Val Asp Leu Asp Ile Arg Asp Glu Lys Gly Arg
405 410 415

Thr Ala Leu Asp Leu Ala Ala Phe Lys Gly His Thr Glu Cys Val Glu
420 425 430

Ala Leu Ile Asn Gln Gly Ala Ser Ile Phe Val Lys Asp Asn Val Thr
435 440 445

Lys Arg Thr Pro Leu His Ala Ser Val Ile Asn Gly His Thr Leu Cys
450 455 460

Leu Arg Leu Leu Leu Glu Ile Ala Asp Asn Pro Glu Ala Val Asp Val
465 470 475 480

Lys Asp Ala Lys Gly Gln Thr Pro Leu Met Leu Ala Val Ala Tyr Gly
485 490 495

His Ile Asp Ala Val Ser Leu Leu Leu Glu Lys Glu Ala Asn Val Asp
500 505 510

Thr Val Asp Ile Leu Gly Cys Thr Ala Leu His Arg Gly Ile Met Thr
515 520 525

Gly His Glu Glu Cys Val Gln Met Leu Leu Glu Gln Glu Val Ser Ile
530 535 540

Leu Cys Lys Asp Ser Arg Gly Arg Thr Pro Leu His Tyr Ala Ala Ala
545 550 555 560

Arg Gly His Ala Thr Trp Leu Ser Glu Leu Leu Gln Met Ala Leu Ser
565 570 575

Glu Glu Asp Cys Cys Phe Lys Asp Asn Gln Gly Tyr Thr Pro Leu His
580 585 590

```
Trp Ala Cys Tyr Asn Gly Asn Glu Asn Cys Ile Glu Val Leu Leu Glu
        595                 600                 605

Gln Lys Cys Phe Arg Lys Phe Ile Gly Asn Pro Phe Thr Pro Leu His
    610                 615                 620

Cys Ala Ile Ile Asn Asp His Gly Asn Cys Ala Ser Leu Leu Leu Gly
625                 630                 635                 640

Ala Ile Asp Ser Ser Ile Val Ser Cys Arg Asp Asp Lys Gly Arg Thr
                645                 650                 655

Pro Leu His Ala Ala Ala Phe Ala Asp His Val Glu Cys Leu Gln Leu
            660                 665                 670

Leu Leu Arg His Ser Ala Pro Val Asn Ala Val Asp Asn Ser Gly Lys
        675                 680                 685

Thr Ala Leu Met Met Ala Ala Glu Asn Gly Gln Ala Gly Ala Val Asp
    690                 695                 700

Ile Leu Val Asn Ser Ala Gln Ala Asp Leu Thr Val Lys Asp Lys Asp
705                 710                 715                 720

Leu Asn Thr Pro Leu His Leu Ala Cys Ser Lys Gly His Glu Lys Cys
                725                 730                 735

Ala Leu Leu Ile Leu Asp Lys Ile Gln Asp Glu Ser Leu Ile Asn Glu
            740                 745                 750

Lys Asn Asn Ala Leu Gln Thr Pro Leu His Val Ala Ala Arg Asn Gly
        755                 760                 765

Leu Lys Val Val Val Glu Glu Leu Leu Ala Lys Gly Ala Cys Val Leu
    770                 775                 780

Ala Val Asp Glu Asn Gly Cys
785                 790
```

<210> 5276
<211> 40
<212> PRT

<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1148; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD44; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 44; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000405983"

<400> 5276
Met Ala Val Leu Lys Leu Thr Asp Gln Pro Pro Leu Val Gln Ala Ile
1 5 10 15

Phe Ser Gly Asp Pro Glu Glu Ile Arg Met Leu Ile His Lys Thr Glu
20 25 30

Asp Val Asn Thr Leu Glu Leu Val
35 40

<210> 5277
<211> 182
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1148; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD44; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 44; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000413091"

<220>
<221> MOD_RES

<222> (1)..(1)
<223> Any amino acid

<400> 5277
Xaa Ile Asn Asp His Gly Asn Cys Ala Ser Leu Leu Leu Gly Ala Ile
1 5 10 15

Asp Ser Ser Ile Val Ser Cys Arg Asp Asp Lys Gly Arg Thr Pro Leu
20 25 30

His Ala Ala Ala Phe Ala Asp His Val Glu Cys Leu Gln Leu Leu Leu
35 40 45

Arg His Ser Ala Pro Val Asn Ala Val Asp Asn Ser Gly Lys Thr Ala
50 55 60

Leu Met Met Ala Ala Glu Asn Gly Gln Ala Gly Ala Val Asp Ile Leu
65 70 75 80

Val Asn Ser Ala Gln Ala Asp Leu Thr Val Lys Asp Lys Asp Leu Asn
85 90 95

Thr Pro Leu His Leu Ala Cys Ser Lys Gly His Glu Lys Cys Ala Leu
100 105 110

Leu Ile Leu Asp Lys Ile Gln Asp Glu Ser Leu Ile Asn Glu Lys Asn
115 120 125

Asn Ala Leu Gln Thr Pro Leu His Val Ala Ala Arg Asn Gly Leu Lys
130 135 140

Val Val Val Glu Glu Leu Leu Ala Lys Gly Ala Cys Val Leu Ala Val
145 150 155 160

Asp Glu Asn Ala Ser Arg Ser Asn Gly Pro Arg Ser Thr Pro Gly Thr
165 170 175

Ala Val Gln Lys Glu Glu
180

<210> 5278
<211> 316
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1148; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD44; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 44; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000416319"

<400> 5278

Ser	Lys	Asp	Gly	Lys	Ser	Pro	Leu	His	Met	Thr	Ala	Val	His	Gly	Arg
1				5				10					15		

Phe	Thr	Arg	Ser	Gln	Thr	Leu	Ile	Gln	Asn	Gly	Gly	Glu	Ile	Asp	Cys
			20					25					30		

Val	Asp	Lys	Asp	Gly	Asn	Thr	Pro	Leu	His	Val	Ala	Ala	Arg	Tyr	Gly
		35					40					45			

His	Glu	Leu	Leu	Ile	Asn	Thr	Leu	Ile	Thr	Ser	Gly	Ala	Asp	Thr	Ala
	50					55					60				

Lys	Cys	Gly	Ile	His	Ser	Met	Phe	Pro	Leu	His	Leu	Ala	Ala	Leu	Asn
65					70					75					80

Ala	His	Ser	Asp	Cys	Cys	Arg	Lys	Leu	Leu	Ser	Ser	Gly	Phe	Glu	Ile
				85					90					95	

Asp	Thr	Pro	Asp	Lys	Phe	Gly	Arg	Thr	Cys	Leu	His	Ala	Ala	Ala	Ala
			100					105					110		

Gly	Gly	Thr	Pro	Leu	His	Tyr	Ala	Ala	Ala	Asn	Cys	His	Phe	His	Cys
		115					120					125			

Ile	Glu	Thr	Leu	Val	Thr	Thr	Gly	Ala	Asn	Val	Asn	Glu	Thr	Asp	Asp
	130					135					140				

Trp	Gly	Arg	Thr	Ala	Leu	His	Tyr	Ala	Ala	Ala	Ser	Asp	Met	Asp	Arg
145					150					155					160

```
Asn Lys Thr Ile Leu Gly Asn Ala His Asp Asn Ser Glu Glu Leu Glu
                165                 170                 175

Arg Ala Arg Glu Leu Lys Glu Lys Glu Ala Thr Leu Cys Leu Glu Phe
            180                 185                 190

Leu Leu Gln Asn Asp Ala Asn Pro Ser Ile Arg Asp Lys Glu Gly Tyr
        195                 200                 205

Asn Ser Ile His Tyr Ala Ala Ala Tyr Gly His Arg Gln Cys Leu Glu
    210                 215                 220

Leu Leu Leu Glu Arg Thr Asn Ser Gly Phe Glu Glu Ser Asp Ser Gly
225                 230                 235                 240

Ala Thr Lys Ser Pro Leu His Leu Ala Ala Tyr Asn Gly His His Gln
                245                 250                 255

Ala Leu Glu Val Leu Leu Gln Ser Leu Val Asp Leu Asp Ile Arg Asp
            260                 265                 270

Glu Lys Gly Arg Thr Ala Leu Asp Leu Ala Ala Phe Lys Gly His Thr
        275                 280                 285

Glu Cys Val Glu Ala Leu Ile Asn Gln Gly Ala Ser Ile Phe Val Lys
    290                 295                 300

Asp Asn Val Thr Lys Arg Thr Pro Leu His Ala Ser
305                 310                 315


<210> 5279
<211> 266
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1149; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD45; "

<220>
<221> source
<223> /note="Gene Name:
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ankyrin repeat domain 45; "

<220>
<221> source
<223> /note="Uniprot ID: Q5TZF3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000331268"

<400> 5279
Met Glu Ser Glu Gly Pro Pro Glu Ser Glu Ser Ser Glu Phe Phe Ser
1   5   10   15

Gln Gln Glu Glu Glu Asn Glu Glu Glu Glu Ala Gln Glu Pro Glu Glu
            20   25   30

Thr Gly Pro Lys Asn Pro Leu Leu Gln Pro Ala Leu Thr Gly Asp Val
        35   40   45

Glu Gly Leu Gln Lys Ile Phe Glu Asp Pro Glu Asn Pro His His Glu
    50   55   60

Gln Ala Met Gln Leu Leu Leu Glu Glu Asp Ile Val Gly Arg Asn Leu
65   70   75   80

Leu Tyr Ala Ala Cys Met Ala Gly Gln Ser Asp Val Ile Arg Ala Leu
                85   90   95

Ala Lys Tyr Gly Val Asn Leu Asn Glu Lys Thr Thr Arg Gly Tyr Thr
            100   105   110

Leu Leu His Cys Ala Ala Ala Trp Gly Arg Leu Glu Thr Leu Lys Ala
        115   120   125

Leu Val Glu Leu Asp Val Asp Ile Glu Ala Leu Asn Phe Arg Glu Glu
    130   135   140

Arg Ala Arg Asp Val Ala Ala Arg Tyr Ser Gln Thr Glu Cys Val Glu
145   150   155   160

Phe Leu Asp Trp Ala Asp Ala Arg Leu Thr Leu Lys Lys Tyr Ile Ala
                165   170   175

Lys Val Ser Leu Ala Val Thr Asp Thr Glu Lys Gly Ser Gly Lys Leu
            180   185   190

```
Leu Lys Glu Asp Lys Asn Thr Ile Leu Ser Ala Cys Arg Ala Lys Asn
        195                 200                 205

Glu Trp Leu Glu Thr His Thr Glu Ala Ser Ile Asn Glu Leu Phe Glu
    210                 215                 220

Gln Arg Gln Gln Leu Glu Asp Ile Val Thr Pro Ile Phe Thr Lys Met
225                 230                 235                 240

Thr Thr Pro Cys Gln Val Lys Ser Ala Lys Ser Val Thr Ser His Asp
                245                 250                 255

Gln Lys Arg Ser Gln Asp Asp Thr Ser Asn
            260                 265


<210> 5280
<211> 228
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1150; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD46; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 46; "

<220>
<221> source
<223> /note="Uniprot ID:  Q86W74; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000335287"

<400> 5280
Met Ser Tyr Val Phe Val Asn Asp Ser Ser Gln Thr Asn Val Pro Leu
1               5                   10                  15

Leu Gln Ala Cys Ile Asp Gly Asp Phe Asn Tyr Ser Lys Arg Leu Leu
            20                  25                  30
```

```
Glu Ser Gly Phe Asp Pro Asn Ile Arg Asp Ser Arg Gly Arg Thr Gly
        35                  40                  45

Leu His Leu Ala Ala Ala Arg Gly Asn Val Asp Ile Cys Gln Leu Leu
    50                  55                  60

His Lys Phe Gly Ala Asp Leu Leu Ala Thr Asp Tyr Gln Gly Asn Thr
65                  70                  75                  80

Ala Leu His Leu Cys Gly His Val Asp Thr Ile Gln Phe Leu Val Ser
                85                  90                  95

Asn Gly Leu Lys Ile Asp Ile Cys Asn His Gln Gly Ala Thr Pro Leu
            100                 105                 110

Val Leu Ala Lys Arg Arg Gly Val Asn Lys Asp Val Ile Arg Leu Leu
        115                 120                 125

Glu Ser Leu Glu Glu Gln Glu Val Lys Gly Phe Asn Arg Gly Thr His
    130                 135                 140

Ser Lys Leu Glu Thr Met Gln Thr Ala Glu Ser Glu Ser Ala Met Glu
145                 150                 155                 160

Ser His Ser Leu Leu Asn Pro Asn Leu Gln Gln Gly Glu Gly Val Leu
                165                 170                 175

Ser Ser Phe Arg Thr Thr Trp Gln Glu Phe Val Glu Asp Leu Gly Phe
            180                 185                 190

Trp Arg Val Leu Leu Leu Ile Phe Val Ile Ala Leu Leu Ser Leu Gly
        195                 200                 205

Ile Ala Tyr Tyr Val Ser Gly Val Leu Pro Phe Val Glu Asn Gln Pro
    210                 215                 220

Glu Leu Val His
225
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<210> 5281
<211> 195
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="ENSP ID: ENSP00000351881"

<400> 5281

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Met Ser Tyr Val Phe Val Asn Asp Ser Ser Gln Thr Asn Val Pro Leu
1               5                  10                  15

Leu Gln Ala Cys Ile Asp Gly Asp Phe Asn Tyr Ser Lys Arg Leu Leu
            20                  25                  30

Glu Ser Gly Phe Asp Pro Asn Ile Arg Asp Ser Arg Gly Arg Thr Gly
        35                  40                  45

Leu His Leu Ala Ala Ala Arg Gly Asn Val Asp Ile Cys Gln Leu Leu
    50                  55                  60

His Lys Phe Gly Ala Asp Leu Leu Ala Thr Asp Tyr Gln Gly Asn Thr
65                  70                  75                  80

Ala Leu His Leu Cys Gly His Val Asp Thr Ile Gln Phe Leu Val Ser
                85                  90                  95

Asn Gly Leu Lys Ile Asp Ile Cys Asn His Gln Gly Ala Thr Pro Leu
            100                 105                 110

Val Leu Ala Lys Arg Arg Gly Val Asn Lys Asp Val Ile Arg Leu Leu
        115                 120                 125

Glu Ser Leu Glu Glu Gln Glu Val Lys Gly Phe Asn Arg Gly Thr His
    130                 135                 140

Ser Lys Leu Glu Thr Met Gln Thr Ala Glu Ser Glu Ser Ala Met Glu
145                 150                 155                 160
```

```
Ser His Ser Leu Leu Asn Pro Asn Leu Gln Gln Gly Glu Gly Val Leu
                165                 170                 175

Ser Ser Phe Arg Thr Thr Trp Gln Glu Phe Val Glu Asp Leu Gly Phe
            180                 185                 190

Trp Arg Val
        195


<210> 5282
<211> 228
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Uniprot ID:  Q86W74; "

<220>
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<223> /note="ENSP ID: ENSP00000428388"

<400> 5282
Met Ser Tyr Val Phe Val Asn Asp Ser Ser Gln Thr Asn Val Pro Leu
1               5                   10                  15

Leu Gln Ala Cys Ile Asp Gly Asp Phe Asn Tyr Ser Lys Arg Leu Leu
            20                  25                  30

Glu Ser Gly Phe Asp Pro Asn Ile Arg Asp Ser Arg Gly Arg Thr Gly
        35                  40                  45

Leu His Leu Ala Ala Ala Arg Gly Asn Val Asp Ile Cys Gln Leu Leu
    50                  55                  60

His Lys Phe Gly Ala Asp Leu Leu Ala Thr Asp Tyr Gln Gly Asn Thr
```

65 70 75 80

Ala Leu His Leu Cys Gly His Val Asp Thr Ile Gln Phe Leu Val Ser
85 90 95

Asn Gly Leu Lys Ile Asp Ile Cys Asn His Gln Gly Ala Thr Pro Leu
100 105 110

Val Leu Ala Lys Arg Arg Gly Val Asn Lys Asp Val Ile Arg Leu Leu
115 120 125

Glu Ser Leu Glu Glu Gln Glu Val Lys Gly Phe Asn Arg Gly Thr His
130 135 140

Ser Lys Leu Glu Thr Met Gln Thr Ala Glu Ser Glu Ser Ala Met Glu
145 150 155 160

Ser His Ser Leu Leu Asn Pro Asn Leu Gln Gln Gly Glu Gly Val Leu
165 170 175

Ser Ser Phe Arg Thr Thr Trp Gln Glu Phe Val Glu Asp Leu Gly Phe
180 185 190

Trp Arg Val Leu Leu Leu Ile Phe Val Ile Ala Leu Leu Ser Leu Gly
195 200 205

Ile Ala Tyr Tyr Val Ser Gly Val Leu Pro Phe Val Glu Asn Gln Pro
210 215 220

Glu Leu Val His
225

<210> 5283
<211> 232
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Uniprot ID: Q86W74; "

<220>
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<223> /note="ENSP ID: ENSP00000429015"

<400> 5283

```
Met Ser Tyr Val Phe Val Asn Asp Ser Ser Gln Thr Asn Val Pro Leu
1               5                  10                  15

Leu Gln Ala Cys Ile Asp Gly Asp Phe Asn Tyr Ser Lys Arg Leu Leu
            20                  25                  30

Glu Ser Gly Phe Asp Pro Asn Ile Arg Asp Ser Arg Gly Arg Thr Gly
        35                  40                  45

Leu His Leu Ala Ala Ala Arg Gly Asn Val Asp Ile Cys Gln Leu Leu
    50                  55                  60

His Lys Phe Gly Ala Asp Leu Leu Ala Thr Asp Tyr Gln Gly Asn Thr
65                  70                  75                  80

Ala Leu His Leu Cys Gly His Val Asp Thr Ile Gln Phe Leu Val Ser
                85                  90                  95

Asn Gly Leu Lys Ile Asp Ile Cys Asn His Gln Gly Ala Thr Pro Leu
            100                 105                 110

Val Leu Ala Lys Arg Arg Gly Val Asn Lys Asp Val Ile Arg Leu Leu
        115                 120                 125

Glu Ser Leu Glu Glu Gln Glu Val Lys Gly Phe Asn Arg Gly Thr His
    130                 135                 140

Ser Lys Leu Glu Thr Met Gln Thr Ala Glu Ser Glu Ser Ala Met Glu
145                 150                 155                 160

Ser His Ser Leu Leu Asn Pro Asn Leu Gln Gln Gly Glu Gly Val Leu
                165                 170                 175
```

```
Ser Ser Phe Arg Thr Thr Trp Gln Glu Phe Val Glu Asp Leu Gly Phe
            180                 185                 190

Trp Arg Val Leu Leu Leu Ile Phe Val Ile Ala Leu Leu Ser Leu Gly
        195                 200                 205

Ile Ala Tyr Tyr Arg Arg Thr Leu Arg Leu Gly Ser Phe Ala Arg Gln
    210                 215                 220

Asp Arg Ser Arg Ile Gln Ala Ile
225                 230
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<210> 5284
<211> 82
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ANKRD46; "

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<223> /note="Gene Name:
ankyrin repeat domain 46; "

<220>
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<223> /note="ENSP ID: ENSP00000429647"

<400> 5284

```
Met Ser Tyr Val Phe Val Asn Asp Ser Ser Gln Thr Asn Val Pro Leu
1               5                   10                  15

Leu Gln Ala Cys Ile Asp Gly Asp Phe Asn Tyr Ser Lys Arg Leu Leu
            20                  25                  30

Glu Ser Gly Phe Asp Pro Asn Ile Arg Asp Ser Arg Gly Arg Thr Gly
        35                  40                  45

Leu His Leu Ala Ala Ala Arg Gly Asn Val Asp Ile Cys Gln Leu Leu
    50                  55                  60

His Lys Phe Gly Ala Asp Leu Leu Ala Thr Asp Tyr Gln Gly Asn Thr
65                  70                  75                  80
```

Ala Leu

<210> 5285
<211> 228
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ANKRD46; "

<220>
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<223> /note="Gene Name:
ankyrin repeat domain 46; "

<220>
<221> source
<223> /note="Uniprot ID: Q86W74; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430056"

<400> 5285
Met Ser Tyr Val Phe Val Asn Asp Ser Ser Gln Thr Asn Val Pro Leu
1   5   10   15

Leu Gln Ala Cys Ile Asp Gly Asp Phe Asn Tyr Ser Lys Arg Leu Leu
            20   25   30

Glu Ser Gly Phe Asp Pro Asn Ile Arg Asp Ser Arg Gly Arg Thr Gly
        35   40   45

Leu His Leu Ala Ala Ala Arg Gly Asn Val Asp Ile Cys Gln Leu Leu
    50   55   60

His Lys Phe Gly Ala Asp Leu Leu Ala Thr Asp Tyr Gln Gly Asn Thr
65   70   75   80

Ala Leu His Leu Cys Gly His Val Asp Thr Ile Gln Phe Leu Val Ser
                85   90   95

```
Asn Gly Leu Lys Ile Asp Ile Cys Asn His Gln Gly Ala Thr Pro Leu
            100                 105                 110

Val Leu Ala Lys Arg Arg Gly Val Asn Lys Asp Val Ile Arg Leu Leu
        115                 120                 125

Glu Ser Leu Glu Glu Gln Glu Val Lys Gly Phe Asn Arg Gly Thr His
    130                 135                 140

Ser Lys Leu Glu Thr Met Gln Thr Ala Glu Ser Glu Ser Ala Met Glu
145                 150                 155                 160

Ser His Ser Leu Leu Asn Pro Asn Leu Gln Gln Gly Glu Gly Val Leu
                165                 170                 175

Ser Ser Phe Arg Thr Thr Trp Gln Glu Phe Val Glu Asp Leu Gly Phe
            180                 185                 190

Trp Arg Val Leu Leu Leu Ile Phe Val Ile Ala Leu Leu Ser Leu Gly
        195                 200                 205

Ile Ala Tyr Tyr Val Ser Gly Val Leu Pro Phe Val Glu Asn Gln Pro
    210                 215                 220

Glu Leu Val His
225
```

<210> 5286
<211> 103
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1150; "

<220>
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<223> /note="Gene Name:
ankyrin repeat domain 46; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430357"

<400> 5286
Met Ser Tyr Val Phe Val Asn Asp Ser Ser Gln Thr Asn Val Pro Leu
1   5   10   15

Leu Gln Ala Cys Ile Asp Gly Asp Phe Asn Tyr Ser Lys Arg Leu Leu
            20   25   30

Glu Ser Gly Phe Asp Pro Asn Ile Arg Asp Ser Arg Gly Arg Thr Gly
        35   40   45

Leu His Leu Ala Ala Ala Arg Gly Asn Val Asp Ile Cys Gln Leu Leu
    50   55   60

His Lys Phe Gly Ala Asp Leu Leu Ala Thr Asp Tyr Gln Gly Asn Thr
65   70   75   80

Ala Leu His Leu Cys Gly His Val Asp Thr Ile Gln Phe Leu Val Ser
                85   90   95

Asn Gly Leu Lys Ile Asp Ile
            100

<210> 5287
<211> 85
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1150; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD46; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 46; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430800"

<400> 5287
Met Ser Tyr Val Phe Val Asn Asp Ser Ser Gln Thr Asn Val Pro Leu
1   5   10   15

```
Leu Gln Ala Cys Ile Asp Gly Asp Phe Asn Tyr Ser Lys Arg Leu Leu
            20                  25                  30

Glu Ser Gly Phe Asp Pro Asn Ile Arg Asp Ser Arg Gly Arg Thr Gly
        35                  40                  45

Leu His Leu Ala Ala Ala Arg Gly Asn Val Asp Ile Cys Gln Leu Leu
    50                  55                  60

His Lys Phe Gly Ala Asp Leu Leu Ala Thr Asp Tyr Gln Gly Asn Thr
65                  70                  75                  80

Ala Leu His Leu Cys
                85


<210> 5288
<211> 175
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1150; "

<220>
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<223> /note="Gene Symbol: ANKRD46; "

<220>
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<223> /note="Gene Name:
      ankyrin repeat domain 46; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430827"

<400> 5288
Met Ser Tyr Val Phe Val Asn Asp Ser Ser Gln Thr Asn Val Pro Leu
1               5                   10                  15

Leu Gln Ala Cys Ile Asp Gly Asp Phe Asn Tyr Ser Lys Arg Leu Leu
            20                  25                  30

Glu Ser Gly Phe Asp Pro Asn Ile Arg Asp Ser Arg Gly Arg Thr Gly
        35                  40                  45

Leu His Leu Ala Ala Ala Arg Gly Asn Val Asp Ile Cys Gln Leu Leu
    50                  55                  60
```

```
His Lys Phe Gly Ala Asp Leu Leu Ala Thr Asp Tyr Gln Gly Asn Thr
65                  70                  75                  80

Ala Leu His Leu Cys Gly His Val Asp Thr Ile Gln Phe Leu Val Ser
                85                  90                  95

Asn Gly Leu Lys Ile Asp Ile Cys Ala Met Glu Ser His Ser Leu Leu
            100                 105                 110

Asn Pro Asn Leu Gln Gln Gly Glu Gly Val Leu Ser Ser Phe Arg Thr
        115                 120                 125

Thr Trp Gln Glu Phe Val Glu Asp Leu Gly Phe Trp Arg Val Leu Leu
    130                 135                 140

Leu Ile Phe Val Ile Ala Leu Leu Ser Leu Gly Ile Ala Tyr Tyr Val
145                 150                 155                 160

Ser Gly Val Leu Pro Phe Val Glu Asn Gln Pro Glu Leu Val His
                165                 170                 175


<210> 5289
<211> 239
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1151; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD49; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 49; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8WVL7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000303518"

<400> 5289
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Met Glu Lys Glu Lys Gly Asn Asp Asp Gly Ile Pro Asp Gln Glu Asn
1               5                  10                  15

Ser Leu Asp Phe Ser Glu His Phe Asn Gln Leu Glu Leu Leu Glu Thr
            20                  25                  30

His Gly His Leu Ile Pro Thr Gly Thr Gln Ser Leu Trp Val Gly Asn
        35                  40                  45

Ser Asp Glu Asp Glu Glu Gln Asp Asp Lys Asn Glu Glu Trp Tyr Arg
    50                  55                  60

Leu Gln Glu Lys Lys Met Glu Lys Asp Pro Ser Arg Leu Leu Leu Trp
65                  70                  75                  80

Ala Ala Glu Lys Asn Arg Leu Thr Thr Val Arg Arg Leu Leu Ser Glu
                85                  90                  95

Lys Ala Thr His Val Asn Thr Arg Asp Glu Asp Glu Tyr Thr Pro Leu
            100                 105                 110

His Arg Ala Ala Tyr Ser Gly His Leu Asp Ile Val Gln Glu Leu Ile
        115                 120                 125

Ala Gln Gly Ala Asp Val His Ala Val Thr Val Asp Gly Trp Thr Pro
    130                 135                 140

Leu His Ser Ala Cys Lys Trp Asn Asn Thr Arg Val Ala Ser Phe Leu
145                 150                 155                 160

Leu Gln His Asp Ala Asp Ile Asn Ala Gln Thr Lys Gly Leu Leu Thr
                165                 170                 175

Pro Leu His Leu Ala Ala Gly Asn Arg Asp Ser Lys Asp Thr Leu Glu
            180                 185                 190

Leu Leu Leu Met Asn Arg Tyr Val Lys Pro Gly Leu Lys Asn Asn Leu
        195                 200                 205

Glu Glu Thr Ala Phe Asp Ile Ala Arg Arg Thr Ser Ile Tyr His Tyr
    210                 215                 220

Leu Phe Glu Ile Val Glu Gly Cys Thr Asn Ser Ser Pro Gln Ser
```

225 230 235

<210> 5290
<211> 125
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1151; "

<220>
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<223> /note="Gene Symbol: ANKRD49; "

<220>
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<223> /note="Gene Name:
ankyrin repeat domain 49; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000438506"

<400> 5290
Met Glu Lys Glu Lys Gly Asn Asp Asp Gly Ile Pro Asp Gln Glu Asn
1 5 10 15

Ser Leu Asp Phe Ser Glu His Phe Asn Gln Leu Glu Leu Leu Glu Thr
20 25 30

His Gly His Leu Ile Pro Thr Gly Thr Gln Ser Leu Trp Val Gly Asn
35 40 45

Ser Asp Glu Asp Glu Glu Gln Asp Asp Lys Asn Glu Glu Trp Tyr Arg
50 55 60

Leu Gln Glu Lys Lys Met Glu Lys Asp Pro Ser Arg Leu Leu Leu Trp
65 70 75 80

Ala Ala Glu Lys Asn Arg Val Lys Lys Lys Ile Thr Glu Gly Ser Val
85 90 95

Thr Val Gly Lys Ala Leu Gly Ser Ser Gln Lys Thr Cys Leu Tyr Cys
100 105 110

Tyr Gly His His Thr Tyr Leu Leu Ile Val Arg Thr Lys
115 120 125

<210> 5291
<211> 111
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1151; "

<220>
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<223> /note="Gene Symbol: ANKRD49; "

<220>
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<223> /note="Gene Name:
ankyrin repeat domain 49; "

<220>
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<223> /note="ENSP ID: ENSP00000439200"

<400> 5291
Met Glu Lys Glu Lys Gly Asn Asp Asp Gly Ile Pro Asp Gln Glu Asn
1 5 10 15

Ser Leu Asp Phe Ser Glu His Phe Asn Gln Leu Glu Leu Leu Glu Thr
20 25 30

His Gly His Leu Ile Pro Thr Gly Thr Gln Ser Leu Trp Val Gly Asn
35 40 45

Ser Asp Glu Asp Glu Glu Gln Asp Asp Lys Asn Glu Glu Trp Tyr Arg
50 55 60

Leu Gln Glu Lys Lys Met Glu Lys Asp Pro Ser Arg Leu Leu Leu Trp
65 70 75 80

Ala Ala Glu Lys Asn Arg Val Lys Lys Lys Ile Thr Glu Gly Ser Val
85 90 95

Thr Val Gly Lys Ala Leu Gly Ser Ser Gln Lys Thr Cys Leu Tyr
100 105 110

<210> 5292
<211> 239
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1151; "

<220>
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<223> /note="Gene Symbol: ANKRD49; "

<220>
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<223> /note="Gene Name:
ankyrin repeat domain 49; "

<220>
<221> source
<223> /note="Uniprot ID: Q8WVL7; "

<220>
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<223> /note="ENSP ID: ENSP00000440396"

<400> 5292
Met Glu Lys Glu Lys Gly Asn Asp Asp Gly Ile Pro Asp Gln Glu Asn
1   5   10   15

Ser Leu Asp Phe Ser Glu His Phe Asn Gln Leu Glu Leu Leu Glu Thr
            20   25   30

His Gly His Leu Ile Pro Thr Gly Thr Gln Ser Leu Trp Val Gly Asn
        35   40   45

Ser Asp Glu Asp Glu Glu Gln Asp Asp Lys Asn Glu Glu Trp Tyr Arg
    50   55   60

Leu Gln Glu Lys Lys Met Glu Lys Asp Pro Ser Arg Leu Leu Leu Trp
65   70   75   80

Ala Ala Glu Lys Asn Arg Leu Thr Thr Val Arg Arg Leu Leu Ser Glu
                85   90   95

Lys Ala Thr His Val Asn Thr Arg Asp Glu Asp Glu Tyr Thr Pro Leu
            100   105   110

His Arg Ala Ala Tyr Ser Gly His Leu Asp Ile Val Gln Glu Leu Ile
        115   120   125

Ala Gln Gly Ala Asp Val His Ala Val Thr Val Asp Gly Trp Thr Pro
    130   135   140

```
Leu His Ser Ala Cys Lys Trp Asn Asn Thr Arg Val Ala Ser Phe Leu
145                 150                 155                 160

Leu Gln His Asp Ala Asp Ile Asn Ala Gln Thr Lys Gly Leu Leu Thr
                165                 170                 175

Pro Leu His Leu Ala Ala Gly Asn Arg Asp Ser Lys Asp Thr Leu Glu
            180                 185                 190

Leu Leu Leu Met Asn Arg Tyr Val Lys Pro Gly Leu Lys Asn Asn Leu
        195                 200                 205

Glu Glu Thr Ala Phe Asp Ile Ala Arg Arg Thr Ser Ile Tyr His Tyr
    210                 215                 220

Leu Phe Glu Ile Val Glu Gly Cys Thr Asn Ser Ser Pro Gln Ser
225                 230                 235


<210> 5293
<211> 146
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<223> /note="Gene Name:
      ankyrin repeat domain 49; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000441877"

<400> 5293
Met Glu Lys Glu Lys Gly Asn Asp Asp Gly Ile Pro Asp Gln Glu Asn
1               5                   10                  15

Ser Leu Asp Phe Ser Glu His Phe Asn Gln Leu Glu Leu Leu Glu Thr
            20                  25                  30

His Gly His Leu Ile Pro Thr Gly Thr Gln Ser Leu Trp Val Gly Asn
```

```
        35                  40                  45

Ser Asp Glu Asp Glu Glu Gln Asp Asp Lys Asn Glu Glu Trp Tyr Arg
    50                  55                  60

Leu Gln Glu Lys Lys Met Glu Lys Asp Pro Ser Arg Leu Leu Leu Trp
65                  70                  75                  80

Ala Ala Glu Lys Asn Arg Val Lys Lys Lys Ile Thr Glu Gly Ser Val
                85                  90                  95

Thr Val Gly Lys Ala Leu Gly Ser Ser Gln Lys Thr Cys Leu Tyr Cys
            100                 105                 110

Tyr Gly His His Thr Tyr Leu Leu Ile Leu Thr Thr Val Arg Arg Leu
        115                 120                 125

Leu Ser Glu Lys Ala Thr His Val Asn Thr Arg Asp Glu Asp Glu Tyr
    130                 135                 140

Thr Pro
145


<210> 5294
<211> 130
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1151; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD49; "

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<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 49; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000442449"

<400> 5294
Met Glu Lys Glu Lys Gly Asn Asp Asp Gly Ile Pro Asp Gln Glu Asn
1               5                   10                  15
```

```
Ser Leu Asp Phe Ser Glu His Phe Asn Gln Leu Glu Leu Leu Glu Thr
            20                  25                  30

His Gly His Leu Ile Pro Thr Gly Thr Gln Ser Leu Trp Leu Thr Thr
        35                  40                  45

Val Arg Arg Leu Leu Ser Glu Lys Ala Thr His Val Asn Thr Arg Asp
    50                  55                  60

Glu Asp Glu Tyr Thr Pro Leu His Arg Ala Ala Tyr Ser Gly His Leu
65                  70                  75                  80

Asp Ile Val Gln Glu Leu Ile Ala Gln Gly Ala Asp Val His Ala Val
                85                  90                  95

Thr Val Asp Gly Trp Thr Pro Leu His Ser Ala Cys Lys Trp Asn Asn
            100                 105                 110

Thr Arg Val Ala Ser Phe Leu Leu Gln His Asp Ala Asp Ile Asn Ala
        115                 120                 125

Gln Thr
    130


<210> 5295
<211> 125
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1151; "

<220>
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<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 49; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000444030"

<400> 5295
Met Glu Lys Glu Lys Gly Asn Asp Asp Gly Ile Pro Asp Gln Glu Asn
```

```
1               5                   10                  15

Ser Leu Asp Phe Ser Glu His Phe Asn Gln Leu Glu Leu Leu Glu Thr
            20                  25                  30

His Gly His Leu Ile Pro Thr Gly Thr Gln Ser Leu Trp Val Gly Asn
        35                  40                  45

Ser Asp Glu Asp Glu Glu Gln Asp Asp Lys Asn Glu Glu Trp Tyr Arg
    50                  55                  60

Leu Gln Glu Lys Lys Met Glu Lys Asp Pro Ser Arg Leu Leu Leu Trp
65                  70                  75                  80

Ala Ala Glu Lys Asn Arg Val Lys Lys Lys Ile Thr Glu Gly Ser Val
                85                  90                  95

Thr Val Gly Lys Ala Leu Gly Ser Ser Gln Lys Thr Cys Leu Tyr Cys
            100                 105                 110

Tyr Gly His His Thr Tyr Leu Leu Ile Val Arg Thr Lys
        115                 120                 125


<210> 5296
<211> 86
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
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<220>
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<223> /note="Gene Name:
      ankyrin repeat domain 49; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000445597"

<400> 5296
Met Glu Lys Glu Lys Gly Asn Asp Asp Gly Ile Pro Asp Gln Glu Asn
1               5                   10                  15
```

```
Ser Leu Asp Phe Ser Glu His Phe Asn Gln Leu Glu Leu Leu Glu Thr
            20                  25                  30

His Gly His Leu Ile Pro Thr Gly Thr Gln Ser Leu Trp Val Gly Asn
        35                  40                  45

Ser Asp Glu Asp Glu Glu Gln Asp Asp Lys Asn Glu Glu Trp Tyr Arg
    50                  55                  60

Leu Gln Glu Lys Lys Met Glu Lys Asp Pro Ser Arg Leu Leu Leu Trp
65                  70                  75                  80

Ala Ala Glu Lys Asn Arg
                85


<210> 5297
<211> 125
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1151; "

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 49; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000446433"

<400> 5297
Met Glu Lys Glu Lys Gly Asn Asp Asp Gly Ile Pro Asp Gln Glu Asn
1               5                   10                  15

Ser Leu Asp Phe Ser Glu His Phe Asn Gln Leu Glu Leu Leu Glu Thr
            20                  25                  30

His Gly His Leu Ile Pro Thr Gly Thr Gln Ser Leu Trp Val Gly Asn
        35                  40                  45

Ser Asp Glu Asp Glu Glu Gln Asp Asp Lys Asn Glu Glu Trp Tyr Arg
```

```
    50                  55                  60

Leu Gln Glu Lys Lys Met Glu Lys Asp Pro Ser Arg Leu Leu Leu Trp
65                  70                  75                  80

Ala Ala Glu Lys Asn Arg Val Lys Lys Lys Ile Thr Glu Gly Ser Val
                85                  90                  95

Thr Val Gly Lys Ala Leu Gly Ser Ser Gln Lys Thr Cys Leu Tyr Cys
            100                 105                 110

Tyr Gly His His Thr Tyr Leu Leu Ile Val Arg Thr Lys
        115                 120                 125


<210> 5298
<211> 1250
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Met Lys Pro Pro Gln Gln Ser Leu Tyr Leu Leu Val Asp Ser Val Asp
1               5                   10                  15

Glu Gly Cys Asn Ile Thr Glu Gly Glu Gln Thr Ser Thr Ser Leu Ser
            20                  25                  30

Gly Thr Val Ala Ala Leu Leu Ala Gly His His Glu Phe Phe Pro Pro
        35                  40                  45
```

```
Trp Leu Leu Leu Leu Cys Ser Ala Arg Lys Gln Ser Lys Ala Val Thr
    50                  55                  60

Lys Met Phe Thr Gly Phe Arg Lys Ile Ser Leu Asp Asp Leu Arg Lys
65                  70                  75                  80

Ala Tyr Ile Val Lys Asp Val Gln Gln Tyr Ile Leu His Arg Leu Asp
                85                  90                  95

Gln Glu Glu Ala Leu Arg Gln His Leu Thr Lys Glu Thr Ala Glu Met
            100                 105                 110

Leu Asn Gln Leu His Ile Lys Ser Ser Gly Cys Phe Leu Tyr Leu Glu
        115                 120                 125

Arg Val Leu Asp Gly Val Val Glu Asn Phe Ile Met Leu Arg Glu Ile
    130                 135                 140

Arg Asp Ile Pro Gly Thr Leu Asn Gly Leu Tyr Leu Trp Leu Cys Gln
145                 150                 155                 160

Arg Leu Phe Val Arg Lys Gln Phe Ala Lys Val Gln Pro Ile Leu Asn
                165                 170                 175

Val Ile Leu Ala Ala Cys Arg Pro Leu Thr Ile Thr Glu Leu Tyr His
            180                 185                 190

Ala Val Trp Thr Lys Asn Met Ser Leu Thr Leu Glu Asp Phe Gln Arg
        195                 200                 205

Lys Leu Asp Ile Leu Ser Lys Leu Leu Val Asp Gly Leu Gly Asn Thr
    210                 215                 220

Lys Ile Leu Phe His Tyr Ser Phe Ala Glu Trp Leu Leu Asp Val Lys
225                 230                 235                 240

His Cys Thr Gln Lys Tyr Leu Cys Asn Ala Ala Glu Gly His Arg Met
                245                 250                 255

Leu Ala Met Ser Tyr Thr Cys Gln Ala Lys Asn Leu Thr Pro Leu Glu
            260                 265                 270
```

```
Ala Gln Glu Phe Ala Leu His Leu Ile Asn Ser Asn Leu Gln Leu Glu
        275                 280                 285

Thr Ala Glu Leu Ala Leu Trp Met Ile Trp Asn Gly Thr Pro Val Arg
    290                 295                 300

Asp Ser Leu Ser Thr Leu Ile Pro Lys Glu Gln Glu Val Leu Gln Leu
305                 310                 315                 320

Leu Val Lys Ala Gly Ala His Val Asn Ser Glu Asp Asp Arg Thr Ser
                325                 330                 335

Cys Ile Val Arg Gln Ala Leu Glu Arg Glu Asp Ser Ile Arg Thr Leu
            340                 345                 350

Leu Asp Asn Gly Ala Ser Val Asn Gln Cys Asp Ser Asn Gly Arg Thr
        355                 360                 365

Leu Leu Ala Asn Ala Ala Tyr Ser Gly Ser Leu Asp Val Val Asn Leu
    370                 375                 380

Leu Val Ser Arg Gly Ala Asp Leu Glu Ile Glu Asp Ala His Gly His
385                 390                 395                 400

Thr Pro Leu Thr Leu Ala Ala Arg Gln Gly His Thr Lys Val Val Asn
                405                 410                 415

Cys Leu Ile Gly Cys Gly Ala Asn Ile Asn His Thr Asp Gln Asp Gly
            420                 425                 430

Trp Thr Ala Leu Arg Ser Ala Ala Trp Gly Gly His Thr Glu Val Val
        435                 440                 445

Ser Ala Leu Leu Tyr Ala Gly Val Lys Val Asp Cys Ala Asp Ala Asp
    450                 455                 460

Ser Arg Thr Ala Leu Arg Ala Ala Ala Trp Gly Gly His Glu Asp Ile
465                 470                 475                 480

Val Leu Asn Leu Leu Gln His Gly Ala Glu Val Asn Lys Ala Asp Asn
                485                 490                 495

Glu Gly Arg Thr Ala Leu Ile Ala Ala Ala Tyr Met Gly His Arg Glu
```

```
            500                 505                 510

Ile Val Glu His Leu Leu Asp His Gly Ala Glu Val Asn His Glu Asp
        515                 520                 525

Val Asp Gly Arg Thr Ala Leu Ser Val Ala Ala Leu Cys Val Pro Ala
    530                 535                 540

Ser Lys Gly His Ala Ser Val Val Ser Leu Leu Ile Asp Arg Gly Ala
545                 550                 555                 560

Glu Val Asp His Cys Asp Lys Asp Gly Met Thr Pro Leu Leu Val Ala
                565                 570                 575

Ala Tyr Glu Gly His Val Asp Val Val Asp Leu Leu Leu Glu Gly Gly
            580                 585                 590

Ala Asp Val Asp His Thr Asp Asn Asn Gly Arg Thr Pro Leu Leu Ala
        595                 600                 605

Ala Ala Ser Met Gly His Ala Ser Val Val Asn Thr Leu Leu Phe Trp
    610                 615                 620

Gly Ala Ala Val Asp Ser Ile Asp Ser Glu Gly Arg Thr Val Leu Ser
625                 630                 635                 640

Ile Ala Ser Ala Gln Gly Asn Val Glu Val Val Arg Thr Leu Leu Asp
                645                 650                 655

Arg Gly Leu Asp Glu Asn His Arg Asp Asp Ala Gly Trp Thr Pro Leu
            660                 665                 670

His Met Ala Ala Phe Glu Gly His Arg Leu Ile Cys Glu Ala Leu Ile
        675                 680                 685

Glu Gln Gly Ala Arg Thr Asn Glu Ile Asp Asn Asp Gly Arg Ile Pro
    690                 695                 700

Phe Ile Leu Ala Ser Gln Glu Gly His Tyr Asp Cys Val Gln Ile Leu
705                 710                 715                 720

Leu Glu Asn Lys Ser Asn Ile Asp Gln Arg Gly Tyr Asp Gly Arg Asn
                725                 730                 735
```

```
Ala Leu Arg Val Ala Ala Leu Glu Gly His Arg Asp Ile Val Glu Leu
            740                 745                 750

Leu Phe Ser His Gly Ala Asp Val Asn Cys Lys Asp Ala Asp Gly Arg
        755                 760                 765

Pro Thr Leu Tyr Ile Leu Ala Leu Glu Asn Gln Leu Thr Met Ala Glu
    770                 775                 780

Tyr Phe Leu Glu Asn Gly Ala Asn Val Glu Ala Ser Asp Ala Glu Gly
785                 790                 795                 800

Arg Thr Ala Leu His Val Ser Cys Trp Gln Gly His Met Glu Met Val
                805                 810                 815

Gln Val Leu Ile Ala Tyr His Ala Asp Val Asn Ala Ala Asp Asn Glu
            820                 825                 830

Lys Arg Ser Ala Leu Gln Ser Ala Ala Trp Gln Gly His Val Lys Val
        835                 840                 845

Val Gln Leu Leu Ile Glu His Gly Ala Val Val Asp His Thr Cys Asn
    850                 855                 860

Gln Gly Ala Thr Ala Leu Cys Ile Ala Ala Gln Glu Gly His Ile Asp
865                 870                 875                 880

Val Val Gln Val Leu Leu Glu His Gly Ala Asp Pro Asn His Ala Asp
                885                 890                 895

Gln Phe Gly Arg Thr Ala Met Arg Val Ala Ala Lys Asn Gly His Ser
            900                 905                 910

Gln Ile Ile Lys Leu Leu Glu Lys Tyr Gly Ala Ser Ser Leu Asn Gly
        915                 920                 925

Cys Ser Pro Ser Pro Val His Thr Met Glu Gln Lys Pro Leu Gln Ser
    930                 935                 940

Leu Ser Ser Lys Val Gln Ser Leu Thr Ile Lys Ser Asn Ser Ser Gly
945                 950                 955                 960
```

```
Ser Thr Gly Gly Gly Asp Met Gln Pro Ser Leu Arg Gly Leu Pro Asn
                965                 970                 975

Gly Pro Thr His Ala Phe Ser Ser Pro Ser Glu Ser Pro Asp Ser Thr
            980                 985                 990

Val Asp Arg Gln Lys Ser Ser Leu  Ser Asn Asn Ser Leu  Lys Ser
Ser
        995                 1000                1005

Lys Asn  Ser Ser Leu Arg Thr  Thr Ser Ser Thr Ala  Thr Ala Gln
    1010                1015                1020

Thr Val  Pro Ile Asp Ser Phe  His Asn Leu Ser Phe  Thr Glu Gln
    1025                1030                1035

Ile Gln  Gln His Ser Leu Pro  Arg Ser Arg Ser Arg  Gln Ser Ile
    1040                1045                1050

Val Ser  Pro Ser Ser Thr Thr  Gln Ser Leu Gly Gln  Ser His Asn
    1055                1060                1065

Ser Pro  Ser Ser Glu Phe Glu  Trp Ser Gln Val Lys  Pro Ser Leu
    1070                1075                1080

Lys Ser  Thr Lys Ala Ser Lys  Gly Gly Lys Ser Glu  Asn Ser Ala
    1085                1090                1095

Lys Ser  Gly Ser Ala Gly Lys  Lys Ala Lys Gln Ser  Asn Ser Ser
    1100                1105                1110

Gln Pro  Lys Val Leu Glu Tyr  Glu Met Thr Gln Phe  Asp Arg Arg
    1115                1120                1125

Gly Pro  Ile Ala Lys Ser Gly  Thr Ala Ala Pro Pro  Lys Gln Met
    1130                1135                1140

Pro Ala  Glu Ser Gln Cys Lys  Ile Met Ile Pro Ser  Ala Gln Gln
    1145                1150                1155

Glu Ile  Gly Arg Ser Gln Gln  Gln Phe Leu Ile His  Gln Gln Ser
    1160                1165                1170
```

```
Gly Glu  Gln Lys Lys Arg Asn  Gly Ile Met Thr Asn  Pro Asn Tyr
    1175                1180                1185

His Leu  Gln Ser Asn Gln Val  Phe Leu Gly Arg Val  Ser Val Pro
    1190                1195                1200

Arg Thr  Met Gln Asp Arg Gly  His Gln Glu Val Leu  Glu Gly Tyr
    1205                1210                1215

Pro Ser  Ser Glu Thr Glu Leu  Ser Leu Lys Gln Ala  Leu Lys Leu
    1220                1225                1230

Gln Ile  Glu Gly Ser Asp Pro  Ser Phe Asn Tyr Lys  Lys Glu Thr
    1235                1240                1245

Pro Leu
    1250


<210> 5299
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<212> PRT
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Met Thr Asn Pro Trp Glu Glu Lys Val Cys Lys Met Ala Gln Thr Ser
1               5                  10                  15

Leu Leu Gln Gly Lys Gln Phe Tyr Cys Arg Glu Trp Val Phe His Lys
```

```
            20                  25                  30

Leu Gln His Cys Leu Gln Glu Lys Ser Asn Cys Cys Asn Ser Ala Val
        35                  40                  45

Asn Ala Pro Ser Leu Val Met Asn Ser Gly Asn Asn Ala Ser Gly Val
    50                  55                  60

Ser Gly Lys Gly Ala Ala Trp Gly Val Leu Leu Val Gly Gly Pro Gly
65                  70                  75                  80

Ser Gly Lys Thr Ala Leu Cys Thr Glu Leu Leu Trp Pro Ser Ser Pro
                85                  90                  95

Ala Ser Leu Gln Arg Gly Leu His Arg Gln Ala Leu Ala Phe His Phe
            100                 105                 110

Cys Lys Ala Gln Asp Ser Asp Thr Leu Cys Val Gly Gly Phe Ile Arg
        115                 120                 125

Gly Leu Val Ala Gln Ile Cys Arg Ser Gly Leu Leu Gln Gly Tyr Glu
    130                 135                 140

Asp Lys Leu Arg Asp Pro Ala Val Gln Ser Leu Leu Gln Pro Gly Glu
145                 150                 155                 160

Cys Glu Arg Asn Pro Ala Glu Ala Phe Lys Arg Cys Val Leu Leu Pro
                165                 170                 175

Leu Leu Gly Met Lys Pro Pro Gln Gln Ser Leu Tyr Leu Leu Val Asp
            180                 185                 190

Ser Val Asp Glu Gly Cys Asn Ile Thr Glu Gly Glu Gln Thr Ser Thr
        195                 200                 205

Ser Leu Ser Gly Thr Val Ala Ala Leu Leu Ala Gly His His Glu Phe
    210                 215                 220

Phe Pro Pro Trp Leu Leu Leu Leu Cys Ser Ala Arg Lys Gln Ser Lys
225                 230                 235                 240

Ala Val Thr Lys Met Phe Thr Gly Phe Arg Lys Ile Ser Leu Asp Asp
                245                 250                 255
```

```
Leu Arg Lys Ala Tyr Ile Val Lys Asp Val Gln Gln Tyr Ile Leu His
            260                 265                 270

Arg Leu Asp Gln Glu Glu Ala Leu Arg Gln His Leu Thr Lys Glu Thr
        275                 280                 285

Ala Glu Met Leu Asn Gln Leu His Ile Lys Ser Ser Gly Cys Phe Leu
    290                 295                 300

Tyr Leu Glu Arg Val Leu Asp Gly Val Val Glu Asn Phe Ile Met Leu
305                 310                 315                 320

Arg Glu Ile Arg Asp Ile Pro Gly Thr Leu Asn Gly Leu Tyr Leu Trp
                325                 330                 335

Leu Cys Gln Arg Leu Phe Val Arg Lys Gln Phe Ala Lys Val Gln Pro
            340                 345                 350

Ile Leu Asn Val Ile Leu Ala Ala Cys Arg Pro Leu Thr Ile Thr Glu
        355                 360                 365

Leu Tyr His Ala Val Trp Thr Lys Asn Met Ser Leu Thr Leu Glu Asp
    370                 375                 380

Phe Gln Arg Lys Leu Asp Ile Leu Ser Lys Leu Leu Val Asp Gly Leu
385                 390                 395                 400

Gly Asn Thr Lys Ile Leu Phe His Tyr Ser Phe Ala Glu Trp Leu Leu
                405                 410                 415

Asp Val Lys His Cys Thr Gln Lys Tyr Leu Cys Asn Ala Ala Glu Gly
            420                 425                 430

His Arg Met Leu Ala Met Ser Tyr Thr Cys Gln Ala Lys Asn Leu Thr
        435                 440                 445

Pro Leu Glu Ala Gln Glu Phe Ala Leu His Leu Ile Asn Ser Asn Leu
    450                 455                 460

Gln Leu Glu Thr Ala Glu Leu Ala Leu Trp Met Ile Trp Asn Gly Thr
465                 470                 475                 480
```

```
Pro Val Arg Asp Ser Leu Ser Thr Leu Ile Pro Lys Glu Gln Glu Val
                485                 490                 495

Leu Gln Leu Leu Val Lys Ala Gly Ala His Val Asn Ser Glu Asp Asp
            500                 505                 510

Arg Thr Ser Cys Ile Val Arg Gln Ala Leu Glu Arg Glu Asp Ser Ile
        515                 520                 525

Arg Thr Leu Leu Asp Asn Gly Ala Ser Val Asn Gln Cys Asp Ser Asn
    530                 535                 540

Gly Arg Thr Leu Leu Ala Asn Ala Ala Tyr Ser Gly Ser Leu Asp Val
545                 550                 555                 560

Val Asn Leu Leu Val Ser Arg Gly Ala Asp Leu Glu Ile Glu Asp Ala
                565                 570                 575

His Gly His Thr Pro Leu Thr Leu Ala Ala Arg Gln Gly His Thr Lys
            580                 585                 590

Val Val Asn Cys Leu Ile Gly Cys Gly Ala Asn Ile Asn His Thr Asp
        595                 600                 605

Gln Asp Gly Trp Thr Ala Leu Arg Ser Ala Ala Trp Gly Gly His Thr
    610                 615                 620

Glu Val Val Ser Ala Leu Leu Tyr Ala Gly Val Lys Val Asp Cys Ala
625                 630                 635                 640

Asp Ala Asp Ser Arg Thr Ala Leu Arg Ala Ala Ala Trp Gly Gly His
                645                 650                 655

Glu Asp Ile Val Leu Asn Leu Leu Gln His Gly Ala Glu Val Asn Lys
            660                 665                 670

Ala Asp Asn Glu Gly Arg Thr Ala Leu Ile Ala Ala Ala Tyr Met Gly
        675                 680                 685

His Arg Glu Ile Val Glu His Leu Leu Asp His Gly Ala Glu Val Asn
    690                 695                 700
```

```
His Glu Asp Val Asp Gly Arg Thr Ala Leu Ser Val Ala Ala Leu Cys
705                 710                 715                 720

Val Pro Ala Ser Lys Gly His Ala Ser Val Val Ser Leu Leu Ile Asp
                725                 730                 735

Arg Gly Ala Glu Val Asp His Cys Asp Lys Asp Gly Met Thr Pro Leu
            740                 745                 750

Leu Val Ala Ala Tyr Glu Gly His Val Asp Val Val Asp Leu Leu Leu
        755                 760                 765

Glu Gly Gly Ala Asp Val Asp His Thr Asp Asn Asn Gly Arg Thr Pro
    770                 775                 780

Leu Leu Ala Ala Ala Ser Met Gly His Ala Ser Val Val Asn Thr Leu
785                 790                 795                 800

Leu Phe Trp Gly Ala Ala Val Asp Ser Ile Asp Ser Glu Gly Arg Thr
                805                 810                 815

Val Leu Ser Ile Ala Ser Ala Gln Gly Asn Val Glu Val Val Arg Thr
            820                 825                 830

Leu Leu Asp Arg Gly Leu Asp Glu Asn His Arg Asp Asp Ala Gly Trp
        835                 840                 845

Thr Pro Leu His Met Ala Ala Phe Glu Gly His Arg Leu Ile Cys Glu
    850                 855                 860

Ala Leu Ile Glu Gln Gly Ala Arg Thr Asn Glu Ile Asp Asn Asp Gly
865                 870                 875                 880

Arg Ile Pro Phe Ile Leu Ala Ser Gln Glu Gly His Tyr Asp Cys Val
                885                 890                 895

Gln Ile Leu Leu Glu Asn Lys Ser Asn Ile Asp Gln Arg Gly Tyr Asp
            900                 905                 910

Gly Arg Asn Ala Leu Arg Val Ala Ala Leu Glu Gly His Arg Asp Ile
        915                 920                 925

Val Glu Leu Leu Phe Ser His Gly Ala Asp Val Asn Cys Lys Asp Ala
```

```
    930                 935                 940

Asp Gly Arg Pro Thr Leu Tyr Ile Leu Ala Leu Glu Asn Gln Leu Thr
945                 950                 955                 960

Met Ala Glu Tyr Phe Leu Glu Asn Gly Ala Asn Val Glu Ala Ser Asp
                965                 970                 975

Ala Glu Gly Arg Thr Ala Leu His Val Ser Cys Trp Gln Gly His Met
            980                 985                 990

Glu Met Val Gln Val Leu Ile Ala  Tyr His Ala Asp Val  Asn Ala
Ala
        995                 1000                1005

Asp Asn  Glu Lys Arg Ser Ala  Leu Gln Ser Ala Ala  Trp Gln Gly
    1010                1015                1020

His Val  Lys Val Val Gln Leu  Leu Ile Glu His Gly  Ala Val Val
    1025                1030                1035

Asp His  Thr Cys Asn Gln Gly  Ala Thr Ala Leu Cys  Ile Ala Ala
    1040                1045                1050

Gln Glu  Gly His Ile Asp Val  Val Gln Val Leu Leu  Glu His Gly
    1055                1060                1065

Ala Asp  Pro Asn His Ala Asp  Gln Phe Gly Arg Thr  Ala Met Arg
    1070                1075                1080

Val Ala  Ala Lys Asn Gly His  Ser Gln Ile Ile Lys  Leu Leu Glu
    1085                1090                1095

Lys Tyr  Gly Ala Ser Ser Leu  Asn Gly Cys Ser Pro  Ser Pro Val
    1100                1105                1110

His Thr  Met Glu Gln Lys Pro  Leu Gln Ser Leu Ser  Ser Lys Val
    1115                1120                1125

Gln Ser  Leu Thr Ile Lys Ser  Asn Ser Ser Gly Ser  Thr Gly Gly
    1130                1135                1140

Gly Asp  Met Gln Pro Ser Leu  Arg Gly Leu Pro Asn  Gly Pro Thr
```

1145 1150 1155

His Ala Phe Ser Ser Pro Ser Glu Ser Pro Asp Ser Thr Val Asp
1160 1165 1170

Arg Gln Lys Ser Ser Leu Ser Asn Asn Ser Leu Lys Ser Ser Lys
1175 1180 1185

Asn Ser Ser Leu Arg Thr Thr Ser Ser Thr Ala Thr Ala Gln Thr
1190 1195 1200

Val Pro Ile Asp Ser Phe His Asn Leu Ser Phe Thr Glu Gln Ile
1205 1210 1215

Gln Gln His Ser Leu Pro Arg Ser Arg Ser Arg Gln Ser Ile Val
1220 1225 1230

Ser Pro Ser Ser Thr Thr Gln Ser Leu Gly Gln Ser His Asn Ser
1235 1240 1245

Pro Ser Ser Glu Phe Glu Trp Ser Gln Val Lys Pro Ser Leu Lys
1250 1255 1260

Ser Thr Lys Ala Ser Lys Gly Gly Lys Ser Glu Asn Ser Ala Lys
1265 1270 1275

Ser Gly Ser Ala Gly Lys Lys Ala Lys Gln Ser Asn Ser Ser Gln
1280 1285 1290

Pro Lys Val Leu Glu Tyr Glu Met Thr Gln Phe Asp Arg Arg Gly
1295 1300 1305

Pro Ile Ala Lys Ser Gly Thr Ala Ala Pro Pro Lys Gln Met Pro
1310 1315 1320

Ala Glu Ser Gln Cys Lys Ile Met Ile Pro Ser Ala Gln Gln Glu
1325 1330 1335

Ile Gly Arg Ser Gln Gln Gln Phe Leu Ile His Gln Gln Ser Gly
1340 1345 1350

Glu Gln Lys Lys Arg Asn Gly Ile Met Thr Asn Pro Asn Tyr His
1355 1360 1365

```
Leu Gln  Ser Asn Gln Val Phe  Leu Gly Arg Val Ser  Val Pro Arg
    1370                1375                1380


Thr Met  Gln Asp Arg Gly His  Gln Glu Val Leu Glu  Gly Tyr Pro
    1385                1390                1395


Ser Ser  Glu Thr Glu Leu Ser  Leu Lys Gln Ala Leu  Lys Leu Gln
    1400                1405                1410


Ile Glu  Gly Ser Asp Pro Ser  Phe Asn Tyr Lys Lys  Glu Thr Pro
    1415                1420                1425


Leu
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<210> 5300
<211> 1076
<212> PRT
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Met Gly Ile Leu Ser Ile Thr Asp Gln Pro Pro Leu Val Gln Ala Ile
1               5                  10                  15


Phe Ser Arg Asp Val Glu Glu Val Arg Ser Leu Leu Ser Gln Lys Glu
            20                  25                  30
```

```
Asn Ile Asn Val Leu Asp Gln Glu Arg Arg Thr Pro Leu His Ala Ala
        35                  40                  45

Ala Tyr Val Gly Asp Val Pro Ile Leu Gln Leu Leu Leu Met Ser Gly
    50                  55                  60

Ala Asn Val Asn Ala Lys Asp Thr Leu Trp Leu Thr Pro Leu His Arg
65                  70                  75                  80

Ala Ala Ala Ser Arg Asn Glu Lys Val Leu Gly Leu Leu Leu Ala His
                85                  90                  95

Ser Ala Asp Val Asn Ala Arg Asp Lys Leu Trp Gln Thr Pro Leu His
            100                 105                 110

Val Ala Ala Ala Asn Arg Ala Thr Lys Cys Ala Glu Ala Leu Ala Pro
        115                 120                 125

Leu Leu Ser Ser Leu Asn Val Ala Asp Arg Ser Gly Arg Ser Ala Leu
    130                 135                 140

His His Ala Val His Ser Gly His Leu Glu Thr Val Asn Leu Leu Leu
145                 150                 155                 160

Asn Lys Gly Ala Ser Leu Asn Val Cys Asp Lys Lys Glu Arg Gln Pro
                165                 170                 175

Leu His Trp Ala Ala Phe Leu Gly His Leu Glu Val Leu Lys Leu Leu
            180                 185                 190

Val Ala Arg Gly Ala Asp Leu Gly Cys Lys Asp Arg Lys Gly Tyr Gly
        195                 200                 205

Leu Leu His Thr Ala Ala Ala Ser Gly Gln Ile Glu Val Val Lys Tyr
    210                 215                 220

Leu Leu Arg Met Gly Ala Glu Ile Asp Glu Pro Asn Ala Phe Gly Asn
225                 230                 235                 240

Thr Ala Leu His Ile Ala Cys Tyr Leu Gly Gln Asp Ala Val Ala Ile
                245                 250                 255

Glu Leu Val Asn Ala Gly Ala Asn Val Asn Gln Pro Asn Asp Lys Gly
```

260 265 270

Phe Thr Pro Leu His Val Ala Ala Val Ser Thr Asn Gly Ala Leu Cys
275 280 285

Leu Glu Leu Leu Val Asn Asn Gly Ala Asp Val Asn Tyr Gln Ser Lys
290 295 300

Glu Gly Lys Ser Pro Leu His Met Ala Ala Ile His Gly Arg Phe Thr
305 310 315 320

Arg Ser Gln Ile Leu Ile Gln Asn Gly Ser Glu Ile Asp Cys Ala Asp
325 330 335

Lys Phe Gly Asn Thr Pro Leu His Val Ala Ala Arg Tyr Gly His Glu
340 345 350

Leu Leu Ile Ser Thr Leu Met Thr Asn Gly Ala Asp Thr Ala Arg Arg
355 360 365

Gly Ile His Asp Met Phe Pro Leu His Leu Ala Val Leu Phe Gly Phe
370 375 380

Ser Asp Cys Cys Arg Lys Leu Leu Ser Ser Gly Gln Leu Tyr Ser Ile
385 390 395 400

Val Ser Ser Leu Ser Asn Glu His Val Leu Ser Ala Gly Phe Asp Ile
405 410 415

Asn Thr Pro Asp Asn Leu Gly Arg Thr Cys Leu His Ala Ala Ala Ser
420 425 430

Gly Gly Asn Val Glu Cys Leu Asn Leu Leu Leu Ser Ser Gly Ala Asp
435 440 445

Leu Arg Arg Arg Asp Lys Phe Gly Arg Thr Pro Leu His Tyr Ala Ala
450 455 460

Ala Asn Gly Ser Tyr Gln Cys Ala Val Thr Leu Val Thr Ala Gly Ala
465 470 475 480

Gly Val Asn Glu Ala Asp Cys Lys Gly Cys Ser Pro Leu His Tyr Ala
485 490 495

```
Ala Ala Ser Asp Thr Tyr Arg Arg Ala Glu Pro His Thr Pro Ser Ser
            500                 505                 510

His Asp Ala Glu Glu Asp Glu Pro Leu Lys Glu Ser Arg Arg Lys Glu
        515                 520                 525

Ala Phe Phe Cys Leu Glu Phe Leu Leu Asp Asn Gly Ala Asp Pro Ser
    530                 535                 540

Leu Arg Asp Arg Gln Gly Tyr Thr Ala Val His Tyr Ala Ala Ala Tyr
545                 550                 555                 560

Gly Asn Arg Gln Asn Leu Glu Leu Leu Leu Glu Met Ser Phe Asn Cys
                565                 570                 575

Leu Glu Asp Val Glu Ser Thr Ile Pro Val Ser Pro Leu His Leu Ala
            580                 585                 590

Ala Tyr Asn Gly His Cys Glu Ala Leu Lys Thr Leu Ala Glu Thr Leu
        595                 600                 605

Val Asn Leu Asp Val Arg Asp His Lys Gly Arg Thr Ala Leu Phe Leu
    610                 615                 620

Ala Thr Glu Arg Gly Ser Thr Glu Cys Val Glu Val Leu Thr Ala His
625                 630                 635                 640

Gly Ala Ser Ala Leu Ile Lys Glu Arg Lys Arg Lys Trp Thr Pro Leu
                645                 650                 655

His Ala Ala Ala Ala Ser Gly His Thr Asp Ser Leu His Leu Leu Ile
            660                 665                 670

Asp Ser Gly Glu Arg Ala Asp Ile Thr Asp Val Met Asp Ala Tyr Gly
        675                 680                 685

Gln Thr Pro Leu Met Leu Ala Ile Met Asn Gly His Val Asp Cys Val
    690                 695                 700

His Leu Leu Leu Glu Lys Gly Ser Thr Ala Asp Ala Ala Asp Leu Arg
705                 710                 715                 720
```

```
Gly Arg Thr Ala Leu His Arg Gly Ala Val Thr Gly Cys Glu Asp Cys
                725                 730                 735

Leu Ala Ala Leu Leu Asp His Asp Ala Phe Val Leu Cys Arg Asp Phe
            740                 745                 750

Lys Gly Arg Thr Pro Ile His Leu Ala Ser Ala Cys Gly His Thr Ala
        755                 760                 765

Val Leu Arg Thr Leu Leu Gln Ala Ala Leu Ser Thr Asp Pro Leu Asp
    770                 775                 780

Ala Gly Val Asp Tyr Ser Gly Tyr Ser Pro Met His Trp Ala Ser Tyr
785                 790                 795                 800

Thr Gly His Glu Asp Cys Leu Glu Leu Leu Leu Glu His Ser Pro Phe
                805                 810                 815

Ser Tyr Leu Glu Gly Asn Pro Phe Thr Pro Leu His Cys Ala Val Ile
            820                 825                 830

Asn Asn Gln Asp Ser Thr Thr Glu Met Leu Leu Gly Ala Leu Gly Ala
        835                 840                 845

Lys Ile Val Asn Ser Arg Asp Ala Lys Gly Arg Thr Pro Leu His Ala
    850                 855                 860

Ala Ala Phe Ala Asp Asn Val Ser Gly Leu Arg Met Leu Leu Gln His
865                 870                 875                 880

Gln Ala Glu Val Asn Ala Thr Asp His Thr Gly Arg Thr Ala Leu Met
                885                 890                 895

Thr Ala Ala Glu Asn Gly Gln Thr Ala Ala Val Glu Phe Leu Leu Tyr
            900                 905                 910

Arg Gly Lys Ala Asp Leu Thr Val Leu Asp Glu Asn Lys Asn Thr Ala
        915                 920                 925

Leu His Leu Ala Cys Ser Lys Gly His Glu Lys Cys Ala Leu Met Ile
    930                 935                 940
```

```
Leu Ala Glu Thr Gln Asp Leu Gly Leu Ile Asn Ala Thr Asn Ser Ala
945                 950                 955                 960


Leu Gln Met Pro Leu His Ile Ala Ala Arg Asn Gly Leu Ala Ser Val
                965                 970                 975


Val Gln Ala Leu Leu Ser His Gly Ala Thr Val Leu Ala Val Asp Glu
            980                 985                 990


Glu Gly His Thr Pro Ala Leu Ala  Cys Ala Pro Asn Lys  Asp Val
Ala
        995                 1000                1005


Asp Cys  Leu Ala Leu Ile Leu  Ser Thr Met Lys Pro  Phe Pro Pro
    1010                1015                1020


Lys Asp  Ala Val Ser Pro Phe  Ser Phe Ser Leu Leu  Lys Asn Cys
    1025                1030                1035


Ser Ile  Ala Ala Ala Lys Thr  Val Gly Gly Cys Gly  Ala Leu Pro
    1040                1045                1050


His Gly  Ala Ser Cys Pro Tyr  Ser Gln Glu Arg Pro  Gly Ala Ile
    1055                1060                1065


Gly Leu  Asp Gly Cys Tyr Ser  Glu
    1070                1075


<210> 5301
<211> 343
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1154; "

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<223> /note="Gene Symbol: ANKRD53; "

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<223> /note="Gene Name:
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<220>
<221> source
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<223> /note="Uniprot ID: Q8N9V6; "

<220>
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<223> /note="ENSP ID: ENSP00000272421"

<400> 5301
Met Ala Ser Ala Gly Ser Thr Ala Arg Arg Ala Gly Ser Gly Ser Trp
1   5   10   15

His Ser Glu Arg Gly Glu Gly Arg Gly Ala Arg Pro Gln Pro Thr Pro
            20   25   30

Ser Gly Ser Met Gln Gln Ala Asn Lys Val Ser Leu Lys Ala Thr Trp
        35   40   45

Thr Asp Ala Glu Ser Lys Gln Pro Ser Gln Pro Leu Pro Asp Leu Ala
    50   55   60

Asp His Leu Ser Ala Gln Ala Thr Ala Leu Ala Arg Pro Arg Arg Pro
65   70   75   80

Ala Ser Leu Thr Pro Pro Arg Ala Asp Pro Ser Pro Ser Lys Glu Ser
                85   90   95

Asp Gln Thr Ala Ile Asp Gln Thr Ala Ile Gly Ser Tyr Tyr Gln Leu
            100   105   110

Phe Ala Ala Ala Val Gly Asn Val Glu Trp Leu Arg Phe Cys Leu Asn
        115   120   125

Gln Ser Leu Arg Glu Ile Pro Thr Asp Asp Lys Gly Phe Thr Ala Ile
    130   135   140

His Phe Ala Ala Gln Trp Gly Lys Leu Ala Cys Leu Gln Val Leu Val
145   150   155   160

Glu Glu Tyr Lys Phe Pro Val Asp Leu Leu Thr Asn Asn Ser Gln Thr
                165   170   175

Pro Leu His Leu Val Ile His Arg Asp Asn Thr Thr Val Ala Leu Pro
            180   185   190

Cys Ile Tyr Tyr Leu Leu Glu Lys Gly Ala Asp Leu Asn Ala Gln Thr
        195   200   205

```
Cys Asn Gly Ser Thr Pro Leu His Leu Ala Ala Arg Asp Gly Leu Leu
    210                 215                 220

Asp Cys Val Lys Val Leu Val Gln Ser Gly Ala Asn Val His Ala Gln
225                 230                 235                 240

Asp Ala Met Gly Tyr Lys Pro Ile Asp Phe Cys Lys Ile Trp Asn His
                245                 250                 255

Arg Ala Cys Ala Arg Phe Leu Lys Asp Ala Met Trp Lys Lys Asp Lys
            260                 265                 270

Lys Asp Phe Ala Arg Glu Met Thr Lys Met Lys Met Phe Lys Ser Gln
        275                 280                 285

Leu Thr Leu Met Glu His Asn Tyr Leu Ile Glu Tyr Gln Gly Gln Gly
    290                 295                 300

Cys Ser Val His Phe Pro Phe Ala Phe Ser Pro Ile Thr Pro Glu Thr
305                 310                 315                 320

Leu Leu Trp Gln Asp Ile Ser Leu Leu Ser Asp Cys Gly Phe Leu Trp
                325                 330                 335

Arg Arg Arg Glu Leu Ser Phe
            340
```

<210> 5302
<211> 530
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
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ankyrin repeat domain 53; "

<220>

<221> source
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000353796"

<400> 5302
Met Ala Ser Ala Gly Ser Thr Ala Arg Arg Ala Gly Ser Gly Ser Trp
1   5   10   15

His Ser Glu Arg Gly Glu Gly Arg Gly Ala Arg Pro Gln Pro Thr Pro
            20   25   30

Ser Gly Ser Met Gln Gln Ala Asn Lys Val Ser Leu Lys Ala Thr Trp
        35   40   45

Thr Asp Ala Glu Ser Lys Gln Pro Ser Gln Pro Leu Pro Asp Leu Ala
    50   55   60

Asp His Leu Ser Ala Gln Ala Thr Ala Leu Ala Arg Pro Arg Arg Pro
65   70   75   80

Ala Ser Leu Thr Pro Pro Arg Ala Asp Pro Ser Pro Ser Lys Glu Ser
                85   90   95

Asp Gln Thr Ala Ile Asp Gln Thr Ala Ile Gly Ser Tyr Tyr Gln Leu
            100   105   110

Phe Ala Ala Ala Val Gly Asn Val Glu Trp Leu Arg Phe Cys Leu Asn
        115   120   125

Gln Ser Leu Arg Glu Ile Pro Thr Asp Asp Lys Gly Phe Thr Ala Ile
    130   135   140

His Phe Ala Ala Gln Trp Gly Lys Leu Ala Cys Leu Gln Val Leu Val
145   150   155   160

Glu Glu Tyr Lys Phe Pro Val Asp Leu Leu Thr Asn Asn Ser Gln Thr
                165   170   175

Pro Leu His Leu Val Ile His Arg Asp Asn Thr Thr Val Ala Leu Pro
            180   185   190

Cys Ile Tyr Tyr Leu Leu Glu Lys Gly Ala Asp Leu Asn Ala Gln Thr

```
        195                 200                 205

Cys Asn Gly Ser Thr Pro Leu His Leu Ala Ala Arg Asp Gly Leu Leu
    210                 215                 220

Asp Cys Val Lys Val Leu Val Gln Ser Gly Ala Asn Val His Ala Gln
225                 230                 235                 240

Asp Ala Met Gly Tyr Lys Pro Ile Asp Phe Cys Lys Ile Trp Asn His
                245                 250                 255

Arg Ala Cys Ala Arg Phe Leu Lys Asp Ala Met Trp Lys Lys Asp Lys
            260                 265                 270

Lys Asp Phe Ala Arg Glu Met Thr Lys Met Lys Met Phe Lys Ser Gln
        275                 280                 285

Leu Thr Leu Met Glu His Asn Tyr Leu Ile Glu Tyr Gln Lys Glu His
    290                 295                 300

Lys Ile Leu Arg Glu Ala Ala Ile Arg Lys Trp Leu His Gly Lys Leu
305                 310                 315                 320

His Pro Gly His Ser Leu Val Ser Asn Thr Lys Gln Ala Arg Ala Thr
                325                 330                 335

Ala Leu Ser Lys Thr Pro Glu Gln Arg Glu Ser Gln Arg Ser Arg Ser
            340                 345                 350

Phe His Pro Ser Val Asp Ala Arg Leu Gln Cys Ile Pro Gln Pro Thr
        355                 360                 365

Glu Met Pro Lys Pro Ile Tyr Arg Lys Pro Thr Val Lys Arg Pro Thr
    370                 375                 380

Met Trp Asn Val Ser Asn Asn Pro Ala Arg Pro Pro Thr Thr Gln Ile
385                 390                 395                 400

Ser His Ser Gln Gly Ile Arg Leu Gly Val His Pro Asp Pro Thr Pro
                405                 410                 415

Glu His Asp Phe Ser Ser Phe Leu Glu Val Arg Pro Asp Gly His Gly
            420                 425                 430
```

```
Gly Ala Arg Leu His Thr Val Asp Gly His Trp Val Ala Pro Val Pro
        435                 440                 445

Arg Leu Pro Phe Glu Val Leu Leu Arg Met Leu Tyr Pro Arg Val Trp
    450                 455                 460

Pro Tyr Arg Met Lys Val Pro Gln Gly Phe Tyr Pro Ile Ser Met Arg
465                 470                 475                 480

Glu Val Pro Arg Lys Arg His Leu Gly Asp Asn Thr Phe Trp Thr Asp
                485                 490                 495

Thr Leu Ala Met Asn Leu Arg Asp Thr Phe Asp Glu Ala Phe Leu Ala
            500                 505                 510

Ala Val Arg Ser His Gln Gly Leu Pro Thr Leu Pro Ser Pro Gln Thr
        515                 520                 525

Asn Pro
    530
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<210> 5303
<211> 254
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1154; "

<220>
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<223> /note="Gene Symbol: ANKRD53; "

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<223> /note="Gene Name:
ankyrin repeat domain 53; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000388883"

<400> 5303

```
Met Ala Ser Ala Gly Ser Thr Ala Arg Arg Ala Gly Ser Gly Ser Trp
1               5                   10                  15
```

```
His Ser Glu Arg Gly Glu Gly Arg Gly Ala Arg Pro Gln Pro Thr Pro
            20                  25                  30

Ser Gly Ser Met Gln Gln Ala Asn Lys Val Ser Leu Lys Ala Thr Trp
        35                  40                  45

Thr Asp Ala Glu Ser Lys Gln Pro Ser Pro Ser Lys Glu Ser Asp Gln
    50                  55                  60

Thr Ala Ile Asp Gln Thr Ala Ile Gly Ser Tyr Tyr Gln Leu Phe Ala
65                  70                  75                  80

Ala Ala Val Gly Asn Val Glu Trp Leu Arg Phe Cys Leu Asn Gln Ser
                85                  90                  95

Leu Arg Glu Ile Pro Thr Asp Asp Lys Gly Phe Thr Ala Ile His Phe
            100                 105                 110

Ala Ala Gln Trp Gly Lys Leu Ala Cys Leu Gln Val Leu Val Glu Glu
        115                 120                 125

Tyr Lys Phe Pro Val Asp Leu Leu Thr Asn Asn Ser Gln Thr Pro Leu
    130                 135                 140

His Leu Val Ile His Arg Asp Asn Thr Thr Val Ala Leu Pro Cys Ile
145                 150                 155                 160

Tyr Tyr Leu Leu Glu Lys Gly Ala Asp Leu Asn Ala Phe Leu Lys Asp
                165                 170                 175

Ala Met Trp Lys Lys Asp Lys Lys Asp Phe Ala Arg Glu Met Thr Lys
            180                 185                 190

Met Lys Met Phe Lys Ser Gln Leu Thr Leu Met Glu His Asn Tyr Leu
        195                 200                 205

Ile Glu Tyr Gln Gly Gln Gly Cys Ser Val His Phe Pro Phe Ala Phe
    210                 215                 220

Ser Pro Ile Thr Pro Glu Thr Leu Leu Trp Gln Asp Ile Ser Leu Leu
225                 230                 235                 240

Ser Asp Cys Gly Phe Leu Trp Arg Arg Arg Glu Leu Ser Phe
```

245 250

<210> 5304
<211> 496
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1154; "

<220>
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<220>
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<223> /note="Gene Name:
ankyrin repeat domain 53; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000407004"

<400> 5304
Met Ala Ser Ala Gly Ser Thr Ala Arg Arg Ala Gly Ser Gly Ser Trp
1 5 10 15

His Ser Glu Arg Gly Glu Gly Arg Gly Ala Arg Pro Gln Pro Thr Pro
20 25 30

Ser Gly Ser Met Gln Gln Ala Asn Lys Val Ser Leu Lys Ala Thr Trp
35 40 45

Thr Asp Ala Glu Ser Lys Gln Pro Ser Pro Ser Lys Glu Ser Asp Gln
50 55 60

Thr Ala Ile Asp Gln Thr Ala Ile Gly Ser Tyr Tyr Gln Leu Phe Ala
65 70 75 80

Ala Ala Val Gly Asn Val Glu Trp Leu Arg Phe Cys Leu Asn Gln Ser
85 90 95

Leu Arg Glu Ile Pro Thr Asp Asp Lys Gly Phe Thr Ala Ile His Phe
100 105 110

Ala Ala Gln Trp Gly Lys Leu Ala Cys Leu Gln Val Leu Val Glu Glu
115 120 125

```
Tyr Lys Phe Pro Val Asp Leu Leu Thr Asn Asn Ser Gln Thr Pro Leu
    130                 135                 140

His Leu Val Ile His Arg Asp Asn Thr Thr Val Ala Leu Pro Cys Ile
145                 150                 155                 160

Tyr Tyr Leu Leu Glu Lys Gly Ala Asp Leu Asn Ala Gln Thr Cys Asn
                165                 170                 175

Gly Ser Thr Pro Leu His Leu Ala Ala Arg Asp Gly Leu Leu Asp Cys
            180                 185                 190

Val Lys Val Leu Val Gln Ser Gly Ala Asn Val His Ala Gln Asp Ala
        195                 200                 205

Met Gly Tyr Lys Pro Ile Asp Phe Cys Lys Ile Trp Asn His Arg Ala
    210                 215                 220

Cys Ala Arg Phe Leu Lys Asp Ala Met Trp Lys Lys Asp Lys Lys Asp
225                 230                 235                 240

Phe Ala Arg Glu Met Thr Lys Met Lys Met Phe Lys Ser Gln Leu Thr
                245                 250                 255

Leu Met Glu His Asn Tyr Leu Ile Glu Tyr Gln Lys Glu His Lys Ile
            260                 265                 270

Leu Arg Glu Ala Ala Ile Arg Lys Trp Leu His Gly Lys Leu His Pro
        275                 280                 285

Gly His Ser Leu Val Ser Asn Thr Lys Gln Ala Arg Ala Thr Ala Leu
    290                 295                 300

Ser Lys Thr Pro Glu Gln Arg Glu Ser Gln Arg Ser Arg Ser Phe His
305                 310                 315                 320

Pro Ser Val Asp Ala Arg Leu Gln Cys Ile Pro Gln Pro Thr Glu Met
                325                 330                 335

Pro Lys Pro Ile Tyr Arg Lys Pro Thr Val Lys Arg Pro Thr Met Trp
            340                 345                 350
```

```
Asn Val Ser Asn Asn Pro Ala Arg Pro Pro Thr Thr Gln Ile Ser His
        355                 360                 365

Ser Gln Gly Ile Arg Leu Gly Val His Pro Asp Pro Thr Pro Glu His
    370                 375                 380

Asp Phe Ser Ser Phe Leu Glu Val Arg Pro Asp Gly His Gly Gly Ala
385                 390                 395                 400

Arg Leu His Thr Val Asp Gly His Trp Val Ala Pro Val Pro Arg Leu
                405                 410                 415

Pro Phe Glu Val Leu Leu Arg Met Leu Tyr Pro Arg Val Trp Pro Tyr
            420                 425                 430

Arg Met Lys Val Pro Gln Gly Phe Tyr Pro Ile Ser Met Arg Glu Val
        435                 440                 445

Pro Arg Lys Arg His Leu Gly Asp Asn Thr Phe Trp Thr Asp Thr Leu
    450                 455                 460

Ala Met Asn Leu Arg Asp Thr Phe Asp Glu Ala Phe Leu Ala Ala Val
465                 470                 475                 480

Arg Ser His Gln Gly Leu Pro Thr Leu Pro Ser Pro Gln Thr Asn Pro
                485                 490                 495


<210> 5305
<211> 300
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1155; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD54; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 54; "

<220>
<221> source
<223> /note="Uniprot ID:  Q6NXT1; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000215941"

<400> 5305
Met Ala Ala Ala Ala Gly Asp Ala Asp Asp Glu Pro Arg Ser Gly His
1   5   10   15

Ser Ser Ser Glu Gly Glu Cys Ala Val Ala Pro Glu Pro Leu Thr Asp
            20   25   30

Ala Glu Gly Leu Phe Ser Phe Ala Asp Phe Gly Ser Ala Leu Gly Gly
        35   40   45

Gly Gly Ala Gly Leu Ser Gly Arg Ala Ser Gly Gly Ala Gln Ser Pro
    50   55   60

Leu Arg Tyr Leu His Val Leu Trp Gln Gln Asp Ala Glu Pro Arg Asp
65   70   75   80

Glu Leu Arg Cys Lys Ile Pro Ala Gly Arg Leu Arg Arg Ala Ala Arg
                85   90   95

Pro His Arg Arg Leu Gly Pro Thr Gly Lys Glu Val His Ala Leu Lys
            100   105   110

Arg Leu Arg Asp Ser Ala Asn Ala Asn Asp Val Glu Thr Val Gln Gln
        115   120   125

Leu Leu Glu Asp Gly Ala Asp Pro Cys Ala Ala Asp Asp Lys Gly Arg
    130   135   140

Thr Ala Leu His Phe Ala Ser Cys Asn Gly Asn Asp Gln Ile Val Gln
145   150   155   160

Leu Leu Leu Asp His Gly Ala Asp Pro Asn Gln Arg Asp Gly Leu Gly
                165   170   175

Asn Thr Pro Leu His Leu Ala Ala Cys Thr Asn His Val Pro Val Ile
            180   185   190

Thr Thr Leu Leu Arg Gly Gly Ala Arg Val Asp Ala Leu Asp Arg Ala
        195   200   205

```
Gly Arg Thr Pro Leu His Leu Ala Lys Ser Lys Leu Asn Ile Leu Gln
    210                 215                 220

Glu Gly His Ala Gln Cys Leu Glu Ala Val Arg Leu Glu Val Lys Gln
225                 230                 235                 240

Ile Ile His Met Leu Arg Glu Tyr Leu Glu Arg Leu Gly Gln His Glu
                245                 250                 255

Gln Arg Glu Arg Leu Asp Asp Leu Cys Thr Arg Leu Gln Met Thr Ser
            260                 265                 270

Thr Lys Glu Gln Val Asp Glu Val Thr Asp Leu Leu Ala Ser Phe Thr
        275                 280                 285

Ser Leu Ser Leu Gln Met Gln Ser Met Glu Lys Arg
    290                 295                 300


<210> 5306
<211> 180
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1155; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD54; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 54; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000384392"

<400> 5306
Met Pro Met Met Trp Lys Gln Gln Leu Leu Glu Asp Gly Ala Asp Pro
1               5                   10                  15

Cys Ala Ala Asp Asp Lys Gly Arg Thr Ala Leu His Phe Ala Ser Cys
            20                  25                  30

Asn Gly Asn Asp Gln Ile Val Gln Leu Leu Leu Asp His Gly Ala Asp
```

```
        35                  40                  45

Pro Asn Gln Arg Asp Gly Leu Gly Asn Thr Pro Leu His Leu Ala Ala
    50                  55                  60

Cys Thr Asn His Val Pro Val Ile Thr Thr Leu Leu Arg Gly Gly Ala
65                  70                  75                  80

Arg Val Asp Ala Leu Asp Arg Ala Gly Arg Thr Pro Leu His Leu Ala
                85                  90                  95

Lys Ser Lys Leu Asn Ile Leu Gln Glu Gly His Ala Gln Cys Leu Glu
            100                 105                 110

Ala Val Arg Leu Glu Val Lys Gln Ile Ile His Met Leu Arg Glu Tyr
        115                 120                 125

Leu Glu Arg Leu Gly Gln His Glu Gln Arg Glu Arg Leu Asp Asp Leu
    130                 135                 140

Cys Thr Arg Leu Gln Met Thr Ser Thr Lys Glu Gln Val Asp Glu Val
145                 150                 155                 160

Thr Asp Leu Leu Ala Ser Phe Thr Ser Leu Ser Leu Gln Met Gln Ser
                165                 170                 175

Met Glu Lys Arg
            180


<210> 5307
<211> 156
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1155; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD54; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 54; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000385180"

<400> 5307
Met Ala Arg Ile Pro Val Gln Leu Met Thr Arg Ala Ala Gln Leu Tyr
1   5   10   15

Thr Leu Pro His Ala Met Ala Met Thr Arg Leu Leu Leu Leu Asp His
            20   25   30

Gly Ala Asp Pro Asn Gln Arg Asp Gly Leu Gly Asn Thr Pro Leu His
        35   40   45

Leu Ala Ala Cys Thr Asn His Val Pro Val Ile Thr Thr Leu Leu Arg
    50   55   60

Gly Gly Ala Arg Val Asp Ala Leu Asp Arg Ala Gly Arg Thr Pro Leu
65   70   75   80

His Leu Ala Lys Ser Lys Leu Asn Ile Leu Gln Glu Gly His Ala Gln
                85   90   95

Cys Leu Glu Ala Val Arg Leu Glu Val Lys Gln Ile Ile His Met Leu
            100   105   110

Arg Glu Tyr Leu Glu Arg Leu Gly Gln His Glu Gln Arg Glu Arg Leu
        115   120   125

Asp Asp Leu Cys Thr Arg Leu Gln Met Thr Ser Thr Lys Glu Gln Val
    130   135   140

Asp Glu Val Thr Asp Leu Leu Ala Ser Phe Thr Ser
145   150   155

<210> 5308
<211> 216
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1155; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD54; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 54; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000387507"

<400> 5308
Met Ala Ala Ala Ala Gly Asp Ala Asp Asp Glu Pro Arg Ser Gly His
1 5 10 15

Ser Ser Ser Glu Gly Glu Cys Ala Val Ala Pro Glu Pro Leu Thr Asp
20 25 30

Ala Glu Gly Leu Phe Ser Phe Ala Asp Phe Gly Ser Ala Leu Gly Gly
35 40 45

Gly Gly Ala Gly Leu Ser Gly Arg Ala Ser Gly Gly Ala Gln Ser Pro
50 55 60

Leu Arg Tyr Leu His Val Leu Trp Gln Gln Asp Ala Glu Pro Arg Asp
65 70 75 80

Glu Leu Arg Cys Lys Ile Pro Ala Gly Arg Leu Arg Arg Ala Ala Arg
85 90 95

Pro His Arg Arg Leu Gly Pro Thr Gly Lys Glu Val His Ala Leu Lys
100 105 110

Arg Leu Arg Asp Ser Ala Asn Ala Asn Asp Val Glu Thr Val Gln Gln
115 120 125

Leu Leu Glu Asp Gly Ala Asp Pro Cys Ala Ala Asp Asp Lys Gly Arg
130 135 140

Thr Ala Leu His Phe Ala Ser Cys Asn Gly Asn Asp Gln Ile Val Gln
145 150 155 160

Leu Leu Leu Asp His Gly Ala Asp Pro Asn Gln Arg Asp Gly Leu Gly
165 170 175

Asn Thr Pro Leu His Leu Ala Ala Cys Thr Asn His Val Pro Val Ile
180 185 190

```
Thr Thr Leu Leu Arg Gly Ala Gly Thr Cys Arg Gly Pro Cys Arg Cys
        195                 200                 205


Pro Gly Pro Ser Trp Ser His Thr
    210                 215


<210> 5309
<211> 178
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1155; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD54; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 54; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000391744"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5309
Xaa Arg Leu Arg Arg Pro Gly Pro Arg Gly Ala Val Ala Met Ala Ala
1               5                   10                  15


Ala Ala Gly Asp Ala Asp Asp Glu Pro Arg Ser Gly His Ser Ser Ser
            20                  25                  30


Glu Gly Glu Cys Ala Val Ala Pro Glu Pro Leu Thr Asp Ala Glu Gly
        35                  40                  45


Leu Phe Ser Phe Ala Asp Phe Gly Ser Ala Leu Gly Gly Gly Gly Ala
    50                  55                  60


Gly Leu Ser Gly Arg Ala Ser Gly Gly Ala Gln Ser Pro Leu Arg Tyr
65                  70                  75                  80
```

```
Leu His Val Leu Trp Gln Gln Asp Ala Glu Pro Arg Asp Glu Leu Arg
                85                  90                  95

Cys Lys Ile Pro Ala Gly Arg Leu Arg Arg Ala Ala Arg Pro His Arg
            100                 105                 110

Arg Leu Gly Pro Thr Gly Lys Glu Val His Ala Leu Lys Arg Leu Arg
        115                 120                 125

Asp Ser Ala Asn Ala Asn Asp Val Glu Thr Val Gln Gln Leu Leu Glu
    130                 135                 140

Asp Gly Ala Asp Pro Cys Ala Ala Asp Asp Lys Gly Arg Thr Ala Leu
145                 150                 155                 160

His Phe Ala Ser Cys Asn Gly Asn Asp Gln Ile Ala Ala Pro Gly Pro
                165                 170                 175

Trp Cys
```

<210> 5310
<211> 90
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1155; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD54; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 54; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000393035"

<400> 5310

```
Met Ala Arg Ile Pro Val Gln Leu Met Thr Arg Ala Ala Gln Leu Tyr
1               5                   10                  15
```

```
Thr Leu Pro His Ala Met Ala Met Thr Arg Leu Leu Leu Leu Asp His
            20                  25                  30

Gly Ala Asp Pro Asn Gln Arg Asp Gly Leu Gly Asn Thr Pro Leu His
        35                  40                  45

Leu Ala Ala Cys Thr Asn His Val Pro Val Ile Thr Thr Leu Leu Arg
    50                  55                  60

Gly Gly Ala Arg Val Asp Ala Leu Asp Arg Ala Gly Arg Thr Pro Leu
65                  70                  75                  80

His Leu Ala Lys Ser Lys Leu Asn Ile Leu
                85                  90


<210> 5311
<211> 284
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1155; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD54; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 54; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000405782"

<400> 5311
Met Ala Ala Ala Ala Gly Asp Ala Asp Asp Glu Pro Arg Ser Gly His
1               5                   10                  15

Ser Ser Ser Glu Gly Glu Cys Ala Val Ala Pro Glu Pro Leu Thr Asp
            20                  25                  30

Ala Glu Gly Leu Phe Ser Phe Ala Asp Phe Gly Ser Ala Leu Gly Gly
        35                  40                  45

Gly Gly Ala Gly Leu Ser Gly Arg Ala Ser Gly Gly Ala Gln Ser Pro
    50                  55                  60
```

```
Leu Arg Tyr Leu His Val Leu Trp Gln Gln Asp Ala Glu Pro Arg Asp
65                  70                  75                  80

Glu Leu Arg Cys Lys Ile Pro Ala Gly Arg Leu Arg Arg Ala Ala Arg
                85                  90                  95

Pro His Arg Arg Leu Gly Pro Thr Gly Lys Glu Val His Val Gln Gln
            100                 105                 110

Leu Leu Glu Asp Gly Ala Asp Pro Cys Ala Ala Asp Asp Lys Gly Arg
        115                 120                 125

Thr Ala Leu His Phe Ala Ser Cys Asn Gly Asn Asp Gln Ile Val Gln
    130                 135                 140

Leu Leu Leu Asp His Gly Ala Asp Pro Asn Gln Arg Asp Gly Leu Gly
145                 150                 155                 160

Asn Thr Pro Leu His Leu Ala Ala Cys Thr Asn His Val Pro Val Ile
                165                 170                 175

Thr Thr Leu Leu Arg Gly Gly Ala Arg Val Asp Ala Leu Asp Arg Ala
            180                 185                 190

Gly Arg Thr Pro Leu His Leu Ala Lys Ser Lys Leu Asn Ile Leu Gln
        195                 200                 205

Glu Gly His Ala Gln Cys Leu Glu Ala Val Arg Leu Glu Val Lys Gln
    210                 215                 220

Ile Ile His Met Leu Arg Glu Tyr Leu Glu Arg Leu Gly Gln His Glu
225                 230                 235                 240

Gln Arg Glu Arg Leu Asp Asp Leu Cys Thr Arg Leu Gln Met Thr Ser
                245                 250                 255

Thr Lys Glu Gln Val Asp Glu Val Thr Asp Leu Leu Ala Ser Phe Thr
            260                 265                 270

Ser Leu Ser Leu Gln Met Gln Ser Met Glu Lys Arg
        275                 280
```

<210> 5312
<211> 208
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1155; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD54; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 54; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000412534"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5312
Xaa Arg Asp Glu Leu Arg Cys Lys Ile Pro Ala Gly Arg Leu Arg Arg
1 5 10 15

Ala Ala Arg Pro His Arg Arg Leu Gly Pro Thr Gly Lys Glu Val His
20 25 30

Ala Leu Lys Arg Leu Arg Asp Ser Ala Asn Ala Asn Asp Val Glu Thr
35 40 45

Val Gln Gln Leu Leu Glu Asp Gly Ala Asp Pro Cys Ala Ala Asp Asp
50 55 60

Lys Gly Arg Thr Ala Leu His Phe Ala Ser Cys Asn Gly Asn Asp Gln
65 70 75 80

Ile Val Gln Leu Leu Leu Asp His Gly Ala Asp Pro Asn Gln Arg Asp
85 90 95

Gly Leu Gly Asn Thr Pro Leu His Leu Glu Cys Ser Pro Gln Leu Val
100 105 110

```
Pro Ala Gly Ala Arg Val Asp Ala Leu Asp Arg Ala Gly Arg Thr Pro
        115                 120                 125

Leu His Leu Ala Lys Ser Lys Leu Asn Ile Leu Gln Glu Gly His Ala
    130                 135                 140

Gln Cys Leu Glu Ala Val Arg Leu Glu Val Lys Gln Ile Ile His Met
145                 150                 155                 160

Leu Arg Glu Tyr Leu Glu Arg Leu Gly Gln His Glu Gln Arg Glu Arg
                165                 170                 175

Leu Asp Asp Leu Cys Thr Arg Leu Gln Met Thr Ser Thr Lys Glu Gln
            180                 185                 190

Val Asp Glu Val Thr Asp Leu Leu Ala Ser Phe Thr Ser Leu Ser Leu
        195                 200                 205


<210> 5313
<211> 107
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
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<400> 5313
Met Pro Met Met Trp Lys Gln Cys Ser Cys Ser Trp Thr Met Val Leu
1               5                   10                  15

Ile Leu Thr Ser Glu Met Gly Trp Gly Thr Arg His Cys Thr Trp Arg
            20                  25                  30

Pro Ala Pro Thr Thr Phe Leu Ser Ser Pro His Cys Tyr Glu Glu Ile
```

```
        35                  40                  45

Ile His Met Leu Arg Glu Tyr Leu Glu Arg Leu Gly Gln His Glu Gln
    50                  55                  60

Arg Glu Arg Leu Asp Asp Leu Cys Thr Arg Leu Gln Met Thr Ser Thr
65                  70                  75                  80

Lys Glu Gln Val Asp Glu Val Thr Asp Leu Leu Ala Ser Phe Thr Ser
                85                  90                  95

Leu Ser Leu Gln Met Gln Ser Met Glu Lys Arg
            100                 105


<210> 5314
<211> 614
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<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ANKRD55; "

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<223> /note="Gene Name:
      ankyrin repeat domain 55; "

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<220>
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<223> /note="ENSP ID: ENSP00000342295"

<400> 5314
Met Met Arg Gln Ala Thr Met Asp Phe Ser Thr Pro Ser Val Phe Asp
1               5                   10                  15

Gln Gln Arg Gly Asp Ser Ser Glu Glu Val Asp Leu Thr Met Val Tyr
            20                  25                  30

Gln Ala Ala Ser Asn Gly Asp Val Asn Ala Leu Thr Ala Val Ile Arg
        35                  40                  45
```

```
Glu Asp Pro Ser Ile Leu Glu Cys Cys Asp Ser Glu Gly Cys Thr Pro
    50                  55                  60

Leu Met His Ala Val Ser Gly Arg Gln Ala Asp Thr Val Lys Leu Leu
65                  70                  75                  80

Leu Lys Met Gly Ala Asn Ile Asn Met Gln Asp Ala Tyr Gly Arg Thr
                85                  90                  95

Ser Leu Cys Leu Ala Thr Tyr Leu Gly Trp Leu Glu Gly Cys Val Ser
            100                 105                 110

Leu Leu Arg Asn Gly Ala Lys His Asn Ile Pro Asp Lys Asn Gly Arg
        115                 120                 125

Leu Pro Leu His Ala Ala Thr Ala Glu Pro Asp Met Arg Leu Leu Thr
    130                 135                 140

Val Leu Leu Gln Gln Ser Asn Ile Ser Glu Ile Asn His Gln Asp Asn
145                 150                 155                 160

Glu Gly Met Thr Pro Leu His Trp Ala Ala Phe His Asn Gln Pro Gln
                165                 170                 175

His Thr Gln Met Leu Leu Lys Lys Gly Ala Asp Pro Thr Leu Val Asp
            180                 185                 190

Lys Asp Phe Lys Thr Ala Leu His Trp Ala Val Gln Ser Gly Asn Arg
        195                 200                 205

Ile Leu Cys Ser Ile Ile Leu Ser His His Gln Gly Pro Ser Ile Ile
    210                 215                 220

Asn Tyr Asp Asp Glu Ser Gly Lys Thr Cys Val His Ile Ala Ala Ala
225                 230                 235                 240

Ala Gly Phe Ser Asp Ile Ile His Glu Leu Ala Arg Val Pro Glu Cys
                245                 250                 255

Asn Leu Gln Ala Leu Asp Val Asp Asp Arg Thr Pro Leu His Trp Ala
            260                 265                 270
```

```
Ala Ala Ala Gly Lys Ala Glu Cys Val Gln Ser Leu Leu Glu Leu Gly
        275                 280                 285

Met Asp Ser Asn Leu Arg Asp Ile Asn Glu Ser Thr Pro Leu Ala Tyr
    290                 295                 300

Ala Leu Tyr Cys Gly His Thr Ala Cys Val Lys Leu Leu Ser Gln Glu
305                 310                 315                 320

Ser Arg Thr Glu Pro Thr Arg Pro Pro Pro Ser Gln Ser Ser Arg Pro
                325                 330                 335

Gln Lys Lys Glu Arg Arg Phe Asn Val Leu Asn Gln Ile Phe Cys Lys
            340                 345                 350

Asn Lys Lys Glu Glu Gln Arg Ala His Gln Lys Asp Pro Ser Arg Asp
        355                 360                 365

Arg Tyr Arg Glu Glu Asp Thr Ser Glu Val Asn Asp Ile Ile Thr Thr
    370                 375                 380

Phe Asp Ser Ile Val Gly Thr Asn Cys Gln Glu Gln Pro Gly Asp Gln
385                 390                 395                 400

Val Ala Met Val Glu Phe Lys Lys Lys Thr Ser Asp Asn Ser Lys Tyr
                405                 410                 415

Leu Leu Pro Glu Lys Lys Pro Leu Ala Arg Lys Gly Leu Pro Pro Ile
            420                 425                 430

Arg Thr Gln Ser Leu Pro Pro Ile Thr Leu Gly Asn Asn Phe Leu Thr
        435                 440                 445

Ala Ser His Arg Ala Thr Ser His Ala Gly Leu Ser Ser Ala Pro His
    450                 455                 460

His Met Ala Gln Arg Ser Gln Lys Ser Arg Ser Glu Gln Asp Leu Leu
465                 470                 475                 480

Asn Asn Arg Thr Gly Cys Gln Met Leu Leu Asp Asn Pro Trp Lys Ser
                485                 490                 495

Asp Ser Asn Gln Val Phe Ser Tyr Lys Val Trp Thr Val Ser Ser Ser
```

```
            500                 505                 510

Asp Lys Leu Leu Asp Arg Leu Leu Ser Val Arg Pro Gly His Gln Glu
        515                 520                 525

Val Ser Val Pro Pro His Leu Arg His Leu His Asn Pro Ser Ser Gly
    530                 535                 540

Gln Asn Phe Gln His Leu Ser Pro Asn Arg His Lys Ile Arg Asp Leu
545                 550                 555                 560

Pro Phe Thr Arg Asn Asn Leu Ala Pro Leu Pro Asp Gln Lys Phe Leu
                565                 570                 575

Ser Gly Glu Pro Leu Arg Thr Asn Arg Val Leu Pro Ala Ile Pro Ser
            580                 585                 590

Gln Arg Arg His Ser Thr Ala Ala Glu Glu Ser Glu His Ser Ala Asn
        595                 600                 605

Pro Thr Ser Asp Glu Asn
    610


<210> 5315
<211> 178
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
      ankyrin repeat domain 55; "

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<221> source
<223> /note="ENSP ID: ENSP00000423507"

<400> 5315
Met Val Tyr Gln Ala Ala Ser Asn Gly Asp Val Asn Ala Leu Thr Ala
1               5                   10                  15
```

```
Val Ile Arg Glu Asp Pro Ser Ile Leu Glu Cys Cys Asp Ser Glu Gly
            20                  25                  30

Cys Thr Pro Leu Met His Ala Val Ser Gly Arg Gln Ala Asp Thr Val
        35                  40                  45

Lys Leu Leu Leu Lys Met Gly Ala Asn Ile Asn Met Gln Asp Ala Tyr
    50                  55                  60

Gly Arg Thr Ser Leu Cys Leu Ala Thr Tyr Leu Gly Trp Leu Glu Gly
65                  70                  75                  80

Cys Val Ser Leu Leu Arg Asn Gly Ala Lys His Asn Ile Pro Asp Lys
                85                  90                  95

Asn Gly Arg Leu Pro Leu His Ala Ala Thr Ala Glu Pro Asp Met Arg
            100                 105                 110

Leu Leu Thr Val Leu Leu Gln Gln Ser Asn Ile Ser Glu Ile Asn His
        115                 120                 125

Gln Asp Asn Glu Gly Met Thr Pro Leu His Trp Ala Ala Phe His Asn
    130                 135                 140

Gln Pro Gln His Thr Gln Met Leu Leu Lys Lys Gly Ala Asp Pro Thr
145                 150                 155                 160

Leu Val Asp Lys Asp Phe Lys Thr Ala Leu His Trp Ala Val Gln Val
                165                 170                 175

Arg Asn
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<210> 5316
<211> 571
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
ankyrin repeat domain 55; "

<220>
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<400> 5316
Met Met Arg Gln Ala Thr Met Asp Phe Ser Thr Pro Ser Val Phe Asp
1 5 10 15

Gln Gln Arg Gly Asp Ser Ser Glu Glu Val Asp Leu Thr Met Val Tyr
20 25 30

Gln Ala Ala Ser Asn Gly Asp Val Asn Ala Leu Thr Ala Val Ile Arg
35 40 45

Glu Asp Pro Ser Ile Leu Glu Cys Cys Asp Ser Glu Gly Cys Thr Pro
50 55 60

Leu Met His Ala Val Ser Gly Arg Gln Ala Asp Thr Val Lys Leu Leu
65 70 75 80

Leu Lys Met Gly Ala Asn Ile Asn Met Gln Asp Ala Tyr Gly Arg Thr
85 90 95

Ser Leu Cys Leu Ala Thr Tyr Leu Gly Trp Leu Glu Gly Cys Val Ser
100 105 110

Leu Leu Arg Asn Gly Ala Lys His Asn Ile Pro Asp Lys Asn Gly Arg
115 120 125

Leu Pro Leu His Ala Ala Thr Ala Glu Pro Asp Met Arg Leu Leu Thr
130 135 140

Val Leu Leu Gln Gln Ser Asn Ile Ser Glu Ile Asn His Gln Asp Asn
145 150 155 160

Glu Ser Gly Asn Arg Ile Leu Cys Ser Ile Ile Leu Ser His His Gln
165 170 175

Gly Pro Ser Ile Ile Asn Tyr Asp Asp Glu Ser Gly Lys Thr Cys Val
180 185 190

```
His Ile Ala Ala Ala Ala Gly Phe Ser Asp Ile Ile His Glu Leu Ala
        195                 200                 205

Arg Val Pro Glu Cys Asn Leu Gln Ala Leu Asp Val Asp Asp Arg Thr
    210                 215                 220

Pro Leu His Trp Ala Ala Ala Ala Gly Lys Ala Glu Cys Val Gln Ser
225                 230                 235                 240

Leu Leu Glu Leu Gly Met Asp Ser Asn Leu Arg Asp Ile Asn Glu Ser
                245                 250                 255

Thr Pro Leu Ala Tyr Ala Leu Tyr Cys Gly His Thr Ala Cys Val Lys
            260                 265                 270

Leu Leu Ser Gln Glu Ser Arg Thr Glu Pro Thr Arg Pro Pro Pro Ser
        275                 280                 285

Gln Ser Ser Arg Pro Gln Lys Lys Glu Arg Arg Phe Asn Val Leu Asn
    290                 295                 300

Gln Ile Phe Cys Lys Asn Lys Lys Glu Glu Gln Arg Ala His Gln Lys
305                 310                 315                 320

Asp Pro Ser Arg Asp Arg Tyr Arg Glu Glu Asp Thr Ser Glu Val Asn
                325                 330                 335

Asp Ile Ile Thr Thr Phe Asp Ser Ile Val Gly Thr Asn Cys Gln Glu
            340                 345                 350

Gln Pro Gly Asp Gln Val Ala Met Val Glu Phe Lys Lys Lys Thr Ser
        355                 360                 365

Asp Asn Ser Lys Tyr Leu Leu Pro Glu Lys Lys Pro Leu Ala Arg Lys
    370                 375                 380

Gly Leu Pro Pro Ile Arg Thr Gln Ser Leu Pro Pro Ile Thr Leu Gly
385                 390                 395                 400

Asn Asn Phe Leu Thr Ala Ser His Arg Ala Thr Ser His Ala Gly Leu
                405                 410                 415
```

```
Ser Ser Ala Pro His His Met Ala Gln Arg Ser Gln Lys Ser Arg Ser
            420                 425                 430

Glu Gln Asp Leu Leu Asn Asn Arg Thr Gly Cys Gln Met Leu Leu Asp
        435                 440                 445

Asn Pro Trp Lys Ser Asp Ser Asn Gln Val Phe Ser Tyr Lys Val Trp
    450                 455                 460

Thr Val Ser Ser Ser Asp Lys Leu Leu Asp Arg Leu Leu Ser Val Arg
465                 470                 475                 480

Pro Gly His Gln Glu Val Ser Val Pro Pro His Leu Arg His Leu His
                485                 490                 495

Asn Pro Ser Ser Gly Gln Asn Phe Gln His Leu Ser Pro Asn Arg His
            500                 505                 510

Lys Ile Arg Asp Leu Pro Phe Thr Arg Asn Asn Leu Ala Pro Leu Pro
        515                 520                 525

Asp Gln Lys Phe Leu Ser Gly Glu Pro Leu Arg Thr Asn Arg Val Leu
    530                 535                 540

Pro Ala Ile Pro Ser Gln Arg Arg His Ser Thr Ala Ala Glu Glu Ser
545                 550                 555                 560

Glu His Ser Ala Asn Pro Thr Ser Asp Glu Asn
                565                 570


<210> 5317
<211> 326
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1156; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD55; "

<220>
<221> source
<223> /note="Gene Name:
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ankyrin repeat domain 55; "

<220>
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<223> /note="Uniprot ID: Q3KP44; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429421"

<400> 5317

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Met Asp Ser Asn Leu Arg Asp Ile Asn Glu Ser Thr Pro Leu Ala Tyr
1               5                  10                  15

Ala Leu Tyr Cys Gly His Thr Ala Cys Val Lys Leu Leu Ser Gln Glu
            20                  25                  30

Ser Arg Thr Glu Pro Thr Arg Pro Pro Pro Ser Gln Ser Ser Arg Pro
        35                  40                  45

Gln Lys Lys Glu Arg Arg Phe Asn Val Leu Asn Gln Ile Phe Cys Lys
    50                  55                  60

Asn Lys Lys Glu Glu Gln Arg Ala His Gln Lys Asp Pro Ser Arg Asp
65                  70                  75                  80

Arg Tyr Arg Glu Glu Asp Thr Ser Glu Val Asn Asp Ile Ile Thr Thr
                85                  90                  95

Phe Asp Ser Ile Val Gly Thr Asn Cys Gln Glu Gln Pro Gly Asp Gln
            100                 105                 110

Val Ala Met Val Glu Phe Lys Lys Lys Thr Ser Asp Asn Ser Lys Tyr
        115                 120                 125

Leu Leu Pro Glu Lys Lys Pro Leu Ala Arg Lys Gly Leu Pro Pro Ile
    130                 135                 140

Arg Thr Gln Ser Leu Pro Pro Ile Thr Leu Gly Asn Asn Phe Leu Thr
145                 150                 155                 160

Ala Ser His Arg Ala Thr Ser His Ala Gly Leu Ser Ser Ala Pro His
                165                 170                 175

His Met Ala Gln Arg Ser Gln Lys Ser Arg Ser Glu Gln Asp Leu Leu
            180                 185                 190
```

```
Asn Asn Arg Thr Gly Cys Gln Met Leu Leu Asp Asn Pro Trp Lys Ser
        195                 200                 205

Asp Ser Asn Gln Val Phe Ser Tyr Lys Val Trp Thr Val Ser Ser Ser
    210                 215                 220

Asp Lys Leu Leu Asp Arg Leu Leu Ser Val Arg Pro Gly His Gln Glu
225                 230                 235                 240

Val Ser Val Pro Pro His Leu Arg His Leu His Asn Pro Ser Ser Gly
                245                 250                 255

Gln Asn Phe Gln His Leu Ser Pro Asn Arg His Lys Ile Arg Asp Leu
            260                 265                 270

Pro Phe Thr Arg Asn Asn Leu Ala Pro Leu Pro Asp Gln Lys Phe Leu
        275                 280                 285

Ser Gly Glu Pro Leu Arg Thr Asn Arg Val Leu Pro Ala Ile Pro Ser
    290                 295                 300

Gln Arg Arg His Ser Thr Ala Ala Glu Glu Ser Glu His Ser Ala Asn
305                 310                 315                 320

Pro Thr Ser Asp Glu Asn
                325


<210> 5318
<211> 727
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1157; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD6; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 6; "

<220>
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<221> source
<223> /note="Uniprot ID: Q9Y2G4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000345767"

<400> 5318
Met Ser Gln Gln Asp Ala Val Ala Ala Leu Ser Glu Arg Leu Leu Val
1   5   10   15

Ala Ala Tyr Lys Gly Gln Thr Glu Asn Val Val Gln Leu Ile Asn Lys
            20   25   30

Gly Ala Arg Val Ala Val Thr Lys His Gly Arg Thr Pro Leu His Leu
        35   40   45

Ala Ala Asn Lys Gly His Leu Pro Val Val Gln Ile Leu Leu Lys Ala
    50   55   60

Gly Cys Asp Leu Asp Val Gln Asp Asp Gly Asp Gln Thr Ala Leu His
65   70   75   80

Arg Ala Thr Val Val Gly Asn Thr Glu Ile Ile Ala Ala Leu Ile His
                85   90   95

Glu Gly Cys Ala Leu Asp Arg Gln Asp Lys Asp Gly Asn Thr Ala Leu
            100   105   110

His Glu Ala Ser Trp His Gly Phe Ser Gln Ser Ala Lys Leu Leu Ile
        115   120   125

Lys Ala Gly Ala Asn Val Leu Ala Lys Asn Lys Ala Gly Asn Thr Ala
    130   135   140

Leu His Leu Ala Cys Gln Asn Ser His Ser Gln Ser Thr Arg Val Leu
145   150   155   160

Leu Leu Ala Gly Ser Arg Ala Asp Leu Lys Asn Asn Ala Gly Asp Thr
                165   170   175

Cys Leu His Val Ala Ala Arg Tyr Asn His Leu Ser Ile Ile Arg Leu
            180   185   190

Leu Leu Thr Ala Phe Cys Ser Val His Glu Lys Asn Gln Ala Gly Asp

```
        195                 200                 205

Thr Ala Leu His Val Ala Ala Ala Leu Asn His Lys Lys Val Ala Lys
    210                 215                 220

Ile Leu Leu Glu Ala Gly Ala Asp Thr Thr Ile Val Asn Asn Ala Gly
225                 230                 235                 240

Gln Thr Pro Leu Glu Thr Ala Arg Tyr His Asn Asn Pro Glu Val Ala
                245                 250                 255

Leu Leu Leu Thr Lys Ala Pro Gln Val Leu Arg Phe Ser Arg Gly Arg
            260                 265                 270

Ser Leu Arg Lys Lys Arg Glu Arg Leu Lys Glu Glu Arg Arg Ala Gln
        275                 280                 285

Ser Val Pro Arg Asp Glu Val Ala Gln Ser Lys Gly Ser Val Ser Ala
    290                 295                 300

Gly Asp Thr Pro Ser Ser Glu Gln Ala Val Ala Arg Lys Glu Glu Ala
305                 310                 315                 320

Arg Glu Glu Phe Leu Ser Ala Ser Pro Glu Pro Arg Ala Lys Asp Asp
                325                 330                 335

Arg Arg Arg Lys Ser Arg Pro Lys Val Ser Ala Phe Ser Asp Pro Thr
            340                 345                 350

Pro Pro Ala Asp Gln Gln Pro Gly His Gln Lys Asn Leu His Ala His
        355                 360                 365

Asn His Pro Lys Lys Arg Asn Arg His Arg Cys Ser Ser Pro Pro Pro
    370                 375                 380

Pro His Glu Phe Arg Ala Tyr Gln Leu Tyr Thr Leu Tyr Arg Gly Lys
385                 390                 395                 400

Asp Gly Lys Val Met Gln Ala Pro Ile Asn Gly Cys Arg Cys Glu Pro
                405                 410                 415

Leu Ile Asn Lys Leu Glu Asn Gln Leu Glu Ala Thr Val Glu Glu Ile
            420                 425                 430
```

```
Lys Ala Glu Leu Gly Ser Val Gln Asp Lys Met Asn Thr Lys Leu Gly
        435                 440                 445

Gln Met Glu Asn Lys Thr Gln His Gln Met Arg Val Leu Asp Lys Leu
    450                 455                 460

Met Val Glu Arg Leu Ser Ala Glu Arg Thr Glu Cys Leu Asn Arg Leu
465                 470                 475                 480

Gln Gln His Ser Asp Thr Glu Lys His Glu Gly Glu Lys Arg Gln Ile
                485                 490                 495

Ser Leu Val Asp Glu Leu Lys Thr Trp Cys Met Leu Lys Ile Gln Asn
            500                 505                 510

Leu Glu Gln Lys Leu Ser Gly Asp Ser Arg Ala Cys Arg Ala Lys Ser
        515                 520                 525

Thr Pro Ser Thr Cys Glu Ser Ser Thr Gly Val Asp Gln Leu Val Val
    530                 535                 540

Thr Ala Gly Pro Ala Ala Ala Ser Asp Ser Ser Pro Pro Val Val Arg
545                 550                 555                 560

Pro Lys Glu Lys Ala Leu Asn Ser Thr Ala Thr Gln Arg Leu Gln Gln
                565                 570                 575

Glu Leu Ser Ser Ser Asp Cys Thr Gly Ser Arg Leu Arg Asn Val Lys
            580                 585                 590

Val Gln Thr Ala Leu Leu Pro Met Asn Glu Ala Ala Arg Ser Asp Gln
        595                 600                 605

Gln Ala Gly Pro Cys Val Asn Arg Gly Thr Gln Thr Lys Lys Ser Gly
    610                 615                 620

Lys Ser Gly Pro Thr Arg His Arg Ala Gln Gln Pro Ala Ala Ser Ser
625                 630                 635                 640

Thr Cys Gly Gln Pro Pro Pro Ala Thr Gly Ser Glu Gln Thr Gly Pro
                645                 650                 655
```

```
His Ile Arg Asp Thr Ser Gln Ala Leu Glu Leu Thr Gln Tyr Phe Phe
            660                 665                 670

Glu Ala Val Ser Thr Gln Met Glu Lys Trp Tyr Glu Arg Lys Ile Glu
        675                 680                 685

Glu Ala Arg Ser Gln Ala Asn Gln Lys Ala Gln Gln Asp Lys Ala Thr
    690                 695                 700

Leu Lys Glu His Ile Lys Ser Leu Glu Glu Leu Ala Lys Leu Arg
705                 710                 715                 720

Thr Arg Val Gln Lys Glu Asn
                725
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<210> 5319
<211> 692
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1157; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD6; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 6; "

<220>
<221> source
<223> /note="Uniprot ID: Q9Y2G4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000358416"

<400> 5319

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Met Ser Gln Gln Asp Ala Val Ala Ala Leu Ser Glu Arg Leu Leu Val
1               5                   10                  15

Ala Ala Tyr Lys Gly Gln Thr Glu Asn Val Val Gln Leu Ile Asn Lys
            20                  25                  30

Gly Ala Arg Val Ala Val Thr Lys His Gly Arg Thr Pro Leu His Leu
```

```
        35                  40                  45

Ala Ala Asn Lys Gly His Leu Pro Val Val Gln Ile Leu Leu Lys Ala
    50                  55                  60

Gly Cys Asp Leu Asp Val Gln Asp Asp Gly Asp Gln Thr Ala Leu His
65                  70                  75                  80

Arg Ala Thr Val Val Gly Asn Thr Glu Ile Ile Ala Ala Leu Ile His
                85                  90                  95

Glu Gly Cys Ala Leu Asp Arg Gln Asp Lys Asp Gly Asn Thr Ala Leu
            100                 105                 110

His Glu Ala Ser Trp His Gly Phe Ser Gln Ser Ala Lys Leu Leu Ile
        115                 120                 125

Lys Ala Gly Ala Asn Val Leu Ala Lys Asn Lys Ala Gly Asn Thr Ala
    130                 135                 140

Leu His Leu Ala Cys Gln Asn Ser His Ser Gln Ser Thr Arg Val Leu
145                 150                 155                 160

Leu Leu Ala Gly Ser Arg Ala Asp Leu Lys Asn Asn Ala Gly Asp Thr
                165                 170                 175

Cys Leu His Val Ala Ala Arg Tyr Asn His Leu Ser Ile Ile Arg Leu
            180                 185                 190

Leu Leu Thr Ala Phe Cys Ser Val His Glu Lys Asn Gln Ala Gly Asp
        195                 200                 205

Thr Ala Leu His Val Ala Ala Ala Leu Asn His Lys Lys Val Ala Lys
    210                 215                 220

Ile Leu Leu Glu Ala Gly Ala Asp Thr Thr Ile Val Asn Asn Ala Gly
225                 230                 235                 240

Gln Thr Pro Leu Glu Thr Ala Arg Tyr His Asn Asn Pro Glu Val Ala
                245                 250                 255

Leu Leu Leu Thr Lys Ala Pro Gln Gly Ser Val Ser Ala Gly Asp Thr
            260                 265                 270
```

```
Pro Ser Ser Glu Gln Ala Val Ala Arg Lys Glu Glu Ala Arg Glu Glu
        275                 280                 285

Phe Leu Ser Ala Ser Pro Glu Pro Arg Ala Lys Asp Asp Arg Arg Arg
    290                 295                 300

Lys Ser Arg Pro Lys Val Ser Ala Phe Ser Asp Pro Thr Pro Pro Ala
305                 310                 315                 320

Asp Gln Gln Pro Gly His Gln Lys Asn Leu His Ala His Asn His Pro
                325                 330                 335

Lys Lys Arg Asn Arg His Arg Cys Ser Ser Pro Pro Pro Pro His Glu
            340                 345                 350

Phe Arg Ala Tyr Gln Leu Tyr Thr Leu Tyr Arg Gly Lys Asp Gly Lys
        355                 360                 365

Val Met Gln Ala Pro Ile Asn Gly Cys Arg Cys Glu Pro Leu Ile Asn
    370                 375                 380

Lys Leu Glu Asn Gln Leu Glu Ala Thr Val Glu Glu Ile Lys Ala Glu
385                 390                 395                 400

Leu Gly Ser Val Gln Asp Lys Met Asn Thr Lys Leu Gly Gln Met Glu
                405                 410                 415

Asn Lys Thr Gln His Gln Met Arg Val Leu Asp Lys Leu Met Val Glu
            420                 425                 430

Arg Leu Ser Ala Glu Arg Thr Glu Cys Leu Asn Arg Leu Gln Gln His
        435                 440                 445

Ser Asp Thr Glu Lys His Glu Gly Glu Lys Arg Gln Ile Ser Leu Val
    450                 455                 460

Asp Glu Leu Lys Thr Trp Cys Met Leu Lys Ile Gln Asn Leu Glu Gln
465                 470                 475                 480

Lys Leu Ser Gly Asp Ser Arg Ala Cys Arg Ala Lys Ser Thr Pro Ser
                485                 490                 495
```

```
Thr Cys Glu Ser Ser Thr Gly Val Asp Gln Leu Val Val Thr Ala Gly
            500                 505                 510

Pro Ala Ala Ala Ser Asp Ser Ser Pro Pro Val Val Arg Pro Lys Glu
        515                 520                 525

Lys Ala Leu Asn Ser Thr Ala Thr Gln Arg Leu Gln Gln Glu Leu Ser
    530                 535                 540

Ser Ser Asp Cys Thr Gly Ser Arg Leu Arg Asn Val Lys Val Gln Thr
545                 550                 555                 560

Ala Leu Leu Pro Met Asn Glu Ala Ala Arg Ser Asp Gln Gln Ala Gly
                565                 570                 575

Pro Cys Val Asn Arg Gly Thr Gln Thr Lys Lys Ser Gly Lys Ser Gly
            580                 585                 590

Pro Thr Arg His Arg Ala Gln Gln Pro Ala Ala Ser Ser Thr Cys Gly
        595                 600                 605

Gln Pro Pro Pro Ala Thr Gly Ser Glu Gln Thr Gly Pro His Ile Arg
    610                 615                 620

Asp Thr Ser Gln Ala Leu Glu Leu Thr Gln Tyr Phe Phe Glu Ala Val
625                 630                 635                 640

Ser Thr Gln Met Glu Lys Trp Tyr Glu Arg Lys Ile Glu Glu Ala Arg
                645                 650                 655

Ser Gln Ala Asn Gln Lys Ala Gln Gln Asp Lys Ala Thr Leu Lys Glu
            660                 665                 670

His Ile Lys Ser Leu Glu Glu Glu Leu Ala Lys Leu Arg Thr Arg Val
        675                 680                 685

Gln Lys Glu Asn
    690
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<210> 5320
<211> 722
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1157; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD6; "

<220>
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<223> /note="Gene Name:
ankyrin repeat domain 6; "

<220>
<221> source
<223> /note="Uniprot ID: Q9Y2G4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000396771"

<400> 5320
Met Ser Gln Gln Asp Ala Val Ala Ala Leu Ser Glu Arg Leu Leu Val
1   5   10   15

Ala Ala Tyr Lys Gly Gln Thr Glu Asn Val Val Gln Leu Ile Asn Lys
            20   25   30

Gly Ala Arg Val Ala Val Thr Lys His Gly Arg Thr Pro Leu His Leu
        35   40   45

Ala Ala Asn Lys Gly His Leu Pro Val Val Gln Ile Leu Leu Lys Ala
    50   55   60

Gly Cys Asp Leu Asp Val Gln Asp Asp Gly Asp Gln Thr Ala Leu His
65   70   75   80

Arg Ala Thr Val Val Gly Asn Thr Glu Ile Ile Ala Ala Leu Ile His
                85   90   95

Glu Gly Cys Ala Leu Asp Arg Gln Asp Lys Asp Gly Asn Thr Ala Leu
            100   105   110

His Glu Ala Ser Trp His Gly Phe Ser Gln Ser Ala Lys Leu Leu Ile
        115   120   125

Lys Ala Gly Ala Asn Val Leu Ala Lys Asn Lys Ala Gly Asn Thr Ala
    130   135   140

```
Leu His Leu Ala Cys Gln Asn Ser His Ser Gln Ser Thr Arg Val Leu
145                 150                 155                 160

Leu Leu Ala Gly Ser Arg Ala Asp Leu Lys Asn Asn Ala Gly Asp Thr
                165                 170                 175

Cys Leu His Val Ala Ala Arg Tyr Asn His Leu Ser Ile Ile Arg Leu
            180                 185                 190

Leu Leu Thr Ala Phe Cys Ser Val His Glu Lys Asn Gln Ala Gly Asp
        195                 200                 205

Thr Ala Leu His Val Ala Ala Ala Leu Asn His Lys Lys Val Ala Lys
    210                 215                 220

Ile Leu Leu Glu Ala Gly Ala Asp Thr Thr Ile Val Asn Asn Ala Gly
225                 230                 235                 240

Gln Thr Pro Leu Glu Thr Ala Arg Tyr His Asn Asn Pro Glu Val Ala
                245                 250                 255

Leu Leu Leu Thr Lys Ala Pro Gln Val Leu Arg Phe Ser Arg Gly Arg
            260                 265                 270

Ser Leu Arg Lys Lys Arg Glu Arg Leu Lys Glu Glu Arg Arg Ala Gln
        275                 280                 285

Ser Val Pro Arg Asp Glu Val Ala Gln Ser Lys Gly Ser Val Ser Ala
    290                 295                 300

Gly Asp Thr Pro Ser Ser Glu Gln Ala Val Ala Arg Lys Glu Glu Ala
305                 310                 315                 320

Arg Glu Glu Phe Leu Ser Ala Ser Pro Glu Pro Arg Ala Lys Asp Asp
                325                 330                 335

Arg Arg Arg Lys Ser Arg Pro Lys Val Ser Ala Phe Ser Asp Pro Thr
            340                 345                 350

Pro Pro Ala Asp Gln Gln Pro Gly His Gln Lys Asn Leu His Ala His
        355                 360                 365
```

```
Asn His Pro Lys Lys Arg Asn Arg His Arg Cys Ser Ser Pro Pro Pro
    370                 375                 380

Pro His Glu Phe Arg Ala Tyr Gln Leu Tyr Thr Leu Tyr Arg Gly Lys
385                 390                 395                 400

Asp Gly Lys Val Met Gln Ala Pro Ile Asn Gly Cys Arg Cys Glu Pro
                405                 410                 415

Leu Ile Asn Lys Leu Glu Asn Gln Leu Glu Ala Thr Val Glu Glu Ile
            420                 425                 430

Lys Ala Glu Leu Gly Ser Val Gln Asp Lys Met Asn Thr Lys Leu Gly
        435                 440                 445

Gln Met Glu Asn Lys Thr Gln His Gln Met Arg Val Leu Asp Lys Leu
    450                 455                 460

Met Val Glu Arg Leu Ser Ala Glu Arg Thr Glu Cys Leu Asn Arg Leu
465                 470                 475                 480

Gln Gln His Ser Asp Thr Glu Lys His Glu Gly Glu Lys Arg Gln Ile
                485                 490                 495

Ser Leu Val Asp Glu Leu Lys Thr Trp Cys Met Leu Lys Ile Gln Asn
            500                 505                 510

Leu Glu Gln Lys Leu Ser Gly Asp Ser Arg Ala Cys Arg Ala Lys Ser
        515                 520                 525

Thr Pro Ser Thr Cys Val Asp Gln Leu Val Val Thr Ala Gly Pro Ala
    530                 535                 540

Ala Ala Ser Asp Ser Ser Pro Pro Val Val Arg Pro Lys Glu Lys Ala
545                 550                 555                 560

Leu Asn Ser Thr Ala Thr Gln Arg Leu Gln Gln Glu Leu Ser Ser Ser
                565                 570                 575

Asp Cys Thr Gly Ser Arg Leu Arg Asn Val Lys Val Gln Thr Ala Leu
            580                 585                 590
```

```
Leu Pro Met Asn Glu Ala Ala Arg Ser Asp Gln Gln Ala Gly Pro Cys
        595                 600                 605

Val Asn Arg Gly Thr Gln Thr Lys Lys Ser Gly Lys Ser Gly Pro Thr
    610                 615                 620

Arg His Arg Ala Gln Gln Pro Ala Ala Ser Ser Thr Cys Gly Gln Pro
625                 630                 635                 640

Pro Pro Ala Thr Gly Ser Glu Gln Thr Gly Pro His Ile Arg Asp Thr
                645                 650                 655

Ser Gln Ala Leu Glu Leu Thr Gln Tyr Phe Phe Glu Ala Val Ser Thr
            660                 665                 670

Gln Met Glu Lys Trp Tyr Glu Arg Lys Ile Glu Glu Ala Arg Ser Gln
        675                 680                 685

Ala Asn Gln Lys Ala Gln Gln Asp Lys Ala Thr Leu Lys Glu His Ile
    690                 695                 700

Lys Ser Leu Glu Glu Glu Leu Ala Lys Leu Arg Thr Arg Val Gln Lys
705                 710                 715                 720

Glu Asn
```

<210> 5321
<211> 118
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1157; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD6; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 6; "

<220>
<221> source
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<400> 5321
Met Ser Gln Gln Asp Ala Val Ala Ala Leu Ser Glu Arg Leu Leu Val
1 5 10 15

Ala Ala Tyr Lys Gly Gln Thr Glu Asn Val Val Gln Leu Ile Asn Lys
20 25 30

Gly Ala Arg Val Ala Val Thr Lys His Gly Arg Thr Pro Leu His Leu
35 40 45

Ala Ala Asn Lys Gly His Leu Pro Val Val Gln Ile Leu Leu Lys Ala
50 55 60

Gly Cys Asp Leu Asp Val Gln Asp Asp Gly Asp Gln Thr Ala Leu His
65 70 75 80

Arg Ala Thr Val Val Gly Asn Thr Glu Ile Ile Ala Ala Leu Ile His
85 90 95

Glu Gly Cys Ala Leu Asp Arg Gln Asp Lys Asp Gly Asn Thr Ala Leu
100 105 110

His Glu Ala Ser Trp His
115

<210> 5322
<211> 102
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
ankyrin repeat domain 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000428377"

<400> 5322

```
Met Ser Gln Gln Asp Ala Val Ala Ala Leu Ser Glu Arg Leu Leu Val
1               5                   10                  15

Ala Ala Tyr Lys Gly Gln Thr Glu Asn Val Val Gln Leu Ile Asn Lys
            20                  25                  30

Gly Ala Arg Val Ala Val Thr Lys His Gly Arg Thr Pro Leu His Leu
        35                  40                  45

Ala Ala Asn Lys Gly His Leu Pro Val Val Gln Ile Leu Leu Lys Ala
    50                  55                  60

Gly Cys Asp Leu Asp Val Gln Asp Asp Gly Asp Gln Thr Ala Leu His
65                  70                  75                  80

Arg Ala Thr Val Val Gly Asn Thr Glu Ile Ile Ala Ala Leu Ile His
                85                  90                  95

Glu Gly Cys Ala Leu Asp
            100


<210> 5323
<211> 230
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1157; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD6; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429235"

<400> 5323
Met Ser Gln Gln Asp Ala Val Ala Ala Leu Ser Glu Arg Leu Leu Val
1               5                   10                  15

Ala Ala Tyr Lys Gly Gln Thr Glu Asn Val Val Gln Leu Ile Asn Lys
            20                  25                  30
```

```
Gly Ala Arg Val Ala Val Thr Lys Gly Ser Val Ser Ala Gly Asp Thr
        35                  40                  45

Pro Ser Ser Glu Gln Ala Val Ala Arg Lys Glu Glu Ala Arg Glu Glu
    50                  55                  60

Phe Leu Ser Ala Ser Pro Glu Pro Arg Ala Lys Asp Asp Arg Arg Arg
65                  70                  75                  80

Lys Ser Arg Pro Lys Val Ser Ala Phe Ser Asp Pro Thr Pro Pro Ala
                85                  90                  95

Asp Gln Gln Pro Gly His Gln Lys Asn Leu His Ala His Asn His Pro
            100                 105                 110

Lys Lys Arg Asn Arg His Arg Cys Ser Ser Pro Pro Pro Pro His Glu
        115                 120                 125

Phe Arg Ala Tyr Gln Leu Tyr Thr Leu Tyr Arg Gly Lys Asp Gly Lys
    130                 135                 140

Val Met Gln Ala Pro Ile Asn Gly Cys Arg Cys Glu Pro Leu Ile Asn
145                 150                 155                 160

Lys Leu Glu Asn Gln Leu Glu Ala Thr Val Glu Glu Ile Lys Ala Glu
                165                 170                 175

Leu Gly Ser Val Gln Asp Lys Met Asn Thr Lys Leu Gly Gln Met Glu
            180                 185                 190

Asn Lys Thr Gln His Gln Met Arg Val Leu Asp Lys Leu Met Val Glu
        195                 200                 205

Arg Leu Ser Ala Glu Arg Thr Glu Cys Leu Asn Arg Leu Gln Gln His
    210                 215                 220

Ser Asp Thr Glu Lys His
225                 230
```

<210> 5324
<211> 54
<212> PRT

<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1157; "

<220>
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<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429337"

<400> 5324
Met Ser Gln Gln Asp Ala Val Ala Ala Leu Ser Glu Arg Leu Leu Val
1 5 10 15

Ala Ala Tyr Lys Gly Gln Thr Glu Asn Val Val Gln Leu Ile Asn Lys
20 25 30

Gly Ala Arg Val Ala Val Thr Lys Gly Asp Gln Thr Ala Leu His Arg
35 40 45

Ala Thr Val Val Gly Asn
50

<210> 5325
<211> 175
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429431"

<400> 5325
Met Ser Gln Gln Asp Ala Val Ala Ala Leu Ser Glu Arg Leu Leu Val
1 5 10 15

Ala Ala Tyr Lys Gly Gln Thr Glu Asn Val Val Gln Leu Ile Asn Lys
20 25 30

Gly Ala Arg Val Ala Val Thr Lys His Gly Arg Thr Pro Leu His Leu
35 40 45

Ala Ala Asn Lys Gly His Leu Pro Val Val Gln Ile Leu Leu Lys Ala
50 55 60

Gly Cys Asp Leu Asp Val Gln Asp Asp Gly Asp Gln Thr Ala Leu His
65 70 75 80

Arg Ala Thr Val Val Gly Asn Thr Glu Ile Ile Ala Ala Leu Ile His
85 90 95

Glu Gly Cys Ala Leu Asp Arg Gln Asp Lys Asp Gly Asn Thr Ala Leu
100 105 110

His Glu Ala Ser Trp His Gly Phe Ser Gln Ser Ala Lys Leu Leu Ile
115 120 125

Lys Ala Gly Ala Asn Val Leu Ala Lys Asn Lys Ala Gly Asn Thr Ala
130 135 140

Leu His Leu Ala Cys Gln Asn Ser His Ser Gln Ser Thr Arg Val Leu
145 150 155 160

Leu Leu Ala Gly Ser Arg Ala Asp Leu Lys Asn Asn Ala Gly Asp
165 170 175

<210> 5326
<211> 76
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1157; "

<220>
<221> source

<223> /note="Gene Symbol: ANKRD6; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429456"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5326
Xaa Gly Asp Thr Cys Leu His Val Ala Ala Arg Tyr Asn His Leu Ser
1 5 10 15

Ile Ile Arg Leu Leu Leu Thr Ala Phe Cys Ser Val His Glu Lys Asn
20 25 30

Gln Ala Gly Asp Thr Ala Leu His Val Ala Ala Ala Leu Asn His Lys
35 40 45

Lys Val Ala Lys Ile Leu Leu Glu Ala Gly Ala Asp Thr Thr Ile Val
50 55 60

Asn Asn Leu Pro Asp Cys Ser Glu His Asn Leu Ala
65 70 75

<210> 5327
<211> 152
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1157; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD6; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 6; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000429531"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5327
Xaa His Arg Cys Ser Ser Pro Pro Pro Pro His Glu Phe Arg Ala Tyr
1 5 10 15

Gln Leu Tyr Thr Leu Tyr Arg Gly Lys Asp Gly Lys Val Met Gln Met
20 25 30

Arg Val Leu Asp Lys Leu Met Val Glu Arg Leu Ser Ala Glu Arg Thr
35 40 45

Glu Cys Leu Asn Arg Leu Gln Gln His Ser Asp Thr Glu Lys His Glu
50 55 60

Gly Glu Lys Arg Gln Ile Ser Leu Val Asp Glu Leu Lys Thr Trp Cys
65 70 75 80

Met Leu Lys Ile Gln Asn Leu Glu Gln Lys Leu Ser Gly Asp Ser Arg
85 90 95

Ala Cys Arg Ala Lys Ser Thr Pro Ser Thr Cys Glu Ser Ser Thr Gly
100 105 110

Val Asp Gln Leu Val Val Thr Ala Gly Pro Ala Ala Ala Ser Asp Ser
115 120 125

Ser Pro Pro Val Val Arg Pro Lys Glu Lys Ala Leu Asn Ser Thr Ala
130 135 140

Thr Gln Arg Leu Gln Gln Glu Leu
145 150

<210> 5328
<211> 663
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1157; "

<220>
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<220>
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<223> /note="Gene Name:
ankyrin repeat domain 6; "

<220>
<221> source
<223> /note="Uniprot ID: Q9Y2G4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429782"

<400> 5328

```
Met Ser Gln Gln Asp Ala Val Ala Ala Leu Ser Glu Arg Leu Leu Val
1               5                  10                  15

Ala Ala Tyr Lys Gly Gln Thr Glu Asn Val Val Gln Leu Ile Asn Lys
            20                  25                  30

Gly Ala Arg Val Ala Val Thr Lys His Gly Arg Thr Pro Leu His Leu
        35                  40                  45

Ala Ala Asn Lys Gly His Leu Pro Val Val Gln Ile Leu Leu Lys Ala
    50                  55                  60

Gly Cys Asp Leu Asp Val Gln Asp Asp Gly Asp Gln Thr Ala Leu His
65                  70                  75                  80

Arg Ala Thr Val Val Gly Asn Thr Glu Ile Ile Ala Ala Leu Ile His
                85                  90                  95

Glu Gly Cys Ala Leu Asp Arg Gln Asp Lys Ala Gly Asn Thr Ala Leu
            100                 105                 110

His Leu Ala Cys Gln Asn Ser His Ser Gln Ser Thr Arg Val Leu Leu
        115                 120                 125

Leu Ala Gly Ser Arg Ala Asp Leu Lys Asn Asn Ala Gly Asp Thr Cys
    130                 135                 140

Leu His Val Ala Ala Arg Tyr Asn His Leu Ser Ile Ile Arg Leu Leu
```

145 150 155 160

Leu Thr Ala Phe Cys Ser Val His Glu Lys Asn Gln Ala Gly Asp Thr
165 170 175

Ala Leu His Val Ala Ala Ala Leu Asn His Lys Lys Val Ala Lys Ile
180 185 190

Leu Leu Glu Ala Gly Ala Asp Thr Thr Ile Val Asn Asn Val Leu Arg
195 200 205

Phe Ser Arg Gly Arg Ser Leu Arg Lys Lys Arg Glu Arg Leu Lys Glu
210 215 220

Glu Arg Arg Ala Gln Ser Val Pro Arg Asp Glu Val Ala Gln Ser Lys
225 230 235 240

Gly Ser Val Ser Ala Gly Asp Thr Pro Ser Ser Glu Gln Ala Val Ala
245 250 255

Arg Lys Glu Glu Ala Arg Glu Glu Phe Leu Ser Ala Ser Pro Glu Pro
260 265 270

Arg Ala Lys Asp Asp Arg Arg Arg Lys Ser Arg Pro Lys Val Ser Ala
275 280 285

Phe Ser Asp Pro Thr Pro Pro Ala Asp Gln Gln Pro Gly His Gln Lys
290 295 300

Asn Leu His Ala His Asn His Pro Lys Lys Arg Asn Arg His Arg Cys
305 310 315 320

Ser Ser Pro Pro Pro Pro His Glu Phe Arg Ala Tyr Gln Leu Tyr Thr
325 330 335

Leu Tyr Arg Gly Lys Asp Gly Lys Val Met Gln Ala Pro Ile Asn Gly
340 345 350

Cys Arg Cys Glu Pro Leu Ile Asn Lys Leu Glu Asn Gln Leu Glu Ala
355 360 365

Thr Val Glu Glu Ile Lys Ala Glu Leu Gly Ser Val Gln Asp Lys Met
370 375 380

```
Asn Thr Lys Leu Gly Gln Met Glu Asn Lys Thr Gln His Gln Met Arg
385                 390                 395                 400

Val Leu Asp Lys Leu Met Val Glu Arg Leu Ser Ala Glu Arg Thr Glu
                405                 410                 415

Cys Leu Asn Arg Leu Gln Gln His Ser Asp Thr Glu Lys His Glu Gly
            420                 425                 430

Glu Lys Arg Gln Ile Ser Leu Val Asp Glu Leu Lys Thr Trp Cys Met
        435                 440                 445

Leu Lys Ile Gln Asn Leu Glu Gln Lys Leu Ser Gly Asp Ser Arg Ala
    450                 455                 460

Cys Arg Ala Lys Ser Thr Pro Ser Thr Cys Val Asp Gln Leu Val Val
465                 470                 475                 480

Thr Ala Gly Pro Ala Ala Ala Ser Asp Ser Ser Pro Pro Val Val Arg
                485                 490                 495

Pro Lys Glu Lys Ala Leu Asn Ser Thr Ala Thr Gln Arg Leu Gln Gln
            500                 505                 510

Glu Leu Ser Ser Ser Asp Cys Thr Gly Ser Arg Leu Arg Asn Val Lys
        515                 520                 525

Val Gln Thr Ala Leu Leu Pro Met Asn Glu Ala Ala Arg Ser Asp Gln
    530                 535                 540

Gln Ala Gly Pro Cys Val Asn Arg Gly Thr Gln Thr Lys Lys Ser Gly
545                 550                 555                 560

Lys Ser Gly Pro Thr Arg His Arg Ala Gln Gln Pro Ala Ala Ser Ser
                565                 570                 575

Thr Cys Gly Gln Pro Pro Pro Ala Thr Gly Ser Glu Gln Thr Gly Pro
            580                 585                 590

His Ile Arg Asp Thr Ser Gln Ala Leu Glu Leu Thr Gln Tyr Phe Phe
        595                 600                 605
```

```
Glu Ala Val Ser Thr Gln Met Glu Lys Trp Tyr Glu Arg Lys Ile Glu
    610                 615                 620

Glu Ala Arg Ser Gln Ala Asn Gln Lys Ala Gln Gln Asp Lys Ala Thr
625                 630                 635                 640

Leu Lys Glu His Ile Lys Ser Leu Glu Glu Glu Leu Ala Lys Leu Arg
                645                 650                 655

Thr Arg Val Gln Lys Glu Asn
            660


<210> 5329
<211> 130
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1157; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD6; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430452"

<400> 5329
Lys Leu Gly Gln Met Glu Asn Lys Thr Gln His Gln Met Arg Val Leu
1               5                   10                  15

Asp Lys Leu Met Val Glu Arg Leu Ser Ala Glu Arg Thr Glu Cys Leu
            20                  25                  30

Asn Arg Leu Gln Gln His Ser Asp Thr Glu Lys His Glu Gly Glu Lys
        35                  40                  45

Arg Gln Ile Ser Leu Val Asp Glu Leu Lys Thr Trp Cys Met Leu Lys
    50                  55                  60

Ile Gln Asn Leu Glu Gln Lys Leu Ser Gly Asp Ser Arg Ala Cys Arg
```

65 70 75 80

Ala Lys Ser Thr Pro Ser Thr Cys Glu Ser Ser Thr Gly Asn Pro His
85 90 95

Thr Glu Ser Pro Phe Val Gln Lys Glu His Asp Gln Gln Leu Leu Tyr
100 105 110

Ser Pro Ala Leu Lys Gly Ser Thr Tyr Ala Arg Ala Val Gly Asn Thr
115 120 125

Gly Trp
130

<210> 5330
<211> 307
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1157; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD6; "

<220>
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<223> /note="Gene Name:
ankyrin repeat domain 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430954"

<400> 5330
Met Ser Gln Gln Asp Ala Val Ala Ala Leu Ser Glu Arg Leu Leu Val
1 5 10 15

Ala Ala Tyr Lys Gly Gln Thr Glu Asn Val Val Gln Leu Ile Asn Lys
20 25 30

Gly Ala Arg Val Ala Val Thr Lys His Gly Arg Thr Pro Leu His Leu
35 40 45

Ala Ala Asn Lys Gly His Leu Pro Val Val Gln Ile Leu Leu Lys Ala
50 55 60

```
Gly Cys Asp Leu Asp Val Gln Asp Asp Gly Asp Gln Thr Ala Leu His
65                  70                  75                  80

Arg Ala Thr Val Val Gly Asn Thr Glu Ile Ile Ala Ala Leu Ile His
                85                  90                  95

Glu Gly Cys Ala Leu Asp Arg Gln Asp Lys Asp Gly Asn Thr Ala Leu
            100                 105                 110

His Glu Ala Ser Trp His Gly Phe Ser Gln Ser Ala Lys Leu Leu Ile
        115                 120                 125

Lys Ala Gly Ala Asn Val Leu Ala Lys Asn Lys Ala Gly Asn Thr Ala
    130                 135                 140

Leu His Leu Ala Cys Gln Asn Ser His Ser Gln Ser Thr Arg Val Leu
145                 150                 155                 160

Leu Leu Ala Gly Ser Arg Ala Asp Leu Lys Asn Asn Ala Gly Asp Thr
                165                 170                 175

Cys Leu His Val Ala Ala Arg Tyr Asn His Leu Ser Ile Ile Arg Leu
            180                 185                 190

Leu Leu Thr Ala Phe Cys Ser Val His Glu Lys Asn Gln Ala Gly Asp
        195                 200                 205

Thr Ala Leu His Val Ala Ala Ala Leu Asn His Lys Lys Val Ala Lys
    210                 215                 220

Ile Leu Leu Glu Ala Gly Ala Asp Thr Thr Ile Val Asn Asn Ala Gly
225                 230                 235                 240

Gln Thr Pro Leu Glu Thr Ala Arg Tyr His Asn Asn Pro Glu Val Ala
                245                 250                 255

Leu Leu Leu Thr Lys Ala Pro Gln Val Gly Phe Thr Ala Leu Ser Met
            260                 265                 270

Val Leu Ile Met Arg Asp Tyr Lys Val Val Gly Thr Pro Gly Cys Asn
        275                 280                 285
```

```
Leu Leu Lys Pro Leu Gln Thr Asn Leu Asn Met Glu Cys Asn Gln Ala
    290                 295                 300


Val Glu Val
305


<210> 5331
<211> 727
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID:  Q9Y2G4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430985"

<400> 5331
Met Ser Gln Gln Asp Ala Val Ala Ala Leu Ser Glu Arg Leu Leu Val
1               5                   10                  15


Ala Ala Tyr Lys Gly Gln Thr Glu Asn Val Val Gln Leu Ile Asn Lys
            20                  25                  30


Gly Ala Arg Val Ala Val Thr Lys His Gly Arg Thr Pro Leu His Leu
        35                  40                  45


Ala Ala Asn Lys Gly His Leu Pro Val Val Gln Ile Leu Leu Lys Ala
    50                  55                  60


Gly Cys Asp Leu Asp Val Gln Asp Asp Gly Asp Gln Thr Ala Leu His
65                  70                  75                  80


Arg Ala Thr Val Val Gly Asn Thr Glu Ile Ile Ala Ala Leu Ile His
                85                  90                  95
```

```
Glu Gly Cys Ala Leu Asp Arg Gln Asp Lys Asp Gly Asn Thr Ala Leu
            100                 105                 110

His Glu Ala Ser Trp His Gly Phe Ser Gln Ser Ala Lys Leu Leu Ile
        115                 120                 125

Lys Ala Gly Ala Asn Val Leu Ala Lys Asn Lys Ala Gly Asn Thr Ala
    130                 135                 140

Leu His Leu Ala Cys Gln Asn Ser His Ser Gln Ser Thr Arg Val Leu
145                 150                 155                 160

Leu Leu Ala Gly Ser Arg Ala Asp Leu Lys Asn Asn Ala Gly Asp Thr
                165                 170                 175

Cys Leu His Val Ala Ala Arg Tyr Asn His Leu Ser Ile Ile Arg Leu
            180                 185                 190

Leu Leu Thr Ala Phe Cys Ser Val His Glu Lys Asn Gln Ala Gly Asp
        195                 200                 205

Thr Ala Leu His Val Ala Ala Ala Leu Asn His Lys Lys Val Ala Lys
    210                 215                 220

Ile Leu Leu Glu Ala Gly Ala Asp Thr Thr Ile Val Asn Asn Ala Gly
225                 230                 235                 240

Gln Thr Pro Leu Glu Thr Ala Arg Tyr His Asn Asn Pro Glu Val Ala
                245                 250                 255

Leu Leu Leu Thr Lys Ala Pro Gln Val Leu Arg Phe Ser Arg Gly Arg
            260                 265                 270

Ser Leu Arg Lys Lys Arg Glu Arg Leu Lys Glu Glu Arg Arg Ala Gln
        275                 280                 285

Ser Val Pro Arg Asp Glu Val Ala Gln Ser Lys Gly Ser Val Ser Ala
    290                 295                 300

Gly Asp Thr Pro Ser Ser Glu Gln Ala Val Ala Arg Lys Glu Glu Ala
305                 310                 315                 320
```

```
Arg Glu Glu Phe Leu Ser Ala Ser Pro Glu Pro Arg Ala Lys Asp Asp
                325                 330                 335

Arg Arg Arg Lys Ser Arg Pro Lys Val Ser Ala Phe Ser Asp Pro Thr
            340                 345                 350

Pro Pro Ala Asp Gln Gln Pro Gly His Gln Lys Asn Leu His Ala His
        355                 360                 365

Asn His Pro Lys Lys Arg Asn Arg His Arg Cys Ser Ser Pro Pro Pro
    370                 375                 380

Pro His Glu Phe Arg Ala Tyr Gln Leu Tyr Thr Leu Tyr Arg Gly Lys
385                 390                 395                 400

Asp Gly Lys Val Met Gln Ala Pro Ile Asn Gly Cys Arg Cys Glu Pro
                405                 410                 415

Leu Ile Asn Lys Leu Glu Asn Gln Leu Glu Ala Thr Val Glu Glu Ile
            420                 425                 430

Lys Ala Glu Leu Gly Ser Val Gln Asp Lys Met Asn Thr Lys Leu Gly
        435                 440                 445

Gln Met Glu Asn Lys Thr Gln His Gln Met Arg Val Leu Asp Lys Leu
    450                 455                 460

Met Val Glu Arg Leu Ser Ala Glu Arg Thr Glu Cys Leu Asn Arg Leu
465                 470                 475                 480

Gln Gln His Ser Asp Thr Glu Lys His Glu Gly Glu Lys Arg Gln Ile
                485                 490                 495

Ser Leu Val Asp Glu Leu Lys Thr Trp Cys Met Leu Lys Ile Gln Asn
            500                 505                 510

Leu Glu Gln Lys Leu Ser Gly Asp Ser Arg Ala Cys Arg Ala Lys Ser
        515                 520                 525

Thr Pro Ser Thr Cys Glu Ser Ser Thr Gly Val Asp Gln Leu Val Val
    530                 535                 540
```

```
Thr Ala Gly Pro Ala Ala Ala Ser Asp Ser Ser Pro Pro Val Val Arg
545                 550                 555                 560

Pro Lys Glu Lys Ala Leu Asn Ser Thr Ala Thr Gln Arg Leu Gln Gln
                565                 570                 575

Glu Leu Ser Ser Ser Asp Cys Thr Gly Ser Arg Leu Arg Asn Val Lys
            580                 585                 590

Val Gln Thr Ala Leu Leu Pro Met Asn Glu Ala Ala Arg Ser Asp Gln
        595                 600                 605

Gln Ala Gly Pro Cys Val Asn Arg Gly Thr Gln Thr Lys Lys Ser Gly
    610                 615                 620

Lys Ser Gly Pro Thr Arg His Arg Ala Gln Gln Pro Ala Ala Ser Ser
625                 630                 635                 640

Thr Cys Gly Gln Pro Pro Pro Ala Thr Gly Ser Glu Gln Thr Gly Pro
                645                 650                 655

His Ile Arg Asp Thr Ser Gln Ala Leu Glu Leu Thr Gln Tyr Phe Phe
            660                 665                 670

Glu Ala Val Ser Thr Gln Met Glu Lys Trp Tyr Glu Arg Lys Ile Glu
        675                 680                 685

Glu Ala Arg Ser Gln Ala Asn Gln Lys Ala Gln Gln Asp Lys Ala Thr
    690                 695                 700

Leu Lys Glu His Ile Lys Ser Leu Glu Glu Glu Leu Ala Lys Leu Arg
705                 710                 715                 720

Thr Arg Val Gln Lys Glu Asn
                725
```

<210> 5332
<211> 80
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1157; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD6; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 6; "

<220>
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<223> /note="ENSP ID: ENSP00000431061"

<400> 5332
Met Ser Gln Gln Asp Ala Val Ala Ala Leu Ser Glu Arg Leu Leu Val
1 5 10 15

Ala Ala Tyr Lys Gly Gln Thr Glu Asn Val Val Gln Leu Ile Asn Lys
20 25 30

Gly Ala Arg Val Ala Val Thr Lys His Gly Arg Thr Pro Leu His Leu
35 40 45

Ala Ala Asn Lys Gly His Leu Pro Val Val Gln Ile Leu Leu Lys Ala
50 55 60

Gly Cys Asp Leu Asp Val Gln Asp Asp Gly Asp Gln Thr Ala Leu His
65 70 75 80

<210> 5333
<211> 345
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1158; "

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<220>

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<400> 5333
Met Thr Arg Gly Arg Ala Trp Gly Met Arg Arg Ala Ala Ala Gly Ala
1 5 10 15

Gly Gly Ala Arg Ala Ala Gly Pro Thr Gly Gly Ala Ser Arg Leu His
20 25 30

Pro Asn Ala Gly Arg Arg Ser Gly Ala Arg Ala Gly Ala Gln Gly Cys
35 40 45

Gly Gly Pro Arg Val Gly Ser Ala Asp Ser Arg Ala Leu Pro Ala Gln
50 55 60

Pro Leu Ala Cys Ala Arg Gly Arg Ser Gln Arg Leu Val Cys Asp Pro
65 70 75 80

Lys Ala Ala Ser Ala Leu Pro Asp Leu Ala Pro Asp Val Phe Val Leu
85 90 95

Arg Val Arg Leu Glu Glu Thr Gly Glu Met Phe Arg Val Ala Asn Cys
100 105 110

Arg Gly Asp Met Thr Val Arg Glu Leu Lys Glu Glu Leu Asp Leu Met
115 120 125

Val Gly Ile Pro Phe Asn Leu Gln Arg Leu Gln Tyr Leu Asp Glu Gly
130 135 140

Val Leu Met Asp Asp Thr Thr Leu Lys Phe His Asp Val Val Pro Gly
145 150 155 160

Gly Ile Ile Ser Leu Cys Ile Trp His His Asp Gly Trp Thr Glu Leu
165 170 175

Val Leu Ala Ala Val Glu Gly Asp Pro Ser Lys Leu Ser Cys Leu Gly
180 185 190

Leu Thr Glu Asp Ser Phe Tyr Arg Thr Ala Asn Ser Glu His Phe Glu
195 200 205

Gly Glu Lys Trp Lys His Trp Thr Ser Gln Arg Ala Phe Val Ala Leu

```
    210                 215                 220

Tyr Val Ala Ser His Arg Gly His Phe Asp Ala Val Gln Tyr Leu Leu
225                 230                 235                 240

Glu His Gly Ala Ser Cys Leu Ser Arg Ser Pro Leu Gly Arg Thr Pro
                245                 250                 255

Leu His Val Ala Ala Ala Met Gly Arg Ser Asp Cys Ile Ile Leu Leu
            260                 265                 270

Leu Gln His Gly Ala Ser Ile His Asp Arg Asp Ala Lys Gly Glu Thr
        275                 280                 285

Pro Ile Ser Ile Ala His Arg Leu Asn His Thr Leu Ser Glu Arg Gln
    290                 295                 300

Met Val Leu Leu His Arg Ile Ala Lys Ser Gly Ile Arg Asp Leu Asn
305                 310                 315                 320

Asp Leu Val Met Lys Asn Ala Leu Gln Arg Val Lys Ser Gly Phe Arg
                325                 330                 335

Ser Glu Lys Met Thr Met Thr Pro His
            340                 345


<210> 5334
<211> 418
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<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ANKRD61; "

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<223> /note="Uniprot ID:  A6NGH8; "
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<220>
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<400> 5334
Met Gly Asn Ile Thr Arg Lys Gly Ser Arg Asp Leu Val Val Asp Ser
1   5   10   15

Ala Lys Ser Leu Glu Asp Gly Pro Ser Ala Ala Leu His Ser Lys Leu
            20   25   30

Tyr Glu Ala Ile Met Arg Glu Asp Cys Thr Thr Ile Glu Val Leu Leu
        35   40   45

Arg Asn His Pro Val Asn Gln Pro Ile Thr Ile Leu Pro Asn Ser Ala
    50   55   60

Ser Asn Arg Leu Leu Leu Thr Gln Pro Thr Glu Ser Ile Ile Pro Ile
65   70   75   80

His Leu Ala Ala Lys Tyr His Lys Ala Gln Ser Leu Leu Cys Leu Leu
                85   90   95

Arg His Gly Ala Asp Pro Glu Val Arg Asp Thr Thr Gly Leu Thr Thr
            100   105   110

Leu Asn Leu Met Leu Leu His Trp Pro Val Thr Ser Thr Thr Trp Ala
        115   120   125

Lys Pro Gly Asn Arg Thr His Arg Ile Leu Thr Asp Ile Gln Asn Ser
    130   135   140

Ser Ile Thr Cys Leu Arg Ile Leu Cys Ala His Gly Ala Gln Val Asn
145   150   155   160

Thr Gln Gly Glu Ile Ser Asn Lys Arg Ser Pro Leu His Leu Ala Ile
                165   170   175

Ala Tyr Gly Cys Tyr Pro Val Leu Ser Ile Leu Thr Gln Asn Gly Ala
            180   185   190

Asp Val Asn Ala Ile Asn Glu Ala Ser Met Thr Pro Leu His Met Ala
        195   200   205

```
Ala Asn Met Leu Asn Lys Glu Met Met Glu Thr Leu Ile Ala Tyr Gly
    210                 215                 220

Ala Asn Val Asn Cys Ala Val Ser Ser Thr Gly Asn Thr Pro Leu Lys
225                 230                 235                 240

Leu Ala Val Cys Thr Ala Ser Ser Lys Ala Gly Arg Leu Leu Gly Ala
                245                 250                 255

Gly Val Ser Cys Ile Arg Leu Leu Leu Thr His Gly Ala Lys Val Asn
            260                 265                 270

Ala Gln Asp Tyr Lys Gly Gln Thr Ala Ile His Glu Ala Cys Phe Gly
        275                 280                 285

Gly Arg Glu Ala Ile Ile Asn Leu Leu Leu Glu Phe Glu Ala Asn Val
    290                 295                 300

Asn Ile Leu Thr Arg Asn Gly Glu Ser Pro Ile Tyr Met Tyr Leu Gln
305                 310                 315                 320

Arg Ser Cys Asn Val Arg Asp Thr Ala Leu Leu Ala Arg Leu Leu Tyr
                325                 330                 335

His Thr Tyr Pro Leu Arg Met Thr Asn Asn Gln Gly Ile Leu Pro Ala
            340                 345                 350

Gly Ile Met Leu Pro Glu Phe Arg Leu Leu Arg Asp Thr Leu Ile Lys
        355                 360                 365

Gln Ser Gln Lys Pro Leu Ser Leu Gln Gly Ile Cys Lys Arg Asn Ile
    370                 375                 380

Arg Asn Ile Tyr Gly Glu Lys Tyr Lys Gln His Leu Lys Gln Phe Leu
385                 390                 395                 400

Pro Val Thr Ile Trp Asn Ser Val Tyr Cys Cys Tyr Asp Leu Ala Tyr
                405                 410                 415

Thr Ser
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<210> 5335

<211> 917
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
ankyrin repeat domain 62; "

<220>
<221> source
<223> /note="Uniprot ID: A6NC57; "

<220>
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<223> /note="ENSP ID: ENSP00000467740"

<400> 5335

```
Met Glu Val Arg Gly Ser Phe Leu Ala Ala Cys Arg Arg Arg Met Ala
1               5                  10                  15

Thr Trp Arg Lys Asn Arg Asp Lys Asp Gly Phe Ser Asn Pro Gly Tyr
            20                  25                  30

Arg Val Arg Gln Lys Asp Leu Gly Met Ile His Lys Ala Ala Ile Ala
        35                  40                  45

Gly Asp Val Asn Lys Val Met Glu Ser Ile Leu Leu Arg Leu Asn Asp
    50                  55                  60

Leu Asn Asp Arg Asp Lys Lys Asn Arg Thr Ala Leu Leu Leu Ala Cys
65                  70                  75                  80

Ala His Gly Arg Pro Gly Val Val Ala Asp Leu Val Ala Arg Lys Cys
                85                  90                  95

Gln Leu Asn Leu Thr Asp Ser Glu Asn Arg Thr Ala Leu Ile Lys Ala
            100                 105                 110

Val Gln Cys Gln Glu Glu Val Cys Ala Ser Ile Leu Leu Glu His Gly
        115                 120                 125
```

```
Ala Asn Pro Asn Val Arg Asp Met Tyr Gly Asn Thr Ala Leu His Tyr
    130                 135                 140

Ala Ile Asp Asn Glu Asn Ile Ser Met Ala Arg Lys Leu Leu Ala Tyr
145                 150                 155                 160

Gly Ala Asp Ile Glu Ala Arg Ser Gln Asp Gly His Thr Ser Leu Leu
                165                 170                 175

Leu Ala Val Asn Arg Lys Lys Glu Gln Met Val Ala Phe Leu Leu Lys
            180                 185                 190

Lys Lys Pro Asp Leu Thr Ala Ile Asp Asn Phe Gly Arg Thr Ala Leu
        195                 200                 205

Ile Leu Ala Ala Arg Asn Gly Ser Thr Ser Val Val Tyr Gln Leu Leu
    210                 215                 220

Gln His Asn Ile Asp Val Phe Cys Gln Asp Ile Ser Gly Trp Thr Ala
225                 230                 235                 240

Glu Asp Tyr Ala Val Ala Ser Lys Phe Gln Ala Ile Arg Gly Met Ile
                245                 250                 255

Ser Glu Tyr Lys Ala Asn Lys Arg Cys Lys Ser Leu Gln Asn Ser Asn
            260                 265                 270

Ser Glu Gln Asp Leu Glu Met Thr Ser Glu Gly Glu Gln Glu Arg Leu
        275                 280                 285

Glu Gly Cys Glu Ser Ser Gln Pro Gln Val Glu Glu Lys Met Lys Lys
    290                 295                 300

Cys Arg Asn Lys Lys Met Glu Val Ser Arg Asn Val His Ala Asp Asp
305                 310                 315                 320

Ser Asp Asn Tyr Asn Asp Asp Val Asp Glu Leu Ile His Lys Ile Lys
                325                 330                 335

Asn Arg Lys Pro Asp Asn His Gln Ser Pro Gly Lys Glu Asn Gly Glu
            340                 345                 350
```

```
Phe Asp Arg Leu Ala Arg Lys Thr Ser Asn Glu Lys Ser Lys Val Lys
        355                 360                 365

Ser Gln Ile Tyr Phe Thr Asp Asp Leu Asn Asp Ile Ser Gly Ser Ser
    370                 375                 380

Glu Lys Thr Ser Glu Asp Asp Glu Leu Pro Tyr Ser Asp Asp Glu Asn
385                 390                 395                 400

Phe Met Leu Leu Ile Glu Gln Ser Gly Met Glu Cys Lys Asp Phe Val
                405                 410                 415

Ser Leu Ser Lys Ser Lys Asn Ala Thr Ala Ala Cys Gly Arg Ser Ile
            420                 425                 430

Glu Asp Gln Lys Cys Tyr Cys Glu Arg Leu Lys Val Lys Phe Gln Lys
        435                 440                 445

Met Lys Asn Asn Ile Ser Val Leu Gln Lys Val Leu Ser Glu Thr Asp
    450                 455                 460

Lys Thr Lys Ser Gln Ser Glu His Gln Asn Leu Gln Gly Lys Lys Lys
465                 470                 475                 480

Leu Cys Asn Leu Arg Phe Ile Leu Gln Gln Gln Glu Glu Glu Arg Ile
                485                 490                 495

Lys Ala Glu Glu Leu Tyr Glu Lys Asp Ile Glu Glu Leu Lys Ile Met
            500                 505                 510

Glu Glu Gln Tyr Arg Thr Gln Thr Glu Val Lys Lys Gln Ser Lys Leu
        515                 520                 525

Thr Leu Lys Ser Leu Glu Val Glu Leu Lys Thr Val Arg Ser Asn Ser
    530                 535                 540

Asn Gln Asn Phe His Thr His Glu Arg Glu Arg Asp Leu Trp Gln Glu
545                 550                 555                 560

Asn His Leu Met Arg Asp Glu Ile Ala Arg Leu Arg Leu Glu Ile Asp
                565                 570                 575

Thr Ile Lys His Gln Asn Gln Glu Thr Glu Asn Lys Tyr Phe Lys Asp
```

```
            580                 585                 590

Ile Glu Ile Ile Lys Glu Asn Asn Glu Asp Leu Glu Lys Thr Leu Lys
        595                 600                 605

Arg Asn Glu Glu Ala Leu Thr Lys Thr Ile Thr Arg Tyr Ser Lys Glu
    610                 615                 620

Leu Asn Val Leu Met Asp Glu Asn Thr Met Leu Asn Ser Glu Leu Gln
625                 630                 635                 640

Lys Glu Lys Gln Ser Met Ser Arg Leu Glu Thr Glu Met Glu Ser Tyr
                645                 650                 655

Arg Cys Arg Leu Ala Ala Ala Leu Cys Asp His Asp Gln Arg Gln Ser
            660                 665                 670

Ser Lys Arg Asp Leu Gln Leu Ala Phe Gln Ser Thr Val Asn Glu Trp
        675                 680                 685

Cys His Leu Gln Glu Asp Thr Asn Ser His Ile Gln Ile Leu Ser Gln
    690                 695                 700

Gln Leu Ser Lys Ala Glu Ser Thr Ser Ser Gly Leu Glu Thr Glu Leu
705                 710                 715                 720

His Tyr Glu Arg Glu Ala Leu Lys Glu Lys Thr Leu His Ile Glu His
                725                 730                 735

Met Gln Gly Val Leu Ser Arg Thr Gln Arg Arg Leu Glu Asp Ile Glu
            740                 745                 750

His Met Tyr Gln Asn Asp Gln Pro Ile Leu Glu Lys Tyr Val Arg Lys
        755                 760                 765

Gln Gln Ser Val Glu Asp Gly Leu Phe Gln Leu Gln Ser Gln Asn Leu
    770                 775                 780

Leu Tyr Gln Gln Gln Cys Asn Asp Ala Arg Lys Lys Ala Asp Asn Gln
785                 790                 795                 800

Glu Lys Thr Ile Ile Asn Ile Gln Val Lys Cys Glu Asp Thr Val Glu
                805                 810                 815
```

```
Lys Leu Gln Ala Glu Cys Arg Lys Leu Glu Glu Asn Asn Lys Gly Leu
            820                 825                 830

Met Lys Glu Cys Thr Leu Leu Lys Glu Arg Gln Cys Gln Tyr Glu Lys
        835                 840                 845

Glu Lys Glu Glu Arg Glu Val Val Arg Arg Gln Leu Gln Arg Glu Val
    850                 855                 860

Asp Asp Ala Leu Asn Lys Gln Leu Leu Leu Glu Ala Met Leu Glu Ile
865                 870                 875                 880

Ser Ser Glu Arg Arg Ile Asn Leu Glu Asp Glu Ala Gln Ser Leu Lys
                885                 890                 895

Lys Lys Leu Gly Gln Met Arg Ser Gln Val Cys Met Lys Leu Ser Met
            900                 905                 910

Ser Thr Val Thr Leu
        915


<210> 5336
<211> 380
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1161; "

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<223> /note="Gene Symbol: ANKRD63; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 63; "

<220>
<221> source
<223> /note="Uniprot ID:  C9JTQ0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000399547"

<400> 5336
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```
Met Leu Lys Pro Lys Asp Leu Cys Pro Arg Ala Gly Thr Arg Thr Phe
1               5                  10                  15

Leu Glu Ala Met Gln Ala Gly Lys Val His Leu Ala Arg Phe Val Leu
            20                  25                  30

Asp Ala Leu Asp Arg Ser Ile Ile Asp Cys Arg Ala Glu Gln Gly Arg
        35                  40                  45

Thr Pro Leu Met Val Ala Val Gly Leu Pro Asp Pro Ala Leu Arg Ala
    50                  55                  60

Arg Phe Val Arg Leu Leu Leu Glu Gln Gly Ala Ala Val Asn Leu Arg
65                  70                  75                  80

Asp Glu Arg Gly Arg Thr Ala Leu Ser Leu Ala Cys Glu Arg Gly His
                85                  90                  95

Leu Asp Ala Val Gln Leu Leu Val Gln Phe Ser Gly Asp Pro Glu Ala
            100                 105                 110

Ala Asp Ser Ala Gly Asn Ser Pro Val Met Trp Ala Ala Ala Cys Gly
        115                 120                 125

His Gly Ala Val Leu Glu Phe Leu Val Arg Ser Phe Arg Arg Leu Gly
    130                 135                 140

Leu Arg Leu Asp Arg Thr Asn Arg Ala Gly Leu Thr Ala Leu Gln Leu
145                 150                 155                 160

Ala Ala Ala Arg Gly His Gly Thr Cys Val Gln Ala Leu Thr Gly Pro
                165                 170                 175

Trp Gly Arg Ala Ala Ala Ala Ala Ala Ala Ala Arg Gly Ser Asn Ser Asp
            180                 185                 190

Ser Pro Pro Gly Arg Pro Ala Pro Ala Ala Ser Pro Glu His Arg Arg
        195                 200                 205

Pro Ser Pro Arg Arg Leu Pro Arg Pro Leu Leu Ala Arg Phe Ala Arg
    210                 215                 220

Ala Ala Gly Gly His Gly Gly Glu Ala Gly Ser Ala Gly Lys Asn Ser
```

```
225                 230                 235                 240

Gly Arg His Arg Ala Gln Gly Ser Glu Arg Pro Glu Leu Gly Arg Ser
                245                 250                 255

Met Ser Leu Ala Leu Gly Ala Val Thr Glu Glu Glu Ala Ala Arg Leu
            260                 265                 270

Arg Ala Gly Ala Leu Met Ala Leu Pro Asn Ser Pro Gln Ser Ser Gly
        275                 280                 285

Thr Gly Arg Trp Arg Ser Gln Glu Val Leu Glu Gly Ala Pro Pro Thr
    290                 295                 300

Leu Ala Gln Ala Pro Ile Gly Leu Ser Pro His Pro Glu Gly Gly Pro
305                 310                 315                 320

Gly Ser Gly Arg Leu Gly Leu Arg Arg Arg Ser Thr Ala Pro Asp Ile
                325                 330                 335

Pro Ser Leu Val Gly Glu Ala Pro Gly Pro Glu Ser Gly Pro Glu Leu
            340                 345                 350

Glu Ala Asn Ala Leu Ser Val Ser Val Pro Gly Pro Asn Pro Trp Gln
        355                 360                 365

Ala Gly Thr Glu Ala Val Val Leu Arg Ala Gln Arg
    370                 375                 380


<210> 5337
<211> 174
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1162; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD65; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 65; "
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<220>
<221> source
<223> /note="Uniprot ID: E5RJM6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000428201"

<400> 5337
Met Asp Ser Gln Arg Pro Glu Pro Arg Glu Glu Glu Glu Glu Glu Gln
1   5   10   15

Glu Leu Arg Trp Met Glu Leu Asp Ser Glu Glu Ala Leu Gly Thr Arg
            20   25   30

Thr Glu Gly Pro Ser Val Val Gln Gly Trp Gly His Leu Leu Gln Ala
        35   40   45

Val Trp Arg Gly Pro Ala Gly Leu Val Thr Gln Leu Leu Arg Gln Gly
    50   55   60

Ala Ser Val Glu Glu Arg Thr Leu Arg Cys Cys Trp Ala Thr Gly Gln
65   70   75   80

Thr Gln Ala Ser Gly Thr Gly Met Ala Ala Leu Arg Cys Thr Gly Leu
                85   90   95

Pro Pro Glu Asp Thr Cys Leu Pro Ser Ser Cys Trp Ser Pro Arg Gly
            100   105   110

Pro Arg Trp Met Arg Gly Thr Pro Trp Ala Ser His Pro Cys Ile Thr
        115   120   125

Pro Leu Gly Lys Ala Thr Trp Arg Leu Pro Ala Ala Cys Trp Thr Gly
    130   135   140

Val Pro Arg Trp Met Leu Pro Ala Gly Ser Glu Arg Pro Pro Tyr Thr
145   150   155   160

Trp Leu Gln Ser Glu Gly Met Gly Leu Pro Trp Gly Phe Cys
                165   170

<210> 5338
<211> 174
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1162; "

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<220>
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<220>
<221> source
<223> /note="Uniprot ID: E5RJM6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000428419"

<400> 5338
Met Asp Ser Gln Arg Pro Glu Pro Arg Glu Glu Glu Glu Glu Glu Gln
1   5   10   15

Glu Leu Arg Trp Met Glu Leu Asp Ser Glu Glu Ala Leu Gly Thr Arg
            20   25   30

Thr Glu Gly Pro Ser Val Val Gln Gly Trp Gly His Leu Leu Gln Ala
        35   40   45

Val Trp Arg Gly Pro Ala Gly Leu Val Thr Gln Leu Leu Arg Gln Gly
    50   55   60

Ala Ser Val Glu Glu Arg Thr Leu Arg Cys Cys Trp Ala Thr Gly Gln
65   70   75   80

Thr Gln Ala Ser Gly Thr Gly Met Ala Ala Leu Arg Cys Thr Gly Leu
                85   90   95

Pro Pro Glu Asp Thr Cys Leu Pro Ser Ser Cys Trp Ser Pro Arg Gly
            100   105   110

Pro Arg Trp Met Arg Gly Thr Pro Trp Ala Ser His Pro Cys Ile Thr
        115   120   125

Pro Leu Gly Lys Ala Thr Trp Arg Leu Pro Ala Ala Cys Trp Thr Gly
    130   135   140

```
Val Pro Arg Trp Met Leu Pro Ala Gly Ser Glu Arg Pro Pro Tyr Thr
145                 150                 155                 160


Trp Leu Gln Ser Glu Gly Met Gly Leu Pro Trp Gly Phe Cys
                165                 170


<210> 5339
<211> 65
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1162; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD65; "

<220>
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<223> /note="Gene Name:
      ankyrin repeat domain 65; "

<220>
<221> source
<223> /note="Uniprot ID:  E5RJM6; "

<220>
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<223> /note="ENSP ID: ENSP00000429035"

<400> 5339
Met Asp Ser Gln Arg Pro Glu Pro Arg Glu Glu Glu Glu Glu Glu Gln
1               5                   10                  15


Glu Leu Arg Trp Met Glu Leu Asp Ser Glu Glu Ala Leu Gly Thr Arg
            20                  25                  30


Thr Glu Gly Pro Ser Val Val Gln Gly Trp Gly His Leu Leu Gln Ala
        35                  40                  45


Val Trp Arg Gly Pro Ala Gly Leu Val Thr Gln Leu Leu Arg Gln Gly
    50                  55                  60


His
65
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<210> 5340
<211> 399
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1162; "

<220>
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<220>
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<220>
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<223> /note="Uniprot ID: E5RJM6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000445688"

<400> 5340
Met Asp Ser Gln Arg Pro Glu Pro Arg Glu Glu Glu Glu Glu Glu Gln
1   5   10   15

Glu Leu Arg Trp Met Glu Leu Asp Ser Glu Glu Ala Leu Gly Thr Arg
            20   25   30

Thr Glu Gly Pro Ser Val Val Gln Gly Trp Gly His Leu Leu Gln Ala
        35   40   45

Val Trp Arg Gly Pro Ala Gly Leu Val Thr Gln Leu Leu Arg Gln Gly
    50   55   60

Ala Ser Val Glu Glu Arg Asp His Ala Gly Arg Thr Pro Leu His Leu
65   70   75   80

Ala Val Leu Arg Gly His Ala Pro Leu Val Arg Leu Leu Leu Gln Arg
                85   90   95

Gly Ala Pro Val Gly Ala Val Asp Arg Ala Gly Arg Thr Ala Leu His
            100   105   110

Glu Ala Ala Trp His Gly His Ser Arg Val Ala Glu Leu Leu Leu Gln
        115   120   125

```
Arg Gly Ala Ser Ala Ala Ala Arg Ser Gly Thr Gly Leu Thr Pro Leu
    130                 135                 140

His Trp Ala Ala Ala Leu Gly His Thr Leu Leu Ala Ala Arg Leu Leu
145                 150                 155                 160

Glu Ala Pro Gly Pro Gly Pro Ala Ala Ala Glu Ala Glu Asp Ala Arg
                165                 170                 175

Gly Trp Thr Ala Ala His Trp Ala Ala Ala Gly Gly Arg Leu Ala Val
            180                 185                 190

Leu Glu Leu Leu Ala Ala Gly Gly Ala Gly Leu Asp Gly Ala Leu Leu
        195                 200                 205

Val Ala Ala Ala Ala Gly Arg Gly Ala Ala Leu Arg Phe Leu Leu Ala
    210                 215                 220

Arg Gly Ala Arg Val Asp Ala Arg Asp Gly Ala Gly Ala Thr Ala Leu
225                 230                 235                 240

Gly Leu Ala Ala Ala Leu Gly Arg Ser Gln Asp Ile Glu Val Leu Leu
                245                 250                 255

Gly His Gly Ala Asp Pro Gly Ile Arg Asp Arg His Gly Arg Ser Ala
            260                 265                 270

Leu His Arg Ala Ala Ala Arg Gly His Leu Leu Ala Val Gln Leu Leu
        275                 280                 285

Val Thr Gln Gly Ala Glu Val Asp Ala Arg Asp Thr Leu Gly Leu Thr
    290                 295                 300

Pro Leu His His Ala Ser Arg Glu Gly His Val Glu Val Ala Gly Cys
305                 310                 315                 320

Leu Leu Asp Arg Gly Ala Gln Val Asp Ala Thr Gly Trp Leu Arg Lys
                325                 330                 335

Thr Pro Leu His Leu Ala Ala Glu Arg Gly His Gly Pro Thr Val Gly
            340                 345                 350
```

```
Leu Leu Leu Ser Arg Gly Ala Ser Pro Thr Leu Arg Thr Gln Trp Ala
        355                 360                 365

Glu Val Ala Gln Met Pro Glu Gly Asp Leu Pro Gln Ala Leu Pro Glu
    370                 375                 380

Leu Gly Gly Gly Glu Lys Glu Cys Glu Gly Ile Glu Ser Thr Gly
385                 390                 395
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<210> 5341
<211> 399
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1162; "

<220>
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<223> /note="Gene Symbol: ANKRD65; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 65; "

<220>
<221> source
<223> /note="Uniprot ID: E5RJM6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000482314"

<400> 5341

```
Met Asp Ser Gln Arg Pro Glu Pro Arg Glu Glu Glu Glu Glu Glu Gln
1               5                  10                  15

Glu Leu Arg Trp Met Glu Leu Asp Ser Glu Glu Ala Leu Gly Thr Arg
            20                  25                  30

Thr Glu Gly Pro Ser Val Val Gln Gly Trp Gly His Leu Leu Gln Ala
        35                  40                  45

Val Trp Arg Gly Pro Ala Gly Leu Val Thr Gln Leu Leu Arg Gln Gly
    50                  55                  60

Ala Ser Val Glu Glu Arg Asp His Ala Gly Arg Thr Pro Leu His Leu
```

65 70 75 80

Ala Val Leu Arg Gly His Ala Pro Leu Val Arg Leu Leu Leu Gln Arg
85 90 95

Gly Ala Pro Val Gly Ala Val Asp Arg Ala Gly Arg Thr Ala Leu His
100 105 110

Glu Ala Ala Trp His Gly His Ser Arg Val Ala Glu Leu Leu Leu Gln
115 120 125

Arg Gly Ala Ser Ala Ala Ala Arg Ser Gly Thr Gly Leu Thr Pro Leu
130 135 140

His Trp Ala Ala Ala Leu Gly His Thr Leu Leu Ala Ala Arg Leu Leu
145 150 155 160

Glu Ala Pro Gly Pro Gly Pro Ala Ala Ala Glu Ala Glu Asp Ala Arg
165 170 175

Gly Trp Thr Ala Ala His Trp Ala Ala Ala Gly Gly Arg Leu Ala Val
180 185 190

Leu Glu Leu Leu Ala Ala Gly Gly Ala Gly Leu Asp Gly Ala Leu Leu
195 200 205

Val Ala Ala Ala Ala Gly Arg Gly Ala Ala Leu Arg Phe Leu Leu Ala
210 215 220

Arg Gly Ala Arg Val Asp Ala Arg Asp Gly Ala Gly Ala Thr Ala Leu
225 230 235 240

Gly Leu Ala Ala Ala Leu Gly Arg Ser Gln Asp Ile Glu Val Leu Leu
245 250 255

Gly His Gly Ala Asp Pro Gly Ile Arg Asp Arg His Gly Arg Ser Ala
260 265 270

Leu His Arg Ala Ala Ala Arg Gly His Leu Leu Ala Val Gln Leu Leu
275 280 285

Val Thr Gln Gly Ala Glu Val Asp Ala Arg Asp Thr Leu Gly Leu Thr
290 295 300

```
Pro Leu His His Ala Ser Arg Glu Gly His Val Glu Val Ala Gly Cys
305                 310                 315                 320

Leu Leu Asp Arg Gly Ala Gln Val Asp Ala Thr Gly Trp Leu Arg Lys
                325                 330                 335

Thr Pro Leu His Leu Ala Ala Glu Arg Gly His Gly Pro Thr Val Gly
            340                 345                 350

Leu Leu Leu Ser Arg Gly Ala Ser Pro Thr Leu Arg Thr Gln Trp Ala
        355                 360                 365

Glu Val Ala Gln Met Pro Glu Gly Asp Leu Pro Gln Ala Leu Pro Glu
    370                 375                 380

Leu Gly Gly Gly Glu Lys Glu Cys Glu Gly Ile Glu Ser Thr Gly
385                 390                 395


<210> 5342
<211> 251
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1163; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD66; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 66; "

<220>
<221> source
<223> /note="Uniprot ID:  B4E2M5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000454770"

<400> 5342
Met Asp Thr Thr Leu Arg Met Val Arg Thr Ala Cys Gln His Arg Ala
1               5                   10                  15
```

```
Pro Gln Ile Ser His Lys Thr Gly Cys Ser His Ile Ser Met His Ser
            20                  25                  30

Pro Gly Gly Leu Thr Thr Thr Lys Met Ala Gly Pro Leu Pro Arg Val
        35                  40                  45

Ser Asp Ser Leu Phe Ser Ala Met Glu Leu Ala Lys Met Ser Asp Met
    50                  55                  60

Thr Lys Leu His Gln Ala Val Ala Ala Gly Asp Tyr Ser Leu Val Lys
65                  70                  75                  80

Lys Ile Leu Lys Lys Gly Leu Cys Asp Pro Asn Tyr Lys Asp Val Asp
                85                  90                  95

Trp Asn Asp Arg Thr Pro Leu His Trp Ala Ala Ile Lys Gly Gln Met
            100                 105                 110

Glu Val Ile Arg Leu Leu Ile Glu Tyr Gly Ala Arg Pro Cys Leu Val
        115                 120                 125

Thr Ser Val Gly Trp Thr Pro Ala His Phe Ala Ala Glu Ala Gly His
    130                 135                 140

Leu Asn Ile Leu Lys Thr Leu His Ala Leu His Ala Ala Ile Asp Ala
145                 150                 155                 160

Pro Asp Phe Phe Gly Asp Thr Pro Lys Arg Ile Ala Gln Ile Tyr Gly
                165                 170                 175

Gln Lys Ala Cys Val Ala Phe Leu Glu Lys Ala Glu Pro Glu Cys Gln
            180                 185                 190

Asp His Arg Cys Ala Ala Gln Gln Lys Gly Leu Pro Leu Asp Glu Arg
        195                 200                 205

Asp Glu Asp Trp Asp Ala Lys Lys Arg Glu Leu Glu Leu Ser Leu Pro
    210                 215                 220

Ser Leu Asn Gln Asn Met Asn Lys Lys Asn Lys Lys Ser Arg Gly Pro
225                 230                 235                 240

Thr Arg Pro Ser Asn Thr Lys Gly Arg Arg Val
```

245 250

<210> 5343
<211> 73
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1163; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD66; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 66; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000457147"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5343
Xaa Ile Glu Tyr Gly Ala Arg Pro Cys Leu Val Thr Ser Val Gly Trp
1 5 10 15

Thr Pro Ala His Phe Ala Ala Glu Ala Gly His Leu Asn Ile Leu Lys
20 25 30

Thr Leu His Ala Leu His Ala Ala Ile Asp Ala Pro Asp Phe Phe Gly
35 40 45

Asp Thr Pro Lys Arg Ile Ala Gln Ile Tyr Gly Gln Lys Ala Cys Val
50 55 60

Ala Phe Leu Glu Lys Gly Ile Glu Phe
65 70

<210> 5344
<211> 254
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1164; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD7; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 7; "

<220>
<221> source
<223> /note="Uniprot ID: Q92527; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000265224"

<400> 5344

```
Met Asn Lys Leu Phe Ser Phe Trp Lys Arg Lys Asn Glu Thr Arg Ser
1               5                  10                  15

Gln Gly Tyr Asn Leu Arg Glu Lys Asp Leu Lys Lys Leu His Arg Ala
            20                  25                  30

Ala Ser Val Gly Asp Leu Lys Lys Leu Lys Glu Tyr Leu Gln Ile Lys
        35                  40                  45

Lys Tyr Asp Val Asn Met Gln Asp Lys Lys Tyr Arg Thr Pro Leu His
    50                  55                  60

Leu Ala Cys Ala Asn Gly His Thr Asp Val Val Leu Phe Leu Ile Glu
65                  70                  75                  80

Gln Gln Cys Lys Ile Asn Val Arg Asp Ser Glu Asn Lys Ser Pro Leu
                85                  90                  95

Ile Lys Ala Val Gln Cys Gln Asn Glu Asp Cys Ala Thr Ile Leu Leu
            100                 105                 110

Asn Phe Gly Ala Asp Pro Asp Leu Arg Asp Ile Arg Tyr Asn Thr Val
        115                 120                 125

Leu His Tyr Ala Val Cys Gly Gln Ser Leu Ser Leu Val Glu Lys Leu
    130                 135                 140
```

```
Leu Glu Tyr Glu Ala Asp Leu Glu Ala Lys Asn Lys Asp Gly Tyr Thr
145                 150                 155                 160

Pro Leu Leu Val Ala Val Ile Asn Asn Asn Pro Lys Met Val Lys Phe
                165                 170                 175

Leu Leu Glu Lys Gly Ala Asp Val Asn Ala Ser Asp Asn Tyr Gln Arg
            180                 185                 190

Thr Ala Leu Ile Leu Ala Val Ser Gly Glu Pro Pro Cys Leu Val Lys
        195                 200                 205

Leu Leu Leu Gln Gln Gly Val Glu Leu Cys Tyr Glu Gly Ile Val Asp
    210                 215                 220

Ser Gln Leu Arg Asn Met Phe Ile Ser Met Val Leu Leu His Arg Tyr
225                 230                 235                 240

Pro Gln Phe Thr Ala Ser His Gly Lys Lys Lys His Ala Lys
                245                 250


<210> 5345
<211> 263
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1164; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD7; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000395595"

<400> 5345
Met Asn Lys Leu Phe Ser Phe Trp Lys Arg Lys Asn Glu Thr Arg Ser
1               5                   10                  15

Gln Gly Tyr Asn Leu Arg Glu Lys Asp Leu Lys Lys Leu His Arg Ala
```

```
            20                  25                  30

Ala Ser Val Gly Asp Leu Lys Lys Leu Lys Glu Tyr Leu Gln Ile Lys
        35                  40                  45

Lys Tyr Asp Val Asn Met Gln Asp Lys Lys Tyr Arg Thr Pro Leu His
    50                  55                  60

Leu Ala Cys Ala Asn Gly His Thr Asp Val Val Leu Phe Leu Ile Glu
65                  70                  75                  80

Gln Gln Cys Lys Ile Asn Val Arg Asp Ser Glu Asn Lys Ser Pro Leu
                85                  90                  95

Ile Lys Ala Val Gln Cys Gln Asn Glu Asp Cys Ala Thr Ile Leu Leu
            100                 105                 110

Asn Phe Gly Ala Asp Pro Asp Leu Arg Asp Ile Arg Tyr Asn Thr Val
        115                 120                 125

Leu His Tyr Ala Val Cys Gly Gln Ser Leu Ser Leu Val Glu Lys Leu
    130                 135                 140

Leu Glu Tyr Glu Ala Asp Leu Glu Ala Lys Asn Lys Asp Gly Tyr Thr
145                 150                 155                 160

Pro Leu Leu Val Ala Val Ile Asn Asn Asn Pro Lys Met Val Lys Phe
                165                 170                 175

Leu Leu Glu Lys Gly Ala Asp Val Asn Ala Ser Asp Asn Tyr Gln Arg
            180                 185                 190

Thr Ala Leu Ile Leu Ala Val Ser Gly Glu Pro Pro Cys Leu Val Lys
        195                 200                 205

Leu Leu Leu Gln Gln Gly Val Glu Leu Cys Tyr Glu Gly Ile Val Asp
    210                 215                 220

Ser Gln Leu Arg Asn Met Phe Ile Ser Met Val Leu Leu His Thr His
225                 230                 235                 240

Asn Ser Leu Arg Ala Met Glu Arg Arg Asn Met Leu Asn Arg His Leu
                245                 250                 255
```

Ile Leu Gly Thr Thr Cys Asp
260

<210> 5346
<211> 104
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1164; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD7; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000417353"

<400> 5346
Met Asn Lys Leu Phe Ser Phe Trp Lys Arg Lys Asn Glu Thr Arg Ser
1 5 10 15

Gln Gly Tyr Asn Leu Arg Glu Lys Asp Leu Lys Lys Leu His Arg Ala
20 25 30

Ala Ser Val Gly Asp Leu Lys Lys Leu Lys Glu Tyr Leu Gln Ile Lys
35 40 45

Lys Tyr Asp Val Asn Met Gln Asp Lys Lys Tyr Ser Val Val Gln Ser
50 55 60

Ser Arg Trp Leu Leu Ser Tyr Thr Thr Pro Leu Asn Asp Phe Ile Arg
65 70 75 80

Thr Pro Leu His Leu Ala Cys Ala Asn Gly His Thr Asp Val Val Leu
85 90 95

Phe Leu Ile Glu Gln Gln Cys Lys
100

<210> 5347
<211> 150
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1164; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD7; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000482875"

<400> 5347

```
Met Arg Ile Val Thr Ile Leu Leu Asn Phe Gly Ala Asp Pro Asp Leu
1               5                  10                  15

Arg Asp Ile Arg Tyr Asn Thr Val Leu His Tyr Ala Val Cys Gly Gln
            20                  25                  30

Ser Leu Ser Leu Val Glu Lys Leu Leu Glu Tyr Glu Ala Asp Leu Glu
        35                  40                  45

Ala Lys Asn Lys Asp Gly Tyr Thr Pro Leu Leu Val Ala Val Ile Asn
    50                  55                  60

Asn Asn Pro Lys Met Val Lys Phe Leu Leu Glu Lys Gly Ala Asp Val
65                  70                  75                  80

Asn Ala Ser Asp Asn Tyr Gln Arg Thr Ala Leu Ile Leu Ala Val Ser
                85                  90                  95

Gly Glu Pro Pro Cys Leu Val Lys Leu Leu Leu Gln Gln Gly Val Glu
            100                 105                 110

Leu Cys Tyr Glu Gly Ile Val Asp Ser Gln Leu Arg Asn Met Phe Ile
        115                 120                 125

Ser Met Val Leu Leu His Arg Tyr Pro Gln Phe Thr Ala Ser His Gly
    130                 135                 140
```

Lys Lys Lys His Ala Lys
145 150

<210> 5348
<211> 82
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1164; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD7; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000489121"

<400> 5348
Met Val Lys Phe Leu Leu Glu Lys Gly Ala Asp Val Asn Ala Ser Asp
1 5 10 15

Asn Tyr Gln Arg Thr Ala Leu Ile Leu Ala Val Ser Gly Glu Pro Pro
20 25 30

Cys Leu Val Lys Leu Leu Leu Gln Gln Gly Val Glu Leu Cys Tyr Glu
35 40 45

Gly Ile Val Asp Ser Gln Leu Arg Asn Met Phe Ile Ser Met Val Leu
50 55 60

Leu His Arg Tyr Pro Gln Phe Thr Ala Ser His Gly Lys Lys Lys His
65 70 75 80

Ala Lys

<210> 5349
<211> 317
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1165; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD9; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 9; "

<220>
<221> source
<223> /note="Uniprot ID: Q96BM1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000286918"

<400> 5349
Met Pro Trp Asp Ala Arg Arg Pro Gly Gly Gly Ala Asp Gly Gly Pro
1   5   10   15

Glu Ala Ser Gly Ala Ala Arg Ser Arg Ala Gln Lys Gln Cys Arg Lys
            20   25   30

Ser Ser Phe Ala Phe Tyr Gln Ala Val Arg Asp Leu Leu Pro Val Trp
        35   40   45

Leu Leu Glu Asp Met Arg Ala Ser Glu Ala Phe His Trp Asp Glu Arg
    50   55   60

Gly Arg Ala Ala Ala Tyr Ser Pro Ser Glu Ala Leu Leu Tyr Ala Leu
65   70   75   80

Val His Asp His Gln Ala Tyr Ala His Tyr Leu Leu Ala Thr Phe Pro
                85   90   95

Arg Arg Ala Leu Ala Pro Pro Ser Ala Gly Phe Arg Cys Cys Ala Ala
            100   105   110

Pro Gly Pro His Val Ala Leu Ala Val Arg Tyr Asn Arg Val Gly Ile
        115   120   125

Leu Arg Arg Ile Leu Arg Thr Leu Arg Asp Phe Pro Ala Glu Glu Arg
    130   135   140

```
Ala Arg Val Leu Asp Arg Arg Gly Cys Ser Arg Val Glu Gly Gly Gly
145                 150                 155                 160

Thr Ser Leu His Val Ala Cys Glu Leu Ala Arg Pro Glu Cys Leu Phe
                165                 170                 175

Leu Leu Leu Gly His Gly Ala Ser Pro Gly Leu Arg Asp Gly Gly Gly
            180                 185                 190

Leu Thr Pro Leu Glu Leu Leu Leu Arg Gln Leu Gly Arg Asp Ala Gly
        195                 200                 205

Ala Thr Pro Ser Ala Ala Gly Ala Pro Ala Ser Ala Pro Gly Glu Pro
    210                 215                 220

Arg Gln Arg Arg Leu Leu Leu Leu Asp Leu Leu Ala Leu Tyr Thr Pro
225                 230                 235                 240

Val Gly Ala Ala Gly Ser Ala Arg Gln Glu Leu Leu Gly Asp Arg Pro
                245                 250                 255

Arg Trp Gln Arg Leu Leu Gly Glu Asp Lys Phe Gln Trp Leu Ala Gly
            260                 265                 270

Leu Ala Pro Pro Ser Leu Phe Ala Arg Ala Met Gln Val Leu Val Thr
        275                 280                 285

Ala Ile Ser Pro Gly Arg Phe Pro Glu Ala Leu Asp Glu Leu Pro Leu
    290                 295                 300

Pro Pro Phe Leu Gln Pro Leu Asp Leu Thr Gly Lys Gly
305                 310                 315


<210> 5350
<211> 259
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1165; "

<220>
<221> source
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<223> /note="Gene Symbol: ANKRD9; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453417"

<400> 5350

```
Met Pro Trp Asp Ala Arg Arg Pro Gly Gly Gly Ala Asp Gly Gly Pro
1               5                  10                  15

Glu Ala Ser Gly Ala Ala Arg Ser Arg Ala Gln Lys Gln Cys Arg Lys
            20                  25                  30

Ser Ser Phe Ala Phe Tyr Gln Ala Val Arg Asp Leu Leu Pro Val Trp
        35                  40                  45

Leu Leu Glu Asp Met Arg Ala Ser Glu Ala Phe His Trp Asp Glu Arg
    50                  55                  60

Gly Arg Ala Ala Ala Tyr Ser Pro Ser Glu Ala Leu Leu Tyr Ala Leu
65                  70                  75                  80

Val His Asp His Gln Ala Tyr Ala His Tyr Leu Leu Ala Thr Phe Pro
                85                  90                  95

Arg Arg Ala Leu Ala Pro Pro Ser Ala Gly Phe Arg Cys Cys Ala Ala
            100                 105                 110

Pro Gly Pro His Val Ala Leu Ala Val Arg Tyr Asn Arg Val Gly Ile
        115                 120                 125

Leu Arg Arg Ile Leu Arg Thr Leu Arg Asp Phe Pro Ala Glu Glu Arg
    130                 135                 140

Ala Arg Val Leu Asp Arg Arg Gly Cys Ser Arg Val Glu Gly Gly Gly
145                 150                 155                 160

Thr Ser Leu His Val Ala Cys Glu Leu Ala Arg Pro Glu Cys Leu Phe
                165                 170                 175

Leu Leu Leu Gly His Gly Ala Ser Pro Gly Leu Arg Asp Gly Gly Gly
```

```
            180                 185                 190

Leu Thr Pro Leu Glu Leu Leu Leu Arg Gln Leu Gly Arg Asp Ala Gly
        195                 200                 205

Ala Thr Pro Ser Ala Ala Gly Ala Pro Ala Ser Ala Pro Gly Glu Pro
    210                 215                 220

Arg Gln Arg Arg Leu Leu Leu Leu Asp Leu Leu Ala Leu Tyr Thr Pro
225                 230                 235                 240

Val Gly Ala Ala Gly Ser Ala Arg Gln Glu Leu Leu Gly Asp Arg Pro
                245                 250                 255

Arg Trp Gln
```

<210> 5351
<211> 317
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1165; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD9; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat domain 9; "

<220>
<221> source
<223> /note="Uniprot ID: Q96BM1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453650"

<400> 5351

```
Met Pro Trp Asp Ala Arg Arg Pro Gly Gly Gly Ala Asp Gly Gly Pro
1               5                   10                  15

Glu Ala Ser Gly Ala Ala Arg Ser Arg Ala Gln Lys Gln Cys Arg Lys
            20                  25                  30
```

```
Ser Ser Phe Ala Phe Tyr Gln Ala Val Arg Asp Leu Leu Pro Val Trp
        35                  40                  45

Leu Leu Glu Asp Met Arg Ala Ser Glu Ala Phe His Trp Asp Glu Arg
    50                  55                  60

Gly Arg Ala Ala Ala Tyr Ser Pro Ser Glu Ala Leu Leu Tyr Ala Leu
65                  70                  75                  80

Val His Asp His Gln Ala Tyr Ala His Tyr Leu Leu Ala Thr Phe Pro
                85                  90                  95

Arg Arg Ala Leu Ala Pro Pro Ser Ala Gly Phe Arg Cys Cys Ala Ala
            100                 105                 110

Pro Gly Pro His Val Ala Leu Ala Val Arg Tyr Asn Arg Val Gly Ile
        115                 120                 125

Leu Arg Arg Ile Leu Arg Thr Leu Arg Asp Phe Pro Ala Glu Glu Arg
    130                 135                 140

Ala Arg Val Leu Asp Arg Arg Gly Cys Ser Arg Val Glu Gly Gly Gly
145                 150                 155                 160

Thr Ser Leu His Val Ala Cys Glu Leu Ala Arg Pro Glu Cys Leu Phe
                165                 170                 175

Leu Leu Leu Gly His Gly Ala Ser Pro Gly Leu Arg Asp Gly Gly Gly
            180                 185                 190

Leu Thr Pro Leu Glu Leu Leu Leu Arg Gln Leu Gly Arg Asp Ala Gly
        195                 200                 205

Ala Thr Pro Ser Ala Ala Gly Ala Pro Ala Ser Ala Pro Gly Glu Pro
    210                 215                 220

Arg Gln Arg Arg Leu Leu Leu Leu Asp Leu Leu Ala Leu Tyr Thr Pro
225                 230                 235                 240

Val Gly Ala Ala Gly Ser Ala Arg Gln Glu Leu Leu Gly Asp Arg Pro
                245                 250                 255
```

```
Arg Trp Gln Arg Leu Leu Gly Glu Asp Lys Phe Gln Trp Leu Ala Gly
            260                 265                 270

Leu Ala Pro Pro Ser Leu Phe Ala Arg Ala Met Gln Val Leu Val Thr
        275                 280                 285

Ala Ile Ser Pro Gly Arg Phe Pro Glu Ala Leu Asp Glu Leu Pro Leu
    290                 295                 300

Pro Pro Phe Leu Gln Pro Leu Asp Leu Thr Gly Lys Gly
305                 310                 315


<210> 5352
<211> 105
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1165; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD9; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000454080"

<400> 5352
Met Pro Trp Asp Ala Arg Arg Pro Gly Gly Gly Ala Asp Gly Gly Pro
1               5                   10                  15

Glu Ala Ser Gly Ala Ala Arg Ser Arg Ala Gln Lys Gln Cys Arg Lys
            20                  25                  30

Ser Ser Phe Ala Phe Tyr Gln Ala Val Arg Asp Leu Leu Pro Val Trp
        35                  40                  45

Leu Leu Glu Asp Met Arg Ala Ser Glu Ala Phe His Trp Asp Glu Arg
    50                  55                  60

Gly Arg Ala Ala Ala Tyr Ser Pro Ser Glu Ala Leu Leu Tyr Ala Leu
65                  70                  75                  80
```

```
Val His Asp His Gln Ala Tyr Ala His Tyr Leu Leu Ala Thr Phe Pro
                85                  90                  95

Arg Arg Ala Leu Ala Pro Pro Ser Ala
            100                 105


<210> 5353
<211> 317
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1165; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRD9; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat domain 9; "

<220>
<221> source
<223> /note="Uniprot ID:  Q96BM1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000454100"

<400> 5353
Met Pro Trp Asp Ala Arg Arg Pro Gly Gly Gly Ala Asp Gly Gly Pro
1               5                   10                  15

Glu Ala Ser Gly Ala Ala Arg Ser Arg Ala Gln Lys Gln Cys Arg Lys
            20                  25                  30

Ser Ser Phe Ala Phe Tyr Gln Ala Val Arg Asp Leu Leu Pro Val Trp
        35                  40                  45

Leu Leu Glu Asp Met Arg Ala Ser Glu Ala Phe His Trp Asp Glu Arg
    50                  55                  60

Gly Arg Ala Ala Ala Tyr Ser Pro Ser Glu Ala Leu Leu Tyr Ala Leu
65                  70                  75                  80
```

```
Val His Asp His Gln Ala Tyr Ala His Tyr Leu Leu Ala Thr Phe Pro
                85                  90                  95

Arg Arg Ala Leu Ala Pro Pro Ser Ala Gly Phe Arg Cys Cys Ala Ala
            100                 105                 110

Pro Gly Pro His Val Ala Leu Ala Val Arg Tyr Asn Arg Val Gly Ile
        115                 120                 125

Leu Arg Arg Ile Leu Arg Thr Leu Arg Asp Phe Pro Ala Glu Glu Arg
    130                 135                 140

Ala Arg Val Leu Asp Arg Arg Gly Cys Ser Arg Val Glu Gly Gly Gly
145                 150                 155                 160

Thr Ser Leu His Val Ala Cys Glu Leu Ala Arg Pro Glu Cys Leu Phe
                165                 170                 175

Leu Leu Leu Gly His Gly Ala Ser Pro Gly Leu Arg Asp Gly Gly Gly
            180                 185                 190

Leu Thr Pro Leu Glu Leu Leu Leu Arg Gln Leu Gly Arg Asp Ala Gly
        195                 200                 205

Ala Thr Pro Ser Ala Ala Gly Ala Pro Ala Ser Ala Pro Gly Glu Pro
    210                 215                 220

Arg Gln Arg Arg Leu Leu Leu Leu Asp Leu Leu Ala Leu Tyr Thr Pro
225                 230                 235                 240

Val Gly Ala Ala Gly Ser Ala Arg Gln Glu Leu Leu Gly Asp Arg Pro
                245                 250                 255

Arg Trp Gln Arg Leu Leu Gly Glu Asp Lys Phe Gln Trp Leu Ala Gly
            260                 265                 270

Leu Ala Pro Pro Ser Leu Phe Ala Arg Ala Met Gln Val Leu Val Thr
        275                 280                 285

Ala Ile Ser Pro Gly Arg Phe Pro Glu Ala Leu Asp Glu Leu Pro Leu
    290                 295                 300

Pro Pro Phe Leu Gln Pro Leu Asp Leu Thr Gly Lys Gly
```

305 310 315

<210> 5354
<211> 313
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1166; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRA2; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat, family A (RFXANK-like), 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q9H9E1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000296785"

<400> 5354
Met Asp Thr Ser Thr Asn Leu Asp Ile Gly Ala Gln Leu Ile Val Glu
1 5 10 15

Glu Cys Pro Ser Thr Tyr Ser Leu Thr Gly Met Pro Asp Ile Lys Ile
20 25 30

Glu His Pro Leu Asp Pro Asn Ser Glu Glu Gly Ser Ala Gln Gly Val
35 40 45

Ala Met Gly Met Lys Phe Ile Leu Pro Asn Arg Phe Asp Met Asn Val
50 55 60

Cys Ser Arg Phe Val Lys Ser Leu Asn Glu Glu Asp Ser Lys Asn Ile
65 70 75 80

Gln Asp Gln Val Asn Ser Asp Leu Glu Val Ala Ser Val Leu Phe Lys
85 90 95

Ala Glu Cys Asn Ile His Thr Ser Pro Ser Pro Gly Ile Gln Val Arg
100 105 110

```
His Val Tyr Thr Pro Ser Thr Thr Lys His Phe Ser Pro Ile Lys Gln
        115                 120                 125

Ser Thr Thr Leu Thr Asn Lys His Arg Gly Asn Glu Val Ser Thr Thr
    130                 135                 140

Pro Leu Leu Ala Asn Ser Leu Ser Val His Gln Leu Ala Ala Gln Gly
145                 150                 155                 160

Glu Met Leu Tyr Leu Ala Thr Arg Ile Glu Gln Glu Asn Val Ile Asn
                165                 170                 175

His Thr Asp Glu Glu Gly Phe Thr Pro Leu Met Trp Ala Ala Ala His
            180                 185                 190

Gly Gln Ile Ala Val Val Glu Phe Leu Leu Gln Asn Gly Ala Asp Pro
        195                 200                 205

Gln Leu Leu Gly Lys Gly Arg Glu Ser Ala Leu Ser Leu Ala Cys Ser
    210                 215                 220

Lys Gly Tyr Thr Asp Ile Val Lys Met Leu Leu Asp Cys Gly Val Asp
225                 230                 235                 240

Val Asn Glu Tyr Asp Trp Asn Gly Gly Thr Pro Leu Leu Tyr Ala Val
                245                 250                 255

His Gly Asn His Val Lys Cys Val Lys Met Leu Leu Glu Ser Gly Ala
            260                 265                 270

Asp Pro Thr Ile Glu Thr Asp Ser Gly Tyr Asn Ser Met Asp Leu Ala
        275                 280                 285

Val Ala Leu Gly Tyr Arg Ser Val Gln Gln Val Ile Glu Ser His Leu
    290                 295                 300

Leu Lys Leu Leu Gln Asn Ile Lys Glu
305                 310
```

<210> 5355
<211> 177
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1166; "

<220>
<221> source
<223> /note="Gene Symbol: ANKRA2; "

<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat, family A (RFXANK-like), 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000422643"

<400> 5355
Met Asp Thr Ser Thr Asn Leu Asp Ile Gly Ala Gln Leu Ile Val Glu
1 5 10 15

Glu Cys Pro Ser Thr Tyr Ser Leu Thr Gly Met Pro Asp Ile Lys Ile
20 25 30

Glu His Pro Leu Asp Pro Asn Ser Glu Glu Gly Ser Ala Gln Gly Val
35 40 45

Ala Met Gly Met Lys Phe Ile Leu Pro Asn Arg Phe Asp Met Asn Val
50 55 60

Cys Ser Arg Phe Val Lys Ser Leu Asn Glu Glu Asp Ser Lys Asn Ile
65 70 75 80

Gln Asp Gln Val Asn Ser Asp Leu Glu Val Ala Ser Val Leu Phe Lys
85 90 95

Ala Leu Ser Val His Gln Leu Ala Ala Gln Gly Glu Met Leu Tyr Leu
100 105 110

Ala Thr Arg Ile Glu Gln Glu Asn Val Ile Asn His Thr Asp Glu Glu
115 120 125

Gly Phe Thr Pro Leu Met Trp Ala Ala Ala His Gly Gln Ile Ala Val
130 135 140

Val Glu Phe Leu Leu Gln Asn Gly Ala Asp Pro Gln Leu Leu Gly Lys
145 150 155 160

```
Gly Arg Glu Ser Ala Leu Ser Leu Ala Cys Ser Lys Gly Tyr Thr Asp
                165                 170                 175


Ile



<210> 5356
<211> 475
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1167; "

<220>
<221> source
<223> /note="Gene Symbol: ASZ1; "

<220>
<221> source
<223> /note="Gene Name:
      ankyrin repeat, SAM and basic leu zipper
      domain containing 1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8WWH4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000284629"

<400> 5356
Met Ala Ala Ser Ala Leu Arg Gly Leu Pro Val Ala Gly Gly Gly Glu
1               5                   10                  15


Ser Ser Glu Ser Glu Asp Asp Gly Trp Glu Ile Gly Tyr Leu Asp Arg
            20                  25                  30


Thr Ser Gln Lys Leu Lys Arg Leu Leu Pro Ile Glu Glu Lys Lys Glu
        35                  40                  45


Lys Phe Lys Lys Ala Met Thr Ile Gly Asp Val Ser Leu Val Gln Glu
    50                  55                  60


Leu Leu Asp Ser Gly Ile Ser Val Asp Ser Asn Phe Gln Tyr Gly Trp
65                  70                  75                  80
```

```
Thr Pro Leu Met Tyr Ala Ala Ser Val Ala Asn Ala Glu Leu Val Arg
                85                  90                  95

Val Leu Leu Asp Arg Gly Ala Asn Ala Ser Phe Glu Lys Asp Lys Gln
            100                 105                 110

Ser Ile Leu Ile Thr Ala Cys Ser Ala His Gly Ser Glu Glu Gln Ile
        115                 120                 125

Leu Lys Cys Val Glu Leu Leu Leu Ser Arg Asn Ala Asp Pro Asn Val
    130                 135                 140

Ala Cys Arg Arg Leu Met Thr Pro Ile Met Tyr Ala Ala Arg Asp Gly
145                 150                 155                 160

His Thr Gln Val Val Ala Leu Leu Val Ala His Gly Ala Glu Val Asn
                165                 170                 175

Thr Gln Asp Glu Asn Gly Tyr Thr Ala Leu Thr Trp Ala Ala Arg Gln
            180                 185                 190

Gly His Lys Asn Ile Val Leu Lys Leu Leu Glu Leu Gly Ala Asn Lys
        195                 200                 205

Met Leu Gln Thr Lys Asp Gly Lys Met Pro Ser Glu Ile Ala Lys Arg
    210                 215                 220

Asn Lys His His Glu Ile Phe Asn Leu Leu Ser Phe Thr Leu Asn Pro
225                 230                 235                 240

Leu Glu Gly Lys Leu Gln Gln Leu Thr Lys Glu Asp Thr Ile Cys Lys
                245                 250                 255

Ile Leu Thr Thr Asp Ser Asp Arg Glu Lys Asp His Ile Phe Ser Ser
            260                 265                 270

Tyr Thr Ala Phe Gly Asp Leu Glu Val Phe Leu His Gly Leu Gly Leu
        275                 280                 285

Glu His Met Thr Asp Leu Leu Lys Glu Arg Asp Ile Thr Leu Arg His
    290                 295                 300
```

```
Leu Leu Thr Met Arg Glu Asp Glu Phe Thr Lys Asn Gly Ile Thr Ser
305                 310                 315                 320

Lys Asp Gln Gln Lys Ile Leu Ala Ala Leu Lys Glu Leu Gln Val Glu
                325                 330                 335

Glu Ile Gln Phe Gly Glu Leu Ser Glu Glu Thr Lys Leu Glu Ile Ser
            340                 345                 350

Gly Asp Glu Phe Leu Asn Phe Leu Leu Lys Leu Asn Lys Gln Cys Gly
        355                 360                 365

His Leu Ile Thr Ala Val Gln Asn Val Ile Thr Glu Leu Pro Val Asn
    370                 375                 380

Ser Gln Lys Ile Thr Leu Glu Trp Ala Ser Pro Gln Asn Phe Thr Ser
385                 390                 395                 400

Val Cys Glu Glu Leu Val Asn Asn Val Glu Asp Leu Ser Glu Lys Val
                405                 410                 415

Cys Lys Leu Lys Asp Leu Ile Gln Lys Leu Gln Asn Glu Arg Glu Asn
            420                 425                 430

Asp Pro Thr His Ile Gln Leu Arg Glu Glu Val Ser Thr Trp Asn Ser
        435                 440                 445

Arg Ile Leu Lys Arg Thr Ala Ile Thr Ile Cys Gly Phe Gly Phe Leu
    450                 455                 460

Leu Phe Ile Cys Lys Leu Thr Phe Gln Arg Lys
465                 470                 475


<210> 5357
<211> 148
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ASZ1; "
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<220>
<221> source
<223> /note="Gene Name:
ankyrin repeat, SAM and basic leu zipper
domain containing 1; "

<220>
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<223> /note="ENSP ID: ENSP00000389791"

<400> 5357
Met Ala Ala Ser Ala Leu Arg Gly Leu Pro Val Ala Gly Gly Gly Glu
1 5 10 15

Ser Ser Glu Ser Glu Asp Asp Gly Trp Glu Ile Gly Tyr Leu Asp Arg
20 25 30

Thr Ser Gln Lys Leu Lys Arg Leu Leu Pro Ile Glu Glu Lys Lys Glu
35 40 45

Lys Phe Lys Lys Ala Met Thr Ile Gly Asp Val Ser Leu Val Gln Glu
50 55 60

Leu Leu Asp Ser Gly Ile Ser Val Asp Ser Asn Phe Gln Tyr Gly Trp
65 70 75 80

Thr Pro Leu Met Tyr Ala Ala Ser Val Ala Asn Ala Glu Leu Val Arg
85 90 95

Val Leu Leu Asp Arg Gly Ala Asn Ala Ser Phe Glu Lys Asp Lys Gln
100 105 110

Ser Ile Leu Ile Thr Ala Cys Ser Ala His Gly Ser Glu Glu Gln Ile
115 120 125

Leu Lys Cys Val Glu Leu Leu Leu Ser Arg Asn Ala Asp Pro Asn Val
130 135 140

Ala Cys Arg Leu
145

<210> 5358
<211> 44
<212> PRT
<213> Homo sapiens

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<220>
<221> source
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ankyrin repeat, SAM and basic leu zipper
domain containing 1; "

<220>
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<400> 5358
Met Thr Ile Gly Asp Val Ser Leu Val Gln Glu Leu Leu Asp Ser Gly
1 5 10 15

Ile Ser Val Asp Ser Asn Phe Gln Tyr Gly Trp Thr Pro Leu Met Tyr
20 25 30

Ala Ala Ser Val Ala Asn Ala Glu Leu Val Arg Val
35 40

<210> 5359
<211> 763
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
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<223> /note="Gene Name:
ankyrin-repeat and fibronectin type III
domain containing 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q8N957; "

<220>
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<400> 5359
Met Glu Ala Ser Leu Thr Arg Arg Leu Leu Phe Lys Asp Arg His Phe
1 5 10 15

Thr Cys Ser Lys Ile Ile Gly Arg Arg Phe Ala Cys Phe Ala Gln Arg
20 25 30

Leu Ser His Arg Arg Lys Gln Ser Gln Cys Asp Leu Leu Asn Glu Ser
35 40 45

Thr Gly Gln Leu Pro Thr Thr Cys Ser Ser Ala Ala Ser Asn Ser Ile
50 55 60

Asn Trp Asn Cys Arg Val Lys Met Thr Gln Gln Met Gln Asn Leu His
65 70 75 80

Leu Cys Gln Ser Lys Lys His Ser Ala Pro Ser Ser Pro Asn Ala Ala
85 90 95

Lys Arg Leu Tyr Arg Asn Leu Ser Glu Lys Leu Lys Gly Ser His Ser
100 105 110

Ser Phe Asp Glu Ala Tyr Phe Arg Thr Arg Thr Asp Arg Leu Ser Leu
115 120 125

Arg Lys Thr Ser Val Asn Phe Gln Gly Asn Glu Ala Met Phe Glu Ala
130 135 140

Val Glu Gln Gln Asp Met Asp Ala Val Gln Ile Leu Leu Tyr Gln Tyr
145 150 155 160

Thr Pro Glu Glu Leu Asp Leu Asn Thr Pro Asn Ser Glu Gly Leu Thr
165 170 175

Pro Leu Asp Ile Ala Ile Met Thr Asn Asn Val Pro Ile Ala Arg Ile
180 185 190

Leu Leu Arg Thr Gly Ala Arg Glu Ser Pro His Phe Val Ser Leu Glu
195 200 205

Ser Arg Ala Met His Leu Asn Thr Leu Val Gln Glu Ala Gln Glu Arg
210 215 220

```
Val Ser Glu Leu Ser Ala Gln Val Glu Asn Glu Gly Phe Thr Leu Asp
225                 230                 235                 240

Asn Thr Glu Lys Glu Lys Gln Leu Lys Ala Trp Glu Trp Arg Tyr Arg
                245                 250                 255

Leu Tyr Arg Arg Met Lys Thr Gly Phe Glu His Ala Arg Ala Pro Glu
            260                 265                 270

Met Pro Thr Asn Val Cys Leu Met Val Thr Ser Ser Thr Ser Leu Thr
        275                 280                 285

Val Ser Phe Gln Glu Pro Leu Ser Val Asn Ala Ala Val Val Thr Arg
    290                 295                 300

Tyr Lys Val Glu Trp Ser Met Ser Glu Asp Phe Ser Pro Leu Ala Gly
305                 310                 315                 320

Glu Ile Ile Met Asp Asn Leu Gln Thr Leu Arg Cys Thr Ile Thr Gly
                325                 330                 335

Leu Thr Met Gly Gln Gln Tyr Phe Val Gln Val Ser Ala Tyr Asn Met
            340                 345                 350

Lys Gly Trp Gly Pro Ala Gln Thr Thr Thr Pro Ala Cys Ala Ser Pro
        355                 360                 365

Ser Asn Trp Lys Asp Tyr Asp Asp Arg Glu Pro Arg His Lys Gly Gln
    370                 375                 380

Ser Glu Val Leu Glu Gly Leu Leu Gln Gln Val Arg Ala Leu His Gln
385                 390                 395                 400

His Tyr Ser Cys Arg Glu Ser Thr Lys Leu Gln Thr Thr Gly Arg Lys
                405                 410                 415

Gln Ser Val Ser Arg Ser Leu Lys His Leu Phe His Ser Ser Asn Lys
            420                 425                 430

Phe Val Lys Thr Leu Lys Arg Gly Leu Tyr Ile Ala Val Ile Phe Tyr
        435                 440                 445

Tyr Lys Asp Asn Ile Leu Val Thr Asn Glu Asp Gln Val Pro Ile Val
```

```
    450                 455                 460

Glu Ile Asp Asp Ser His Thr Ser Ser Ile Thr Gln Asp Phe Leu Trp
465                 470                 475                 480

Phe Thr Lys Leu Ser Cys Met Trp Glu Asp Ile Arg Trp Leu Arg Gln
                485                 490                 495

Ser Ile Pro Ile Ser Ser Ser Ser Ser Thr Val Leu Gln Thr Arg Gln
            500                 505                 510

Lys Met Leu Ala Ala Thr Ala Gln Leu Gln Asn Leu Leu Gly Thr His
        515                 520                 525

Asn Leu Gly Arg Val Tyr Tyr Glu Pro Ile Lys Asp Arg His Gly Asn
    530                 535                 540

Ile Leu Ile Val Thr Ile Arg Glu Val Glu Met Leu Tyr Ser Phe Phe
545                 550                 555                 560

Asn Gly Lys Trp Met Gln Ile Ser Lys Leu Gln Ser Gln Arg Lys Ser
                565                 570                 575

Leu Ser Thr Pro Glu Glu Pro Thr Ala Leu Asp Ile Leu Leu Ile Thr
            580                 585                 590

Ile Gln Asp Ile Leu Ser Tyr His Lys Arg Ser His Gln Arg Leu Phe
        595                 600                 605

Pro Gly Leu Tyr Leu Gly Tyr Leu Lys Leu Cys Ser Ser Val Asp Gln
    610                 615                 620

Ile Lys Val Leu Val Thr Gln Lys Leu Pro Asn Ile Leu Cys His Val
625                 630                 635                 640

Lys Ile Arg Glu Asn Asn Asn Ile Ser Arg Glu Glu Trp Glu Trp Ile
                645                 650                 655

Gln Lys Leu Ser Gly Ser Glu Ser Met Glu Ser Val Asp His Thr Ser
            660                 665                 670

Asp Cys Pro Met Gln Leu Phe Phe Tyr Glu Leu Gln Met Ala Val Lys
        675                 680                 685
```

```
Ala Leu Leu Gln Gln Ile Asn Ile Pro Leu His Gln Ala Arg Asn Phe
    690                 695                 700

Arg Leu Tyr Thr Gln Glu Val Leu Glu Met Gly His Asn Val Ser Phe
705                 710                 715                 720

Leu Leu Leu Leu Pro Ala Ser Asp Asp Val Cys Thr Ala Pro Gly Gln
                725                 730                 735

Asn Asn Pro Tyr Thr Pro His Ser Gly Phe Leu Asn Leu Pro Leu Gln
            740                 745                 750

Met Phe Glu Leu Gly Ile Val Ala Cys Phe Thr
        755                 760


<210> 5360
<211> 1149
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1168; "

<220>
<221> source
<223> /note="Gene Symbol: ANKFN1; "

<220>
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<223> /note="Gene Name:
      ankyrin-repeat and fibronectin type III
      domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000454224"

<400> 5360
Met Glu Ala Ser Leu Thr Arg Arg Leu Leu Phe Lys Asp Arg His Phe
1               5                   10                  15

Thr Cys Ser Lys Ile Ile Gly Arg Arg Phe Ala Cys Phe Ala Gln Arg
            20                  25                  30

Leu Ser His Arg Arg Lys Gln Ser Gln Cys Asp Leu Leu Asn Glu Ser
        35                  40                  45
```

```
Thr Gly Gln Leu Pro Thr Thr Cys Ser Ser Ala Ala Ser Asn Ser Ile
    50                  55                  60

Asn Trp Asn Cys Arg Val Lys Met Thr Gln Gln Met Gln Asn Leu His
65                  70                  75                  80

Leu Cys Gln Ser Lys Lys His Ser Ala Pro Ser Ser Pro Asn Ala Ala
                85                  90                  95

Lys Arg Leu Tyr Arg Asn Leu Ser Glu Lys Leu Lys Gly Ser His Ser
            100                 105                 110

Ser Phe Asp Glu Ala Tyr Phe Arg Thr Arg Thr Asp Arg Leu Ser Leu
        115                 120                 125

Arg Lys Thr Ser Val Asn Phe Gln Gly Asn Glu Ala Met Phe Glu Ala
    130                 135                 140

Val Glu Gln Gln Asp Met Asp Ala Val Gln Ile Leu Leu Tyr Gln Tyr
145                 150                 155                 160

Thr Pro Glu Glu Leu Asp Leu Asn Thr Pro Asn Ser Glu Gly Leu Thr
                165                 170                 175

Pro Leu Asp Ile Ala Ile Met Thr Asn Asn Val Pro Ile Ala Arg Ile
            180                 185                 190

Leu Leu Arg Thr Gly Ala Arg Glu Ser Pro His Phe Val Ser Leu Glu
        195                 200                 205

Ser Arg Ala Met His Leu Asn Thr Leu Val Gln Glu Ala Gln Glu Arg
    210                 215                 220

Val Ser Glu Leu Ser Ala Gln Val Glu Asn Glu Gly Phe Thr Leu Asp
225                 230                 235                 240

Asn Thr Glu Lys Glu Lys Gln Leu Lys Ala Trp Glu Trp Arg Tyr Arg
                245                 250                 255

Leu Tyr Arg Arg Met Lys Thr Gly Phe Glu His Ala Arg Ala Pro Glu
            260                 265                 270
```

```
Met Pro Thr Asn Val Cys Leu Met Val Thr Ser Ser Thr Ser Leu Thr
        275                 280                 285

Val Ser Phe Gln Glu Pro Leu Ser Val Asn Ala Ala Val Val Thr Arg
    290                 295                 300

Tyr Lys Val Glu Trp Ser Met Ser Glu Asp Phe Ser Pro Leu Ala Gly
305                 310                 315                 320

Glu Ile Ile Met Asp Asn Leu Gln Thr Leu Arg Cys Thr Ile Thr Gly
                325                 330                 335

Leu Thr Met Gly Gln Gln Tyr Phe Val Gln Val Ser Ala Tyr Asn Met
            340                 345                 350

Lys Gly Trp Gly Pro Ala Gln Thr Thr Thr Pro Ala Cys Ala Ser Pro
        355                 360                 365

Ser Asn Trp Lys Asp Tyr Asp Asp Arg Glu Pro Arg His Lys Gly Gln
    370                 375                 380

Ser Glu Val Leu Glu Gly Leu Leu Gln Gln Val Arg Ala Leu His Gln
385                 390                 395                 400

His Tyr Ser Cys Arg Glu Ser Thr Lys Leu Gln Thr Thr Gly Arg Lys
                405                 410                 415

Gln Ser Val Ser Arg Ser Leu Lys His Leu Phe His Ser Ser Asn Lys
            420                 425                 430

Phe Val Lys Thr Leu Lys Arg Gly Leu Tyr Ile Ala Val Ile Phe Tyr
        435                 440                 445

Tyr Lys Asp Asn Ile Leu Val Thr Asn Glu Asp Gln Val Pro Ile Val
    450                 455                 460

Glu Ile Asp Asp Ser His Thr Ser Ser Ile Thr Gln Asp Phe Leu Trp
465                 470                 475                 480

Phe Thr Lys Leu Ser Cys Met Trp Glu Asp Ile Arg Trp Leu Arg Gln
                485                 490                 495

Ser Ile Pro Ile Ser Ser Ser Ser Ser Thr Val Leu Gln Thr Arg Gln
```

```
            500                 505                 510

Lys Met Leu Ala Ala Thr Ala Gln Leu Gln Asn Leu Leu Gly Thr His
        515                 520                 525

Asn Leu Gly Arg Val Tyr Tyr Glu Pro Ile Lys Asp Arg His Gly Asn
    530                 535                 540

Ile Leu Ile Val Thr Ile Arg Glu Val Glu Met Leu Tyr Ser Phe Phe
545                 550                 555                 560

Asn Gly Lys Trp Met Gln Ile Ser Lys Leu Gln Ser Gln Arg Lys Ser
                565                 570                 575

Leu Ser Thr Pro Glu Glu Pro Thr Ala Leu Asp Ile Leu Leu Ile Thr
            580                 585                 590

Ile Gln Asp Ile Leu Ser Tyr His Lys Arg Ser His Gln Arg Leu Phe
        595                 600                 605

Pro Gly Leu Tyr Leu Gly Tyr Leu Lys Leu Cys Ser Ser Val Asp Gln
    610                 615                 620

Ile Lys Val Leu Val Thr Gln Lys Leu Pro Asn Ile Leu Cys His Val
625                 630                 635                 640

Lys Ile Arg Glu Asn Asn Asn Ile Ser Arg Glu Glu Trp Glu Trp Ile
                645                 650                 655

Gln Lys Leu Ser Gly Ser Glu Ser Met Glu Ser Val Asp His Thr Ser
            660                 665                 670

Asp Cys Pro Met Gln Leu Phe Phe Tyr Glu Leu Gln Met Ala Val Lys
        675                 680                 685

Ala Leu Leu Gln Gln Ile Asn Ile Pro Leu His Gln Ala Arg Asn Phe
    690                 695                 700

Arg Leu Tyr Thr Gln Glu Val Leu Glu Met Gly His Asn Val Ser Phe
705                 710                 715                 720

Leu Leu Leu Leu Pro Ala Ser Asp Asp Val Cys Thr Ala Pro Gly Gln
                725                 730                 735
```

```
Asn Asn Pro Tyr Thr Pro His Ser Gly Phe Leu Asn Leu Pro Leu Gln
            740                 745                 750

Met Phe Glu Leu Val His Phe Cys Ser Tyr Arg Glu Lys Phe Ile Ser
        755                 760                 765

Leu Tyr Cys Arg Leu Ser Ala Val Val Glu Leu Asp Ser Leu Asn Thr
    770                 775                 780

Gln Gln Ser Leu Arg Glu Ala Ile Ser Asp Ser Glu Val Ala Ala Ala
785                 790                 795                 800

Lys Gln Arg His Gln Gln Val Leu Asp Phe Ile Gln Gln Ile Asp Glu
                805                 810                 815

Val Trp Arg Glu Met Arg Trp Ile Met Asp Ala Leu Gln Tyr Ala Arg
            820                 825                 830

Tyr Lys Gln Pro Val Ser Gly Leu Pro Ile Thr Lys Leu Ile Asp Pro
        835                 840                 845

Ser Asp Glu Gln Ser Leu Lys Lys Ile Asn Ser Thr Ser Ser Ser His
    850                 855                 860

Ile Asp Cys Leu Pro Ser Pro Pro Pro Ser Pro Glu Met His Arg Arg
865                 870                 875                 880

Lys Thr Val Ser Asp Ser Gln Pro Cys Ser Asp Glu Glu Ala Cys Ser
                885                 890                 895

Glu Val Phe Leu Pro Thr Asn Ser Asp Tyr Asp Ser Ser Asp Ala Leu
            900                 905                 910

Ser Pro Arg Asp Leu Asp Leu Val Tyr Leu Ser Ser His Asp Ile Ala
        915                 920                 925

Gln Gln Thr Leu Ser Gly Leu Ser Gly Ser Ala Pro Asp Val Leu Gln
    930                 935                 940

Val His Asp Val Lys Thr Pro Leu Gly Pro Gly Gln Asp Pro Gln Gly
945                 950                 955                 960
```

```
Glu Gly Pro Asn Pro Asp His Ser Cys Ala Glu Phe Leu His Ser Leu
                965                 970                 975

Thr Leu Thr Gly Phe Thr Pro Lys Asn His Ala Lys Thr Val Ser Gly
            980                 985                 990

Gly Arg Pro Pro Leu Gly Phe Leu  Gly Lys Arg Lys Pro  Gly Lys
His
        995                 1000                1005

Pro His  Tyr Gly Gly Phe Ser  Arg His His Arg Trp  Leu Arg Ile
    1010                1015                1020

His Ser  Glu Thr Gln Ser Leu  Ser Leu Ser Glu Gly  Ile Tyr Thr
    1025                1030                1035

Gln His  Leu Ser Gln Ala Cys  Gly Leu Ala Gln Glu  Pro Lys Glu
    1040                1045                1050

Ala Lys  Arg Ala Gly Pro Ala  Leu Asp Asp Pro Arg  Gly Leu Thr
    1055                1060                1065

Leu Ala  His Ala Ala Ser Leu  Pro Glu Glu Arg Asn  Ser Ser Leu
    1070                1075                1080

Gln Asp  Ala Arg Pro Ser Val  Arg Arg Leu Tyr Val  Glu Pro Tyr
    1085                1090                1095

Ala Ala  Ala Val Val Ala Gln  Asp Glu Lys Pro Trp  Ala Ser Leu
    1100                1105                1110

Ser Pro  Pro Ser Gly Gly Arg  Ile Thr Leu Pro Ser  Pro Thr Gly
    1115                1120                1125

Pro Asp  Val Ser Gln Glu Gly  Pro Thr Ala Ser Pro  Met Ser Glu
    1130                1135                1140

Ile Leu  Ser Ser Met Leu
    1145
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<210> 5361
<211> 173
<212> PRT

<213> Homo sapiens

<220>
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ankyrin-repeat and fibronectin type III
domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000458227"

<400> 5361

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Met Pro Pro Gly Ile Pro Thr Lys Cys Ala Lys Gln Pro His Ser Gly
1               5                  10                  15

Thr Ala Gly Leu Glu Glu Gly Ala Glu Ala Glu Arg Leu Leu Phe Lys
            20                  25                  30

Asp Arg His Phe Thr Cys Ser Lys Ile Ile Gly Arg Arg Phe Ala Cys
        35                  40                  45

Phe Ala Gln Arg Leu Ser His Arg Arg Lys Gln Ser Gln Cys Asp Leu
    50                  55                  60

Leu Asn Glu Ser Thr Gly Gln Leu Pro Thr Thr Cys Ser Ser Ala Ala
65                  70                  75                  80

Ser Asn Ser Ile Asn Trp Asn Cys Arg Val Lys Met Thr Gln Gln Met
                85                  90                  95

Gln Asn Leu His Leu Cys Gln Ser Lys Lys His Ser Ala Pro Ser Ser
            100                 105                 110

Pro Asn Ala Ala Lys Arg Leu Tyr Arg Asn Leu Ser Glu Lys Leu Lys
        115                 120                 125

Gly Ser His Ser Ser Phe Asp Glu Ala Tyr Phe Arg Thr Arg Thr Asp
    130                 135                 140
```

```
Arg Leu Ser Leu Arg Lys Thr Ser Val Asn Phe Gln Gly Asn Glu Ala
145                 150                 155                 160


Met Phe Glu Ala Val Glu Gln Gln Asp Met Asp Ala Val
                165                 170


<210> 5362
<211> 346
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
      annexin A1; "

<220>
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<223> /note="Uniprot ID:  P04083; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000257497"

<400> 5362
Met Ala Met Val Ser Glu Phe Leu Lys Gln Ala Trp Phe Ile Glu Asn
1               5                   10                  15


Glu Glu Gln Glu Tyr Val Gln Thr Val Lys Ser Ser Lys Gly Gly Pro
            20                  25                  30


Gly Ser Ala Val Ser Pro Tyr Pro Thr Phe Asn Pro Ser Ser Asp Val
        35                  40                  45


Ala Ala Leu His Lys Ala Ile Met Val Lys Gly Val Asp Glu Ala Thr
    50                  55                  60


Ile Ile Asp Ile Leu Thr Lys Arg Asn Asn Ala Gln Arg Gln Gln Ile
65                  70                  75                  80


Lys Ala Ala Tyr Leu Gln Glu Thr Gly Lys Pro Leu Asp Glu Thr Leu
                85                  90                  95
```

```
Lys Lys Ala Leu Thr Gly His Leu Glu Glu Val Val Leu Ala Leu Leu
            100                 105                 110

Lys Thr Pro Ala Gln Phe Asp Ala Asp Glu Leu Arg Ala Ala Met Lys
        115                 120                 125

Gly Leu Gly Thr Asp Glu Asp Thr Leu Ile Glu Ile Leu Ala Ser Arg
    130                 135                 140

Thr Asn Lys Glu Ile Arg Asp Ile Asn Arg Val Tyr Arg Glu Glu Leu
145                 150                 155                 160

Lys Arg Asp Leu Ala Lys Asp Ile Thr Ser Asp Thr Ser Gly Asp Phe
                165                 170                 175

Arg Asn Ala Leu Leu Ser Leu Ala Lys Gly Asp Arg Ser Glu Asp Phe
            180                 185                 190

Gly Val Asn Glu Asp Leu Ala Asp Ser Asp Ala Arg Ala Leu Tyr Glu
        195                 200                 205

Ala Gly Glu Arg Arg Lys Gly Thr Asp Val Asn Val Phe Asn Thr Ile
    210                 215                 220

Leu Thr Thr Arg Ser Tyr Pro Gln Leu Arg Arg Val Phe Gln Lys Tyr
225                 230                 235                 240

Thr Lys Tyr Ser Lys His Asp Met Asn Lys Val Leu Asp Leu Glu Leu
                245                 250                 255

Lys Gly Asp Ile Glu Lys Cys Leu Thr Ala Ile Val Lys Cys Ala Thr
            260                 265                 270

Ser Lys Pro Ala Phe Phe Ala Glu Lys Leu His Gln Ala Met Lys Gly
        275                 280                 285

Val Gly Thr Arg His Lys Ala Leu Ile Arg Ile Met Val Ser Arg Ser
    290                 295                 300

Glu Ile Asp Met Asn Asp Ile Lys Ala Phe Tyr Gln Lys Met Tyr Gly
305                 310                 315                 320
```

```
Ile Ser Leu Cys Gln Ala Ile Leu Asp Glu Thr Lys Gly Asp Tyr Glu
                325                 330                 335

Lys Ile Leu Val Ala Leu Cys Gly Gly Asn
            340                 345


<210> 5363
<211> 346
<212> PRT
<213> Homo sapiens

<220>
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      annexin A1; "

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<223> /note="Uniprot ID:  P04083; "

<220>
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<223> /note="ENSP ID: ENSP00000366109"

<400> 5363
Met Ala Met Val Ser Glu Phe Leu Lys Gln Ala Trp Phe Ile Glu Asn
1               5                   10                  15

Glu Glu Gln Glu Tyr Val Gln Thr Val Lys Ser Ser Lys Gly Gly Pro
            20                  25                  30

Gly Ser Ala Val Ser Pro Tyr Pro Thr Phe Asn Pro Ser Ser Asp Val
        35                  40                  45

Ala Ala Leu His Lys Ala Ile Met Val Lys Gly Val Asp Glu Ala Thr
    50                  55                  60

Ile Ile Asp Ile Leu Thr Lys Arg Asn Asn Ala Gln Arg Gln Gln Ile
65                  70                  75                  80

Lys Ala Ala Tyr Leu Gln Glu Thr Gly Lys Pro Leu Asp Glu Thr Leu
```

```
                85                  90                  95

Lys Lys Ala Leu Thr Gly His Leu Glu Glu Val Val Leu Ala Leu Leu
            100                 105                 110

Lys Thr Pro Ala Gln Phe Asp Ala Asp Glu Leu Arg Ala Ala Met Lys
        115                 120                 125

Gly Leu Gly Thr Asp Glu Asp Thr Leu Ile Glu Ile Leu Ala Ser Arg
    130                 135                 140

Thr Asn Lys Glu Ile Arg Asp Ile Asn Arg Val Tyr Arg Glu Glu Leu
145                 150                 155                 160

Lys Arg Asp Leu Ala Lys Asp Ile Thr Ser Asp Thr Ser Gly Asp Phe
                165                 170                 175

Arg Asn Ala Leu Leu Ser Leu Ala Lys Gly Asp Arg Ser Glu Asp Phe
            180                 185                 190

Gly Val Asn Glu Asp Leu Ala Asp Ser Asp Ala Arg Ala Leu Tyr Glu
        195                 200                 205

Ala Gly Glu Arg Arg Lys Gly Thr Asp Val Asn Val Phe Asn Thr Ile
    210                 215                 220

Leu Thr Thr Arg Ser Tyr Pro Gln Leu Arg Arg Val Phe Gln Lys Tyr
225                 230                 235                 240

Thr Lys Tyr Ser Lys His Asp Met Asn Lys Val Leu Asp Leu Glu Leu
                245                 250                 255

Lys Gly Asp Ile Glu Lys Cys Leu Thr Ala Ile Val Lys Cys Ala Thr
            260                 265                 270

Ser Lys Pro Ala Phe Phe Ala Glu Lys Leu His Gln Ala Met Lys Gly
        275                 280                 285

Val Gly Thr Arg His Lys Ala Leu Ile Arg Ile Met Val Ser Arg Ser
    290                 295                 300

Glu Ile Asp Met Asn Asp Ile Lys Ala Phe Tyr Gln Lys Met Tyr Gly
305                 310                 315                 320
```

```
Ile Ser Leu Cys Gln Ala Ile Leu Asp Glu Thr Lys Gly Asp Tyr Glu
                325                 330                 335


Lys Ile Leu Val Ala Leu Cys Gly Gly Asn
            340                 345


<210> 5364
<211> 204
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
      annexin A1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000412489"

<400> 5364
Met Asn Leu Ile Leu Arg Tyr Thr Phe Ser Lys Met Ala Met Val Ser
1               5                   10                  15


Glu Phe Leu Lys Gln Ala Trp Phe Ile Glu Asn Glu Glu Gln Glu Tyr
            20                  25                  30


Val Gln Thr Val Lys Ser Ser Lys Gly Gly Pro Gly Ser Ala Val Ser
        35                  40                  45


Pro Tyr Pro Thr Phe Asn Pro Ser Ser Asp Val Ala Ala Leu His Lys
    50                  55                  60


Ala Ile Met Val Lys Gly Val Asp Glu Ala Thr Ile Ile Asp Ile Leu
65                  70                  75                  80


Thr Lys Arg Asn Asn Ala Gln Arg Gln Gln Ile Lys Ala Ala Tyr Leu
                85                  90                  95
```

```
Gln Glu Thr Gly Lys Pro Leu Asp Glu Thr Leu Lys Lys Ala Leu Thr
            100                 105                 110

Gly His Leu Glu Glu Val Val Leu Ala Leu Leu Lys Thr Pro Ala Gln
        115                 120                 125

Phe Asp Ala Asp Glu Leu Arg Ala Ala Met Lys Gly Leu Gly Thr Asp
    130                 135                 140

Glu Asp Thr Leu Ile Glu Ile Leu Ala Ser Arg Thr Asn Lys Glu Ile
145                 150                 155                 160

Arg Asp Ile Asn Arg Val Tyr Arg Glu Glu Leu Lys Arg Asp Leu Ala
                165                 170                 175

Lys Asp Ile Thr Ser Asp Thr Ser Gly Asp Phe Arg Asn Ala Leu Leu
            180                 185                 190

Ser Leu Ala Lys Gly Asp Arg Ser Glu Asp Phe Gly
        195                 200


<210> 5365
<211> 115
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1169; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA1; "

<220>
<221> source
<223> /note="Gene Name:
      annexin A1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000414013"

<400> 5365
Met Ala Met Val Ser Glu Phe Leu Lys Gln Ala Trp Phe Ile Glu Asn
1               5                   10                  15

Glu Glu Gln Glu Tyr Val Gln Thr Val Lys Ser Ser Lys Gly Gly Pro
            20                  25                  30
```

```
Gly Ser Ala Val Ser Pro Tyr Pro Thr Phe Asn Pro Ser Ser Asp Val
        35                  40                  45

Ala Ala Leu His Lys Ala Ile Met Val Lys Gly Val Asp Glu Ala Thr
    50                  55                  60

Ile Ile Asp Ile Leu Thr Lys Arg Asn Asn Ala Gln Arg Gln Gln Ile
65                  70                  75                  80

Lys Ala Ala Tyr Leu Gln Glu Thr Gly Lys Pro Leu Asp Glu Thr Leu
                85                  90                  95

Lys Lys Ala Leu Thr Gly His Leu Glu Glu Val Val Leu Ala Leu Leu
            100                 105                 110

Lys Thr Pro
        115


<210> 5366
<211> 324
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1170; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA10; "

<220>
<221> source
<223> /note="Gene Name:
      annexin A10; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9UJ72; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000352248"

<400> 5366
Met Phe Cys Gly Asp Tyr Val Gln Gly Thr Ile Phe Pro Ala Pro Asn
1               5                   10                  15
```

```
Phe Asn Pro Ile Met Asp Ala Gln Met Leu Gly Gly Ala Leu Gln Gly
            20                  25                  30

Phe Asp Cys Asp Lys Asp Met Leu Ile Asn Ile Leu Thr Gln Arg Cys
        35                  40                  45

Asn Ala Gln Arg Met Met Ile Ala Glu Ala Tyr Gln Ser Met Tyr Gly
    50                  55                  60

Arg Asp Leu Ile Gly Asp Met Arg Glu Gln Leu Ser Asp His Phe Lys
65                  70                  75                  80

Asp Val Met Ala Gly Leu Met Tyr Pro Pro Pro Leu Tyr Asp Ala His
                85                  90                  95

Glu Leu Trp His Ala Met Lys Gly Val Gly Thr Asp Glu Asn Cys Leu
            100                 105                 110

Ile Glu Ile Leu Ala Ser Arg Thr Asn Gly Glu Ile Phe Gln Met Arg
        115                 120                 125

Glu Ala Tyr Cys Leu Gln Tyr Ser Asn Asn Leu Gln Glu Asp Ile Tyr
    130                 135                 140

Ser Glu Thr Ser Gly His Phe Arg Asp Thr Leu Met Asn Leu Val Gln
145                 150                 155                 160

Gly Thr Arg Glu Glu Gly Tyr Thr Asp Pro Ala Met Ala Ala Gln Asp
                165                 170                 175

Ala Met Val Leu Trp Glu Ala Cys Gln Gln Lys Thr Gly Glu His Lys
            180                 185                 190

Thr Met Leu Gln Met Ile Leu Cys Asn Lys Ser Tyr Gln Gln Leu Arg
        195                 200                 205

Leu Val Phe Gln Glu Phe Gln Asn Ile Ser Gly Gln Asp Met Val Asp
    210                 215                 220

Ala Ile Asn Glu Cys Tyr Asp Gly Tyr Phe Gln Glu Leu Leu Val Ala
225                 230                 235                 240

Ile Val Leu Cys Val Arg Asp Lys Pro Ala Tyr Phe Ala Tyr Arg Leu
```

```
                245                 250                 255

Tyr Ser Ala Ile His Asp Phe Gly Phe His Asn Lys Thr Val Ile Arg
            260                 265                 270

Ile Leu Ile Ala Arg Ser Glu Ile Asp Leu Leu Thr Ile Arg Lys Arg
        275                 280                 285

Tyr Lys Glu Arg Tyr Gly Lys Ser Leu Phe His Asp Ile Arg Asn Phe
    290                 295                 300

Ala Ser Gly His Tyr Lys Lys Ala Leu Leu Ala Ile Cys Ala Gly Asp
305                 310                 315                 320

Ala Glu Asp Tyr
```

<210> 5367
<211> 323
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1170; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA10; "

<220>
<221> source
<223> /note="Gene Name:
annexin A10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000483710"

<400> 5367

```
Met Phe Cys Gly Asp Tyr Val Gln Gly Thr Ile Phe Pro Ala Pro Asn
1               5                   10                  15

Phe Asn Pro Ile Met Asp Ala Gln Met Leu Gly Gly Ala Leu Gln Gly
            20                  25                  30

Phe Asp Cys Asp Lys Asp Met Leu Ile Asn Ile Leu Thr Gln Arg Cys
        35                  40                  45
```

```
Asn Ala Gln Arg Met Met Ile Ala Glu Ala Tyr Gln Ser Met Tyr Gly
    50                  55                  60

Arg Asp Leu Ile Gly Asp Met Arg Ala Ala Phe Gly Ser Leu Gln Arg
65                  70                  75                  80

Cys Asp Gly Trp Leu Met Tyr Pro Pro Pro Leu Tyr Asp Ala His Glu
                85                  90                  95

Leu Trp His Ala Met Lys Gly Val Gly Thr Asp Glu Asn Cys Leu Ile
            100                 105                 110

Glu Ile Leu Ala Ser Arg Thr Asn Gly Glu Ile Phe Gln Met Arg Glu
        115                 120                 125

Ala Tyr Cys Leu Gln Tyr Ser Asn Asn Leu Gln Glu Asp Ile Tyr Ser
    130                 135                 140

Glu Thr Ser Gly His Phe Arg Asp Thr Leu Met Asn Leu Val Gln Gly
145                 150                 155                 160

Thr Arg Glu Glu Gly Tyr Thr Asp Pro Ala Met Ala Ala Gln Asp Ala
                165                 170                 175

Met Val Leu Trp Glu Ala Cys Gln Gln Lys Thr Gly Glu His Lys Thr
            180                 185                 190

Met Leu Gln Met Ile Leu Cys Asn Lys Ser Tyr Gln Gln Leu Arg Leu
        195                 200                 205

Val Phe Gln Glu Phe Gln Asn Ile Ser Gly Gln Asp Met Val Asp Ala
    210                 215                 220

Ile Asn Glu Cys Tyr Asp Gly Tyr Phe Gln Glu Leu Leu Val Ala Ile
225                 230                 235                 240

Val Leu Cys Val Arg Asp Lys Pro Ala Tyr Phe Ala Tyr Arg Leu Tyr
                245                 250                 255

Ser Ala Ile His Asp Phe Gly Phe His Asn Lys Thr Val Ile Arg Ile
            260                 265                 270
```

```
Leu Ile Ala Arg Ser Glu Ile Asp Leu Leu Thr Ile Arg Lys Arg Tyr
        275                 280                 285

Lys Glu Arg Tyr Gly Lys Ser Leu Phe His Asp Ile Arg Asn Phe Ala
    290                 295                 300

Ser Gly His Tyr Lys Lys Ala Leu Leu Ala Ile Cys Ala Gly Asp Ala
305                 310                 315                 320

Glu Asp Tyr
```

<210> 5368
<211> 472
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1171; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA11; "

<220>
<221> source
<223> /note="Gene Name:
annexin A11; "

<220>
<221> source
<223> /note="Uniprot ID: P50995; "

<220>
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<223> /note="ENSP ID: ENSP00000265447"

<400> 5368

```
Met Pro Pro Ile Gly Leu Asp Asn Val Ala Thr Tyr Ala Gly Gln Phe
1               5                  10                  15

Asn Gln Asp Tyr Leu Ser Gly Met Ala Ala Asn Met Ser Gly Thr Phe
            20                  25                  30

Gly Gly Ala Asn Met Pro Asn Leu Tyr Pro Gly Ala Pro Gly Ala Gly
        35                  40                  45

Tyr Pro Pro Val Pro Pro Gly Gly Phe Gly Gln Pro Pro Ser Ala Gln
    50                  55                  60
```

```
Gln Pro Val Pro Pro Tyr Gly Met Tyr Pro Pro Pro Gly Gly Asn Pro
65                  70                  75                  80

Pro Ser Arg Met Pro Ser Tyr Pro Pro Tyr Pro Gly Ala Pro Val Pro
                85                  90                  95

Gly Gln Pro Met Pro Pro Pro Gly Gln Gln Pro Pro Gly Ala Tyr Pro
            100                 105                 110

Gly Gln Pro Pro Val Thr Tyr Pro Gly Gln Pro Pro Val Pro Leu Pro
        115                 120                 125

Gly Gln Gln Gln Pro Val Pro Ser Tyr Pro Gly Tyr Pro Gly Ser Gly
    130                 135                 140

Thr Val Thr Pro Ala Val Pro Pro Thr Gln Phe Gly Ser Arg Gly Thr
145                 150                 155                 160

Ile Thr Asp Ala Pro Gly Phe Asp Pro Leu Arg Asp Ala Glu Val Leu
                165                 170                 175

Arg Lys Ala Met Lys Gly Phe Gly Thr Asp Glu Gln Ala Ile Ile Asp
            180                 185                 190

Cys Leu Gly Ser Arg Ser Asn Lys Gln Arg Gln Gln Ile Leu Leu Ser
        195                 200                 205

Phe Lys Thr Ala Tyr Gly Lys Asp Leu Ile Lys Asp Leu Lys Ser Glu
    210                 215                 220

Leu Ser Gly Asn Phe Glu Lys Thr Ile Leu Ala Leu Met Lys Thr Pro
225                 230                 235                 240

Val Leu Phe Asp Ile Tyr Glu Ile Lys Glu Ala Ile Lys Gly Val Gly
                245                 250                 255

Thr Asp Glu Ala Cys Leu Ile Glu Ile Leu Ala Ser Arg Ser Asn Glu
            260                 265                 270

His Ile Arg Glu Leu Asn Arg Ala Tyr Lys Ala Glu Phe Lys Lys Thr
        275                 280                 285
```

```
Leu Glu Glu Ala Ile Arg Ser Asp Thr Ser Gly His Phe Gln Arg Leu
    290                 295                 300

Leu Ile Ser Leu Ser Gln Gly Asn Arg Asp Glu Ser Thr Asn Val Asp
305                 310                 315                 320

Met Ser Leu Ala Gln Arg Asp Ala Gln Glu Leu Tyr Ala Ala Gly Glu
                325                 330                 335

Asn Arg Leu Gly Thr Asp Glu Ser Lys Phe Asn Ala Val Leu Cys Ser
            340                 345                 350

Arg Ser Arg Ala His Leu Val Ala Val Phe Asn Glu Tyr Gln Arg Met
        355                 360                 365

Thr Gly Arg Asp Ile Glu Lys Ser Ile Cys Arg Glu Met Ser Gly Asp
    370                 375                 380

Leu Glu Glu Gly Met Leu Ala Val Val Lys Cys Leu Lys Asn Thr Pro
385                 390                 395                 400

Ala Phe Phe Ala Glu Arg Leu Asn Lys Ala Met Arg Gly Ala Gly Thr
                405                 410                 415

Lys Asp Arg Thr Leu Ile Arg Ile Met Val Ser Arg Ser Glu Thr Asp
            420                 425                 430

Leu Leu Asp Ile Arg Ser Glu Tyr Lys Arg Met Tyr Gly Lys Ser Leu
        435                 440                 445

Tyr His Asp Ile Ser Gly Asp Thr Ser Gly Asp Tyr Arg Lys Ile Leu
    450                 455                 460

Leu Lys Ile Cys Gly Gly Asn Asp
465                 470


<210> 5369
<211> 505
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1171; "
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<220>
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<223> /note="Gene Symbol: ANXA11; "

<220>
<221> source
<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID: P50995; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000361305"

<400> 5369
Met Ser Tyr Pro Gly Tyr Pro Pro Pro Pro Gly Gly Tyr Pro Pro Ala
1   5   10   15

Ala Pro Gly Gly Gly Pro Trp Gly Gly Ala Ala Tyr Pro Pro Pro Pro
            20   25   30

Ser Met Pro Pro Ile Gly Leu Asp Asn Val Ala Thr Tyr Ala Gly Gln
        35   40   45

Phe Asn Gln Asp Tyr Leu Ser Gly Met Ala Ala Asn Met Ser Gly Thr
    50   55   60

Phe Gly Gly Ala Asn Met Pro Asn Leu Tyr Pro Gly Ala Pro Gly Ala
65   70   75   80

Gly Tyr Pro Pro Val Pro Pro Gly Gly Phe Gly Gln Pro Pro Ser Ala
                85   90   95

Gln Gln Pro Val Pro Pro Tyr Gly Met Tyr Pro Pro Pro Gly Gly Asn
            100   105   110

Pro Pro Ser Arg Met Pro Ser Tyr Pro Pro Tyr Pro Gly Ala Pro Val
        115   120   125

Pro Gly Gln Pro Met Pro Pro Pro Gly Gln Gln Pro Pro Gly Ala Tyr
    130   135   140

Pro Gly Gln Pro Pro Val Thr Tyr Pro Gly Gln Pro Pro Val Pro Leu
145   150   155   160

```
Pro Gly Gln Gln Gln Pro Val Pro Ser Tyr Pro Gly Tyr Pro Gly Ser
                165                 170                 175

Gly Thr Val Thr Pro Ala Val Pro Pro Thr Gln Phe Gly Ser Arg Gly
            180                 185                 190

Thr Ile Thr Asp Ala Pro Gly Phe Asp Pro Leu Arg Asp Ala Glu Val
        195                 200                 205

Leu Arg Lys Ala Met Lys Gly Phe Gly Thr Asp Glu Gln Ala Ile Ile
    210                 215                 220

Asp Cys Leu Gly Ser Arg Ser Asn Lys Gln Arg Gln Gln Ile Leu Leu
225                 230                 235                 240

Ser Phe Lys Thr Ala Tyr Gly Lys Asp Leu Ile Lys Asp Leu Lys Ser
                245                 250                 255

Glu Leu Ser Gly Asn Phe Glu Lys Thr Ile Leu Ala Leu Met Lys Thr
            260                 265                 270

Pro Val Leu Phe Asp Ile Tyr Glu Ile Lys Glu Ala Ile Lys Gly Val
        275                 280                 285

Gly Thr Asp Glu Ala Cys Leu Ile Glu Ile Leu Ala Ser Arg Ser Asn
    290                 295                 300

Glu His Ile Arg Glu Leu Asn Arg Ala Tyr Lys Ala Glu Phe Lys Lys
305                 310                 315                 320

Thr Leu Glu Glu Ala Ile Arg Ser Asp Thr Ser Gly His Phe Gln Arg
                325                 330                 335

Leu Leu Ile Ser Leu Ser Gln Gly Asn Arg Asp Glu Ser Thr Asn Val
            340                 345                 350

Asp Met Ser Leu Ala Gln Arg Asp Ala Gln Glu Leu Tyr Ala Ala Gly
        355                 360                 365

Glu Asn Arg Leu Gly Thr Asp Glu Ser Lys Phe Asn Ala Val Leu Cys
    370                 375                 380
```

```
Ser Arg Ser Arg Ala His Leu Val Ala Val Phe Asn Glu Tyr Gln Arg
385                 390                 395                 400

Met Thr Gly Arg Asp Ile Glu Lys Ser Ile Cys Arg Glu Met Ser Gly
                405                 410                 415

Asp Leu Glu Glu Gly Met Leu Ala Val Val Lys Cys Leu Lys Asn Thr
            420                 425                 430

Pro Ala Phe Phe Ala Glu Arg Leu Asn Lys Ala Met Arg Gly Ala Gly
        435                 440                 445

Thr Lys Asp Arg Thr Leu Ile Arg Ile Met Val Ser Arg Ser Glu Thr
    450                 455                 460

Asp Leu Leu Asp Ile Arg Ser Glu Tyr Lys Arg Met Tyr Gly Lys Ser
465                 470                 475                 480

Leu Tyr His Asp Ile Ser Gly Asp Thr Ser Gly Asp Tyr Arg Lys Ile
                485                 490                 495

Leu Leu Lys Ile Cys Gly Gly Asn Asp
            500                 505


<210> 5370
<211> 505
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1171; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA11; "

<220>
<221> source
<223> /note="Gene Name:
      annexin A11; "

<220>
<221> source
<223> /note="Uniprot ID:  P50995; "

<220>
<221> source
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<223> /note="ENSP ID: ENSP00000398610"

<400> 5370

```
Met Ser Tyr Pro Gly Tyr Pro Pro Pro Pro Gly Gly Tyr Pro Pro Ala
1               5                  10                  15

Ala Pro Gly Gly Gly Pro Trp Gly Gly Ala Ala Tyr Pro Pro Pro Pro
            20                  25                  30

Ser Met Pro Pro Ile Gly Leu Asp Asn Val Ala Thr Tyr Ala Gly Gln
        35                  40                  45

Phe Asn Gln Asp Tyr Leu Ser Gly Met Ala Ala Asn Met Ser Gly Thr
    50                  55                  60

Phe Gly Gly Ala Asn Met Pro Asn Leu Tyr Pro Gly Ala Pro Gly Ala
65                  70                  75                  80

Gly Tyr Pro Pro Val Pro Pro Gly Gly Phe Gly Gln Pro Pro Ser Ala
                85                  90                  95

Gln Gln Pro Val Pro Pro Tyr Gly Met Tyr Pro Pro Pro Gly Gly Asn
            100                 105                 110

Pro Pro Ser Arg Met Pro Ser Tyr Pro Pro Tyr Pro Gly Ala Pro Val
        115                 120                 125

Pro Gly Gln Pro Met Pro Pro Pro Gly Gln Gln Pro Pro Gly Ala Tyr
    130                 135                 140

Pro Gly Gln Pro Pro Val Thr Tyr Pro Gly Gln Pro Pro Val Pro Leu
145                 150                 155                 160

Pro Gly Gln Gln Gln Pro Val Pro Ser Tyr Pro Gly Tyr Pro Gly Ser
                165                 170                 175

Gly Thr Val Thr Pro Ala Val Pro Pro Thr Gln Phe Gly Ser Arg Gly
            180                 185                 190

Thr Ile Thr Asp Ala Pro Gly Phe Asp Pro Leu Arg Asp Ala Glu Val
        195                 200                 205

Leu Arg Lys Ala Met Lys Gly Phe Gly Thr Asp Glu Gln Ala Ile Ile
    210                 215                 220
```

```
Asp Cys Leu Gly Ser Arg Ser Asn Lys Gln Arg Gln Gln Ile Leu Leu
225                 230                 235                 240

Ser Phe Lys Thr Ala Tyr Gly Lys Asp Leu Ile Lys Asp Leu Lys Ser
                245                 250                 255

Glu Leu Ser Gly Asn Phe Glu Lys Thr Ile Leu Ala Leu Met Lys Thr
            260                 265                 270

Pro Val Leu Phe Asp Ile Tyr Glu Ile Lys Glu Ala Ile Lys Gly Val
        275                 280                 285

Gly Thr Asp Glu Ala Cys Leu Ile Glu Ile Leu Ala Ser Arg Ser Asn
    290                 295                 300

Glu His Ile Arg Glu Leu Asn Arg Ala Tyr Lys Ala Glu Phe Lys Lys
305                 310                 315                 320

Thr Leu Glu Glu Ala Ile Arg Ser Asp Thr Ser Gly His Phe Gln Arg
                325                 330                 335

Leu Leu Ile Ser Leu Ser Gln Gly Asn Arg Asp Glu Ser Thr Asn Val
            340                 345                 350

Asp Met Ser Leu Ala Gln Arg Asp Ala Gln Glu Leu Tyr Ala Ala Gly
        355                 360                 365

Glu Asn Arg Leu Gly Thr Asp Glu Ser Lys Phe Asn Ala Val Leu Cys
    370                 375                 380

Ser Arg Ser Arg Ala His Leu Val Ala Val Phe Asn Glu Tyr Gln Arg
385                 390                 395                 400

Met Thr Gly Arg Asp Ile Glu Lys Ser Ile Cys Arg Glu Met Ser Gly
                405                 410                 415

Asp Leu Glu Glu Gly Met Leu Ala Val Val Lys Cys Leu Lys Asn Thr
            420                 425                 430

Pro Ala Phe Phe Ala Glu Arg Leu Asn Lys Ala Met Arg Gly Ala Gly
        435                 440                 445
```

```
Thr Lys Asp Arg Thr Leu Ile Arg Ile Met Val Ser Arg Ser Glu Thr
    450                 455                 460

Asp Leu Leu Asp Ile Arg Ser Glu Tyr Lys Arg Met Tyr Gly Lys Ser
465                 470                 475                 480

Leu Tyr His Asp Ile Ser Gly Asp Thr Ser Gly Asp Tyr Arg Lys Ile
                485                 490                 495

Leu Leu Lys Ile Cys Gly Gly Asn Asp
            500                 505


<210> 5371
<211> 505
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1171; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA11; "

<220>
<221> source
<223> /note="Gene Name:
      annexin A11; "

<220>
<221> source
<223> /note="Uniprot ID:  P50995; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000404412"

<400> 5371
Met Ser Tyr Pro Gly Tyr Pro Pro Pro Pro Gly Gly Tyr Pro Pro Ala
1               5                   10                  15

Ala Pro Gly Gly Gly Pro Trp Gly Gly Ala Ala Tyr Pro Pro Pro Pro
            20                  25                  30

Ser Met Pro Pro Ile Gly Leu Asp Asn Val Ala Thr Tyr Ala Gly Gln
        35                  40                  45

Phe Asn Gln Asp Tyr Leu Ser Gly Met Ala Ala Asn Met Ser Gly Thr
```

```
    50                  55                  60

Phe Gly Gly Ala Asn Met Pro Asn Leu Tyr Pro Gly Ala Pro Gly Ala
65                  70                  75                  80

Gly Tyr Pro Pro Val Pro Pro Gly Gly Phe Gly Gln Pro Pro Ser Ala
                85                  90                  95

Gln Gln Pro Val Pro Pro Tyr Gly Met Tyr Pro Pro Pro Gly Gly Asn
            100                 105                 110

Pro Pro Ser Arg Met Pro Ser Tyr Pro Pro Tyr Pro Gly Ala Pro Val
        115                 120                 125

Pro Gly Gln Pro Met Pro Pro Pro Gly Gln Gln Pro Pro Gly Ala Tyr
    130                 135                 140

Pro Gly Gln Pro Pro Val Thr Tyr Pro Gly Gln Pro Pro Val Pro Leu
145                 150                 155                 160

Pro Gly Gln Gln Gln Pro Val Pro Ser Tyr Pro Gly Tyr Pro Gly Ser
                165                 170                 175

Gly Thr Val Thr Pro Ala Val Pro Pro Thr Gln Phe Gly Ser Arg Gly
            180                 185                 190

Thr Ile Thr Asp Ala Pro Gly Phe Asp Pro Leu Arg Asp Ala Glu Val
        195                 200                 205

Leu Arg Lys Ala Met Lys Gly Phe Gly Thr Asp Glu Gln Ala Ile Ile
    210                 215                 220

Asp Cys Leu Gly Ser Arg Ser Asn Lys Gln Arg Gln Gln Ile Leu Leu
225                 230                 235                 240

Ser Phe Lys Thr Ala Tyr Gly Lys Asp Leu Ile Lys Asp Leu Lys Ser
                245                 250                 255

Glu Leu Ser Gly Asn Phe Glu Lys Thr Ile Leu Ala Leu Met Lys Thr
            260                 265                 270

Pro Val Leu Phe Asp Ile Tyr Glu Ile Lys Glu Ala Ile Lys Gly Val
        275                 280                 285
```

```
Gly Thr Asp Glu Ala Cys Leu Ile Glu Ile Leu Ala Ser Arg Ser Asn
    290                 295                 300

Glu His Ile Arg Glu Leu Asn Arg Ala Tyr Lys Ala Glu Phe Lys Lys
305                 310                 315                 320

Thr Leu Glu Glu Ala Ile Arg Ser Asp Thr Ser Gly His Phe Gln Arg
                325                 330                 335

Leu Leu Ile Ser Leu Ser Gln Gly Asn Arg Asp Glu Ser Thr Asn Val
            340                 345                 350

Asp Met Ser Leu Ala Gln Arg Asp Ala Gln Glu Leu Tyr Ala Ala Gly
        355                 360                 365

Glu Asn Arg Leu Gly Thr Asp Glu Ser Lys Phe Asn Ala Val Leu Cys
    370                 375                 380

Ser Arg Ser Arg Ala His Leu Val Ala Val Phe Asn Glu Tyr Gln Arg
385                 390                 395                 400

Met Thr Gly Arg Asp Ile Glu Lys Ser Ile Cys Arg Glu Met Ser Gly
                405                 410                 415

Asp Leu Glu Glu Gly Met Leu Ala Val Val Lys Cys Leu Lys Asn Thr
            420                 425                 430

Pro Ala Phe Phe Ala Glu Arg Leu Asn Lys Ala Met Arg Gly Ala Gly
        435                 440                 445

Thr Lys Asp Arg Thr Leu Ile Arg Ile Met Val Ser Arg Ser Glu Thr
    450                 455                 460

Asp Leu Leu Asp Ile Arg Ser Glu Tyr Lys Arg Met Tyr Gly Lys Ser
465                 470                 475                 480

Leu Tyr His Asp Ile Ser Gly Asp Thr Ser Gly Asp Tyr Arg Lys Ile
                485                 490                 495

Leu Leu Lys Ile Cys Gly Gly Asn Asp
            500                 505
```

<210> 5372
<211> 148
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1171; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA11; "

<220>
<221> source
<223> /note="Gene Name:
annexin A11; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000405009"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5372
Xaa Glu Asn Arg Leu Gly Thr Asp Glu Ser Lys Phe Asn Ala Val Leu
1 5 10 15

Cys Ser Arg Ser Arg Ala His Leu Val Ala Val Phe Asn Glu Tyr Gln
20 25 30

Arg Met Thr Gly Arg Asp Ile Glu Lys Ser Ile Cys Arg Glu Met Ser
35 40 45

Gly Asp Leu Glu Glu Gly Met Leu Ala Val Val Lys Cys Leu Lys Asn
50 55 60

Thr Pro Ala Phe Phe Ala Glu Arg Leu Asn Lys Ala Met Arg Gly Ala
65 70 75 80

Gly Thr Lys Asp Arg Thr Leu Ile Arg Ile Met Val Ser Arg Ser Glu
85 90 95

Thr Asp Leu Leu Asp Ile Arg Ser Glu Tyr Lys Arg Met Tyr Gly Lys
100 105 110

```
Ser Leu Tyr His Asp Ile Ser Ser Ile Ser Cys Met Pro Ala Ser Tyr
        115                 120                 125

Gly His Leu Glu Glu Ala Thr Cys Leu Ala Leu Lys Leu Leu Arg Val
    130                 135                 140

Glu Gly Asn Asp
145
```

<210> 5373
<211> 150
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1171; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA11; "

<220>
<221> source
<223> /note="Gene Name:
annexin A11; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000414642"

<400> 5373

```
Met Ser Tyr Pro Gly Tyr Pro Pro Pro Pro Gly Gly Tyr Pro Pro Ala
1               5                  10                  15

Ala Pro Gly Gly Gly Pro Trp Gly Gly Ala Ala Tyr Pro Pro Pro Pro
            20                  25                  30

Ser Met Pro Pro Ile Gly Leu Asp Asn Val Ala Thr Tyr Ala Gly Gln
        35                  40                  45

Phe Asn Gln Asp Tyr Leu Ser Gly Met Ala Ala Asn Met Ser Gly Thr
    50                  55                  60

Phe Gly Gly Ala Asn Met Pro Asn Leu Tyr Pro Gly Ala Pro Gly Ala
65                  70                  75                  80

Gly Tyr Pro Pro Val Pro Pro Gly Gly Phe Gly Gln Pro Pro Ser Ala
```

```
                85                  90                  95

Gln Gln Pro Val Pro Pro Tyr Gly Met Tyr Pro Pro Pro Gly Gly Asn
            100                 105                 110

Pro Pro Ser Arg Met Pro Ser Tyr Pro Pro Tyr Pro Gly Ala Pro Val
        115                 120                 125

Pro Gly Gln Pro Met Pro Pro Pro Gly Gln Gln Pro Pro Gly Ala Tyr
    130                 135                 140

Pro Gly Gln Pro Pro Val
145                 150


<210> 5374
<211> 357
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1172; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA13; "

<220>
<221> source
<223> /note="Gene Name:
      annexin A13; "

<220>
<221> source
<223> /note="Uniprot ID:  P27216; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000262219"

<400> 5374
Met Gly Asn Arg His Ser Gln Ser Tyr Thr Leu Ser Glu Gly Ser Gln
1               5                   10                  15

Gln Leu Pro Lys Gly Asp Ser Gln Pro Ser Thr Val Val Gln Pro Leu
            20                  25                  30

Ser His Pro Ser Arg Asn Gly Glu Pro Glu Ala Pro Gln Pro Ala Lys
        35                  40                  45
```

```
Ala Ser Ser Pro Gln Gly Phe Asp Val Asp Arg Asp Ala Lys Lys Leu
    50                  55                  60

Asn Lys Ala Cys Lys Gly Met Gly Thr Asn Glu Ala Ala Ile Ile Glu
65                  70                  75                  80

Ile Leu Ser Gly Arg Thr Ser Asp Glu Arg Gln Gln Ile Lys Gln Lys
                85                  90                  95

Tyr Lys Ala Thr Tyr Gly Lys Glu Leu Glu Glu Val Leu Lys Ser Glu
            100                 105                 110

Leu Ser Gly Asn Phe Glu Lys Thr Ala Leu Ala Leu Leu Asp Arg Pro
        115                 120                 125

Ser Glu Tyr Ala Ala Arg Gln Leu Gln Lys Ala Met Lys Gly Leu Gly
    130                 135                 140

Thr Asp Glu Ser Val Leu Ile Glu Val Leu Cys Thr Arg Thr Asn Lys
145                 150                 155                 160

Glu Ile Ile Ala Ile Lys Glu Ala Tyr Gln Arg Leu Phe Asp Arg Ser
                165                 170                 175

Leu Glu Ser Asp Val Lys Gly Asp Thr Ser Gly Asn Leu Lys Lys Ile
            180                 185                 190

Leu Val Ser Leu Leu Gln Ala Asn Arg Asn Glu Gly Asp Asp Val Asp
        195                 200                 205

Lys Asp Leu Ala Gly Gln Asp Ala Lys Asp Leu Tyr Asp Ala Gly Glu
    210                 215                 220

Gly Arg Trp Gly Thr Asp Glu Leu Ala Phe Asn Glu Val Leu Ala Lys
225                 230                 235                 240

Arg Ser Tyr Lys Gln Leu Arg Ala Thr Phe Gln Ala Tyr Gln Ile Leu
                245                 250                 255

Ile Gly Lys Asp Ile Glu Glu Ala Ile Glu Glu Glu Thr Ser Gly Asp
            260                 265                 270
```

```
Leu Gln Lys Ala Tyr Leu Thr Leu Val Arg Cys Ala Gln Asp Cys Glu
        275                 280                 285

Asp Tyr Phe Ala Glu Arg Leu Tyr Lys Ser Met Lys Gly Ala Gly Thr
    290                 295                 300

Asp Glu Glu Thr Leu Ile Arg Ile Val Val Thr Arg Ala Glu Val Asp
305                 310                 315                 320

Leu Gln Gly Ile Lys Ala Lys Phe Gln Glu Lys Tyr Gln Lys Ser Leu
                325                 330                 335

Ser Asp Met Val Arg Ser Asp Thr Ser Gly Asp Phe Arg Lys Leu Leu
            340                 345                 350

Val Ala Leu Leu His
        355


<210> 5375
<211> 316
<212> PRT
<213> Homo sapiens

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<220>
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<223> /note="Gene Name:
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Met Gly Asn Arg His Ala Lys Ala Ser Ser Pro Gln Gly Phe Asp Val
1               5                   10                  15

Asp Arg Asp Ala Lys Lys Leu Asn Lys Ala Cys Lys Gly Met Gly Thr
            20                  25                  30
```

```
Asn Glu Ala Ala Ile Ile Glu Ile Leu Ser Gly Arg Thr Ser Asp Glu
        35                  40                  45

Arg Gln Gln Ile Lys Gln Lys Tyr Lys Ala Thr Tyr Gly Lys Glu Leu
    50                  55                  60

Glu Glu Val Leu Lys Ser Glu Leu Ser Gly Asn Phe Glu Lys Thr Ala
65                  70                  75                  80

Leu Ala Leu Leu Asp Arg Pro Ser Glu Tyr Ala Ala Arg Gln Leu Gln
                85                  90                  95

Lys Ala Met Lys Gly Leu Gly Thr Asp Glu Ser Val Leu Ile Glu Val
            100                 105                 110

Leu Cys Thr Arg Thr Asn Lys Glu Ile Ile Ala Ile Lys Glu Ala Tyr
        115                 120                 125

Gln Arg Leu Phe Asp Arg Ser Leu Glu Ser Asp Val Lys Gly Asp Thr
    130                 135                 140

Ser Gly Asn Leu Lys Lys Ile Leu Val Ser Leu Leu Gln Ala Asn Arg
145                 150                 155                 160

Asn Glu Gly Asp Asp Val Asp Lys Asp Leu Ala Gly Gln Asp Ala Lys
                165                 170                 175

Asp Leu Tyr Asp Ala Gly Glu Gly Arg Trp Gly Thr Asp Glu Leu Ala
            180                 185                 190

Phe Asn Glu Val Leu Ala Lys Arg Ser Tyr Lys Gln Leu Arg Ala Thr
        195                 200                 205

Phe Gln Ala Tyr Gln Ile Leu Ile Gly Lys Asp Ile Glu Glu Ala Ile
    210                 215                 220

Glu Glu Glu Thr Ser Gly Asp Leu Gln Lys Ala Tyr Leu Thr Leu Val
225                 230                 235                 240

Arg Cys Ala Gln Asp Cys Glu Asp Tyr Phe Ala Glu Arg Leu Tyr Lys
                245                 250                 255
```

```
Ser Met Lys Gly Ala Gly Thr Asp Glu Glu Thr Leu Ile Arg Ile Val
            260                 265                 270

Val Thr Arg Ala Glu Val Asp Leu Gln Gly Ile Lys Ala Lys Phe Gln
        275                 280                 285

Glu Lys Tyr Gln Lys Ser Leu Ser Asp Met Val Arg Ser Asp Thr Ser
    290                 295                 300

Gly Asp Phe Arg Lys Leu Leu Val Ala Leu Leu His
305                 310                 315


<210> 5376
<211> 113
<212> PRT
<213> Homo sapiens

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<223> /note="Gene Name:
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<400> 5376
Met Gly Thr Asn Glu Ala Ala Ile Ile Glu Ile Leu Ser Gly Arg Thr
1               5                   10                  15

Ser Asp Glu Arg Gln Gln Ile Lys Gln Lys Tyr Lys Ala Thr Tyr Gly
            20                  25                  30

Lys Glu Leu Glu Glu Val Leu Lys Ser Glu Leu Ser Gly Asn Phe Glu
        35                  40                  45

Lys Thr Ala Leu Ala Leu Leu Asp Arg Pro Ser Glu Tyr Ala Ala Arg
    50                  55                  60

Gln Leu Gln Lys Ala Met Lys Gly Leu Gly Thr Asp Glu Ser Val Leu
```

65 70 75 80

Ile Glu Val Leu Cys Thr Arg Thr Asn Lys Glu Ile Ile Ala Ile Lys
85 90 95

Glu Ala Tyr Gln Arg Leu Phe Asp Arg Ser Leu Glu Ser Asp Val Lys
100 105 110

Gly

<210> 5377
<211> 357
<212> PRT
<213> Homo sapiens

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<220>
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<400> 5377
Met Gly Arg Gln Leu Ala Gly Cys Gly Asp Ala Gly Lys Lys Ala Ser
1 5 10 15

Phe Lys Met Ser Thr Val His Glu Ile Leu Cys Lys Leu Ser Leu Glu
20 25 30

Gly Asp His Ser Thr Pro Pro Ser Ala Tyr Gly Ser Val Lys Ala Tyr
35 40 45

Thr Asn Phe Asp Ala Glu Arg Asp Ala Leu Asn Ile Glu Thr Ala Ile
50 55 60

```
Lys Thr Lys Gly Val Asp Glu Val Thr Ile Val Asn Ile Leu Thr Asn
65                  70                  75                  80

Arg Ser Asn Ala Gln Arg Gln Asp Ile Ala Phe Ala Tyr Gln Arg Arg
                85                  90                  95

Thr Lys Lys Glu Leu Ala Ser Ala Leu Lys Ser Ala Leu Ser Gly His
            100                 105                 110

Leu Glu Thr Val Ile Leu Gly Leu Leu Lys Thr Pro Ala Gln Tyr Asp
        115                 120                 125

Ala Ser Glu Leu Lys Ala Ser Met Lys Gly Leu Gly Thr Asp Glu Asp
    130                 135                 140

Ser Leu Ile Glu Ile Ile Cys Ser Arg Thr Asn Gln Glu Leu Gln Glu
145                 150                 155                 160

Ile Asn Arg Val Tyr Lys Glu Met Tyr Lys Thr Asp Leu Glu Lys Asp
                165                 170                 175

Ile Ile Ser Asp Thr Ser Gly Asp Phe Arg Lys Leu Met Val Ala Leu
            180                 185                 190

Ala Lys Gly Arg Arg Ala Glu Asp Gly Ser Val Ile Asp Tyr Glu Leu
        195                 200                 205

Ile Asp Gln Asp Ala Arg Asp Leu Tyr Asp Ala Gly Val Lys Arg Lys
    210                 215                 220

Gly Thr Asp Val Pro Lys Trp Ile Ser Ile Met Thr Glu Arg Ser Val
225                 230                 235                 240

Pro His Leu Gln Lys Val Phe Asp Arg Tyr Lys Ser Tyr Ser Pro Tyr
                245                 250                 255

Asp Met Leu Glu Ser Ile Arg Lys Glu Val Lys Gly Asp Leu Glu Asn
            260                 265                 270

Ala Phe Leu Asn Leu Val Gln Cys Ile Gln Asn Lys Pro Leu Tyr Phe
        275                 280                 285
```

```
Ala Asp Arg Leu Tyr Asp Ser Met Lys Gly Lys Gly Thr Arg Asp Lys
    290                 295                 300

Val Leu Ile Arg Ile Met Val Ser Arg Ser Glu Val Asp Met Leu Lys
305                 310                 315                 320

Ile Arg Ser Glu Phe Lys Arg Lys Tyr Gly Lys Ser Leu Tyr Tyr Tyr
                325                 330                 335

Ile Gln Gln Asp Thr Lys Gly Asp Tyr Gln Lys Ala Leu Leu Tyr Leu
            340                 345                 350

Cys Gly Gly Asp Asp
        355


<210> 5378
<211> 339
<212> PRT
<213> Homo sapiens

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<223> /note="ENSP ID: ENSP00000379342"

<400> 5378
Met Ser Thr Val His Glu Ile Leu Cys Lys Leu Ser Leu Glu Gly Asp
1               5                   10                  15

His Ser Thr Pro Pro Ser Ala Tyr Gly Ser Val Lys Ala Tyr Thr Asn
            20                  25                  30

Phe Asp Ala Glu Arg Asp Ala Leu Asn Ile Glu Thr Ala Ile Lys Thr
        35                  40                  45
```

```
Lys Gly Val Asp Glu Val Thr Ile Val Asn Ile Leu Thr Asn Arg Ser
    50                  55                  60

Asn Ala Gln Arg Gln Asp Ile Ala Phe Ala Tyr Gln Arg Arg Thr Lys
65                  70                  75                  80

Lys Glu Leu Ala Ser Ala Leu Lys Ser Ala Leu Ser Gly His Leu Glu
                85                  90                  95

Thr Val Ile Leu Gly Leu Leu Lys Thr Pro Ala Gln Tyr Asp Ala Ser
            100                 105                 110

Glu Leu Lys Ala Ser Met Lys Gly Leu Gly Thr Asp Glu Asp Ser Leu
        115                 120                 125

Ile Glu Ile Ile Cys Ser Arg Thr Asn Gln Glu Leu Gln Glu Ile Asn
    130                 135                 140

Arg Val Tyr Lys Glu Met Tyr Lys Thr Asp Leu Glu Lys Asp Ile Ile
145                 150                 155                 160

Ser Asp Thr Ser Gly Asp Phe Arg Lys Leu Met Val Ala Leu Ala Lys
                165                 170                 175

Gly Arg Arg Ala Glu Asp Gly Ser Val Ile Asp Tyr Glu Leu Ile Asp
            180                 185                 190

Gln Asp Ala Arg Asp Leu Tyr Asp Ala Gly Val Lys Arg Lys Gly Thr
        195                 200                 205

Asp Val Pro Lys Trp Ile Ser Ile Met Thr Glu Arg Ser Val Pro His
    210                 215                 220

Leu Gln Lys Val Phe Asp Arg Tyr Lys Ser Tyr Ser Pro Tyr Asp Met
225                 230                 235                 240

Leu Glu Ser Ile Arg Lys Glu Val Lys Gly Asp Leu Glu Asn Ala Phe
                245                 250                 255

Leu Asn Leu Val Gln Cys Ile Gln Asn Lys Pro Leu Tyr Phe Ala Asp
            260                 265                 270
```

```
Arg Leu Tyr Asp Ser Met Lys Gly Lys Gly Thr Arg Asp Lys Val Leu
        275                 280                 285

Ile Arg Ile Met Val Ser Arg Ser Glu Val Asp Met Leu Lys Ile Arg
    290                 295                 300

Ser Glu Phe Lys Arg Lys Tyr Gly Lys Ser Leu Tyr Tyr Tyr Ile Gln
305                 310                 315                 320

Gln Asp Thr Lys Gly Asp Tyr Gln Lys Ala Leu Leu Tyr Leu Cys Gly
                325                 330                 335

Gly Asp Asp
```

<210> 5379
<211> 339
<212> PRT
<213> Homo sapiens

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<223> /note="ENSP ID: ENSP00000387545"

<400> 5379

```
Met Ser Thr Val His Glu Ile Leu Cys Lys Leu Ser Leu Glu Gly Asp
1               5                   10                  15

His Ser Thr Pro Pro Ser Ala Tyr Gly Ser Val Lys Ala Tyr Thr Asn
            20                  25                  30

Phe Asp Ala Glu Arg Asp Ala Leu Asn Ile Glu Thr Ala Ile Lys Thr
```

```
        35                  40                  45

Lys Gly Val Asp Glu Val Thr Ile Val Asn Ile Leu Thr Asn Arg Ser
    50                  55                  60

Asn Ala Gln Arg Gln Asp Ile Ala Phe Ala Tyr Gln Arg Arg Thr Lys
65                  70                  75                  80

Lys Glu Leu Ala Ser Ala Leu Lys Ser Ala Leu Ser Gly His Leu Glu
                85                  90                  95

Thr Val Ile Leu Gly Leu Leu Lys Thr Pro Ala Gln Tyr Asp Ala Ser
            100                 105                 110

Glu Leu Lys Ala Ser Met Lys Gly Leu Gly Thr Asp Glu Asp Ser Leu
        115                 120                 125

Ile Glu Ile Ile Cys Ser Arg Thr Asn Gln Glu Leu Gln Glu Ile Asn
    130                 135                 140

Arg Val Tyr Lys Glu Met Tyr Lys Thr Asp Leu Glu Lys Asp Ile Ile
145                 150                 155                 160

Ser Asp Thr Ser Gly Asp Phe Arg Lys Leu Met Val Ala Leu Ala Lys
                165                 170                 175

Gly Arg Arg Ala Glu Asp Gly Ser Val Ile Asp Tyr Glu Leu Ile Asp
            180                 185                 190

Gln Asp Ala Arg Asp Leu Tyr Asp Ala Gly Val Lys Arg Lys Gly Thr
        195                 200                 205

Asp Val Pro Lys Trp Ile Ser Ile Met Thr Glu Arg Ser Val Pro His
    210                 215                 220

Leu Gln Lys Val Phe Asp Arg Tyr Lys Ser Tyr Ser Pro Tyr Asp Met
225                 230                 235                 240

Leu Glu Ser Ile Arg Lys Glu Val Lys Gly Asp Leu Glu Asn Ala Phe
                245                 250                 255

Leu Asn Leu Val Gln Cys Ile Gln Asn Lys Pro Leu Tyr Phe Ala Asp
            260                 265                 270
```

```
Arg Leu Tyr Asp Ser Met Lys Gly Lys Gly Thr Arg Asp Lys Val Leu
        275                 280                 285

Ile Arg Ile Met Val Ser Arg Ser Glu Val Asp Met Leu Lys Ile Arg
    290                 295                 300

Ser Glu Phe Lys Arg Lys Tyr Gly Lys Ser Leu Tyr Tyr Tyr Ile Gln
305                 310                 315                 320

Gln Asp Thr Lys Gly Asp Tyr Gln Lys Ala Leu Leu Tyr Leu Cys Gly
                325                 330                 335

Gly Asp Asp
```

<210> 5380
<211> 339
<212> PRT
<213> Homo sapiens

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<220>
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<223> /note="ENSP ID: ENSP00000411352"

<400> 5380

```
Met Ser Thr Val His Glu Ile Leu Cys Lys Leu Ser Leu Glu Gly Asp
1               5                   10                  15

His Ser Thr Pro Pro Ser Ala Tyr Gly Ser Val Lys Ala Tyr Thr Asn
            20                  25                  30
```

```
Phe Asp Ala Glu Arg Asp Ala Leu Asn Ile Glu Thr Ala Ile Lys Thr
        35                  40                  45

Lys Gly Val Asp Glu Val Thr Ile Val Asn Ile Leu Thr Asn Arg Ser
    50                  55                  60

Asn Ala Gln Arg Gln Asp Ile Ala Phe Ala Tyr Gln Arg Arg Thr Lys
65                  70                  75                  80

Lys Glu Leu Ala Ser Ala Leu Lys Ser Ala Leu Ser Gly His Leu Glu
                85                  90                  95

Thr Val Ile Leu Gly Leu Leu Lys Thr Pro Ala Gln Tyr Asp Ala Ser
            100                 105                 110

Glu Leu Lys Ala Ser Met Lys Gly Leu Gly Thr Asp Glu Asp Ser Leu
        115                 120                 125

Ile Glu Ile Ile Cys Ser Arg Thr Asn Gln Glu Leu Gln Glu Ile Asn
    130                 135                 140

Arg Val Tyr Lys Glu Met Tyr Lys Thr Asp Leu Glu Lys Asp Ile Ile
145                 150                 155                 160

Ser Asp Thr Ser Gly Asp Phe Arg Lys Leu Met Val Ala Leu Ala Lys
                165                 170                 175

Gly Arg Arg Ala Glu Asp Gly Ser Val Ile Asp Tyr Glu Leu Ile Asp
            180                 185                 190

Gln Asp Ala Arg Asp Leu Tyr Asp Ala Gly Val Lys Arg Lys Gly Thr
        195                 200                 205

Asp Val Pro Lys Trp Ile Ser Ile Met Thr Glu Arg Ser Val Pro His
    210                 215                 220

Leu Gln Lys Val Phe Asp Arg Tyr Lys Ser Tyr Ser Pro Tyr Asp Met
225                 230                 235                 240

Leu Glu Ser Ile Arg Lys Glu Val Lys Gly Asp Leu Glu Asn Ala Phe
                245                 250                 255

Leu Asn Leu Val Gln Cys Ile Gln Asn Lys Pro Leu Tyr Phe Ala Asp
```

```
            260                 265                 270

Arg Leu Tyr Asp Ser Met Lys Gly Lys Gly Thr Arg Asp Lys Val Leu
        275                 280                 285

Ile Arg Ile Met Val Ser Arg Ser Glu Val Asp Met Leu Lys Ile Arg
    290                 295                 300

Ser Glu Phe Lys Arg Lys Tyr Gly Lys Ser Leu Tyr Tyr Tyr Ile Gln
305                 310                 315                 320

Gln Asp Thr Lys Gly Asp Tyr Gln Lys Ala Leu Leu Tyr Leu Cys Gly
                325                 330                 335

Gly Asp Asp
```

<210> 5381
<211> 110
<212> PRT
<213> Homo sapiens

<220>
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<400> 5381

```
Met Ser Thr Val His Glu Ile Leu Cys Lys Leu Ser Leu Glu Gly Asp
1               5                   10                  15

His Ser Thr Pro Pro Ser Ala Tyr Gly Ser Val Lys Ala Tyr Thr Asn
            20                  25                  30

Phe Asp Ala Glu Arg Asp Ala Leu Asn Ile Glu Thr Ala Ile Lys Thr
        35                  40                  45
```

```
Lys Gly Val Asp Glu Val Thr Ile Val Asn Ile Leu Thr Asn Arg Ser
    50                  55                  60

Asn Ala Gln Arg Gln Asp Ile Ala Phe Ala Tyr Gln Arg Arg Thr Lys
65                  70                  75                  80

Lys Glu Leu Ala Ser Ala Leu Lys Ser Ala Leu Ser Gly His Leu Glu
                85                  90                  95

Thr Val Ile Leu Gly Leu Leu Lys Thr Pro Ala Gln Tyr Asp
            100                 105                 110


<210> 5382
<211> 69
<212> PRT
<213> Homo sapiens

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<223> /note="Gene Name:
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<223> /note="ENSP ID: ENSP00000452876"

<400> 5382
Met Ser Thr Val His Glu Ile Leu Cys Lys Leu Ser Leu Glu Gly Asp
1               5                   10                  15

His Ser Thr Pro Pro Ser Ala Tyr Gly Ser Val Lys Ala Tyr Thr Asn
            20                  25                  30

Phe Asp Ala Glu Arg Asp Ala Leu Asn Ile Glu Thr Ala Ile Lys Thr
        35                  40                  45

Lys Gly Ala Arg Pro Glu Pro Arg Ser Tyr Gln Thr Leu Glu Lys Glu
    50                  55                  60

Ser Leu Val Pro Phe
```

65

<210> 5383
<211> 176
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1173; "

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annexin A2; "

<220>
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<400> 5383
Met Ser Thr Val His Glu Ile Leu Cys Lys Leu Ser Leu Glu Gly Asp
1 5 10 15

His Ser Thr Pro Pro Ser Ala Tyr Gly Ser Val Lys Ala Tyr Thr Asn
20 25 30

Phe Asp Ala Glu Arg Asp Ala Leu Asn Ile Glu Thr Ala Ile Lys Thr
35 40 45

Lys Gly Val Asp Glu Val Thr Ile Val Asn Ile Leu Thr Asn Arg Ser
50 55 60

Asn Ala Gln Arg Gln Asp Ile Ala Phe Ala Tyr Gln Arg Arg Thr Lys
65 70 75 80

Lys Glu Leu Ala Ser Ala Leu Lys Ser Ala Leu Ser Gly His Leu Glu
85 90 95

Thr Val Ile Leu Gly Leu Leu Lys Thr Pro Ala Gln Tyr Asp Ala Ser
100 105 110

Glu Leu Lys Ala Ser Met Lys Gly Leu Gly Thr Asp Glu Asp Ser Leu
115 120 125

```
Ile Glu Ile Ile Cys Ser Arg Thr Asn Gln Glu Leu Gln Glu Ile Asn
    130                 135                 140

Arg Val Tyr Lys Glu Met Tyr Lys Thr Asp Leu Glu Lys Asp Ile Ile
145                 150                 155                 160

Ser Asp Thr Ser Gly Asp Phe Arg Lys Leu Met Val Ala Leu Ala Lys
                165                 170                 175


<210> 5384
<211> 176
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="ENSP ID: ENSP00000452921"

<400> 5384
Met Ser Thr Val His Glu Ile Leu Cys Lys Leu Ser Leu Glu Gly Asp
1               5                   10                  15

His Ser Thr Pro Pro Ser Ala Tyr Gly Ser Val Lys Ala Tyr Thr Asn
            20                  25                  30

Phe Asp Ala Glu Arg Asp Ala Leu Asn Ile Glu Thr Ala Ile Lys Thr
        35                  40                  45

Lys Gly Val Asp Glu Val Thr Ile Val Asn Ile Leu Thr Asn Arg Ser
    50                  55                  60

Asn Ala Gln Arg Gln Asp Ile Ala Phe Ala Tyr Gln Arg Arg Thr Lys
65                  70                  75                  80

Lys Glu Leu Ala Ser Ala Leu Lys Ser Ala Leu Ser Gly His Leu Glu
```

```
                85                  90                  95

Thr Val Ile Leu Gly Leu Leu Lys Thr Pro Ala Gln Tyr Asp Ala Ser
            100                 105                 110

Glu Leu Lys Ala Ser Met Lys Gly Leu Gly Thr Asp Glu Asp Ser Leu
        115                 120                 125

Ile Glu Ile Ile Cys Ser Arg Thr Asn Gln Glu Leu Gln Glu Ile Asn
    130                 135                 140

Arg Val Tyr Lys Glu Met Tyr Lys Thr Asp Leu Glu Lys Asp Ile Ile
145                 150                 155                 160

Ser Asp Thr Ser Gly Asp Phe Arg Lys Leu Met Val Ala Leu Ala Lys
                165                 170                 175


<210> 5385
<211> 81
<212> PRT
<213> Homo sapiens

<220>
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<400> 5385
Met Ser Thr Val His Glu Ile Leu Cys Lys Leu Ser Leu Glu Gly Asp
1               5                   10                  15

His Ser Thr Pro Pro Ser Ala Tyr Gly Ser Val Lys Ala Tyr Thr Asn
            20                  25                  30

Phe Asp Ala Glu Arg Asp Ala Leu Asn Ile Glu Thr Ala Ile Lys Thr
        35                  40                  45
```

Lys Gly Val Asp Glu Val Thr Ile Val Asn Ile Leu Thr Asn Arg Ser
    50   55   60

Asn Ala Gln Arg Gln Asp Ile Ala Phe Ala Tyr Gln Arg Arg Thr Lys
65   70   75   80

Lys

<210> 5386
<211> 134
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<223> /note="Gene Name:
      annexin A2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000452981"

<400> 5386
Met Ser Thr Val His Glu Ile Leu Cys Lys Leu Ser Leu Glu Gly Asp
1   5   10   15

His Ser Thr Pro Pro Ser Ala Tyr Gly Ser Val Lys Ala Tyr Thr Asn
            20   25   30

Phe Asp Ala Glu Arg Asp Ala Leu Asn Ile Glu Thr Ala Ile Lys Thr
        35   40   45

Lys Gly Val Asp Glu Val Thr Ile Val Asn Ile Leu Thr Asn Arg Ser
    50   55   60

Asn Ala Gln Arg Gln Asp Ile Ala Phe Ala Tyr Gln Arg Arg Thr Lys
65   70   75   80

Lys Glu Leu Ala Ser Ala Leu Lys Ser Ala Leu Ser Gly His Leu Glu

```
                85                  90                  95

Thr Val Ile Leu Gly Leu Leu Lys Thr Pro Ala Gln Tyr Asp Ala Ser
            100                 105                 110

Glu Leu Lys Ala Ser Met Lys Gly Leu Gly Thr Asp Glu Asp Ser Leu
        115                 120                 125

Ile Glu Ile Ile Cys Ser
    130
```

<210> 5387
<211> 119
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000453000"

<400> 5387

```
Met Ser Thr Val His Glu Ile Leu Cys Lys Leu Ser Leu Glu Gly Asp
1               5                   10                  15

His Ser Thr Pro Pro Ser Ala Tyr Gly Ser Val Lys Ala Tyr Thr Asn
            20                  25                  30

Phe Asp Ala Glu Arg Asp Ala Leu Asn Ile Glu Thr Ala Ile Lys Thr
        35                  40                  45

Lys Gly Val Asp Glu Val Thr Ile Val Asn Ile Leu Thr Asn Arg Ser
    50                  55                  60

Asn Ala Gln Arg Gln Asp Ile Ala Phe Ala Tyr Gln Arg Arg Thr Lys
65                  70                  75                  80
```

```
Lys Glu Leu Ala Ser Ala Leu Lys Ser Ala Leu Ser Gly His Leu Glu
                85                  90                  95

Thr Val Ile Leu Gly Leu Leu Lys Thr Pro Ala Gln Tyr Asp Ala Ser
            100                 105                 110

Glu Leu Lys Ala Ser Met Lys
        115


<210> 5388
<211> 142
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<221> source
<223> /note="Gene Name:
      annexin A2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453039"

<400> 5388
Met Lys Gly Leu Gly Thr Asp Glu Asp Ser Leu Ile Glu Ile Ile Cys
1               5                   10                  15

Ser Arg Thr Asn Gln Glu Leu Gln Glu Ile Asn Arg Val Tyr Lys Glu
            20                  25                  30

Met Tyr Lys Thr Asp Leu Glu Lys Asp Ile Ile Ser Asp Thr Ser Gly
        35                  40                  45

Asp Phe Arg Lys Leu Met Val Ala Leu Ala Lys Gly Arg Arg Ala Glu
    50                  55                  60

Asp Gly Ser Val Ile Asp Tyr Glu Leu Ile Asp Gln Asp Ala Arg Asp
65                  70                  75                  80

Leu Tyr Asp Ala Gly Val Lys Arg Lys Gly Thr Asp Val Pro Lys Trp
```

```
                85                  90                  95

Ile Ser Ile Met Thr Glu Arg Ser Val Pro His Leu Gln Lys Val Phe
            100                 105                 110

Asp Arg Tyr Lys Ser Tyr Ser Pro Tyr Asp Met Leu Glu Ser Ile Arg
        115                 120                 125

Lys Glu Val Lys Gly Asp Leu Glu Asn Ala Phe Leu Asn Leu
    130                 135                 140


<210> 5389
<211> 45
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1173; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA2; "

<220>
<221> source
<223> /note="Gene Name:
      annexin A2; "

<220>
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<223> /note="ENSP ID: ENSP00000453174"

<400> 5389
Met Lys Gly Leu Gly Thr Asp Glu Asp Ser Leu Ile Glu Ile Ile Cys
1               5                   10                  15

Ser Arg Thr Asn Gln Glu Leu Gln Glu Ile Asn Arg Val Tyr Lys Glu
            20                  25                  30

Met Tyr Lys Thr Asp Leu Glu Lys Asp Ile Ile Ser Asp
        35                  40                  45


<210> 5390
<211> 132
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<223> /note="Payload ID: 1173; "

<220>
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<220>
<221> source
<223> /note="Gene Name:
annexin A2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453356"

<400> 5390

Met	Ser	Thr	Val	His	Glu	Ile	Leu	Cys	Lys	Leu	Ser	Leu	Glu	Gly	Asp
1				5				10					15		
His	Ser	Thr	Pro	Pro	Ser	Ala	Tyr	Gly	Ser	Val	Lys	Ala	Tyr	Thr	Asn
		20					25					30			
Phe	Asp	Ala	Glu	Arg	Asp	Ala	Leu	Asn	Ile	Glu	Thr	Ala	Ile	Lys	Thr
	35					40					45				
Lys	Gly	Val	Asp	Glu	Val	Thr	Ile	Val	Asn	Ile	Leu	Thr	Asn	Arg	Ser
50					55					60					
Asn	Ala	Gln	Arg	Gln	Asp	Ile	Ala	Phe	Ala	Tyr	Gln	Arg	Arg	Thr	Lys
65				70					75					80	
Lys	Glu	Leu	Ala	Ser	Ala	Leu	Lys	Ser	Ala	Leu	Ser	Gly	His	Leu	Glu
			85					90					95		
Thr	Val	Ile	Leu	Gly	Leu	Leu	Lys	Thr	Pro	Ala	Gln	Tyr	Asp	Ala	Ser
		100					105					110			
Glu	Leu	Lys	Ala	Ser	Met	Lys	Val	Asn	Ala	Trp	Ala	Gly	Asn	Arg	Arg
	115					120					125				
Gly	Leu	Ser	His												
130															

<210> 5391
<211> 248
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ANXA2; "

<220>
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<223> /note="Gene Name:
annexin A2; "

<220>
<221> source
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<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5391
Xaa Asn Gln Ile Leu Ile Trp Cys Gln Gln Cys Gln Glu Asn Ser Pro
1 5 10 15

Ile Ser Ser Val Asp Glu Val Thr Ile Val Asn Ile Leu Thr Asn Arg
20 25 30

Ser Asn Ala Gln Arg Gln Asp Ile Ala Phe Ala Tyr Gln Arg Arg Thr
35 40 45

Lys Lys Glu Leu Ala Ser Ala Leu Lys Ser Ala Leu Ser Gly His Leu
50 55 60

Glu Thr Val Ile Leu Gly Leu Leu Lys Thr Pro Ala Gln Tyr Asp Ala
65 70 75 80

Ser Glu Leu Lys Ala Ser Met Lys Gly Leu Gly Thr Asp Glu Asp Ser
85 90 95

Leu Ile Glu Ile Ile Cys Ser Arg Thr Asn Gln Glu Leu Gln Glu Ile
100 105 110

Asn Arg Val Tyr Lys Glu Met Tyr Lys Thr Asp Leu Glu Lys Asp Ile
115 120 125

Ile Ser Asp Thr Ser Gly Asp Phe Arg Lys Leu Met Val Ala Leu Ala

```
    130                 135                 140

Lys Gly Arg Arg Ala Glu Asp Gly Ser Val Ile Asp Tyr Glu Leu Ile
145                 150                 155                 160

Asp Gln Asp Ala Arg Asp Leu Tyr Asp Ala Gly Val Lys Arg Lys Gly
                165                 170                 175

Thr Asp Val Pro Lys Trp Ile Ser Ile Met Thr Glu Arg Ser Val Pro
            180                 185                 190

His Leu Gln Lys Val Phe Asp Arg Tyr Lys Ser Tyr Ser Pro Tyr Asp
        195                 200                 205

Met Leu Glu Ser Ile Arg Lys Glu Val Lys Gly Asp Leu Glu Asn Ala
    210                 215                 220

Phe Leu Asn Leu Val Gln Cys Ile Gln Asn Lys Pro Leu Tyr Phe Ala
225                 230                 235                 240

Asp Arg Leu Tyr Asp Ser Met Lys
                245


<210> 5392
<211> 227
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ANXA2; "

<220>
<221> source
<223> /note="Gene Name:
      annexin A2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453556"

<400> 5392
Met Ser Thr Val His Glu Ile Leu Cys Lys Leu Ser Leu Glu Gly Asp
1               5                   10                  15
```

```
His Ser Thr Pro Pro Ser Ala Tyr Gly Ser Val Lys Ala Tyr Thr Asn
            20                  25                  30

Phe Asp Ala Glu Arg Asp Ala Leu Asn Ile Glu Thr Ala Ile Lys Thr
        35                  40                  45

Lys Gly Val Asp Glu Val Thr Ile Val Asn Ile Leu Thr Asn Arg Ser
    50                  55                  60

Asn Ala Gln Arg Gln Asp Ile Ala Phe Ala Tyr Gln Arg Arg Thr Lys
65                  70                  75                  80

Lys Glu Leu Ala Ser Ala Leu Lys Ser Ala Leu Ser Gly His Leu Glu
                85                  90                  95

Thr Val Ile Leu Gly Leu Leu Lys Thr Pro Ala Gln Tyr Asp Ala Ser
            100                 105                 110

Glu Leu Lys Ala Ser Met Lys Gly Leu Gly Thr Asp Glu Asp Ser Leu
        115                 120                 125

Ile Glu Ile Ile Cys Ser Arg Thr Asn Gln Glu Leu Gln Glu Ile Asn
    130                 135                 140

Arg Val Tyr Lys Glu Met Tyr Lys Thr Asp Leu Glu Lys Asp Ile Ile
145                 150                 155                 160

Ser Asp Thr Ser Gly Asp Phe Arg Lys Leu Met Val Ala Leu Ala Lys
                165                 170                 175

Gly Arg Arg Ala Glu Asp Gly Ser Val Ile Asp Tyr Glu Leu Ile Asp
            180                 185                 190

Gln Asp Ala Arg Asp Leu Tyr Asp Ala Gly Val Lys Arg Lys Gly Thr
        195                 200                 205

Asp Val Pro Lys Trp Ile Ser Ile Met Thr Glu Arg Ser Val Pro His
    210                 215                 220

Leu Gln Lys
225
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<210> 5393
<211> 65
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ANXA2; "

<220>
<221> source
<223> /note="Gene Name:
annexin A2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453566"

<400> 5393
Met Ser Thr Val His Glu Ile Leu Cys Lys Leu Ser Leu Glu Gly Asp
1 5 10 15

His Ser Thr Pro Pro Ser Ala Tyr Gly Ser Val Lys Ala Tyr Thr Asn
20 25 30

Phe Asp Ala Glu Arg Asp Ala Leu Asn Ile Glu Thr Ala Ile Lys Thr
35 40 45

Lys Gly Val Asp Glu Val Thr Ile Val Asn Ile Leu Thr Asn Arg Ser
50 55 60

Asn
65

<210> 5394
<211> 176
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1173; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA2; "

<220>

<221> source
<223> /note="Gene Name:
annexin A2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453579"

<400> 5394
Met Ser Thr Val His Glu Ile Leu Cys Lys Leu Ser Leu Glu Gly Asp
1 5 10 15

His Ser Thr Pro Pro Ser Ala Tyr Gly Ser Val Lys Ala Tyr Thr Asn
20 25 30

Phe Asp Ala Glu Arg Asp Ala Leu Asn Ile Glu Thr Ala Ile Lys Thr
35 40 45

Lys Gly Val Asp Glu Val Thr Ile Val Asn Ile Leu Thr Asn Arg Ser
50 55 60

Asn Ala Gln Arg Gln Asp Ile Ala Phe Ala Tyr Gln Arg Arg Thr Lys
65 70 75 80

Lys Glu Leu Ala Ser Ala Leu Lys Ser Ala Leu Ser Gly His Leu Glu
85 90 95

Thr Val Ile Leu Gly Leu Leu Lys Thr Pro Ala Gln Tyr Asp Ala Ser
100 105 110

Glu Leu Lys Ala Ser Met Lys Gly Leu Gly Thr Asp Glu Asp Ser Leu
115 120 125

Ile Glu Ile Ile Cys Ser Arg Thr Asn Gln Glu Leu Gln Glu Ile Asn
130 135 140

Arg Val Tyr Lys Glu Met Tyr Lys Thr Asp Leu Glu Lys Asp Ile Ile
145 150 155 160

Ser Asp Thr Ser Gly Asp Phe Arg Lys Leu Met Val Ala Leu Ala Lys
165 170 175

<210> 5395
<211> 149
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1173; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA2; "

<220>
<221> source
<223> /note="Gene Name:
annexin A2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453663"

<400> 5395
Met Ser Thr Val His Glu Ile Leu Cys Lys Leu Ser Leu Glu Gly Asp
1 5 10 15

His Ser Thr Pro Pro Ser Ala Tyr Gly Ser Val Lys Ala Tyr Thr Asn
20 25 30

Phe Asp Ala Glu Arg Asp Ala Leu Asn Ile Glu Thr Ala Ile Lys Thr
35 40 45

Lys Gly Val Asp Glu Val Thr Ile Val Asn Ile Leu Thr Asn Arg Ser
50 55 60

Asn Ala Gln Arg Gln Asp Ile Ala Phe Ala Tyr Gln Arg Arg Thr Lys
65 70 75 80

Lys Glu Leu Ala Ser Ala Leu Lys Ser Ala Leu Ser Gly His Leu Glu
85 90 95

Thr Val Ile Leu Gly Leu Leu Lys Thr Pro Ala Gln Tyr Asp Ala Ser
100 105 110

Glu Leu Lys Ala Ser Met Lys Gly Leu Gly Thr Asp Glu Asp Ser Leu
115 120 125

Ile Glu Ile Ile Cys Ser Arg Thr Asn Gln Glu Leu Gln Glu Ile Asn
130 135 140

Arg Val Tyr Lys Glu
145

<210> 5396
<211> 119
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1173; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA2; "

<220>
<221> source
<223> /note="Gene Name:
annexin A2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453694"

<400> 5396

```
Met Ser Thr Val His Glu Ile Leu Cys Lys Leu Ser Leu Glu Gly Asp
1               5                  10                  15


His Ser Thr Pro Pro Ser Ala Tyr Gly Ser Val Lys Ala Tyr Thr Asn
            20                  25                  30


Phe Asp Ala Glu Arg Asp Ala Leu Asn Ile Glu Thr Ala Ile Lys Thr
        35                  40                  45


Lys Gly Val Asp Glu Val Thr Ile Val Asn Ile Leu Thr Asn Arg Ser
    50                  55                  60


Asn Ala Gln Arg Gln Asp Ile Ala Phe Ala Tyr Gln Arg Arg Thr Lys
65                  70                  75                  80


Lys Glu Leu Ala Ser Ala Leu Lys Ser Ala Leu Ser Gly His Leu Glu
                85                  90                  95


Thr Val Ile Leu Gly Leu Leu Lys Thr Pro Ala Gln Tyr Asp Ala Ser
            100                 105                 110


Glu Leu Lys Ala Ser Met Lys
        115
```

<210> 5397
<211> 133
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1173; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA2; "

<220>
<221> source
<223> /note="Gene Name:
annexin A2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453739"

<400> 5397

```
Met Ser Thr Val His Glu Ile Leu Cys Lys Leu Ser Leu Glu Gly Asp
1               5                  10                  15

His Ser Thr Pro Pro Ser Ala Tyr Gly Ser Val Lys Ala Tyr Thr Asn
            20                  25                  30

Phe Asp Ala Glu Arg Asp Ala Leu Asn Ile Glu Thr Ala Ile Lys Thr
        35                  40                  45

Lys Gly Val Asp Glu Val Thr Ile Val Asn Ile Leu Thr Asn Arg Ser
    50                  55                  60

Asn Ala Gln Arg Gln Asp Ile Ala Phe Ala Tyr Gln Arg Arg Thr Lys
65                  70                  75                  80

Lys Glu Leu Ala Ser Ala Leu Lys Ser Ala Leu Ser Gly His Leu Glu
                85                  90                  95

Thr Val Ile Leu Gly Leu Leu Lys Thr Pro Ala Gln Tyr Asp Ala Ser
            100                 105                 110

Glu Leu Lys Ala Ser Met Lys Gly Leu Gly Thr Asp Glu Asp Ser Leu
        115                 120                 125

Ile Glu Ile Ile Cys
    130
```

<210> 5398
<211> 4
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1173; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA2; "

<220>
<221> source
<223> /note="Gene Name:
annexin A2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453742"

<400> 5398
Met Ser Trp Pro
1

<210> 5399
<211> 230
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ANXA2; "

<220>
<221> source
<223> /note="Gene Name:
annexin A2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453754"

<400> 5399
Met Ser Thr Val His Glu Ile Leu Cys Lys Leu Ser Leu Glu Gly Asp
1 5 10 15

His Ser Thr Pro Pro Ser Ala Tyr Gly Ser Val Lys Ala Tyr Thr Asn

```
            20                  25                  30

Phe Asp Ala Glu Arg Asp Ala Leu Asn Ile Glu Thr Ala Ile Lys Thr
        35                  40                  45

Lys Gly Val Asp Glu Val Thr Ile Val Asn Ile Leu Thr Asn Arg Ser
    50                  55                  60

Asn Ala Gln Arg Gln Asp Ile Ala Phe Ala Tyr Gln Arg Arg Thr Lys
65                  70                  75                  80

Lys Glu Leu Ala Ser Ala Leu Lys Ser Ala Leu Ser Gly His Leu Glu
                85                  90                  95

Thr Val Ile Leu Gly Leu Leu Lys Thr Pro Ala Gln Tyr Asp Ala Ser
            100                 105                 110

Glu Leu Lys Ala Ser Met Lys Gly Leu Gly Thr Asp Glu Asp Ser Leu
        115                 120                 125

Ile Glu Ile Ile Cys Ser Arg Thr Asn Gln Glu Leu Gln Glu Ile Asn
    130                 135                 140

Arg Val Tyr Lys Glu Met Tyr Lys Thr Asp Leu Glu Lys Asp Ile Ile
145                 150                 155                 160

Ser Asp Thr Ser Gly Asp Phe Arg Lys Leu Met Val Ala Leu Ala Lys
                165                 170                 175

Gly Arg Arg Ala Glu Asp Gly Ser Val Ile Asp Tyr Glu Leu Ile Asp
            180                 185                 190

Gln Asp Ala Arg Asp Leu Tyr Asp Ala Gly Val Lys Arg Lys Gly Thr
        195                 200                 205

Asp Val Pro Lys Trp Ile Ser Ile Met Thr Glu Arg Ser Val Pro His
    210                 215                 220

Leu Gln Lys Gly Gly Ile
225                 230
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<210> 5400
<211> 146

<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1173; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA2; "

<220>
<221> source
<223> /note="Gene Name:
annexin A2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453770"

<400> 5400
Met Ser Trp Pro Cys Asp Ser Val Ile Asn Gln Asp His Lys Thr Lys
1 5 10 15

Glu Lys Asn Ile Cys Phe Gln Lys Ala Ser Phe Lys Met Ser Thr Val
20 25 30

His Glu Ile Leu Cys Lys Leu Ser Leu Glu Gly Asp His Ser Thr Pro
35 40 45

Pro Ser Ala Tyr Gly Ser Val Lys Ala Tyr Thr Asn Phe Asp Ala Glu
50 55 60

Arg Asp Ala Leu Asn Ile Glu Thr Ala Ile Lys Thr Lys Gly Val Asp
65 70 75 80

Glu Val Thr Ile Val Asn Ile Leu Thr Asn Arg Ser Asn Ala Gln Arg
85 90 95

Gln Asp Ile Ala Phe Ala Tyr Gln Arg Arg Thr Lys Lys Glu Leu Ala
100 105 110

Ser Ala Leu Lys Ser Ala Leu Ser Gly His Leu Glu Thr Val Ile Leu
115 120 125

Gly Leu Leu Lys Thr Pro Ala Gln Tyr Asp Ala Ser Glu Leu Lys Ala
130 135 140

Ser Met
145

<210> 5401
<211> 139
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ANXA2; "

<220>
<221> source
<223> /note="Gene Name:
annexin A2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453841"

<400> 5401
Met Lys Gly Leu Gly Thr Asp Glu Asp Ser Leu Ile Glu Ile Ile Cys
1 5 10 15

Ser Arg Thr Asn Gln Glu Leu Gln Glu Ile Asn Arg Val Tyr Lys Glu
20 25 30

Met Tyr Lys Thr Asp Leu Glu Lys Asp Ile Ile Ser Asp Thr Ser Gly
35 40 45

Asp Phe Arg Lys Leu Met Val Ala Leu Ala Lys Gly Arg Arg Ala Glu
50 55 60

Asp Gly Ser Val Ile Asp Tyr Glu Leu Ile Asp Gln Asp Ala Arg Asp
65 70 75 80

Leu Tyr Asp Ala Gly Val Lys Arg Lys Gly Thr Asp Val Pro Lys Trp
85 90 95

Ile Ser Ile Met Thr Glu Arg Ser Val Pro His Leu Gln Lys Val Phe
100 105 110

Asp Arg Tyr Lys Ser Tyr Ser Pro Tyr Asp Met Leu Glu Ser Ile Arg
115 120 125

```
Lys Glu Val Lys Gly Asp Leu Glu Asn Ala Phe
    130                 135


<210> 5402
<211> 256
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ANXA2; "

<220>
<221> source
<223> /note="Gene Name:
      annexin A2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453859"

<400> 5402
Met Ser Thr Val His Glu Ile Leu Cys Lys Leu Ser Leu Glu Gly Asp
1               5                   10                  15


His Ser Thr Pro Pro Ser Ala Tyr Gly Ser Val Lys Ala Tyr Thr Asn
            20                  25                  30


Phe Asp Ala Glu Arg Asp Ala Leu Asn Ile Glu Thr Ala Ile Lys Thr
        35                  40                  45


Lys Gly Val Asp Glu Val Thr Ile Val Asn Ile Leu Thr Asn Arg Ser
    50                  55                  60


Asn Ala Gln Arg Gln Asp Ile Ala Phe Ala Tyr Gln Arg Arg Thr Lys
65                  70                  75                  80


Lys Glu Leu Ala Ser Ala Leu Lys Ser Ala Leu Ser Gly His Leu Glu
                85                  90                  95


Thr Val Ile Leu Gly Leu Leu Lys Thr Pro Ala Gln Tyr Asp Ala Ser
            100                 105                 110
```

```
Glu Leu Lys Ala Ser Met Lys Gly Leu Gly Thr Asp Glu Asp Ser Leu
        115                 120                 125

Ile Glu Ile Ile Cys Ser Arg Thr Asn Gln Glu Leu Gln Glu Ile Asn
    130                 135                 140

Arg Val Tyr Lys Glu Met Tyr Lys Thr Asp Leu Glu Lys Asp Ile Ile
145                 150                 155                 160

Ser Asp Thr Ser Gly Asp Phe Arg Lys Leu Met Val Ala Leu Ala Lys
                165                 170                 175

Gly Arg Arg Ala Glu Asp Gly Ser Val Ile Asp Tyr Glu Leu Ile Asp
            180                 185                 190

Gln Asp Ala Arg Asp Leu Tyr Asp Ala Gly Val Lys Arg Lys Gly Thr
        195                 200                 205

Asp Val Pro Lys Trp Ile Ser Ile Met Thr Glu Arg Ser Val Pro His
    210                 215                 220

Leu Gln Lys Val Phe Asp Arg Tyr Lys Ser Tyr Ser Pro Tyr Asp Met
225                 230                 235                 240

Leu Glu Ser Ile Arg Lys Glu Val Lys Gly Asp Leu Glu Asn Ala Phe
                245                 250                 255


<210> 5403
<211> 59
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ANXA2; "

<220>
<221> source
<223> /note="Gene Name:
      annexin A2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453869"
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<400> 5403
Met Lys Gly Leu Gly Thr Asp Glu Asp Ser Leu Ile Glu Ile Ile Cys
1   5   10   15

Ser Arg Thr Asn Gln Glu Leu Gln Glu Ile Asn Arg Val Tyr Lys Glu
            20   25   30

Met Tyr Lys Thr Asp Leu Glu Lys Asp Ile Ile Ser Asp Thr Ser Gly
        35   40   45

Asp Phe Arg Lys Leu Met Val Ala Leu Ala Lys
    50   55

<210> 5404
<211> 79
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1173; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA2; "

<220>
<221> source
<223> /note="Gene Name:
annexin A2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453925"

<400> 5404
Met Lys Gly Leu Gly Thr Asp Glu Asp Ser Leu Ile Glu Ile Ile Cys
1   5   10   15

Ser Arg Thr Asn Gln Glu Leu Gln Glu Ile Asn Arg Val Tyr Lys Glu
            20   25   30

Met Tyr Lys Thr Asp Leu Glu Lys Asp Ile Ile Ser Asp Thr Ser Gly
        35   40   45

Asp Phe Arg Lys Leu Met Val Ala Leu Ala Lys Gly Arg Arg Ala Glu
    50   55   60

Asp Gly Ser Val Ile Asp Tyr Glu Leu Ile Asp Gln Asp Ala Arg
65 70 75

<210> 5405
<211> 47
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ANXA2; "

<220>
<221> source
<223> /note="Gene Name:
annexin A2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453945"

<400> 5405
Met Ser Thr Val His Glu Ile Leu Cys Lys Leu Ser Leu Glu Gly Asp
1 5 10 15

His Ser Thr Pro Pro Ser Ala Tyr Gly Ser Val Lys Ala Tyr Thr Asn
20 25 30

Phe Asp Ala Glu Arg Asp Ala Leu Asn Ile Glu Thr Ala Ile Lys
35 40 45

<210> 5406
<211> 175
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1173; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA2; "

<220>
<221> source
<223> /note="Gene Name:
annexin A2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000454096"

<400> 5406
Met Ser Thr Val His Glu Ile Leu Cys Lys Leu Ser Leu Glu Gly Asp
1   5   10   15

Glu Leu Ala Ser Ala Leu Lys Ser Ala Leu Ser Gly His Leu Glu Thr
            20   25   30

Val Ile Leu Gly Leu Leu Lys Thr Pro Ala Gln Tyr Asp Ala Ser Glu
        35   40   45

Leu Lys Ala Ser Met Lys Gly Leu Gly Thr Asp Glu Asp Ser Leu Ile
    50   55   60

Glu Ile Ile Cys Ser Arg Thr Asn Gln Glu Leu Gln Glu Ile Asn Arg
65   70   75   80

Val Tyr Lys Glu Met Tyr Lys Thr Asp Leu Glu Lys Asp Ile Ile Ser
                85   90   95

Asp Thr Ser Gly Asp Phe Arg Lys Leu Met Val Ala Leu Ala Lys Gly
            100   105   110

Arg Arg Ala Glu Asp Gly Ser Val Ile Asp Tyr Glu Leu Ile Asp Gln
        115   120   125

Asp Ala Arg Asp Leu Tyr Asp Ala Gly Val Lys Arg Lys Gly Thr Asp
    130   135   140

Val Pro Lys Trp Ile Ser Ile Met Thr Glu Arg Ser Val Pro His Leu
145   150   155   160

Gln Lys Val Phe Asp Arg Tyr Lys Ser Tyr Ser Pro Tyr Asp Met
                165   170   175

<210> 5407
<211> 193
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ANXA2R; "

<220>
<221> source
<223> /note="Gene Name:
annexin A2 receptor; "

<220>
<221> source
<223> /note="Uniprot ID: Q3ZCQ2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000315915"

<400> 5407
Met Glu Gln His Phe Leu Gly Cys Val Lys Arg Ala Trp Asp Ser Ala
1   5   10   15

Glu Val Ala Pro Glu Pro Gln Pro Pro Pro Ile Val Ser Ser Glu Asp
            20   25   30

Arg Gly Pro Trp Pro Leu Pro Leu Tyr Pro Val Leu Gly Glu Tyr Ser
        35   40   45

Leu Asp Ser Cys Asp Leu Gly Leu Leu Ser Ser Pro Cys Trp Arg Leu
    50   55   60

Pro Gly Val Tyr Trp Gln Asn Gly Leu Ser Pro Gly Val Gln Ser Thr
65   70   75   80

Leu Glu Pro Ser Thr Ala Lys Pro Thr Glu Phe Ser Trp Pro Gly Thr
                85   90   95

Gln Lys Gln Gln Glu Ala Pro Val Glu Glu Val Gly Gln Ala Glu Glu
            100   105   110

Pro Asp Arg Leu Arg Leu Gln Gln Leu Pro Trp Ser Ser Pro Leu His
        115   120   125

Pro Trp Asp Arg Gln Gln Asp Thr Glu Val Cys Asp Ser Gly Cys Leu
    130   135   140

Leu Glu Arg Arg His Pro Pro Ala Leu Gln Pro Trp Arg His Leu Pro
145   150   155   160

```
Gly Phe Ser Asp Cys Leu Glu Trp Ile Leu Arg Val Gly Phe Ala Ala
                165                 170                 175

Phe Ser Val Leu Trp Ala Cys Cys Ser Arg Ile Cys Gly Ala Lys Gln
            180                 185                 190

Pro
```

<210> 5408
<211> 193
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1174; "

<220>
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<223> /note="Gene Symbol: ANXA2R; "

<220>
<221> source
<223> /note="Gene Name:
annexin A2 receptor; "

<220>
<221> source
<223> /note="Uniprot ID: Q3ZCQ2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000479862"

<400> 5408

```
Met Glu Gln His Phe Leu Gly Cys Val Lys Arg Ala Trp Asp Ser Ala
1               5                  10                  15

Glu Val Ala Pro Glu Pro Gln Pro Pro Pro Ile Val Ser Ser Glu Asp
            20                  25                  30

Arg Gly Pro Trp Pro Leu Pro Leu Tyr Pro Val Leu Gly Glu Tyr Ser
        35                  40                  45

Leu Asp Ser Cys Asp Leu Gly Leu Leu Ser Ser Pro Cys Trp Arg Leu
    50                  55                  60
```

```
Pro Gly Val Tyr Trp Gln Asn Gly Leu Ser Pro Gly Val Gln Ser Thr
65                  70                  75                  80

Leu Glu Pro Ser Thr Ala Lys Pro Thr Glu Phe Ser Trp Pro Gly Thr
                85                  90                  95

Gln Lys Gln Gln Glu Ala Pro Val Glu Glu Val Gly Gln Ala Glu Glu
            100                 105                 110

Pro Asp Arg Leu Arg Leu Gln Gln Leu Pro Trp Ser Ser Pro Leu His
        115                 120                 125

Pro Trp Asp Arg Gln Gln Asp Thr Glu Val Cys Asp Ser Gly Cys Leu
    130                 135                 140

Leu Glu Arg Arg His Pro Pro Ala Leu Gln Pro Trp Arg His Leu Pro
145                 150                 155                 160

Gly Phe Ser Asp Cys Leu Glu Trp Ile Leu Arg Val Gly Phe Ala Ala
                165                 170                 175

Phe Ser Val Leu Trp Ala Cys Cys Ser Arg Ile Cys Gly Ala Lys Gln
            180                 185                 190

Pro
```

<210> 5409
<211> 323
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1175; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA3; "

<220>
<221> source
<223> /note="Gene Name:
annexin A3; "

<220>
<221> source
<223> /note="Uniprot ID: P12429; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000264908"

<400> 5409
Met Ala Ser Ile Trp Val Gly His Arg Gly Thr Val Arg Asp Tyr Pro
1   5   10   15

Asp Phe Ser Pro Ser Val Asp Ala Glu Ala Ile Gln Lys Ala Ile Arg
            20   25   30

Gly Ile Gly Thr Asp Glu Lys Met Leu Ile Ser Ile Leu Thr Glu Arg
        35   40   45

Ser Asn Ala Gln Arg Gln Leu Ile Val Lys Glu Tyr Gln Ala Ala Tyr
    50   55   60

Gly Lys Glu Leu Lys Asp Asp Leu Lys Gly Asp Leu Ser Gly His Phe
65   70   75   80

Glu His Leu Met Val Ala Leu Val Thr Pro Pro Ala Val Phe Asp Ala
                85   90   95

Lys Gln Leu Lys Lys Ser Met Lys Gly Ala Gly Thr Asn Glu Asp Ala
            100   105   110

Leu Ile Glu Ile Leu Thr Thr Arg Thr Ser Arg Gln Met Lys Asp Ile
        115   120   125

Ser Gln Ala Tyr Tyr Thr Val Tyr Lys Lys Ser Leu Gly Asp Asp Ile
    130   135   140

Ser Ser Glu Thr Ser Gly Asp Phe Arg Lys Ala Leu Leu Thr Leu Ala
145   150   155   160

Asp Gly Arg Arg Asp Glu Ser Leu Lys Val Asp Glu His Leu Ala Lys
                165   170   175

Gln Asp Ala Gln Ile Leu Tyr Lys Ala Gly Glu Asn Arg Trp Gly Thr
            180   185   190

Asp Glu Asp Lys Phe Thr Glu Ile Leu Cys Leu Arg Ser Phe Pro Gln
        195   200   205

```
Leu Lys Leu Thr Phe Asp Glu Tyr Arg Asn Ile Ser Gln Lys Asp Ile
    210                 215                 220

Val Asp Ser Ile Lys Gly Glu Leu Ser Gly His Phe Glu Asp Leu Leu
225                 230                 235                 240

Leu Ala Ile Val Asn Cys Val Arg Asn Thr Pro Ala Phe Leu Ala Glu
                245                 250                 255

Arg Leu His Arg Ala Leu Lys Gly Ile Gly Thr Asp Glu Phe Thr Leu
            260                 265                 270

Asn Arg Ile Met Val Ser Arg Ser Glu Ile Asp Leu Leu Asp Ile Arg
        275                 280                 285

Thr Glu Phe Lys Lys His Tyr Gly Tyr Ser Leu Tyr Ser Ala Ile Lys
    290                 295                 300

Ser Asp Thr Ser Gly Asp Tyr Glu Ile Thr Leu Leu Lys Ile Cys Gly
305                 310                 315                 320

Gly Asp Asp
```

<210> 5410
<211> 284
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1175; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA3; "

<220>
<221> source
<223> /note="Gene Name:
annexin A3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000421015"

<400> 5410
Met Leu Ile Ser Ile Leu Thr Glu Arg Ser Asn Ala Gln Arg Gln Leu

```
1               5                   10                  15

Ile Val Lys Glu Tyr Gln Ala Ala Tyr Gly Lys Glu Leu Lys Asp Asp
            20                  25                  30

Leu Lys Gly Asp Leu Ser Gly His Phe Glu His Leu Met Val Ala Leu
        35                  40                  45

Val Thr Pro Pro Ala Val Phe Asp Ala Lys Gln Leu Lys Lys Ser Met
    50                  55                  60

Lys Gly Ala Gly Thr Asn Glu Asp Ala Leu Ile Glu Ile Leu Thr Thr
65                  70                  75                  80

Arg Thr Ser Arg Gln Met Lys Asp Ile Ser Gln Ala Tyr Tyr Thr Val
                85                  90                  95

Tyr Lys Lys Ser Leu Gly Asp Asp Ile Ser Ser Glu Thr Ser Gly Asp
            100                 105                 110

Phe Arg Lys Ala Leu Leu Thr Leu Ala Asp Gly Arg Arg Asp Glu Ser
        115                 120                 125

Leu Lys Val Asp Glu His Leu Ala Lys Gln Asp Ala Gln Ile Leu Tyr
    130                 135                 140

Lys Ala Gly Glu Asn Arg Trp Gly Thr Asp Glu Asp Lys Phe Thr Glu
145                 150                 155                 160

Ile Leu Cys Leu Arg Ser Phe Pro Gln Leu Lys Leu Thr Phe Asp Glu
                165                 170                 175

Tyr Arg Asn Ile Ser Gln Lys Asp Ile Val Asp Ser Ile Lys Gly Glu
            180                 185                 190

Leu Ser Gly His Phe Glu Asp Leu Leu Leu Ala Ile Val Asn Cys Val
        195                 200                 205

Arg Asn Thr Pro Ala Phe Leu Ala Glu Arg Leu His Arg Ala Leu Lys
    210                 215                 220

Gly Ile Gly Thr Asp Glu Phe Thr Leu Asn Arg Ile Met Val Ser Arg
225                 230                 235                 240
```

```
Ser Glu Ile Asp Leu Leu Asp Ile Arg Thr Glu Phe Lys Lys His Tyr
                245                 250                 255

Gly Tyr Ser Leu Tyr Ser Ala Ile Lys Ser Asp Thr Ser Gly Asp Tyr
            260                 265                 270

Glu Ile Thr Leu Leu Lys Ile Cys Gly Gly Asp Asp
        275                 280


<210> 5411
<211> 154
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1175; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA3; "

<220>
<221> source
<223> /note="Gene Name:
      annexin A3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000421512"

<400> 5411
Met Ala Ser Ile Trp Val Gly His Arg Gly Thr Val Arg Asp Tyr Pro
1               5                   10                  15

Asp Phe Ser Pro Ser Val Asp Ala Glu Ala Ile Gln Lys Ala Ile Arg
            20                  25                  30

Gly Ile Gly Thr Asp Glu Lys Met Leu Ile Ser Ile Leu Thr Glu Arg
        35                  40                  45

Ser Asn Ala Gln Arg Gln Leu Ile Val Lys Glu Tyr Gln Ala Ala Tyr
    50                  55                  60

Gly Lys Glu Leu Lys Asp Asp Leu Lys Gly Asp Leu Ser Gly His Phe
65                  70                  75                  80
```

```
Glu His Leu Met Val Ala Leu Val Thr Pro Pro Ala Val Phe Asp Ala
                85                  90                  95

Lys Gln Leu Lys Lys Ser Met Lys Gly Ala Gly Thr Asn Glu Asp Ala
            100                 105                 110

Leu Ile Glu Ile Leu Thr Thr Arg Thr Ser Arg Gln Met Lys Asp Ile
        115                 120                 125

Ser Gln Ala Tyr Tyr Thr Val Tyr Lys Lys Ser Leu Gly Asp Asp Ile
    130                 135                 140

Ser Ser Glu Thr Ser Gly Asp Phe Arg Lys
145                 150


<210> 5412
<211> 134
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1175; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA3; "

<220>
<221> source
<223> /note="Gene Name:
      annexin A3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000422281"

<400> 5412
Met Ala Ser Ile Trp Val Gly His Arg Gly Thr Val Arg Asp Tyr Pro
1               5                  10                  15

Asp Phe Ser Pro Ser Val Asp Ala Glu Ala Ile Gln Lys Ala Ile Arg
            20                  25                  30

Gly Ile Gly Thr Asp Glu Lys Met Leu Ile Ser Ile Leu Thr Glu Arg
        35                  40                  45

Ser Asn Ala Gln Arg Gln Leu Ile Val Lys Glu Tyr Gln Ala Ala Tyr
    50                  55                  60
```

```
Gly Lys Glu Leu Lys Asp Asp Leu Lys Gly Asp Leu Ser Gly His Phe
65                  70                  75                  80


Glu His Leu Met Val Ala Leu Val Thr Pro Pro Ala Val Phe Asp Ala
                85                  90                  95


Lys Gln Leu Lys Lys Ser Met Lys Gly Ala Gly Thr Asn Glu Asp Ala
            100                 105                 110


Leu Ile Glu Ile Leu Thr Thr Arg Thr Ser Arg Gln Met Lys Asp Ile
        115                 120                 125


Ser Gln Ala Tyr Tyr Thr
    130


<210> 5413
<211> 284
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1175; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA3; "

<220>
<221> source
<223> /note="Gene Name:
      annexin A3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000423068"

<400> 5413
Met Leu Ile Ser Ile Leu Thr Glu Arg Ser Asn Ala Gln Arg Gln Leu
1               5                   10                  15


Ile Val Lys Glu Tyr Gln Ala Ala Tyr Gly Lys Glu Leu Lys Asp Asp
            20                  25                  30


Leu Lys Gly Asp Leu Ser Gly His Phe Glu His Leu Met Val Ala Leu
        35                  40                  45
```

```
Val Thr Pro Pro Ala Val Phe Asp Ala Lys Gln Leu Lys Lys Ser Met
    50                  55                  60

Lys Gly Ala Gly Thr Asn Glu Asp Ala Leu Ile Glu Ile Leu Thr Thr
65                  70                  75                  80

Arg Thr Ser Arg Gln Met Lys Asp Ile Ser Gln Ala Tyr Tyr Thr Val
                85                  90                  95

Tyr Lys Lys Ser Leu Gly Asp Asp Ile Ser Ser Glu Thr Ser Gly Asp
            100                 105                 110

Phe Arg Lys Ala Leu Leu Thr Leu Ala Asp Gly Arg Arg Asp Glu Ser
        115                 120                 125

Leu Lys Val Asp Glu His Leu Ala Lys Gln Asp Ala Gln Ile Leu Tyr
    130                 135                 140

Lys Ala Gly Glu Asn Arg Trp Gly Thr Asp Glu Asp Lys Phe Thr Glu
145                 150                 155                 160

Ile Leu Cys Leu Arg Ser Phe Pro Gln Leu Lys Leu Thr Phe Asp Glu
                165                 170                 175

Tyr Arg Asn Ile Ser Gln Lys Asp Ile Val Asp Ser Ile Lys Gly Glu
            180                 185                 190

Leu Ser Gly His Phe Glu Asp Leu Leu Leu Ala Ile Val Asn Cys Val
        195                 200                 205

Arg Asn Thr Pro Ala Phe Leu Ala Glu Arg Leu His Arg Ala Leu Lys
    210                 215                 220

Gly Ile Gly Thr Asp Glu Phe Thr Leu Asn Arg Ile Met Val Ser Arg
225                 230                 235                 240

Ser Glu Ile Asp Leu Leu Asp Ile Arg Thr Glu Phe Lys Lys His Tyr
                245                 250                 255

Gly Tyr Ser Leu Tyr Ser Ala Ile Lys Ser Asp Thr Ser Gly Asp Tyr
            260                 265                 270

Glu Ile Thr Leu Leu Lys Ile Cys Gly Gly Asp Asp
```

275 280

<210> 5414
<211> 104
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1175; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA3; "

<220>
<221> source
<223> /note="Gene Name:
annexin A3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000424584"

<400> 5414
Met Ala Ser Ile Trp Val Gly His Arg Gly Thr Val Arg Asp Tyr Pro
1 5 10 15

Asp Phe Ser Pro Ser Val Asp Ala Glu Ala Ile Gln Lys Ala Ile Arg
20 25 30

Gly Ile Gly Thr Asp Glu Lys Met Leu Ile Ser Ile Leu Thr Glu Arg
35 40 45

Ser Asn Ala Gln Arg Gln Leu Ile Val Lys Glu Tyr Gln Ala Ala Tyr
50 55 60

Gly Lys Glu Leu Lys Asp Asp Leu Lys Gly Asp Leu Ser Gly His Phe
65 70 75 80

Glu His Leu Met Val Ala Leu Val Thr Pro Pro Ala Val Phe Asp Ala
85 90 95

Lys Gln Leu Lys Lys Ser Met Lys
100

<210> 5415
<211> 55
<212> PRT

<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1175; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA3; "

<220>
<221> source
<223> /note="Gene Name:
annexin A3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000426591"

<400> 5415
Met Ala Ser Ile Trp Gly Arg Arg Asp Glu Ser Leu Lys Val Asp Glu
1 5 10 15

His Leu Ala Lys Gln Asp Ala Gln Ile Leu Tyr Lys Ala Gly Glu Asn
20 25 30

Arg Trp Gly Thr Asp Glu Asp Lys Phe Thr Glu Ile Leu Cys Leu Arg
35 40 45

Ser Phe Pro Gln Leu Lys Leu
50 55

<210> 5416
<211> 321
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1176; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA4; "

<220>
<221> source
<223> /note="Gene Name:
annexin A4; "

<220>
<221> source
<223> /note="Uniprot ID: P09525; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000377833"

<400> 5416
Met Ala Met Ala Thr Lys Gly Gly Thr Val Lys Ala Ala Ser Gly Phe
1   5   10   15

Asn Ala Met Glu Asp Ala Gln Thr Leu Arg Lys Ala Met Lys Gly Leu
            20   25   30

Gly Thr Asp Glu Asp Ala Ile Ile Ser Val Leu Ala Tyr Arg Asn Thr
        35   40   45

Ala Gln Arg Gln Glu Ile Arg Thr Ala Tyr Lys Ser Thr Ile Gly Arg
    50   55   60

Asp Leu Ile Asp Asp Leu Lys Ser Glu Leu Ser Gly Asn Phe Glu Gln
65   70   75   80

Val Ile Val Gly Met Met Thr Pro Thr Val Leu Tyr Asp Val Gln Glu
                85   90   95

Leu Arg Arg Ala Met Lys Gly Ala Gly Thr Asp Glu Gly Cys Leu Ile
            100   105   110

Glu Ile Leu Ala Ser Arg Thr Pro Glu Glu Ile Arg Arg Ile Ser Gln
        115   120   125

Thr Tyr Gln Gln Gln Tyr Gly Arg Ser Leu Glu Asp Asp Ile Arg Ser
    130   135   140

Asp Thr Ser Phe Met Phe Gln Arg Val Leu Val Ser Leu Ser Ala Gly
145   150   155   160

Gly Arg Asp Glu Gly Asn Tyr Leu Asp Asp Ala Leu Val Arg Gln Asp
                165   170   175

Ala Gln Asp Leu Tyr Glu Ala Gly Glu Lys Lys Trp Gly Thr Asp Glu
            180   185   190

Val Lys Phe Leu Thr Val Leu Cys Ser Arg Asn Arg Asn His Leu Leu
        195   200   205

```
His Val Phe Asp Glu Tyr Lys Arg Ile Ser Gln Lys Asp Ile Glu Gln
    210                 215                 220

Ser Ile Lys Ser Glu Thr Ser Gly Ser Phe Glu Asp Ala Leu Leu Ala
225                 230                 235                 240

Ile Val Lys Cys Met Arg Asn Lys Ser Ala Tyr Phe Ala Glu Lys Leu
                245                 250                 255

Tyr Lys Ser Met Lys Gly Leu Gly Thr Asp Asp Asn Thr Leu Ile Arg
            260                 265                 270

Val Met Val Ser Arg Ala Glu Ile Asp Met Leu Asp Ile Arg Ala His
        275                 280                 285

Phe Lys Arg Leu Tyr Gly Lys Ser Leu Tyr Ser Phe Ile Lys Gly Asp
    290                 295                 300

Thr Ser Gly Asp Tyr Arg Lys Val Leu Leu Val Leu Cys Gly Gly Asp
305                 310                 315                 320

Asp
```

<210> 5417
<211> 299
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1176; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA4; "

<220>
<221> source
<223> /note="Gene Name:
annexin A4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000386756"

<400> 5417
Met Ala Met Ala Thr Lys Gly Gly Thr Val Lys Ala Ala Ser Gly Phe

```
1               5                   10                  15

Asn Ala Met Glu Asp Ala Gln Thr Leu Arg Lys Ala Met Lys Gly Leu
            20                  25                  30

Gly Thr Asp Glu Asp Ala Ile Ile Ser Val Leu Ala Tyr Arg Asn Thr
        35                  40                  45

Ala Gln Arg Gln Glu Ile Arg Thr Ala Tyr Lys Ser Thr Ile Gly Arg
    50                  55                  60

Asp Leu Ile Asp Asp Leu Lys Ser Glu Leu Ser Gly Asn Phe Glu Gln
65                  70                  75                  80

Gly Ala Gly Thr Asp Glu Gly Cys Leu Ile Glu Ile Leu Ala Ser Arg
                85                  90                  95

Thr Pro Glu Glu Ile Arg Arg Ile Ser Gln Thr Tyr Gln Gln Gln Tyr
            100                 105                 110

Gly Arg Ser Leu Glu Asp Asp Ile Arg Ser Asp Thr Ser Phe Met Phe
        115                 120                 125

Gln Arg Val Leu Val Ser Leu Ser Ala Gly Gly Arg Asp Glu Gly Asn
    130                 135                 140

Tyr Leu Asp Asp Ala Leu Val Arg Gln Asp Ala Gln Asp Leu Tyr Glu
145                 150                 155                 160

Ala Gly Glu Lys Lys Trp Gly Thr Asp Glu Val Lys Phe Leu Thr Val
                165                 170                 175

Leu Cys Ser Arg Asn Arg Asn His Leu Leu His Val Phe Asp Glu Tyr
            180                 185                 190

Lys Arg Ile Ser Gln Lys Asp Ile Glu Gln Ser Ile Lys Ser Glu Thr
        195                 200                 205

Ser Gly Ser Phe Glu Asp Ala Leu Leu Ala Ile Val Lys Cys Met Arg
    210                 215                 220

Asn Lys Ser Ala Tyr Phe Ala Glu Lys Leu Tyr Lys Ser Met Lys Gly
225                 230                 235                 240
```

```
Leu Gly Thr Asp Asp Asn Thr Leu Ile Arg Val Met Val Ser Arg Ala
                245                 250                 255

Glu Ile Asp Met Leu Asp Ile Arg Ala His Phe Lys Arg Leu Tyr Gly
            260                 265                 270

Lys Ser Leu Tyr Ser Phe Ile Lys Gly Asp Thr Ser Gly Asp Tyr Arg
        275                 280                 285

Lys Val Leu Leu Val Leu Cys Gly Gly Asp Asp
    290                 295


<210> 5418
<211> 142
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1176; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA4; "

<220>
<221> source
<223> /note="Gene Name:
      annexin A4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000489316"

<400> 5418
Met Ala Met Ala Thr Lys Gly Gly Thr Val Lys Ala Ala Ser Gly Phe
1               5                   10                  15

Asn Ala Met Glu Asp Ala Gln Thr Leu Arg Lys Ala Met Lys Gly Leu
            20                  25                  30

Gly Thr Asp Glu Asp Ala Ile Ile Ser Val Leu Ala Tyr Arg Asn Thr
        35                  40                  45

Ala Gln Arg Gln Glu Ile Arg Thr Ala Tyr Lys Ser Thr Ile Gly Arg
    50                  55                  60
```

```
Asp Leu Ile Asp Asp Leu Lys Ser Glu Leu Ser Gly Asn Phe Glu Gln
65                  70                  75                  80


Gly Ala Gly Thr Asp Glu Gly Cys Leu Ile Glu Ile Leu Ala Ser Arg
                85                  90                  95


Thr Pro Glu Glu Ile Arg Arg Ile Ser Gln Thr Tyr Gln Gln Gln Tyr
            100                 105                 110


Gly Arg Ser Leu Glu Asp Asp Ile Arg Ser Asp Thr Ser Phe Met Phe
        115                 120                 125


Gln Arg Val Leu Val Ser Leu Ser Ala Val Ser Asp Cys Phe
    130                 135                 140


<210> 5419
<211> 7
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1176; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA4; "

<220>
<221> source
<223> /note="Gene Name:
      annexin A4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000489464"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5419
Xaa Thr Tyr Gln Gln Arg Thr
1               5


<210> 5420
<211> 8
<212> PRT
<213> Homo sapiens
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<220>
<221> source
<223> /note="Payload ID: 1176; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA4; "

<220>
<221> source
<223> /note="Gene Name:
annexin A4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000489490"

<400> 5420
Ser Gln Thr Tyr Gln Gln Arg Thr
1 5

<210> 5421
<211> 320
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1177; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA5; "

<220>
<221> source
<223> /note="Gene Name:
annexin A5; "

<220>
<221> source
<223> /note="Uniprot ID: P08758; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000296511"

<400> 5421
Met Ala Gln Val Leu Arg Gly Thr Val Thr Asp Phe Pro Gly Phe Asp
1 5 10 15

Glu Arg Ala Asp Ala Glu Thr Leu Arg Lys Ala Met Lys Gly Leu Gly
20 25 30

```
Thr Asp Glu Glu Ser Ile Leu Thr Leu Leu Thr Ser Arg Ser Asn Ala
        35                  40                  45

Gln Arg Gln Glu Ile Ser Ala Ala Phe Lys Thr Leu Phe Gly Arg Asp
    50                  55                  60

Leu Leu Asp Asp Leu Lys Ser Glu Leu Thr Gly Lys Phe Glu Lys Leu
65                  70                  75                  80

Ile Val Ala Leu Met Lys Pro Ser Arg Leu Tyr Asp Ala Tyr Glu Leu
                85                  90                  95

Lys His Ala Leu Lys Gly Ala Gly Thr Asn Glu Lys Val Leu Thr Glu
            100                 105                 110

Ile Ile Ala Ser Arg Thr Pro Glu Glu Leu Arg Ala Ile Lys Gln Val
        115                 120                 125

Tyr Glu Glu Glu Tyr Gly Ser Ser Leu Glu Asp Asp Val Val Gly Asp
    130                 135                 140

Thr Ser Gly Tyr Tyr Gln Arg Met Leu Val Val Leu Leu Gln Ala Asn
145                 150                 155                 160

Arg Asp Pro Asp Ala Gly Ile Asp Glu Ala Gln Val Glu Gln Asp Ala
                165                 170                 175

Gln Ala Leu Phe Gln Ala Gly Glu Leu Lys Trp Gly Thr Asp Glu Glu
            180                 185                 190

Lys Phe Ile Thr Ile Phe Gly Thr Arg Ser Val Ser His Leu Arg Lys
        195                 200                 205

Val Phe Asp Lys Tyr Met Thr Ile Ser Gly Phe Gln Ile Glu Glu Thr
    210                 215                 220

Ile Asp Arg Glu Thr Ser Gly Asn Leu Glu Gln Leu Leu Leu Ala Val
225                 230                 235                 240

Val Lys Ser Ile Arg Ser Ile Pro Ala Tyr Leu Ala Glu Thr Leu Tyr
                245                 250                 255
```

```
Tyr Ala Met Lys Gly Ala Gly Thr Asp Asp His Thr Leu Ile Arg Val
            260                 265                 270

Met Val Ser Arg Ser Glu Ile Asp Leu Phe Asn Ile Arg Lys Glu Phe
        275                 280                 285

Arg Lys Asn Phe Ala Thr Ser Leu Tyr Ser Met Ile Lys Gly Asp Thr
    290                 295                 300

Ser Gly Asp Tyr Lys Lys Ala Leu Leu Leu Leu Cys Gly Glu Asp Asp
305                 310                 315                 320
```

<210> 5422
<211> 163
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1177; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA5; "

<220>
<221> source
<223> /note="Gene Name:
annexin A5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000421421"

<400> 5422

```
Met Ala Gln Val Leu Arg Gly Thr Val Thr Asp Phe Pro Gly Phe Asp
1               5                  10                  15

Glu Arg Ala Asp Ala Glu Thr Leu Arg Lys Ala Met Lys Gly Leu Gly
            20                  25                  30

Thr Asp Glu Glu Ser Ile Leu Thr Leu Leu Thr Ser Arg Ser Asn Ala
        35                  40                  45

Gln Arg Gln Glu Ile Ser Ala Ala Phe Lys Thr Leu Phe Gly Arg Asp
    50                  55                  60

Leu Leu Asp Asp Leu Lys Ser Glu Leu Thr Gly Lys Phe Glu Lys Leu
65                  70                  75                  80
```

```
Ile Val Ala Leu Met Lys Pro Ser Arg Leu Tyr Asp Ala Tyr Glu Leu
                85                  90                  95

Lys His Ala Leu Lys Gly Ala Gly Thr Asn Glu Lys Val Leu Thr Glu
            100                 105                 110

Ile Ile Ala Ser Arg Thr Pro Glu Glu Leu Arg Ala Ile Lys Gln Val
        115                 120                 125

Tyr Glu Glu Glu Tyr Gly Ser Ser Leu Glu Asp Asp Val Val Gly Asp
    130                 135                 140

Thr Ser Gly Tyr Tyr Gln Arg Met Leu Val Val Leu Leu Gln Val Leu
145                 150                 155                 160

Arg Gly Asp
```

<210> 5423
<211> 260
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1177; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA5; "

<220>
<221> source
<223> /note="Gene Name:
annexin A5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000424106"

<400> 5423

```
Met Ala Gln Asp Leu Leu Asp Asp Leu Lys Ser Glu Leu Thr Gly Lys
1               5                   10                  15

Phe Glu Lys Leu Ile Val Ala Leu Met Lys Pro Ser Arg Leu Tyr Asp
            20                  25                  30
```

```
Ala Tyr Glu Leu Lys His Ala Leu Lys Gly Ala Gly Thr Asn Glu Lys
        35                  40                  45

Val Leu Thr Glu Ile Ile Ala Ser Arg Thr Pro Glu Glu Leu Arg Ala
    50                  55                  60

Ile Lys Gln Val Tyr Glu Glu Glu Tyr Gly Ser Ser Leu Glu Asp Asp
65                  70                  75                  80

Val Val Gly Asp Thr Ser Gly Tyr Tyr Gln Arg Met Leu Val Val Leu
                85                  90                  95

Leu Gln Ala Asn Arg Asp Pro Asp Ala Gly Ile Asp Glu Ala Gln Val
            100                 105                 110

Glu Gln Asp Ala Gln Ala Leu Phe Gln Ala Gly Glu Leu Lys Trp Gly
        115                 120                 125

Thr Asp Glu Glu Lys Phe Ile Thr Ile Phe Gly Thr Arg Ser Val Ser
    130                 135                 140

His Leu Arg Lys Val Phe Asp Lys Tyr Met Thr Ile Ser Gly Phe Gln
145                 150                 155                 160

Ile Glu Glu Thr Ile Asp Arg Glu Thr Ser Gly Asn Leu Glu Gln Leu
                165                 170                 175

Leu Leu Ala Val Val Lys Ser Ile Arg Ser Ile Pro Ala Tyr Leu Ala
            180                 185                 190

Glu Thr Leu Tyr Tyr Ala Met Lys Gly Ala Gly Thr Asp Asp His Thr
        195                 200                 205

Leu Ile Arg Val Met Val Ser Arg Ser Glu Ile Asp Leu Phe Asn Ile
    210                 215                 220

Arg Lys Glu Phe Arg Lys Asn Phe Ala Thr Ser Leu Tyr Ser Met Ile
225                 230                 235                 240

Lys Gly Asp Thr Ser Gly Asp Tyr Lys Lys Ala Leu Leu Leu Leu Cys
                245                 250                 255

Gly Glu Asp Asp
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260

<210> 5424
<211> 220
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1177; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA5; "

<220>
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<223> /note="Gene Name:
annexin A5; "

<220>
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<223> /note="ENSP ID: ENSP00000424199"

<400> 5424
Met Ala Gln Val Leu Arg Gly Thr Val Thr Asp Phe Pro Gly Phe Asp
1 5 10 15

Glu Arg Ala Asp Ala Glu Thr Leu Arg Lys Ala Met Lys Gly Leu Glu
20 25 30

Tyr Gly Ser Ser Leu Glu Asp Asp Val Val Gly Asp Thr Ser Gly Tyr
35 40 45

Tyr Gln Arg Met Leu Val Val Leu Leu Gln Ala Asn Arg Asp Pro Asp
50 55 60

Ala Gly Ile Asp Glu Ala Gln Val Glu Gln Asp Ala Gln Ala Leu Phe
65 70 75 80

Gln Ala Gly Glu Leu Lys Trp Gly Thr Asp Glu Glu Lys Phe Ile Thr
85 90 95

Ile Phe Gly Thr Arg Ser Val Ser His Leu Arg Lys Val Phe Asp Lys
100 105 110

Tyr Met Thr Ile Ser Gly Phe Gln Ile Glu Glu Thr Ile Asp Arg Glu
115 120 125

```
Thr Ser Gly Asn Leu Glu Gln Leu Leu Leu Ala Val Val Lys Ser Ile
    130                 135                 140

Arg Ser Ile Pro Ala Tyr Leu Ala Glu Thr Leu Tyr Tyr Ala Met Lys
145                 150                 155                 160

Gly Ala Gly Thr Asp Asp His Thr Leu Ile Arg Val Met Val Ser Arg
                165                 170                 175

Ser Glu Ile Asp Leu Phe Asn Ile Arg Lys Glu Phe Arg Lys Asn Phe
            180                 185                 190

Ala Thr Ser Leu Tyr Ser Met Ile Lys Gly Asp Thr Ser Gly Asp Tyr
        195                 200                 205

Lys Lys Ala Leu Leu Leu Leu Cys Gly Glu Asp Asp
    210                 215                 220


<210> 5425
<211> 35
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000427135"

<400> 5425
Met Ala Gln Val Leu Arg Gly Thr Val Thr Asp Phe Pro Gly Phe Asp
1               5                   10                  15

Glu Arg Ala Asp Ala Glu Thr Leu Arg Lys Ala Met Lys Gly Leu Gly
            20                  25                  30

Ser Ser Gly
```

35

<210> 5426
<211> 673
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1178; "

<220>
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<223> /note="Gene Symbol: ANXA6; "

<220>
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<223> /note="Gene Name:
annexin A6; "

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<220>
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<223> /note="ENSP ID: ENSP00000346550"

<400> 5426
Met Ala Lys Pro Ala Gln Gly Ala Lys Tyr Arg Gly Ser Ile His Asp
1   5   10   15

Phe Pro Gly Phe Asp Pro Asn Gln Asp Ala Glu Ala Leu Tyr Thr Ala
            20   25   30

Met Lys Gly Phe Gly Ser Asp Lys Glu Ala Ile Leu Asp Ile Ile Thr
        35   40   45

Ser Arg Ser Asn Arg Gln Arg Gln Glu Val Cys Gln Ser Tyr Lys Ser
    50   55   60

Leu Tyr Gly Lys Asp Leu Ile Ala Asp Leu Lys Tyr Glu Leu Thr Gly
65   70   75   80

Lys Phe Glu Arg Leu Ile Val Gly Leu Met Arg Pro Pro Ala Tyr Cys
                85   90   95

Asp Ala Lys Glu Ile Lys Asp Ala Ile Ser Gly Ile Gly Thr Asp Glu
            100   105   110

```
Lys Cys Leu Ile Glu Ile Leu Ala Ser Arg Thr Asn Glu Gln Met His
        115                 120                 125

Gln Leu Val Ala Ala Tyr Lys Asp Ala Tyr Glu Arg Asp Leu Glu Ala
    130                 135                 140

Asp Ile Ile Gly Asp Thr Ser Gly His Phe Gln Lys Met Leu Val Val
145                 150                 155                 160

Leu Leu Gln Gly Thr Arg Glu Glu Asp Asp Val Val Ser Glu Asp Leu
                165                 170                 175

Val Gln Gln Asp Val Gln Asp Leu Tyr Glu Ala Gly Glu Leu Lys Trp
            180                 185                 190

Gly Thr Asp Glu Ala Gln Phe Ile Tyr Ile Leu Gly Asn Arg Ser Lys
        195                 200                 205

Gln His Leu Arg Leu Val Phe Asp Glu Tyr Leu Lys Thr Thr Gly Lys
    210                 215                 220

Pro Ile Glu Ala Ser Ile Arg Gly Glu Leu Ser Gly Asp Phe Glu Lys
225                 230                 235                 240

Leu Met Leu Ala Val Val Lys Cys Ile Arg Ser Thr Pro Glu Tyr Phe
                245                 250                 255

Ala Glu Arg Leu Phe Lys Ala Met Lys Gly Leu Gly Thr Arg Asp Asn
            260                 265                 270

Thr Leu Ile Arg Ile Met Val Ser Arg Ser Glu Leu Asp Met Leu Asp
        275                 280                 285

Ile Arg Glu Ile Phe Arg Thr Lys Tyr Glu Lys Ser Leu Tyr Ser Met
    290                 295                 300

Ile Lys Asn Asp Thr Ser Gly Glu Tyr Lys Lys Thr Leu Leu Lys Leu
305                 310                 315                 320

Ser Gly Gly Asp Asp Asp Ala Ala Gly Gln Phe Phe Pro Glu Ala Ala
                325                 330                 335
```

```
Gln Val Ala Tyr Gln Met Trp Glu Leu Ser Ala Val Ala Arg Val Glu
            340                 345                 350

Leu Lys Gly Thr Val Arg Pro Ala Asn Asp Phe Asn Pro Asp Ala Asp
        355                 360                 365

Ala Lys Ala Leu Arg Lys Ala Met Lys Gly Leu Gly Thr Asp Glu Asp
    370                 375                 380

Thr Ile Ile Asp Ile Ile Thr His Arg Ser Asn Val Gln Arg Gln Gln
385                 390                 395                 400

Ile Arg Gln Thr Phe Lys Ser His Phe Gly Arg Asp Leu Met Thr Asp
                405                 410                 415

Leu Lys Ser Glu Ile Ser Gly Asp Leu Ala Arg Leu Ile Leu Gly Leu
            420                 425                 430

Met Met Pro Pro Ala His Tyr Asp Ala Lys Gln Leu Lys Lys Ala Met
        435                 440                 445

Glu Gly Ala Gly Thr Asp Glu Lys Ala Leu Ile Glu Ile Leu Ala Thr
    450                 455                 460

Arg Thr Asn Ala Glu Ile Arg Ala Ile Asn Glu Ala Tyr Lys Glu Asp
465                 470                 475                 480

Tyr His Lys Ser Leu Glu Asp Ala Leu Ser Ser Asp Thr Ser Gly His
                485                 490                 495

Phe Arg Arg Ile Leu Ile Ser Leu Ala Thr Gly His Arg Glu Glu Gly
            500                 505                 510

Gly Glu Asn Leu Asp Gln Ala Arg Glu Asp Ala Gln Val Ala Ala Glu
        515                 520                 525

Ile Leu Glu Ile Ala Asp Thr Pro Ser Gly Asp Lys Thr Ser Leu Glu
    530                 535                 540

Thr Arg Phe Met Thr Ile Leu Cys Thr Arg Ser Tyr Pro His Leu Arg
545                 550                 555                 560

Arg Val Phe Gln Glu Phe Ile Lys Met Thr Asn Tyr Asp Val Glu His
```

565 570 575

Thr Ile Lys Lys Glu Met Ser Gly Asp Val Arg Asp Ala Phe Val Ala
580 585 590

Ile Val Gln Ser Val Lys Asn Lys Pro Leu Phe Phe Ala Asp Lys Leu
595 600 605

Tyr Lys Ser Met Lys Gly Ala Gly Thr Asp Glu Lys Thr Leu Thr Arg
610 615 620

Ile Met Val Ser Arg Ser Glu Ile Asp Leu Leu Asn Ile Arg Arg Glu
625 630 635 640

Phe Ile Glu Lys Tyr Asp Lys Ser Leu His Gln Ala Ile Glu Gly Asp
645 650 655

Thr Ser Gly Asp Phe Leu Lys Ala Leu Leu Ala Leu Cys Gly Gly Glu
660 665 670

Asp

<210> 5427
<211> 330
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1178; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA6; "

<220>
<221> source
<223> /note="Gene Name:
annexin A6; "

<220>
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<223> /note="ENSP ID: ENSP00000366980"

<400> 5427
Met Ala Lys Pro Ala Gln Gly Ala Lys Tyr Arg Gly Ser Ile His Asp
1 5 10 15

```
Phe Pro Gly Phe Asp Pro Asn Gln Asp Ala Glu Ala Leu Tyr Thr Ala
            20                  25                  30

Met Lys Gly Phe Gly Ser Asp Lys Glu Ala Ile Leu Asp Ile Ile Thr
        35                  40                  45

Ser Arg Ser Asn Arg Gln Arg Gln Glu Val Cys Gln Ser Tyr Lys Ser
    50                  55                  60

Leu Tyr Gly Lys Asp Leu Met Thr Asp Leu Lys Ser Glu Ile Ser Gly
65                  70                  75                  80

Asp Leu Ala Arg Leu Ile Leu Gly Leu Met Met Pro Pro Ala His Tyr
                85                  90                  95

Asp Ala Lys Gln Leu Lys Lys Ala Met Glu Gly Ala Gly Thr Asp Glu
            100                 105                 110

Lys Ala Leu Ile Glu Ile Leu Ala Thr Arg Thr Asn Ala Glu Ile Arg
        115                 120                 125

Ala Ile Asn Glu Ala Tyr Lys Glu Asp Tyr His Lys Ser Leu Glu Asp
    130                 135                 140

Ala Leu Ser Ser Asp Thr Ser Gly His Phe Arg Arg Ile Leu Ile Ser
145                 150                 155                 160

Leu Ala Thr Gly His Arg Glu Glu Gly Gly Glu Asn Leu Asp Gln Ala
                165                 170                 175

Arg Glu Asp Ala Gln Val Ala Ala Glu Ile Leu Glu Ile Ala Asp Thr
            180                 185                 190

Pro Ser Gly Asp Lys Thr Ser Leu Glu Thr Arg Phe Met Thr Ile Leu
        195                 200                 205

Cys Thr Arg Ser Tyr Pro His Leu Arg Arg Val Phe Gln Glu Phe Ile
    210                 215                 220

Lys Met Thr Asn Tyr Asp Val Glu His Thr Ile Lys Lys Glu Met Ser
225                 230                 235                 240
```

```
Gly Asp Val Arg Asp Ala Phe Val Ala Ile Val Gln Ser Val Lys Asn
                245                 250                 255

Lys Pro Leu Phe Phe Ala Asp Lys Leu Tyr Lys Ser Met Lys Gly Ala
            260                 265                 270

Gly Thr Asp Glu Lys Thr Leu Thr Arg Ile Met Val Ser Arg Ser Glu
        275                 280                 285

Ile Asp Leu Leu Asn Ile Arg Arg Glu Phe Ile Glu Lys Tyr Asp Lys
    290                 295                 300

Ser Leu His Gln Ala Ile Glu Gly Asp Thr Ser Gly Asp Phe Leu Lys
305                 310                 315                 320

Ala Leu Leu Ala Leu Cys Gly Gly Glu Asp
                325                 330


<210> 5428
<211> 156
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1178; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA6; "

<220>
<221> source
<223> /note="Gene Name:
      annexin A6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000428916"

<400> 5428
Met Ala Lys Pro Ala Gln Gly Ala Lys Tyr Arg Gly Ser Ile His Asp
1               5                   10                  15

Phe Pro Gly Phe Asp Pro Asn Gln Asp Ala Glu Ala Leu Tyr Thr Ala
            20                  25                  30

Met Lys Gly Phe Gly Ser Asp Lys Glu Ala Ile Leu Asp Ile Ile Thr
        35                  40                  45
```

```
Ser Arg Ser Asn Arg Gln Arg Gln Glu Val Cys Gln Ser Tyr Lys Ser
    50                  55                  60

Leu Tyr Gly Lys Asp Leu Ile Ala Asp Leu Lys Tyr Glu Leu Thr Gly
65                  70                  75                  80

Lys Phe Glu Arg Leu Ile Val Gly Leu Met Arg Pro Pro Ala Tyr Cys
                85                  90                  95

Asp Ala Lys Glu Ile Lys Asp Ala Ile Ser Gly Ala Gly Thr Asp Glu
            100                 105                 110

Lys Thr Leu Thr Arg Ile Met Val Ser Arg Ser Glu Ile Asp Leu Leu
        115                 120                 125

Asn Ile Arg Arg Glu Phe Ile Glu Lys Tyr Asp Lys Ser Leu His Gln
    130                 135                 140

Ala Ile Glu Gly Asp Thr Ser Gly Asp Phe Leu Lys
145                 150                 155


<210> 5429
<211> 460
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000430420"

<400> 5429
Met Ala Lys Pro Ala Gln Gly Ala Lys Tyr Arg Gly Ser Ile His Asp
1               5                   10                  15
```

```
Phe Pro Gly Phe Asp Pro Asn Gln Asp Ala Glu Ala Leu Tyr Thr Ala
            20                  25                  30

Met Lys Gly Phe Gly Ser Asp Lys Glu Ala Ile Leu Asp Ile Ile Thr
        35                  40                  45

Ser Arg Ser Asn Arg Gln Arg Gln Glu Val Cys Gln Ser Tyr Lys Ser
    50                  55                  60

Leu Tyr Gly Lys Asp Leu Ile Ala Asp Leu Asn Glu Leu Asp Met Leu
65                  70                  75                  80

Asp Ile Arg Glu Ile Phe Arg Thr Lys Tyr Glu Lys Ser Leu Tyr Ser
                85                  90                  95

Met Ile Lys Asn Asp Thr Ser Gly Glu Tyr Lys Lys Thr Leu Leu Lys
            100                 105                 110

Leu Ser Gly Gly Asp Asp Asp Ala Ala Gly Gln Phe Phe Pro Glu Ala
        115                 120                 125

Ala Gln Val Ala Tyr Gln Met Trp Glu Leu Ser Ala Val Ala Arg Val
    130                 135                 140

Glu Leu Lys Gly Thr Val Arg Pro Ala Asn Asp Phe Asn Pro Asp Ala
145                 150                 155                 160

Asp Ala Lys Ala Leu Arg Lys Ala Met Lys Gly Leu Gly Thr Asp Glu
                165                 170                 175

Asp Thr Ile Ile Asp Ile Ile Thr His Arg Ser Asn Val Gln Arg Gln
            180                 185                 190

Gln Ile Arg Gln Thr Phe Lys Ser His Phe Gly Arg Asp Leu Met Thr
        195                 200                 205

Asp Leu Lys Ser Glu Ile Ser Gly Asp Leu Ala Arg Leu Ile Leu Gly
    210                 215                 220

Leu Met Met Pro Pro Ala His Tyr Asp Ala Lys Gln Leu Lys Lys Ala
225                 230                 235                 240

Met Glu Gly Ala Gly Thr Asp Glu Lys Ala Leu Ile Glu Ile Leu Ala
```

245 250 255

Thr Arg Thr Asn Ala Glu Ile Arg Ala Ile Asn Glu Ala Tyr Lys Glu
260 265 270

Asp Tyr His Lys Ser Leu Glu Asp Ala Leu Ser Ser Asp Thr Ser Gly
275 280 285

His Phe Arg Arg Ile Leu Ile Ser Leu Ala Thr Gly His Arg Glu Glu
290 295 300

Gly Gly Glu Asn Leu Asp Gln Ala Arg Glu Asp Ala Gln Glu Ile Ala
305 310 315 320

Asp Thr Pro Ser Gly Asp Lys Thr Ser Leu Glu Thr Arg Phe Met Thr
325 330 335

Ile Leu Cys Thr Arg Ser Tyr Pro His Leu Arg Arg Val Phe Gln Glu
340 345 350

Phe Ile Lys Met Thr Asn Tyr Asp Val Glu His Thr Ile Lys Lys Glu
355 360 365

Met Ser Gly Asp Val Arg Asp Ala Phe Val Ala Ile Val Gln Ser Val
370 375 380

Lys Asn Lys Pro Leu Phe Phe Ala Asp Lys Leu Tyr Lys Ser Met Lys
385 390 395 400

Gly Ala Gly Thr Asp Glu Lys Thr Leu Thr Arg Ile Met Val Ser Arg
405 410 415

Ser Glu Ile Asp Leu Leu Asn Ile Arg Arg Glu Phe Ile Glu Lys Tyr
420 425 430

Asp Lys Ser Leu His Gln Ala Ile Glu Gly Asp Thr Ser Gly Asp Phe
435 440 445

Leu Lys Ala Leu Leu Ala Leu Cys Gly Gly Glu Asp
450 455 460

<210> 5430
<211> 150

<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ANXA6; "

<220>
<221> source
<223> /note="Gene Name:
annexin A6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430429"

<400> 5430
Met Lys Gly Phe Gly Ser Asp Lys Glu Ala Ile Leu Asp Ile Ile Thr
1 5 10 15

Ser Arg Ser Asn Arg Gln Arg Gln Glu Val Cys Gln Ser Tyr Lys Ser
20 25 30

Leu Tyr Gly Lys Asp Leu Ile Ala Asp Leu Lys Tyr Glu Leu Thr Gly
35 40 45

Lys Phe Glu Arg Leu Ile Val Gly Leu Met Arg Pro Pro Ala Tyr Cys
50 55 60

Asp Ala Lys Glu Ile Lys Asp Ala Ile Ser Gly Ile Gly Thr Asp Glu
65 70 75 80

Lys Cys Leu Ile Glu Ile Leu Ala Ser Arg Thr Asn Glu Gln Met His
85 90 95

Gln Leu Val Ala Ala Tyr Lys Asp Ala Tyr Glu Arg Asp Leu Glu Ala
100 105 110

Asp Ile Ile Gly Asp Thr Ser Gly His Phe Gln Lys Met Leu Val Val
115 120 125

Leu Leu Gln Gly Thr Arg Glu Glu Asp Asp Val Val Ser Glu Asp Leu
130 135 140

Val Gln Gln Asp Val Gln
145 150

<210> 5431
<211> 641
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1178; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA6; "

<220>
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<223> /note="Gene Name:
annexin A6; "

<220>
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<223> /note="Uniprot ID: P08133; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430517"

<400> 5431
Met Lys Gly Phe Gly Ser Asp Lys Glu Ala Ile Leu Asp Ile Ile Thr
1 5 10 15

Ser Arg Ser Asn Arg Gln Arg Gln Glu Val Cys Gln Ser Tyr Lys Ser
20 25 30

Leu Tyr Gly Lys Asp Leu Ile Ala Asp Leu Lys Tyr Glu Leu Thr Gly
35 40 45

Lys Phe Glu Arg Leu Ile Val Gly Leu Met Arg Pro Pro Ala Tyr Cys
50 55 60

Asp Ala Lys Glu Ile Lys Asp Ala Ile Ser Gly Ile Gly Thr Asp Glu
65 70 75 80

Lys Cys Leu Ile Glu Ile Leu Ala Ser Arg Thr Asn Glu Gln Met His
85 90 95

Gln Leu Val Ala Ala Tyr Lys Asp Ala Tyr Glu Arg Asp Leu Glu Ala
100 105 110

```
Asp Ile Ile Gly Asp Thr Ser Gly His Phe Gln Lys Met Leu Val Val
        115                 120                 125

Leu Leu Gln Gly Thr Arg Glu Glu Asp Asp Val Val Ser Glu Asp Leu
    130                 135                 140

Val Gln Gln Asp Val Gln Asp Leu Tyr Glu Ala Gly Glu Leu Lys Trp
145                 150                 155                 160

Gly Thr Asp Glu Ala Gln Phe Ile Tyr Ile Leu Gly Asn Arg Ser Lys
                165                 170                 175

Gln His Leu Arg Leu Val Phe Asp Glu Tyr Leu Lys Thr Thr Gly Lys
            180                 185                 190

Pro Ile Glu Ala Ser Ile Arg Gly Glu Leu Ser Gly Asp Phe Glu Lys
        195                 200                 205

Leu Met Leu Ala Val Val Lys Cys Ile Arg Ser Thr Pro Glu Tyr Phe
    210                 215                 220

Ala Glu Arg Leu Phe Lys Ala Met Lys Gly Leu Gly Thr Arg Asp Asn
225                 230                 235                 240

Thr Leu Ile Arg Ile Met Val Ser Arg Ser Glu Leu Asp Met Leu Asp
                245                 250                 255

Ile Arg Glu Ile Phe Arg Thr Lys Tyr Glu Lys Ser Leu Tyr Ser Met
            260                 265                 270

Ile Lys Asn Asp Thr Ser Gly Glu Tyr Lys Lys Thr Leu Leu Lys Leu
        275                 280                 285

Ser Gly Gly Asp Asp Asp Ala Ala Gly Gln Phe Phe Pro Glu Ala Ala
    290                 295                 300

Gln Val Ala Tyr Gln Met Trp Glu Leu Ser Ala Val Ala Arg Val Glu
305                 310                 315                 320

Leu Lys Gly Thr Val Arg Pro Ala Asn Asp Phe Asn Pro Asp Ala Asp
                325                 330                 335
```

```
Ala Lys Ala Leu Arg Lys Ala Met Lys Gly Leu Gly Thr Asp Glu Asp
            340                 345                 350

Thr Ile Ile Asp Ile Ile Thr His Arg Ser Asn Val Gln Arg Gln Gln
        355                 360                 365

Ile Arg Gln Thr Phe Lys Ser His Phe Gly Arg Asp Leu Met Thr Asp
    370                 375                 380

Leu Lys Ser Glu Ile Ser Gly Asp Leu Ala Arg Leu Ile Leu Gly Leu
385                 390                 395                 400

Met Met Pro Pro Ala His Tyr Asp Ala Lys Gln Leu Lys Lys Ala Met
                405                 410                 415

Glu Gly Ala Gly Thr Asp Glu Lys Ala Leu Ile Glu Ile Leu Ala Thr
            420                 425                 430

Arg Thr Asn Ala Glu Ile Arg Ala Ile Asn Glu Ala Tyr Lys Glu Asp
        435                 440                 445

Tyr His Lys Ser Leu Glu Asp Ala Leu Ser Ser Asp Thr Ser Gly His
    450                 455                 460

Phe Arg Arg Ile Leu Ile Ser Leu Ala Thr Gly His Arg Glu Glu Gly
465                 470                 475                 480

Gly Glu Asn Leu Asp Gln Ala Arg Glu Asp Ala Gln Val Ala Ala Glu
                485                 490                 495

Ile Leu Glu Ile Ala Asp Thr Pro Ser Gly Asp Lys Thr Ser Leu Glu
            500                 505                 510

Thr Arg Phe Met Thr Ile Leu Cys Thr Arg Ser Tyr Pro His Leu Arg
        515                 520                 525

Arg Val Phe Gln Glu Phe Ile Lys Met Thr Asn Tyr Asp Val Glu His
    530                 535                 540

Thr Ile Lys Lys Glu Met Ser Gly Asp Val Arg Asp Ala Phe Val Ala
545                 550                 555                 560
```

```
Ile Val Gln Ser Val Lys Asn Lys Pro Leu Phe Phe Ala Asp Lys Leu
                565                 570                 575

Tyr Lys Ser Met Lys Gly Ala Gly Thr Asp Glu Lys Thr Leu Thr Arg
            580                 585                 590

Ile Met Val Ser Arg Ser Glu Ile Asp Leu Leu Asn Ile Arg Arg Glu
        595                 600                 605

Phe Ile Glu Lys Tyr Asp Lys Ser Leu His Gln Ala Ile Glu Gly Asp
    610                 615                 620

Thr Ser Gly Asp Phe Leu Lys Ala Leu Leu Ala Leu Cys Gly Gly Glu
625                 630                 635                 640

Asp
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<210> 5432
<211> 129
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1178; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA6; "

<220>
<221> source
<223> /note="Gene Name:
annexin A6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430572"

<400> 5432

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Met Lys Gly Phe Gly Ser Asp Lys Glu Ala Ile Leu Asp Ile Ile Thr
1               5                   10                  15

Ser Arg Ser Asn Arg Gln Arg Gln Glu Val Cys Gln Ser Tyr Lys Ser
            20                  25                  30

Leu Tyr Gly Lys Asp Leu Ile Ala Asp Leu Lys Tyr Glu Leu Thr Gly
        35                  40                  45
```

```
Lys Phe Glu Arg Leu Ile Val Gly Leu Met Arg Pro Pro Ala Tyr Cys
    50                  55                  60

Asp Ala Lys Glu Ile Lys Asp Ala Ile Ser Gly Ile Gly Thr Asp Glu
65                  70                  75                  80

Lys Cys Leu Ile Glu Ile Leu Ala Ser Arg Thr Asn Glu Gln Met His
                85                  90                  95

Gln Leu Val Ala Ala Tyr Lys Asp Ala Tyr Glu Arg Asp Leu Glu Ala
            100                 105                 110

Asp Ile Ile Gly Asp Thr Ser Gly His Phe Gln Lys Met Leu Val Val
        115                 120                 125

Leu
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<210> 5433
<211> 95
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
<221> source
<223> /note="Gene Name:
annexin A6; "

<220>
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<223> /note="ENSP ID: ENSP00000430663"

<400> 5433

```
Met Ala Lys Pro Ala Gln Gly Ala Lys Tyr Arg Gly Ser Ile His Asp
1               5                   10                  15

Phe Pro Gly Phe Asp Pro Asn Gln Asp Ala Glu Ala Leu Tyr Thr Ala
            20                  25                  30
```

```
Met Lys Gly Phe Gly Ser Asp Lys Glu Ala Ile Leu Asp Ile Ile Thr
        35                  40                  45

Ser Arg Ser Asn Arg Gln Arg Gln Glu Val Cys Gln Ser Tyr Lys Ser
    50                  55                  60

Leu Tyr Gly Lys Asp Leu Ile Ala Asp Leu Lys Tyr Glu Leu Thr Gly
65                  70                  75                  80

Lys Phe Glu Arg Leu Ile Val Gly Gly Leu Ser Asp Val Gly Thr
                85                  90                  95


<210> 5434
<211> 129
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ANXA6; "

<220>
<221> source
<223> /note="Gene Name:
      annexin A6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430826"

<400> 5434
Met Ala Lys Pro Ala Gln Gly Ala Lys Tyr Arg Gly Ser Ile His Asp
1               5                   10                  15

Phe Pro Gly Phe Asp Pro Asn Gln Asp Ala Glu Ala Leu Tyr Thr Ala
            20                  25                  30

Met Lys Gly Phe Gly Ser Asp Lys Glu Ala Ile Leu Asp Ile Ile Thr
        35                  40                  45

Ser Arg Ser Asn Arg Gln Arg Gln Glu Val Cys Gln Ser Tyr Lys Ser
    50                  55                  60

Leu Tyr Gly Lys Asp Leu Ile Ala Asp Leu Lys Tyr Glu Leu Thr Gly
65                  70                  75                  80
```

Lys Phe Glu Arg Leu Ile Val Gly Leu Met Arg Pro Pro Ala Tyr Cys
85 90 95

Asp Ala Lys Glu Ile Lys Asp Ala Ile Ser Gly Ile Gly Thr Asp Glu
100 105 110

Lys Cys Leu Ile Glu Ile Leu Ala Ser Arg Thr Tyr Thr Arg Gln Gly
115 120 125

Asn

<210> 5435
<211> 110
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
<221> source
<223> /note="Gene Name:
annexin A6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431078"

<400> 5435
Met Ala Lys Pro Ala Gln Gly Ala Lys Tyr Arg Gly Ser Ile His Asp
1 5 10 15

Phe Pro Gly Phe Asp Pro Asn Gln Asp Ala Glu Ala Leu Tyr Thr Ala
20 25 30

Met Lys Gly Phe Gly Ser Asp Lys Glu Ala Ile Leu Asp Ile Ile Thr
35 40 45

Ser Arg Ser Asn Arg Gln Arg Gln Glu Val Cys Gln Ser Tyr Lys Ser
50 55 60

```
Leu Tyr Gly Lys Asp Leu Ile Ala Asp Leu Lys Tyr Glu Leu Thr Gly
65                  70                  75                  80

Lys Phe Glu Arg Leu Ile Val Gly Leu Met Arg Pro Pro Ala Tyr Cys
                85                  90                  95

Asp Ala Lys Glu Ile Lys Asp Ala Ile Ser Gly Ile Gly Thr
            100                 105                 110


<210> 5436
<211> 91
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1178; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA6; "

<220>
<221> source
<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000431086"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5436
Xaa Ala Asp Lys Leu Tyr Lys Ser Met Lys Gly Ala Gly Thr Asp Glu
1               5                   10                  15

Lys Thr Leu Thr Arg Ile Met Val Ser Arg Ser Glu Ile Asp Leu Leu
            20                  25                  30

Asn Ile Arg Arg Glu Phe Ile Glu Lys Tyr Asp Lys Ser Leu His Gln
        35                  40                  45

Ala Ile Glu Gly Asp Thr Ser Gly Asp Phe Leu Lys Ala Leu Leu Ala
    50                  55                  60
```

```
Leu Cys Gly Gly Arg Ala Arg Val Leu Asp Gln Glu Phe Gly Cys Leu
65                  70                  75                  80


Gly Ser Asn Leu His Leu Pro Cys Thr Cys Phe
                85                  90


<210> 5437
<211> 488
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1179; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA7; "

<220>
<221> source
<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID:  P20073; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000362010"

<400> 5437
Met Ser Tyr Pro Gly Tyr Pro Pro Thr Gly Tyr Pro Pro Phe Pro Gly
1               5                  10                  15


Tyr Pro Pro Ala Gly Gln Glu Ser Ser Phe Pro Pro Ser Gly Gln Tyr
            20                  25                  30


Pro Tyr Pro Ser Gly Phe Pro Pro Met Gly Gly Gly Ala Tyr Pro Gln
        35                  40                  45


Val Pro Ser Ser Gly Tyr Pro Gly Ala Gly Gly Tyr Pro Ala Pro Gly
    50                  55                  60


Gly Tyr Pro Ala Pro Gly Gly Tyr Pro Gly Ala Pro Gln Pro Gly Gly
65                  70                  75                  80


Ala Pro Ser Tyr Pro Gly Val Pro Pro Gly Gln Gly Phe Gly Val Pro
                85                  90                  95
```

```
Pro Gly Gly Ala Gly Phe Ser Gly Tyr Pro Gln Pro Pro Ser Gln Ser
            100                 105                 110

Tyr Gly Gly Gly Pro Ala Gln Val Pro Leu Pro Gly Gly Phe Pro Gly
        115                 120                 125

Gly Gln Met Pro Ser Gln Tyr Pro Gly Gly Gln Pro Thr Tyr Pro Ser
    130                 135                 140

Gln Ile Asn Thr Asp Ser Phe Ser Ser Tyr Pro Val Phe Ser Pro Val
145                 150                 155                 160

Ser Leu Asp Tyr Ser Ser Glu Pro Ala Thr Val Thr Gln Val Thr Gln
                165                 170                 175

Gly Thr Ile Arg Pro Ala Ala Asn Phe Asp Ala Ile Arg Asp Ala Glu
            180                 185                 190

Ile Leu Arg Lys Ala Met Lys Gly Phe Gly Thr Asp Glu Gln Ala Ile
        195                 200                 205

Val Asp Val Val Ala Asn Arg Ser Asn Asp Gln Arg Gln Lys Ile Lys
    210                 215                 220

Ala Ala Phe Lys Thr Ser Tyr Gly Lys Asp Leu Ile Lys Asp Leu Lys
225                 230                 235                 240

Ser Glu Leu Ser Gly Asn Met Glu Glu Leu Ile Leu Ala Leu Phe Met
                245                 250                 255

Pro Pro Thr Tyr Tyr Asp Ala Trp Ser Leu Arg Lys Ala Met Gln Gly
            260                 265                 270

Ala Gly Thr Gln Glu Arg Val Leu Ile Glu Ile Leu Cys Thr Arg Thr
        275                 280                 285

Asn Gln Glu Ile Arg Glu Ile Val Arg Cys Tyr Gln Ser Glu Phe Gly
    290                 295                 300

Arg Asp Leu Glu Lys Asp Ile Arg Ser Asp Thr Ser Gly His Phe Glu
305                 310                 315                 320
```

```
Arg Leu Leu Val Ser Met Cys Gln Gly Asn Arg Asp Glu Asn Gln Ser
                325                 330                 335

Ile Asn His Gln Met Ala Gln Glu Asp Ala Gln Arg Leu Tyr Gln Ala
            340                 345                 350

Gly Glu Gly Arg Leu Gly Thr Asp Glu Ser Cys Phe Asn Met Ile Leu
        355                 360                 365

Ala Thr Arg Ser Phe Pro Gln Leu Arg Ala Thr Met Glu Ala Tyr Ser
    370                 375                 380

Arg Met Ala Asn Arg Asp Leu Leu Ser Ser Val Ser Arg Glu Phe Ser
385                 390                 395                 400

Gly Tyr Val Glu Ser Gly Leu Lys Thr Ile Leu Gln Cys Ala Leu Asn
                405                 410                 415

Arg Pro Ala Phe Phe Ala Glu Arg Leu Tyr Tyr Ala Met Lys Gly Ala
            420                 425                 430

Gly Thr Asp Asp Ser Thr Leu Val Arg Ile Val Val Thr Arg Ser Glu
        435                 440                 445

Ile Asp Leu Val Gln Ile Lys Gln Met Phe Ala Gln Met Tyr Gln Lys
    450                 455                 460

Thr Leu Gly Thr Met Ile Ala Gly Asp Thr Ser Gly Asp Tyr Arg Arg
465                 470                 475                 480

Leu Leu Leu Ala Ile Val Gly Gln
                485
```

<210> 5438
<211> 466
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1179; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA7; "

<220>
<221> source
<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID: P20073; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000362012"

<400> 5438

```
Met Ser Tyr Pro Gly Tyr Pro Pro Thr Gly Tyr Pro Pro Phe Pro Gly
1               5                  10                  15

Tyr Pro Pro Ala Gly Gln Glu Ser Ser Phe Pro Pro Ser Gly Gln Tyr
            20                  25                  30

Pro Tyr Pro Ser Gly Phe Pro Pro Met Gly Gly Gly Ala Tyr Pro Gln
        35                  40                  45

Val Pro Ser Ser Gly Tyr Pro Gly Ala Gly Gly Tyr Pro Ala Pro Gly
    50                  55                  60

Gly Tyr Pro Ala Pro Gly Gly Tyr Pro Gly Ala Pro Gln Pro Gly Gly
65                  70                  75                  80

Ala Pro Ser Tyr Pro Gly Val Pro Pro Gly Gln Gly Phe Gly Val Pro
                85                  90                  95

Pro Gly Gly Ala Gly Phe Ser Gly Tyr Pro Gln Pro Pro Ser Gln Ser
            100                 105                 110

Tyr Gly Gly Gly Pro Ala Gln Val Pro Leu Pro Gly Gly Phe Pro Gly
        115                 120                 125

Gly Gln Met Pro Ser Gln Tyr Pro Gly Gly Gln Pro Thr Tyr Pro Ser
    130                 135                 140

Gln Pro Ala Thr Val Thr Gln Val Thr Gln Gly Thr Ile Arg Pro Ala
145                 150                 155                 160

Ala Asn Phe Asp Ala Ile Arg Asp Ala Glu Ile Leu Arg Lys Ala Met
                165                 170                 175
```

```
Lys Gly Phe Gly Thr Asp Glu Gln Ala Ile Val Asp Val Val Ala Asn
            180                 185                 190

Arg Ser Asn Asp Gln Arg Gln Lys Ile Lys Ala Ala Phe Lys Thr Ser
        195                 200                 205

Tyr Gly Lys Asp Leu Ile Lys Asp Leu Lys Ser Glu Leu Ser Gly Asn
    210                 215                 220

Met Glu Glu Leu Ile Leu Ala Leu Phe Met Pro Pro Thr Tyr Tyr Asp
225                 230                 235                 240

Ala Trp Ser Leu Arg Lys Ala Met Gln Gly Ala Gly Thr Gln Glu Arg
                245                 250                 255

Val Leu Ile Glu Ile Leu Cys Thr Arg Thr Asn Gln Glu Ile Arg Glu
            260                 265                 270

Ile Val Arg Cys Tyr Gln Ser Glu Phe Gly Arg Asp Leu Glu Lys Asp
        275                 280                 285

Ile Arg Ser Asp Thr Ser Gly His Phe Glu Arg Leu Leu Val Ser Met
    290                 295                 300

Cys Gln Gly Asn Arg Asp Glu Asn Gln Ser Ile Asn His Gln Met Ala
305                 310                 315                 320

Gln Glu Asp Ala Gln Arg Leu Tyr Gln Ala Gly Glu Gly Arg Leu Gly
                325                 330                 335

Thr Asp Glu Ser Cys Phe Asn Met Ile Leu Ala Thr Arg Ser Phe Pro
            340                 345                 350

Gln Leu Arg Ala Thr Met Glu Ala Tyr Ser Arg Met Ala Asn Arg Asp
        355                 360                 365

Leu Leu Ser Ser Val Ser Arg Glu Phe Ser Gly Tyr Val Glu Ser Gly
    370                 375                 380

Leu Lys Thr Ile Leu Gln Cys Ala Leu Asn Arg Pro Ala Phe Phe Ala
385                 390                 395                 400
```

Glu Arg Leu Tyr Tyr Ala Met Lys Gly Ala Gly Thr Asp Asp Ser Thr
405 410 415

Leu Val Arg Ile Val Val Thr Arg Ser Glu Ile Asp Leu Val Gln Ile
420 425 430

Lys Gln Met Phe Ala Gln Met Tyr Gln Lys Thr Leu Gly Thr Met Ile
435 440 445

Ala Gly Asp Thr Ser Gly Asp Tyr Arg Arg Leu Leu Leu Ala Ile Val
450 455 460

Gly Gln
465

<210> 5439
<211> 144
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1179; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA7; "

<220>
<221> source
<223> /note="Gene Name:
annexin A7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000378317"

<400> 5439
Met Ser Tyr Pro Gly Tyr Pro Pro Thr Gly Tyr Pro Pro Phe Pro Gly
1 5 10 15

Tyr Pro Pro Ala Gly Gln Glu Ser Ser Phe Pro Pro Ser Gly Gln Tyr
20 25 30

Pro Tyr Pro Ser Gly Phe Pro Pro Met Gly Gly Gly Ala Tyr Pro Gln
35 40 45

Val Pro Ser Ser Gly Tyr Pro Gly Ala Gly Gly Tyr Pro Ala Pro Gly

```
    50                  55                  60

Gly Tyr Pro Ala Pro Gly Gly Tyr Pro Gly Ala Pro Gln Pro Gly Gly
65                  70                  75                  80

Ala Pro Ser Tyr Pro Gly Val Pro Pro Gly Gln Gly Phe Gly Val Pro
                85                  90                  95

Pro Gly Gly Ala Gly Phe Ser Gly Tyr Pro Gln Pro Pro Ser Gln Ser
            100                 105                 110

Tyr Gly Gly Gly Pro Ala Gln Val Pro Leu Pro Gly Gly Phe Pro Gly
        115                 120                 125

Gly Gln Met Pro Ser Gln Tyr Pro Gly Gly Gln Pro Thr Tyr Pro Ser
    130                 135                 140


<210> 5440
<211> 21
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1180; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA8; "

<220>
<221> source
<223> /note="Gene Name:
      annexin A8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000462181"

<400> 5440
Met Ala Trp Trp Lys Ser Trp Asp Ser Gly Ile Leu Pro Leu Arg Asn
1               5                   10                  15

Ala Leu Leu Leu Gly
            20


<210> 5441
<211> 327
<212> PRT
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<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1180; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA8; "

<220>
<221> source
<223> /note="Gene Name:
annexin A8; "

<220>
<221> source
<223> /note="Uniprot ID: P13928; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000462880"

<400> 5441

```
Met Ala Trp Trp Lys Ser Trp Ile Glu Gln Glu Gly Val Thr Val Lys
1               5                  10                  15

Ser Ser Ser His Phe Asn Pro Asp Pro Asp Ala Glu Thr Leu Tyr Lys
            20                  25                  30

Ala Met Lys Gly Ile Gly Thr Asn Glu Gln Ala Ile Ile Asp Val Leu
        35                  40                  45

Thr Lys Arg Ser Asn Thr Gln Arg Gln Gln Ile Ala Lys Ser Phe Lys
    50                  55                  60

Ala Gln Phe Gly Lys Asp Leu Thr Glu Thr Leu Lys Ser Glu Leu Ser
65                  70                  75                  80

Gly Lys Phe Glu Arg Leu Ile Val Ala Leu Met Tyr Pro Pro Tyr Arg
                85                  90                  95

Tyr Glu Ala Lys Glu Leu His Asp Ala Met Lys Gly Leu Gly Thr Lys
            100                 105                 110

Glu Gly Val Ile Ile Glu Ile Leu Ala Ser Arg Thr Lys Asn Gln Leu
        115                 120                 125

Arg Glu Ile Met Lys Ala Tyr Glu Glu Asp Tyr Gly Ser Ser Leu Glu
```

```
    130                 135                 140

Glu Asp Ile Gln Ala Asp Thr Ser Gly Tyr Leu Glu Arg Ile Leu Val
145                 150                 155                 160

Cys Leu Leu Gln Gly Ser Arg Asp Asp Val Ser Ser Phe Val Asp Pro
                165                 170                 175

Gly Leu Ala Leu Gln Asp Ala Gln Asp Leu Tyr Ala Ala Gly Glu Lys
            180                 185                 190

Ile Arg Gly Thr Asp Glu Met Lys Phe Ile Thr Ile Leu Cys Thr Arg
        195                 200                 205

Ser Ala Thr His Leu Leu Arg Val Phe Glu Glu Tyr Glu Lys Ile Ala
    210                 215                 220

Asn Lys Ser Ile Glu Asp Ser Ile Lys Ser Glu Thr His Gly Ser Leu
225                 230                 235                 240

Glu Glu Ala Met Leu Thr Val Val Lys Cys Thr Gln Asn Leu His Ser
                245                 250                 255

Tyr Phe Ala Glu Arg Leu Tyr Tyr Ala Met Lys Gly Ala Gly Thr Arg
            260                 265                 270

Asp Gly Thr Leu Ile Arg Asn Ile Val Ser Arg Ser Glu Ile Asp Leu
        275                 280                 285

Asn Leu Ile Lys Cys His Phe Lys Lys Met Tyr Gly Lys Thr Leu Ser
    290                 295                 300

Ser Met Ile Met Glu Asp Thr Ser Gly Asp Tyr Lys Asn Ala Leu Leu
305                 310                 315                 320

Ser Leu Val Gly Ser Asp Pro
                325
```

<210> 5442
<211> 265
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1180; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA8; "

<220>
<221> source
<223> /note="Gene Name:
annexin A8; "

<220>
<221> source
<223> /note="Uniprot ID: P13928; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000463091"

<400> 5442

```
Met Ala Trp Trp Lys Ser Trp Asp Leu Thr Glu Thr Leu Lys Ser Glu
1               5                  10                  15

Leu Ser Gly Lys Phe Glu Arg Leu Ile Val Ala Leu Met Tyr Pro Pro
            20                  25                  30

Tyr Arg Tyr Glu Ala Lys Glu Leu His Asp Ala Met Lys Gly Leu Gly
        35                  40                  45

Thr Lys Glu Gly Val Ile Ile Glu Ile Leu Ala Ser Arg Thr Lys Asn
    50                  55                  60

Gln Leu Arg Glu Ile Met Lys Ala Tyr Glu Glu Asp Tyr Gly Ser Ser
65                  70                  75                  80

Leu Glu Glu Asp Ile Gln Ala Asp Thr Ser Gly Tyr Leu Glu Arg Ile
                85                  90                  95

Leu Val Cys Leu Leu Gln Gly Ser Arg Asp Asp Val Ser Ser Phe Val
            100                 105                 110

Asp Pro Gly Leu Ala Leu Gln Asp Ala Gln Asp Leu Tyr Ala Ala Gly
        115                 120                 125

Glu Lys Ile Arg Gly Thr Asp Glu Met Lys Phe Ile Thr Ile Leu Cys
    130                 135                 140
```

```
Thr Arg Ser Ala Thr His Leu Leu Arg Val Phe Glu Glu Tyr Glu Lys
145                 150                 155                 160

Ile Ala Asn Lys Ser Ile Glu Asp Ser Ile Lys Ser Glu Thr His Gly
                165                 170                 175

Ser Leu Glu Glu Ala Met Leu Thr Val Val Lys Cys Thr Gln Asn Leu
            180                 185                 190

His Ser Tyr Phe Ala Glu Arg Leu Tyr Tyr Ala Met Lys Gly Ala Gly
        195                 200                 205

Thr Arg Asp Gly Thr Leu Ile Arg Asn Ile Val Ser Arg Ser Glu Ile
    210                 215                 220

Asp Leu Asn Leu Ile Lys Cys His Phe Lys Lys Met Tyr Gly Lys Thr
225                 230                 235                 240

Leu Ser Ser Met Ile Met Glu Asp Thr Ser Gly Asp Tyr Lys Asn Ala
                245                 250                 255

Leu Leu Ser Leu Val Gly Ser Asp Pro
            260                 265


<210> 5443
<211> 141
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1180; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA8; "

<220>
<221> source
<223> /note="Gene Name:
      annexin A8; "

<220>
<221> source
<223> /note="Uniprot ID:  P13928; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000463244"
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<400> 5443
Met Ala Trp Trp Lys Ser Trp Ile Glu Gln Glu Gly Val Thr Val Lys
1   5   10   15

Ser Ser Ser His Phe Asn Pro Asp Pro Asp Ala Glu Thr Leu Tyr Lys
            20   25   30

Ala Met Lys Gly Ile Gly Thr Asn Glu Gln Ala Ile Ile Asp Val Leu
        35   40   45

Thr Lys Arg Ser Asn Thr Gln Arg Gln Gln Ile Ala Lys Ser Phe Lys
    50   55   60

Ala Gln Phe Gly Lys Asp Leu Thr Glu Thr Leu Lys Ser Glu Leu Ser
65   70   75   80

Gly Lys Phe Glu Arg Leu Ile Val Ala Leu Met Tyr Pro Pro Tyr Arg
                85   90   95

Tyr Glu Ala Lys Glu Leu His Asp Ala Met Lys Gly Leu Gly Thr Lys
            100   105   110

Glu Gly Val Ile Ile Glu Ile Leu Ala Ser Arg Thr Lys Asn Gln Leu
        115   120   125

Arg Glu Ile Met Lys Ala Tyr Glu Glu Gly Gln Gln Gly
    130   135   140

<210> 5444
<211> 276
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1180; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA8; "

<220>
<221> source
<223> /note="Gene Name:
annexin A8; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000464486"

<400> 5444
Met Ala Trp Trp Lys Ser Trp Ile Glu Gln Glu Gly Val Thr Val Lys
1 5 10 15

Ser Ser Ser His Phe Asn Pro Asp Pro Asp Ala Glu Thr Leu Tyr Lys
20 25 30

Ala Met Lys Gly Ile Gly Val Gly Ser Gln Leu Leu Ser His Gln Ala
35 40 45

Ala Ala Phe Ala Phe Pro Ser Ser Ala Leu Thr Ser Val Ser Pro Trp
50 55 60

Gly Gln Gln Gly His Leu Cys Cys Asn Pro Ala Gly Thr Asn Glu Gln
65 70 75 80

Ala Ile Ile Asp Val Leu Thr Lys Arg Ser Asn Thr Gln Arg Gln Gln
85 90 95

Ile Ala Lys Ser Phe Lys Ala Gln Phe Gly Lys Asp Leu Thr Glu Thr
100 105 110

Leu Lys Ser Glu Leu Ser Gly Lys Phe Glu Arg Leu Ile Val Ala Leu
115 120 125

Met Tyr Pro Pro Tyr Arg Tyr Glu Ala Lys Glu Leu His Asp Ala Met
130 135 140

Lys Gly Ser Arg Asp Asp Val Ser Ser Phe Val Asp Pro Gly Leu Ala
145 150 155 160

Leu Gln Asp Ala Gln Asp Leu Tyr Ala Ala Gly Glu Lys Ile Arg Gly
165 170 175

Thr Asp Glu Met Lys Phe Ile Thr Ile Leu Cys Thr Arg Ser Ala Thr
180 185 190

His Leu Leu Arg Val Lys Cys Thr Gln Asn Leu His Ser Tyr Phe Ala
195 200 205

Glu Arg Leu Tyr Tyr Ala Met Lys Gly Ala Gly Thr Arg Asp Gly Thr

```
    210                 215                 220

Leu Ile Arg Asn Ile Val Ser Arg Ser Glu Ile Asp Leu Asn Leu Ile
225                 230                 235                 240

Lys Cys His Phe Lys Lys Met Tyr Gly Lys Thr Leu Ser Ser Met Ile
                245                 250                 255

Met Glu Asp Thr Ser Gly Asp Tyr Lys Asn Ala Leu Leu Ser Leu Val
            260                 265                 270

Gly Ser Asp Pro
        275


<210> 5445
<211> 365
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1180; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA8; "

<220>
<221> source
<223> /note="Gene Name:
      annexin A8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000478026"

<400> 5445
Met Ala Trp Trp Lys Ser Trp Ile Glu Gln Glu Gly Val Thr Val Lys
1               5                   10                  15

Ser Ser Ser His Phe Asn Pro Asp Pro Asp Ala Glu Thr Leu Tyr Lys
            20                  25                  30

Ala Met Lys Gly Ile Gly Val Gly Ser Gln Leu Leu Ser His Gln Ala
        35                  40                  45

Ala Ala Phe Ala Phe Pro Ser Ser Ala Leu Thr Ser Val Ser Pro Trp
    50                  55                  60
```

```
Gly Gln Gln Gly His Leu Cys Cys Asn Pro Ala Gly Thr Asn Glu Gln
65                  70                  75                  80

Ala Ile Ile Asp Val Leu Thr Lys Arg Ser Asn Thr Gln Arg Gln Gln
                85                  90                  95

Ile Ala Lys Ser Phe Lys Ala Gln Phe Gly Lys Asp Leu Thr Glu Thr
            100                 105                 110

Leu Lys Ser Glu Leu Ser Gly Lys Phe Glu Arg Leu Ile Val Ala Leu
        115                 120                 125

Met Tyr Pro Pro Tyr Arg Tyr Glu Ala Lys Glu Leu His Asp Ala Met
    130                 135                 140

Lys Gly Leu Gly Thr Lys Glu Gly Val Ile Ile Glu Ile Leu Ala Ser
145                 150                 155                 160

Arg Thr Lys Asn Gln Leu Arg Glu Ile Met Lys Ala Tyr Glu Glu Asp
                165                 170                 175

Tyr Gly Ser Ser Leu Glu Glu Asp Ile Gln Ala Asp Thr Ser Gly Tyr
            180                 185                 190

Leu Glu Arg Ile Leu Val Cys Leu Leu Gln Gly Ser Arg Asp Asp Val
        195                 200                 205

Ser Ser Phe Val Asp Pro Gly Leu Ala Leu Gln Asp Ala Gln Asp Leu
    210                 215                 220

Tyr Ala Ala Gly Glu Lys Ile Arg Gly Thr Asp Glu Met Lys Phe Ile
225                 230                 235                 240

Thr Ile Leu Cys Thr Arg Ser Ala Thr His Leu Leu Arg Val Phe Glu
                245                 250                 255

Glu Tyr Glu Lys Ile Ala Asn Lys Ser Ile Glu Asp Ser Ile Lys Ser
            260                 265                 270

Glu Thr His Gly Ser Leu Glu Glu Ala Met Leu Thr Val Val Lys Cys
        275                 280                 285
```

```
Thr Gln Asn Leu His Ser Tyr Phe Ala Glu Arg Leu Tyr Tyr Ala Met
    290                 295                 300

Lys Gly Ala Gly Thr Arg Asp Gly Thr Leu Ile Arg Asn Ile Val Ser
305                 310                 315                 320

Arg Ser Glu Ile Asp Leu Asn Leu Ile Lys Cys His Phe Lys Lys Met
                325                 330                 335

Tyr Gly Lys Thr Leu Ser Ser Met Ile Met Glu Asp Thr Ser Gly Asp
            340                 345                 350

Tyr Lys Asn Ala Leu Leu Ser Leu Val Gly Ser Asp Pro
        355                 360                 365


<210> 5446
<211> 365
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1181; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA8L1; "

<220>
<221> source
<223> /note="Gene Name:
      annexin A8-like 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000462716"

<400> 5446
Met Ala Trp Trp Lys Ala Trp Ile Glu Gln Glu Gly Val Thr Val Lys
1               5                   10                  15

Ser Ser Ser His Phe Asn Pro Asp Pro Asp Ala Glu Thr Leu Tyr Lys
            20                  25                  30

Ala Met Lys Gly Ile Gly Val Gly Ser Gln Leu Leu Ser His Gln Ala
        35                  40                  45

Ala Ala Phe Ala Phe Pro Ser Ser Ala Leu Thr Ser Val Ser Pro Trp
    50                  55                  60
```

```
Gly Gln Gln Gly His Leu Cys Cys Asn Pro Ala Gly Thr Asn Glu Gln
65                  70                  75                  80

Ala Ile Ile Asp Val Leu Thr Lys Arg Ser Asn Thr Gln Arg Gln Gln
                85                  90                  95

Ile Ala Lys Ser Phe Lys Ala Gln Phe Gly Lys Asp Leu Thr Glu Thr
            100                 105                 110

Leu Lys Ser Glu Leu Ser Gly Lys Phe Glu Arg Leu Ile Val Ala Leu
        115                 120                 125

Met Tyr Pro Pro Tyr Arg Tyr Glu Ala Lys Glu Leu His Asp Ala Met
    130                 135                 140

Lys Gly Leu Gly Thr Lys Glu Gly Val Ile Ile Glu Ile Leu Ala Ser
145                 150                 155                 160

Arg Thr Lys Asn Gln Leu Arg Glu Ile Met Lys Ala Tyr Glu Glu Asp
                165                 170                 175

Tyr Gly Ser Ser Leu Glu Glu Asp Ile Gln Ala Asp Thr Ser Gly Tyr
            180                 185                 190

Leu Glu Arg Ile Leu Val Cys Leu Leu Gln Gly Ser Arg Asp Asp Val
        195                 200                 205

Ser Ser Phe Val Asp Pro Ala Leu Ala Leu Gln Asp Ala Gln Asp Leu
    210                 215                 220

Tyr Ala Ala Gly Glu Lys Ile Arg Gly Thr Asp Glu Met Lys Phe Ile
225                 230                 235                 240

Thr Ile Leu Cys Thr Arg Ser Ala Thr His Leu Leu Arg Val Phe Glu
                245                 250                 255

Glu Tyr Glu Lys Ile Ala Asn Lys Ser Ile Glu Asp Ser Ile Lys Ser
            260                 265                 270

Glu Thr His Gly Ser Leu Glu Glu Ala Met Leu Thr Val Val Lys Cys
        275                 280                 285
```

```
Thr Gln Asn Leu His Ser Tyr Phe Ala Glu Arg Leu Tyr Tyr Ala Met
    290                 295                 300

Lys Gly Ala Gly Thr Arg Asp Gly Thr Leu Ile Arg Asn Ile Val Ser
305                 310                 315                 320

Arg Ser Glu Ile Asp Leu Asn Leu Ile Lys Cys His Phe Lys Lys Met
                325                 330                 335

Tyr Gly Lys Thr Leu Ser Ser Met Ile Met Glu Asp Thr Ser Gly Asp
            340                 345                 350

Tyr Lys Asn Ala Leu Leu Ser Leu Val Gly Ser Asp Pro
        355                 360                 365


<210> 5447
<211> 265
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1181; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA8L1; "

<220>
<221> source
<223> /note="Gene Name:
      annexin A8-like 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000478808"

<400> 5447
Met Ala Trp Trp Lys Ala Trp Asp Leu Thr Glu Thr Leu Lys Ser Glu
1               5                   10                  15

Leu Ser Gly Lys Phe Glu Arg Leu Ile Val Ala Leu Met Tyr Pro Pro
            20                  25                  30

Tyr Arg Tyr Glu Ala Lys Glu Leu His Asp Ala Met Lys Gly Leu Gly
        35                  40                  45

Thr Lys Glu Gly Val Ile Ile Glu Ile Leu Ala Ser Arg Thr Lys Asn
```

```
    50                  55                  60

Gln Leu Arg Glu Ile Met Lys Ala Tyr Glu Glu Asp Tyr Gly Ser Ser
65                  70                  75                  80

Leu Glu Glu Asp Ile Gln Ala Asp Thr Ser Gly Tyr Leu Glu Arg Ile
                85                  90                  95

Leu Val Cys Leu Leu Gln Gly Ser Arg Asp Asp Val Ser Ser Phe Val
            100                 105                 110

Asp Pro Ala Leu Ala Leu Gln Asp Ala Gln Asp Leu Tyr Ala Ala Gly
        115                 120                 125

Glu Lys Ile Arg Gly Thr Asp Glu Met Lys Phe Ile Thr Ile Leu Cys
    130                 135                 140

Thr Arg Ser Ala Thr His Leu Leu Arg Val Phe Glu Glu Tyr Glu Lys
145                 150                 155                 160

Ile Ala Asn Lys Ser Ile Glu Asp Ser Ile Lys Ser Glu Thr His Gly
                165                 170                 175

Ser Leu Glu Glu Ala Met Leu Thr Val Val Lys Cys Thr Gln Asn Leu
            180                 185                 190

His Ser Tyr Phe Ala Glu Arg Leu Tyr Tyr Ala Met Lys Gly Ala Gly
        195                 200                 205

Thr Arg Asp Gly Thr Leu Ile Arg Asn Ile Val Ser Arg Ser Glu Ile
    210                 215                 220

Asp Leu Asn Leu Ile Lys Cys His Phe Lys Lys Met Tyr Gly Lys Thr
225                 230                 235                 240

Leu Ser Ser Met Ile Met Glu Asp Thr Ser Gly Asp Tyr Lys Asn Ala
                245                 250                 255

Leu Leu Ser Leu Val Gly Ser Asp Pro
            260                 265
```

<210> 5448
<211> 327

<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1181; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA8L1; "

<220>
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<223> /note="Gene Name:
annexin A8-like 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q5VT79; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000480221"

<400> 5448
Met Ala Trp Trp Lys Ala Trp Ile Glu Gln Glu Gly Val Thr Val Lys
1   5   10   15

Ser Ser Ser His Phe Asn Pro Asp Pro Asp Ala Glu Thr Leu Tyr Lys
            20   25   30

Ala Met Lys Gly Ile Gly Thr Asn Glu Gln Ala Ile Ile Asp Val Leu
        35   40   45

Thr Lys Arg Ser Asn Thr Gln Arg Gln Gln Ile Ala Lys Ser Phe Lys
    50   55   60

Ala Gln Phe Gly Lys Asp Leu Thr Glu Thr Leu Lys Ser Glu Leu Ser
65   70   75   80

Gly Lys Phe Glu Arg Leu Ile Val Ala Leu Met Tyr Pro Pro Tyr Arg
                85   90   95

Tyr Glu Ala Lys Glu Leu His Asp Ala Met Lys Gly Leu Gly Thr Lys
            100   105   110

Glu Gly Val Ile Ile Glu Ile Leu Ala Ser Arg Thr Lys Asn Gln Leu
        115   120   125

```
Arg Glu Ile Met Lys Ala Tyr Glu Glu Asp Tyr Gly Ser Ser Leu Glu
    130                 135                 140

Glu Asp Ile Gln Ala Asp Thr Ser Gly Tyr Leu Glu Arg Ile Leu Val
145                 150                 155                 160

Cys Leu Leu Gln Gly Ser Arg Asp Asp Val Ser Ser Phe Val Asp Pro
                165                 170                 175

Ala Leu Ala Leu Gln Asp Ala Gln Asp Leu Tyr Ala Ala Gly Glu Lys
            180                 185                 190

Ile Arg Gly Thr Asp Glu Met Lys Phe Ile Thr Ile Leu Cys Thr Arg
        195                 200                 205

Ser Ala Thr His Leu Leu Arg Val Phe Glu Glu Tyr Glu Lys Ile Ala
    210                 215                 220

Asn Lys Ser Ile Glu Asp Ser Ile Lys Ser Glu Thr His Gly Ser Leu
225                 230                 235                 240

Glu Glu Ala Met Leu Thr Val Val Lys Cys Thr Gln Asn Leu His Ser
                245                 250                 255

Tyr Phe Ala Glu Arg Leu Tyr Tyr Ala Met Lys Gly Ala Gly Thr Arg
            260                 265                 270

Asp Gly Thr Leu Ile Arg Asn Ile Val Ser Arg Ser Glu Ile Asp Leu
        275                 280                 285

Asn Leu Ile Lys Cys His Phe Lys Lys Met Tyr Gly Lys Thr Leu Ser
    290                 295                 300

Ser Met Ile Met Glu Asp Thr Ser Gly Asp Tyr Lys Asn Ala Leu Leu
305                 310                 315                 320

Ser Leu Val Gly Ser Asp Pro
                325
```

<210> 5449
<211> 276
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1181; "

<220>
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<223> /note="Gene Symbol: ANXA8L1; "

<220>
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<223> /note="Gene Name:
annexin A8-like 1; "

<220>
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<223> /note="Uniprot ID: Q5VT79; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000483608"

<400> 5449

```
Met Ala Trp Trp Lys Ala Trp Ile Glu Gln Glu Gly Val Thr Val Lys
1               5                  10                  15

Ser Ser Ser His Phe Asn Pro Asp Pro Asp Ala Glu Thr Leu Tyr Lys
            20                  25                  30

Ala Met Lys Gly Ile Gly Val Gly Ser Gln Leu Leu Ser His Gln Ala
        35                  40                  45

Ala Ala Phe Ala Phe Pro Ser Ser Ala Leu Thr Ser Val Ser Pro Trp
    50                  55                  60

Gly Gln Gln Gly His Leu Cys Cys Asn Pro Ala Gly Thr Asn Glu Gln
65                  70                  75                  80

Ala Ile Ile Asp Val Leu Thr Lys Arg Ser Asn Thr Gln Arg Gln Gln
                85                  90                  95

Ile Ala Lys Ser Phe Lys Ala Gln Phe Gly Lys Asp Leu Thr Glu Thr
            100                 105                 110

Leu Lys Ser Glu Leu Ser Gly Lys Phe Glu Arg Leu Ile Val Ala Leu
        115                 120                 125

Met Tyr Pro Pro Tyr Arg Tyr Glu Ala Lys Glu Leu His Asp Ala Met
    130                 135                 140
```

```
Lys Gly Ser Arg Asp Asp Val Ser Ser Phe Val Asp Pro Ala Leu Ala
145                 150                 155                 160

Leu Gln Asp Ala Gln Asp Leu Tyr Ala Ala Gly Glu Lys Ile Arg Gly
                165                 170                 175

Thr Asp Glu Met Lys Phe Ile Thr Ile Leu Cys Thr Arg Ser Ala Thr
            180                 185                 190

His Leu Leu Arg Val Lys Cys Thr Gln Asn Leu His Ser Tyr Phe Ala
        195                 200                 205

Glu Arg Leu Tyr Tyr Ala Met Lys Gly Ala Gly Thr Arg Asp Gly Thr
    210                 215                 220

Leu Ile Arg Asn Ile Val Ser Arg Ser Glu Ile Asp Leu Asn Leu Ile
225                 230                 235                 240

Lys Cys His Phe Lys Lys Met Tyr Gly Lys Thr Leu Ser Ser Met Ile
                245                 250                 255

Met Glu Asp Thr Ser Gly Asp Tyr Lys Asn Ala Leu Leu Ser Leu Val
            260                 265                 270

Gly Ser Asp Pro
        275


<210> 5450
<211> 270
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1181; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA8L1; "

<220>
<221> source
<223> /note="Gene Name:
      annexin A8-like 1; "

<220>
<221> source
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<223> /note="ENSP ID: ENSP00000484310"

<400> 5450

```
Met Ala Trp Trp Lys Ala Trp Ile Glu Gln Glu Gly Val Thr Val Lys
1               5                  10                  15

Ser Ser Ser His Phe Asn Pro Asp Pro Asp Ala Glu Thr Leu Tyr Lys
            20                  25                  30

Ala Met Lys Gly Ile Gly Thr Asn Glu Gln Ala Ile Ile Asp Val Leu
        35                  40                  45

Thr Lys Arg Ser Asn Thr Gln Arg Gln Gln Ile Ala Lys Ser Phe Lys
    50                  55                  60

Ala Gln Phe Gly Lys Asp Leu Thr Glu Thr Leu Lys Ser Glu Leu Ser
65                  70                  75                  80

Gly Lys Phe Glu Arg Leu Ile Val Ala Leu Met Tyr Pro Pro Tyr Arg
                85                  90                  95

Tyr Glu Ala Lys Glu Leu His Asp Ala Met Lys Gly Ser Arg Asp Asp
            100                 105                 110

Val Ser Ser Phe Val Asp Pro Ala Leu Ala Leu Gln Asp Ala Gln Asp
        115                 120                 125

Leu Tyr Ala Ala Gly Glu Lys Ile Arg Gly Thr Asp Glu Met Lys Phe
    130                 135                 140

Ile Thr Ile Leu Cys Thr Arg Ser Ala Thr His Leu Leu Arg Val Phe
145                 150                 155                 160

Glu Glu Tyr Glu Lys Ile Ala Asn Lys Ser Ile Glu Asp Ser Ile Lys
                165                 170                 175

Ser Glu Thr His Gly Ser Leu Glu Glu Ala Met Leu Thr Val Val Lys
            180                 185                 190

Cys Thr Gln Asn Leu His Ser Tyr Phe Ala Glu Arg Leu Tyr Tyr Ala
        195                 200                 205

Met Lys Gly Ala Gly Thr Arg Asp Gly Thr Leu Ile Arg Asn Ile Val
    210                 215                 220
```

```
Ser Arg Ser Glu Ile Asp Leu Asn Leu Ile Lys Cys His Phe Lys Lys
225                 230                 235                 240


Met Tyr Gly Lys Thr Leu Ser Ser Met Ile Met Glu Asp Thr Ser Gly
                245                 250                 255


Asp Tyr Lys Asn Ala Leu Leu Ser Leu Val Gly Ser Asp Pro
            260                 265                 270


<210> 5451
<211> 345
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1182; "

<220>
<221> source
<223> /note="Gene Symbol: ANXA9; "

<220>
<221> source
<223> /note="Gene Name:
      annexin A9; "

<220>
<221> source
<223> /note="Uniprot ID:  O76027; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000357943"

<400> 5451
Met Ser Val Thr Gly Gly Lys Met Ala Pro Ser Leu Thr Gln Glu Ile
1               5                   10                  15


Leu Ser His Leu Gly Leu Ala Ser Lys Thr Ala Ala Trp Gly Thr Leu
            20                  25                  30


Gly Thr Leu Arg Thr Phe Leu Asn Phe Ser Val Asp Lys Asp Ala Gln
        35                  40                  45


Arg Leu Leu Arg Ala Ile Thr Gly Gln Gly Val Asp Arg Ser Ala Ile
    50                  55                  60
```

```
Val Asp Val Leu Thr Asn Arg Ser Arg Glu Gln Arg Gln Leu Ile Ser
65                  70                  75                  80

Arg Asn Phe Gln Glu Arg Thr Gln Gln Asp Leu Met Lys Ser Leu Gln
                85                  90                  95

Ala Ala Leu Ser Gly Asn Leu Glu Arg Ile Val Met Ala Leu Leu Gln
            100                 105                 110

Pro Thr Ala Gln Phe Asp Ala Gln Glu Leu Arg Thr Ala Leu Lys Ala
        115                 120                 125

Ser Asp Ser Ala Val Asp Val Ala Ile Glu Ile Leu Ala Thr Arg Thr
    130                 135                 140

Pro Pro Gln Leu Gln Glu Cys Leu Ala Val Tyr Lys His Asn Phe Gln
145                 150                 155                 160

Val Glu Ala Val Asp Asp Ile Thr Ser Glu Thr Ser Gly Ile Leu Gln
                165                 170                 175

Asp Leu Leu Leu Ala Leu Ala Lys Gly Gly Arg Asp Ser Tyr Ser Gly
            180                 185                 190

Ile Ile Asp Tyr Asn Leu Ala Glu Gln Asp Val Gln Ala Leu Gln Arg
        195                 200                 205

Ala Glu Gly Pro Ser Arg Glu Glu Thr Trp Val Pro Val Phe Thr Gln
    210                 215                 220

Arg Asn Pro Glu His Leu Ile Arg Val Phe Asp Gln Tyr Gln Arg Ser
225                 230                 235                 240

Thr Gly Gln Glu Leu Glu Glu Ala Val Gln Asn Arg Phe His Gly Asp
                245                 250                 255

Ala Gln Val Ala Leu Leu Gly Leu Ala Ser Val Ile Lys Asn Thr Pro
            260                 265                 270

Leu Tyr Phe Ala Asp Lys Leu His Gln Ala Leu Gln Glu Thr Glu Pro
        275                 280                 285

Asn Tyr Gln Val Leu Ile Arg Ile Leu Ile Ser Arg Cys Glu Thr Asp
```

```
    290                 295                 300

Leu Leu Ser Ile Arg Ala Glu Phe Arg Lys Lys Phe Gly Lys Ser Leu
305                 310                 315                 320

Tyr Ser Ser Leu Gln Asp Ala Val Lys Gly Asp Cys Gln Ser Ala Leu
                325                 330                 335

Leu Ala Leu Cys Arg Ala Glu Asp Met
            340                 345


<210> 5452
<211> 642
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1183; "

<220>
<221> source
<223> /note="Gene Symbol: ANO1; "

<220>
<221> source
<223> /note="Gene Name:
      anoctamin 1, calcium activated chloride channel; "

<220>
<221> source
<223> /note="Uniprot ID:  Q5XXA6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000319477"

<400> 5452
Met Leu Thr Arg Pro Ser Gln Val Leu Leu Asn Ser Leu Ser Val Asp
1               5                   10                  15

Pro Asp Ala Glu Cys Lys Tyr Gly Leu Tyr Phe Arg Asp Gly Arg Arg
            20                  25                  30

Lys Val Asp Tyr Ile Leu Val Tyr His His Lys Arg Pro Ser Gly Asn
        35                  40                  45

Arg Thr Leu Val Arg Arg Val Gln His Ser Asp Thr Pro Ser Gly Ala
    50                  55                  60
```

```
Arg Ser Val Lys Gln Asp His Pro Leu Pro Gly Lys Gly Ala Ser Leu
65                  70                  75                  80

Asp Ala Gly Ser Gly Glu Pro Pro Met Asp Tyr His Glu Asp Asp Lys
                85                  90                  95

Arg Phe Arg Arg Glu Glu Tyr Glu Gly Asn Leu Leu Glu Ala Gly Leu
            100                 105                 110

Glu Leu Glu Arg Asp Glu Asp Thr Lys Ile His Gly Val Gly Phe Val
        115                 120                 125

Lys Ile His Ala Pro Trp Asn Val Leu Cys Arg Glu Ala Glu Phe Leu
    130                 135                 140

Lys Leu Lys Met Pro Thr Lys Lys Met Tyr His Ile Asn Glu Thr Arg
145                 150                 155                 160

Gly Leu Leu Lys Lys Ile Asn Ser Val Leu Gln Lys Ile Thr Asp Pro
                165                 170                 175

Ile Gln Pro Lys Val Ala Glu His Arg Pro Gln Thr Met Lys Arg Leu
            180                 185                 190

Ser Tyr Pro Phe Ser Arg Glu Lys Gln His Leu Phe Asp Leu Ser Asp
        195                 200                 205

Lys Asp Ser Phe Phe Asp Ser Lys Thr Arg Ser Thr Ile Val Tyr Glu
    210                 215                 220

Ile Leu Lys Arg Thr Thr Cys Thr Lys Ala Lys Tyr Ser Met Gly Ile
225                 230                 235                 240

Thr Ser Leu Leu Ala Asn Gly Val Tyr Ala Ala Ala Tyr Pro Leu His
                245                 250                 255

Asp Gly Asp Tyr Asn Gly Glu Asn Val Glu Phe Asn Asp Arg Lys Leu
            260                 265                 270

Leu Tyr Glu Glu Trp Ala Arg Tyr Gly Val Phe Tyr Lys Tyr Gln Pro
        275                 280                 285
```

```
Ile Asp Leu Val Arg Lys Tyr Phe Gly Glu Lys Ile Gly Leu Tyr Phe
    290                 295                 300

Ala Trp Leu Gly Val Tyr Thr Gln Met Leu Ile Pro Ala Ser Ile Val
305                 310                 315                 320

Gly Ile Ile Val Phe Leu Tyr Gly Cys Ala Thr Met Asp Glu Asn Ile
                325                 330                 335

Pro Ser Met Glu Met Cys Asp Gln Arg His Asn Ile Thr Met Cys Pro
            340                 345                 350

Leu Cys Asp Lys Thr Cys Ser Tyr Trp Lys Met Ser Ser Ala Cys Ala
        355                 360                 365

Thr Ala Arg Ala Ser His Leu Phe Asp Asn Pro Ala Thr Val Phe Phe
    370                 375                 380

Ser Val Phe Met Ala Leu Trp Ala Ala Thr Phe Met Glu His Trp Lys
385                 390                 395                 400

Arg Lys Gln Met Arg Leu Asn Tyr Arg Trp Asp Leu Thr Gly Phe Glu
                405                 410                 415

Glu Glu Glu Asp His Pro Arg Ala Glu Tyr Glu Ala Arg Val Leu Glu
            420                 425                 430

Lys Ser Leu Lys Lys Glu Ser Arg Asn Lys Glu Thr Asp Lys Val Lys
        435                 440                 445

Leu Thr Trp Arg Asp Arg Phe Pro Ala Tyr Leu Thr Asn Leu Val Ser
    450                 455                 460

Ile Ile Phe Met Ile Ala Val Thr Phe Ala Ile Val Leu Gly Val Ile
465                 470                 475                 480

Ile Tyr Arg Ile Ser Met Ala Ala Ala Leu Ala Met Asn Ser Ser Pro
                485                 490                 495

Ser Val Arg Ser Asn Ile Arg Val Thr Val Thr Ala Thr Ala Val Ile
            500                 505                 510

Ile Asn Leu Val Val Ile Ile Leu Leu Asp Glu Val Tyr Gly Cys Ile
```

```
        515                 520                 525

Ala Arg Trp Leu Thr Lys Ile Glu Val Pro Lys Thr Glu Lys Ser Phe
    530                 535                 540

Glu Glu Arg Leu Ile Phe Lys Ala Phe Leu Leu Lys Phe Val Asn Ser
545                 550                 555                 560

Tyr Thr Pro Ile Phe Tyr Val Ala Phe Phe Lys Gly Arg Phe Val Gly
                565                 570                 575

Arg Pro Gly Asp Tyr Val Tyr Ile Phe Arg Ser Phe Arg Met Glu Glu
            580                 585                 590

Val Thr Glu Ile Leu Phe Ile Ser Gly Ser Pro Phe Cys Leu Ala Tyr
        595                 600                 605

Asp Leu Ser Thr Pro Cys Thr Trp Glu Lys Gln Leu Gln His Ile Cys
    610                 615                 620

Ser Ala Lys Ser Ser Arg Phe Leu Ser Phe Leu Leu Glu Thr Phe Leu
625                 630                 635                 640

Phe Pro
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<210> 5453
<211> 986
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1183; "

<220>
<221> source
<223> /note="Gene Symbol: ANO1; "

<220>
<221> source
<223> /note="Gene Name:
anoctamin 1, calcium activated chloride channel; "

<220>
<221> source
<223> /note="Uniprot ID: Q5XXA6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000347454"

<400> 5453
Met Arg Val Asn Glu Lys Tyr Ser Thr Leu Pro Ala Glu Asp Arg Ser
1   5   10   15

Val His Ile Ile Asn Ile Cys Ala Ile Glu Asp Ile Gly Tyr Leu Pro
            20   25   30

Ser Glu Gly Thr Leu Leu Asn Ser Leu Ser Val Asp Pro Asp Ala Glu
        35   40   45

Cys Lys Tyr Gly Leu Tyr Phe Arg Asp Gly Arg Arg Lys Val Asp Tyr
    50   55   60

Ile Leu Val Tyr His His Lys Arg Pro Ser Gly Asn Arg Thr Leu Val
65   70   75   80

Arg Arg Val Gln His Ser Asp Thr Pro Ser Gly Ala Arg Ser Val Lys
                85   90   95

Gln Asp His Pro Leu Pro Gly Lys Gly Ala Ser Leu Asp Ala Gly Ser
            100   105   110

Gly Glu Pro Pro Met Asp Tyr His Glu Asp Asp Lys Arg Phe Arg Arg
        115   120   125

Glu Glu Tyr Glu Gly Asn Leu Leu Glu Ala Gly Leu Glu Leu Glu Arg
    130   135   140

Asp Glu Asp Thr Lys Ile His Gly Val Gly Phe Val Lys Ile His Ala
145   150   155   160

Pro Trp Asn Val Leu Cys Arg Glu Ala Glu Phe Leu Lys Leu Lys Met
                165   170   175

Pro Thr Lys Lys Met Tyr His Ile Asn Glu Thr Arg Gly Leu Leu Lys
            180   185   190

Lys Ile Asn Ser Val Leu Gln Lys Ile Thr Asp Pro Ile Gln Pro Lys
        195   200   205

```
Val Ala Glu His Arg Pro Gln Thr Met Lys Arg Leu Ser Tyr Pro Phe
    210                 215                 220

Ser Arg Glu Lys Gln His Leu Phe Asp Leu Ser Asp Lys Asp Ser Phe
225                 230                 235                 240

Phe Asp Ser Lys Thr Arg Ser Thr Ile Val Tyr Glu Ile Leu Lys Arg
                245                 250                 255

Thr Thr Cys Thr Lys Ala Lys Tyr Ser Met Gly Ile Thr Ser Leu Leu
            260                 265                 270

Ala Asn Gly Val Tyr Ala Ala Ala Tyr Pro Leu His Asp Gly Asp Tyr
        275                 280                 285

Asn Gly Glu Asn Val Glu Phe Asn Asp Arg Lys Leu Leu Tyr Glu Glu
    290                 295                 300

Trp Ala Arg Tyr Gly Val Phe Tyr Lys Tyr Gln Pro Ile Asp Leu Val
305                 310                 315                 320

Arg Lys Tyr Phe Gly Glu Lys Ile Gly Leu Tyr Phe Ala Trp Leu Gly
                325                 330                 335

Val Tyr Thr Gln Met Leu Ile Pro Ala Ser Ile Val Gly Ile Ile Val
            340                 345                 350

Phe Leu Tyr Gly Cys Ala Thr Met Asp Glu Asn Ile Pro Ser Met Glu
        355                 360                 365

Met Cys Asp Gln Arg His Asn Ile Thr Met Cys Pro Leu Cys Asp Lys
    370                 375                 380

Thr Cys Ser Tyr Trp Lys Met Ser Ser Ala Cys Ala Thr Ala Arg Ala
385                 390                 395                 400

Ser His Leu Phe Asp Asn Pro Ala Thr Val Phe Phe Ser Val Phe Met
                405                 410                 415

Ala Leu Trp Ala Ala Thr Phe Met Glu His Trp Lys Arg Lys Gln Met
            420                 425                 430

Arg Leu Asn Tyr Arg Trp Asp Leu Thr Gly Phe Glu Glu Glu Glu Glu
```

435 440 445

Ala Val Lys Asp His Pro Arg Ala Glu Tyr Glu Ala Arg Val Leu Glu
450 455 460

Lys Ser Leu Lys Lys Glu Ser Arg Asn Lys Glu Lys Arg Arg His Ile
465 470 475 480

Pro Glu Glu Ser Thr Asn Lys Trp Lys Gln Arg Val Lys Thr Ala Met
485 490 495

Ala Gly Val Lys Leu Thr Asp Lys Val Lys Leu Thr Trp Arg Asp Arg
500 505 510

Phe Pro Ala Tyr Leu Thr Asn Leu Val Ser Ile Ile Phe Met Ile Ala
515 520 525

Val Thr Phe Ala Ile Val Leu Gly Val Ile Ile Tyr Arg Ile Ser Met
530 535 540

Ala Ala Ala Leu Ala Met Asn Ser Ser Pro Ser Val Arg Ser Asn Ile
545 550 555 560

Arg Val Thr Val Thr Ala Thr Ala Val Ile Ile Asn Leu Val Val Ile
565 570 575

Ile Leu Leu Asp Glu Val Tyr Gly Cys Ile Ala Arg Trp Leu Thr Lys
580 585 590

Ile Glu Val Pro Lys Thr Glu Lys Ser Phe Glu Glu Arg Leu Ile Phe
595 600 605

Lys Ala Phe Leu Leu Lys Phe Val Asn Ser Tyr Thr Pro Ile Phe Tyr
610 615 620

Val Ala Phe Phe Lys Gly Arg Phe Val Gly Arg Pro Gly Asp Tyr Val
625 630 635 640

Tyr Ile Phe Arg Ser Phe Arg Met Glu Glu Cys Ala Pro Gly Gly Cys
645 650 655

Leu Met Glu Leu Cys Ile Gln Leu Ser Ile Ile Met Leu Gly Lys Gln
660 665 670

```
Leu Ile Gln Asn Asn Leu Phe Glu Ile Gly Ile Pro Lys Met Lys Lys
        675                 680                 685

Leu Ile Arg Tyr Leu Lys Leu Lys Gln Gln Ser Pro Pro Asp His Glu
    690                 695                 700

Glu Cys Val Lys Arg Lys Gln Arg Tyr Glu Val Asp Tyr Asn Leu Glu
705                 710                 715                 720

Pro Phe Ala Gly Leu Thr Pro Glu Tyr Met Glu Met Ile Ile Gln Phe
                725                 730                 735

Gly Phe Val Thr Leu Phe Val Ala Ser Phe Pro Leu Ala Pro Leu Phe
            740                 745                 750

Ala Leu Leu Asn Asn Ile Ile Glu Ile Arg Leu Asp Ala Lys Lys Phe
        755                 760                 765

Val Thr Glu Leu Arg Arg Pro Val Ala Val Arg Ala Lys Asp Ile Gly
    770                 775                 780

Ile Trp Tyr Asn Ile Leu Arg Gly Ile Gly Lys Leu Ala Val Ile Ile
785                 790                 795                 800

Asn Ala Phe Val Ile Ser Phe Thr Ser Asp Phe Ile Pro Arg Leu Val
                805                 810                 815

Tyr Leu Tyr Met Tyr Ser Lys Asn Gly Thr Met His Gly Phe Val Asn
            820                 825                 830

His Thr Leu Ser Ser Phe Asn Val Ser Asp Phe Gln Asn Gly Thr Ala
        835                 840                 845

Pro Asn Asp Pro Leu Asp Leu Gly Tyr Glu Val Gln Ile Cys Arg Tyr
    850                 855                 860

Lys Asp Tyr Arg Glu Pro Pro Trp Ser Glu Asn Lys Tyr Asp Ile Ser
865                 870                 875                 880

Lys Asp Phe Trp Ala Val Leu Ala Ala Arg Leu Ala Phe Val Ile Val
                885                 890                 895
```

```
Phe Gln Asn Leu Val Met Phe Met Ser Asp Phe Val Asp Trp Val Ile
            900                 905                 910

Pro Asp Ile Pro Lys Asp Ile Ser Gln Gln Ile His Lys Glu Lys Val
        915                 920                 925

Leu Met Val Glu Leu Phe Met Arg Glu Glu Gln Asp Lys Gln Gln Leu
    930                 935                 940

Leu Glu Thr Trp Met Glu Lys Glu Arg Gln Lys Asp Glu Pro Pro Cys
945                 950                 955                 960

Asn His His Asn Thr Lys Ala Cys Pro Asp Ser Leu Gly Ser Pro Ala
                965                 970                 975

Pro Ser His Ala Tyr His Gly Gly Val Leu
            980                 985


<210> 5454
<211> 695
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1183; "

<220>
<221> source
<223> /note="Gene Symbol: ANO1; "

<220>
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<223> /note="Gene Name:
      anoctamin 1, calcium activated chloride channel; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000432843"

<400> 5454
Met Gly Ile Thr Ser Leu Leu Ala Asn Gly Val Tyr Ala Ala Ala Tyr
1               5                   10                  15

Pro Leu His Asp Gly Asp Tyr Asn Gly Glu Asn Val Glu Phe Asn Asp
            20                  25                  30

Arg Lys Leu Leu Tyr Glu Glu Trp Ala Arg Tyr Gly Val Phe Tyr Lys
```

```
        35                  40                  45

Tyr Gln Pro Ile Asp Leu Val Arg Lys Tyr Phe Gly Glu Lys Ile Gly
    50                  55                  60

Leu Tyr Phe Ala Trp Leu Gly Val Tyr Thr Gln Met Leu Ile Pro Ala
65                  70                  75                  80

Ser Ile Val Gly Ile Ile Val Phe Leu Tyr Gly Cys Ala Thr Met Asp
                85                  90                  95

Glu Asn Ile Pro Ser Met Glu Met Cys Asp Gln Arg His Asn Ile Thr
            100                 105                 110

Met Cys Pro Leu Cys Asp Lys Thr Cys Ser Tyr Trp Lys Met Ser Ser
        115                 120                 125

Ala Cys Ala Thr Ala Arg Ala Ser His Leu Phe Asp Asn Pro Ala Thr
    130                 135                 140

Val Phe Phe Ser Val Phe Met Ala Leu Trp Ala Ala Thr Phe Met Glu
145                 150                 155                 160

His Trp Lys Arg Lys Gln Met Arg Leu Asn Tyr Arg Trp Asp Leu Thr
                165                 170                 175

Gly Phe Glu Glu Glu Glu Glu Ala Val Lys Asp His Pro Arg Ala Glu
            180                 185                 190

Tyr Glu Ala Arg Val Leu Glu Lys Ser Leu Lys Lys Glu Ser Arg Asn
        195                 200                 205

Lys Glu Thr Asp Lys Val Lys Leu Thr Trp Arg Asp Arg Phe Pro Ala
    210                 215                 220

Tyr Leu Thr Asn Leu Val Ser Ile Ile Phe Met Ile Ala Val Thr Phe
225                 230                 235                 240

Ala Ile Val Leu Gly Val Ile Ile Tyr Arg Ile Ser Met Ala Ala Ala
                245                 250                 255

Leu Ala Met Asn Ser Ser Pro Ser Val Arg Ser Asn Ile Arg Val Thr
            260                 265                 270
```

```
Val Thr Ala Thr Ala Val Ile Ile Asn Leu Val Val Ile Ile Leu Leu
        275                 280                 285

Asp Glu Val Tyr Gly Cys Ile Ala Arg Trp Leu Thr Lys Ile Glu Val
    290                 295                 300

Pro Lys Thr Glu Lys Ser Phe Glu Glu Arg Leu Ile Phe Lys Ala Phe
305                 310                 315                 320

Leu Leu Lys Phe Val Asn Ser Tyr Thr Pro Ile Phe Tyr Val Ala Phe
                325                 330                 335

Phe Lys Gly Arg Phe Val Gly Arg Pro Gly Asp Tyr Val Tyr Ile Phe
            340                 345                 350

Arg Ser Phe Arg Met Glu Glu Cys Ala Pro Gly Gly Cys Leu Met Glu
        355                 360                 365

Leu Cys Ile Gln Leu Ser Ile Ile Met Leu Gly Lys Gln Leu Ile Gln
    370                 375                 380

Asn Asn Leu Phe Glu Ile Gly Ile Pro Lys Met Lys Lys Leu Ile Arg
385                 390                 395                 400

Tyr Leu Lys Leu Lys Gln Gln Ser Pro Pro Asp His Glu Glu Cys Val
                405                 410                 415

Lys Arg Lys Gln Arg Tyr Glu Val Asp Tyr Asn Leu Glu Pro Phe Ala
            420                 425                 430

Gly Leu Thr Pro Glu Tyr Met Glu Met Ile Ile Gln Phe Gly Phe Val
        435                 440                 445

Thr Leu Phe Val Ala Ser Phe Pro Leu Ala Pro Leu Phe Ala Leu Leu
    450                 455                 460

Asn Asn Ile Ile Glu Ile Arg Leu Asp Ala Lys Lys Phe Val Thr Glu
465                 470                 475                 480

Leu Arg Arg Pro Val Ala Val Arg Ala Lys Asp Ile Gly Ile Trp Tyr
                485                 490                 495
```

```
Asn Ile Leu Arg Gly Ile Gly Lys Leu Ala Val Ile Ile Asn Ala Phe
            500                 505                 510

Val Ile Ser Phe Thr Ser Asp Phe Ile Pro Arg Leu Val Tyr Leu Tyr
        515                 520                 525

Met Tyr Ser Lys Asn Gly Thr Met His Gly Phe Val Asn His Thr Leu
    530                 535                 540

Ser Ser Phe Asn Val Ser Asp Phe Gln Asn Gly Thr Ala Pro Asn Asp
545                 550                 555                 560

Pro Leu Asp Leu Gly Tyr Glu Val Gln Ile Cys Arg Tyr Lys Asp Tyr
                565                 570                 575

Arg Glu Pro Pro Trp Ser Glu Asn Lys Tyr Asp Ile Ser Lys Asp Phe
            580                 585                 590

Trp Ala Val Leu Ala Ala Arg Leu Ala Phe Val Ile Val Phe Gln Asn
        595                 600                 605

Leu Val Met Phe Met Ser Asp Phe Val Asp Trp Val Ile Pro Asp Ile
    610                 615                 620

Pro Lys Asp Ile Ser Gln Gln Ile His Lys Glu Lys Val Leu Met Val
625                 630                 635                 640

Glu Leu Phe Met Arg Glu Glu Gln Asp Lys Gln Gln Leu Leu Glu Thr
                645                 650                 655

Trp Met Glu Lys Glu Arg Gln Lys Asp Glu Pro Pro Cys Asn His His
            660                 665                 670

Asn Thr Lys Ala Cys Pro Asp Ser Leu Gly Ser Pro Ala Pro Ser His
        675                 680                 685

Ala Tyr His Gly Gly Val Leu
    690                 695
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<210> 5455
<211> 269
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1183; "

<220>
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<223> /note="Gene Symbol: ANO1; "

<220>
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<223> /note="Gene Name:
anoctamin 1, calcium activated chloride channel; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000433445"

<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 5455
Xaa His Ala Pro Trp Asn Val Leu Cys Arg Glu Ala Glu Phe Leu Lys
1 5 10 15

Leu Lys Met Pro Thr Lys Lys Met Tyr His Ile Asn Glu Thr Arg Gly
20 25 30

Leu Leu Lys Lys Ile Asn Ser Val Leu Gln Lys Ile Thr Asp Pro Ile
35 40 45

Gln Pro Lys Val Ala Glu His Arg Pro Gln Thr Met Lys Arg Leu Ser
50 55 60

Tyr Pro Phe Ser Arg Glu Lys Gln His Leu Phe Asp Leu Ser Asp Lys
65 70 75 80

Asp Ser Phe Phe Asp Ser Lys Thr Arg Ser Thr Ile Val Tyr Glu Ile
85 90 95

Leu Lys Arg Thr Thr Cys Thr Lys Ala Lys Tyr Ser Met Gly Gln Gly
100 105 110

Glu Gly Arg Lys Lys Asp Ser Ala Leu Leu Ser Lys Arg Arg Lys Cys
115 120 125

```
Gly Lys Tyr Gly Ile Thr Ser Leu Leu Ala Asn Gly Val Tyr Ala Ala
    130                 135                 140

Ala Tyr Pro Leu His Asp Gly Asp Tyr Asn Gly Glu Asn Val Glu Phe
145                 150                 155                 160

Asn Asp Arg Lys Leu Leu Tyr Glu Glu Trp Ala Arg Tyr Gly Val Phe
                165                 170                 175

Tyr Lys Tyr Gln Pro Ile Asp Leu Val Arg Lys Tyr Phe Gly Glu Lys
            180                 185                 190

Ile Gly Leu Tyr Phe Ala Trp Leu Gly Val Tyr Thr Gln Met Leu Ile
        195                 200                 205

Pro Ala Ser Ile Val Gly Ile Ile Val Phe Leu Tyr Gly Cys Ala Thr
    210                 215                 220

Met Asp Glu Asn Ile Pro Ser Met Glu Met Cys Asp Gln Arg His Asn
225                 230                 235                 240

Ile Thr Met Cys Pro Leu Cys Asp Lys Thr Cys Ser Tyr Trp Lys Met
                245                 250                 255

Ser Ser Ala Cys Ala Thr Ala Arg Ala Ser His Leu Phe
            260                 265


<210> 5456
<211> 840
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ANO1; "

<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID:  Q5XXA6; "
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<220>
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<223> /note="ENSP ID: ENSP00000435797"

<400> 5456
Met Asp Tyr His Glu Asp Asp Lys Arg Phe Arg Arg Glu Glu Tyr Glu
1   5   10   15

Gly Asn Leu Leu Glu Ala Gly Leu Glu Leu Glu Arg Asp Glu Asp Thr
            20   25   30

Lys Ile His Gly Val Gly Phe Val Lys Ile His Ala Pro Trp Asn Val
        35   40   45

Leu Cys Arg Glu Ala Glu Phe Leu Lys Leu Lys Met Pro Thr Lys Lys
    50   55   60

Met Tyr His Ile Asn Glu Thr Arg Gly Leu Leu Lys Lys Ile Asn Ser
65   70   75   80

Val Leu Gln Lys Ile Thr Asp Pro Ile Gln Pro Lys Val Ala Glu His
                85   90   95

Arg Pro Gln Thr Met Lys Arg Leu Ser Tyr Pro Phe Ser Arg Glu Lys
            100   105   110

Gln His Leu Phe Asp Leu Ser Asp Lys Asp Ser Phe Phe Asp Ser Lys
        115   120   125

Thr Arg Ser Thr Ile Val Tyr Glu Ile Leu Lys Arg Thr Thr Cys Thr
    130   135   140

Lys Ala Lys Tyr Ser Met Gly Ile Thr Ser Leu Leu Ala Asn Gly Val
145   150   155   160

Tyr Ala Ala Ala Tyr Pro Leu His Asp Gly Asp Tyr Asn Gly Glu Asn
                165   170   175

Val Glu Phe Asn Asp Arg Lys Leu Leu Tyr Glu Glu Trp Ala Arg Tyr
            180   185   190

Gly Val Phe Tyr Lys Tyr Gln Pro Ile Asp Leu Val Arg Lys Tyr Phe
        195   200   205

```
Gly Glu Lys Ile Gly Leu Tyr Phe Ala Trp Leu Gly Val Tyr Thr Gln
    210                 215                 220

Met Leu Ile Pro Ala Ser Ile Val Gly Ile Ile Val Phe Leu Tyr Gly
225                 230                 235                 240

Cys Ala Thr Met Asp Glu Asn Ile Pro Ser Met Glu Met Cys Asp Gln
                245                 250                 255

Arg His Asn Ile Thr Met Cys Pro Leu Cys Asp Lys Thr Cys Ser Tyr
            260                 265                 270

Trp Lys Met Ser Ser Ala Cys Ala Thr Ala Arg Ala Ser His Leu Phe
        275                 280                 285

Asp Asn Pro Ala Thr Val Phe Phe Ser Val Phe Met Ala Leu Trp Ala
    290                 295                 300

Ala Thr Phe Met Glu His Trp Lys Arg Lys Gln Met Arg Leu Asn Tyr
305                 310                 315                 320

Arg Trp Asp Leu Thr Gly Phe Glu Glu Glu Glu Asp His Pro Arg Ala
                325                 330                 335

Glu Tyr Glu Ala Arg Val Leu Glu Lys Ser Leu Lys Lys Glu Ser Arg
            340                 345                 350

Asn Lys Glu Thr Asp Lys Val Lys Leu Thr Trp Arg Asp Arg Phe Pro
        355                 360                 365

Ala Tyr Leu Thr Asn Leu Val Ser Ile Ile Phe Met Ile Ala Val Thr
    370                 375                 380

Phe Ala Ile Val Leu Gly Val Ile Ile Tyr Arg Ile Ser Met Ala Ala
385                 390                 395                 400

Ala Leu Ala Met Asn Ser Ser Pro Ser Val Arg Ser Asn Ile Arg Val
                405                 410                 415

Thr Val Thr Ala Thr Ala Val Ile Ile Asn Leu Val Val Ile Ile Leu
            420                 425                 430
```

```
Leu Asp Glu Val Tyr Gly Cys Ile Ala Arg Trp Leu Thr Lys Ile Glu
        435                 440                 445

Val Pro Lys Thr Glu Lys Ser Phe Glu Glu Arg Leu Ile Phe Lys Ala
    450                 455                 460

Phe Leu Leu Lys Phe Val Asn Ser Tyr Thr Pro Ile Phe Tyr Val Ala
465                 470                 475                 480

Phe Phe Lys Gly Arg Phe Val Gly Arg Pro Gly Asp Tyr Val Tyr Ile
                485                 490                 495

Phe Arg Ser Phe Arg Met Glu Glu Cys Ala Pro Gly Gly Cys Leu Met
            500                 505                 510

Glu Leu Cys Ile Gln Leu Ser Ile Ile Met Leu Gly Lys Gln Leu Ile
        515                 520                 525

Gln Asn Asn Leu Phe Glu Ile Gly Ile Pro Lys Met Lys Lys Leu Ile
    530                 535                 540

Arg Tyr Leu Lys Leu Lys Gln Gln Ser Pro Pro Asp His Glu Glu Cys
545                 550                 555                 560

Val Lys Arg Lys Gln Arg Tyr Glu Val Asp Tyr Asn Leu Glu Pro Phe
                565                 570                 575

Ala Gly Leu Thr Pro Glu Tyr Met Glu Met Ile Ile Gln Phe Gly Phe
            580                 585                 590

Val Thr Leu Phe Val Ala Ser Phe Pro Leu Ala Pro Leu Phe Ala Leu
        595                 600                 605

Leu Asn Asn Ile Ile Glu Ile Arg Leu Asp Ala Lys Lys Phe Val Thr
    610                 615                 620

Glu Leu Arg Arg Pro Val Ala Val Arg Ala Lys Asp Ile Gly Ile Trp
625                 630                 635                 640

Tyr Asn Ile Leu Arg Gly Ile Gly Lys Leu Ala Val Ile Ile Asn Ala
                645                 650                 655

Phe Val Ile Ser Phe Thr Ser Asp Phe Ile Pro Arg Leu Val Tyr Leu
```

```
            660                 665                 670

Tyr Met Tyr Ser Lys Asn Gly Thr Met His Gly Phe Val Asn His Thr
        675                 680                 685

Leu Ser Ser Phe Asn Val Ser Asp Phe Gln Asn Gly Thr Ala Pro Asn
    690                 695                 700

Asp Pro Leu Asp Leu Gly Tyr Glu Val Gln Ile Cys Arg Tyr Lys Asp
705                 710                 715                 720

Tyr Arg Glu Pro Pro Trp Ser Glu Asn Lys Tyr Asp Ile Ser Lys Asp
                725                 730                 735

Phe Trp Ala Val Leu Ala Ala Arg Leu Ala Phe Val Ile Val Phe Gln
            740                 745                 750

Asn Leu Val Met Phe Met Ser Asp Phe Val Asp Trp Val Ile Pro Asp
        755                 760                 765

Ile Pro Lys Asp Ile Ser Gln Gln Ile His Lys Glu Lys Val Leu Met
    770                 775                 780

Val Glu Leu Phe Met Arg Glu Glu Gln Asp Lys Gln Gln Leu Leu Glu
785                 790                 795                 800

Thr Trp Met Glu Lys Glu Arg Gln Lys Asp Glu Pro Pro Cys Asn His
                805                 810                 815

His Asn Thr Lys Ala Cys Pro Asp Ser Leu Gly Ser Pro Ala Pro Ser
            820                 825                 830

His Ala Tyr His Gly Gly Val Leu
        835                 840


<210> 5457
<211> 151
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1183; "

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<221> source
<223> /note="Gene Symbol: ANO1; "

<220>
<221> source
<223> /note="Gene Name:
anoctamin 1, calcium activated chloride channel; "

<220>
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<223> /note="ENSP ID: ENSP00000435868"

<400> 5457

Met	Glu	His	Trp	Lys	Arg	Lys	Gln	Met	Arg	Leu	Asn	Tyr	Arg	Trp	Asp
1				5				10					15		
Leu	Thr	Gly	Phe	Glu	Glu	Glu	Glu	Glu	Ala	Val	Lys	Asp	His	Pro	Arg
			20					25					30		
Ala	Glu	Tyr	Glu	Ala	Arg	Val	Leu	Glu	Lys	Ser	Leu	Lys	Lys	Glu	Ser
		35					40					45			
Arg	Asn	Lys	Glu	Thr	Asp	Lys	Val	Lys	Leu	Thr	Trp	Arg	Asp	Arg	Phe
	50					55					60				
Pro	Ala	Tyr	Leu	Thr	Asn	Leu	Val	Ser	Ile	Ile	Phe	Met	Ile	Ala	Val
65					70					75					80
Thr	Phe	Ala	Ile	Val	Leu	Gly	Val	Ile	Ile	Tyr	Arg	Ile	Ser	Met	Ala
				85					90					95	
Ala	Ala	Leu	Ala	Met	Asn	Ser	Ser	Pro	Ser	Val	Arg	Ser	Asn	Ile	Arg
			100					105					110		
Val	Thr	Val	Thr	Ala	Thr	Ala	Val	Ile	Ile	Asn	Leu	Val	Val	Ile	Ile
		115					120					125			
Leu	Leu	Asp	Glu	Val	Tyr	Gly	Cys	Ile	Ala	Arg	Trp	Leu	Thr	Lys	Ile
	130					135					140				
Glu	Val	Pro	Lys	Thr	Glu	Lys									
145					150										

<210> 5458
<211> 251
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1183; "

<220>
<221> source
<223> /note="Gene Symbol: ANO1; "

<220>
<221> source
<223> /note="Gene Name:
anoctamin 1, calcium activated chloride channel; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436392"

<400> 5458
Met Arg Val Asn Glu Lys Tyr Ser Thr Leu Pro Ala Glu Asp Arg Ser
1 5 10 15

Val His Ile Ile Asn Ile Cys Ala Ile Glu Asp Ile Gly Tyr Leu Pro
20 25 30

Ser Glu Gly Thr Leu Leu Asn Ser Leu Ser Val Asp Pro Asp Ala Glu
35 40 45

Cys Lys Tyr Gly Leu Tyr Phe Arg Asp Gly Arg Arg Lys Val Asp Tyr
50 55 60

Ile Leu Val Tyr His His Lys Arg Pro Ser Gly Asn Arg Thr Leu Val
65 70 75 80

Arg Arg Val Gln His Ser Asp Thr Pro Ser Gly Ala Arg Ser Val Lys
85 90 95

Gln Asp His Pro Leu Pro Gly Lys Gly Ala Ser Leu Asp Ala Gly Ser
100 105 110

Gly Glu Pro Pro Met Asp Tyr His Glu Asp Asp Lys Arg Phe Arg Arg
115 120 125

Glu Glu Tyr Glu Gly Asn Leu Leu Glu Ala Gly Leu Glu Leu Glu Arg
130 135 140

Asp Glu Asp Met Tyr His Ile Asn Glu Thr Arg Gly Leu Leu Lys Lys
145 150 155 160

```
Ile Asn Ser Val Leu Gln Lys Ile Thr Asp Pro Ile Gln Pro Lys Val
                165                 170                 175

Ala Glu His Arg Pro Gln Thr Met Lys Arg Leu Ser Tyr Pro Phe Ser
            180                 185                 190

Arg Glu Lys Gln His Leu Phe Asp Leu Ser Asp Lys Asp Ser Phe Phe
        195                 200                 205

Asp Ser Lys Thr Arg Ser Thr Ile Val Tyr Glu Ile Leu Lys Arg Thr
    210                 215                 220

Thr Cys Thr Lys Ala Lys Tyr Ser Met Gly Ile Thr Ser Leu Leu Ala
225                 230                 235                 240

Asn Gly Val Tyr Ala Ala Ala Tyr Pro Leu His
                245                 250


<210> 5459
<211> 660
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1184; "

<220>
<221> source
<223> /note="Gene Symbol: ANO10; "

<220>
<221> source
<223> /note="Gene Name:
      anoctamin 10; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9NW15; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000292246"

<400> 5459
Met Lys Val Thr Leu Ser Ala Leu Asp Thr Ser Glu Ser Ser Phe Thr
1               5                   10                  15
```

```
Pro Leu Val Val Ile Glu Leu Ala Gln Asp Val Lys Glu Glu Thr Lys
            20                  25                  30

Glu Trp Leu Lys Asn Arg Ile Ile Ala Lys Lys Lys Asp Gly Gly Ala
        35                  40                  45

Gln Leu Leu Phe Arg Pro Leu Leu Asn Lys Tyr Glu Gln Glu Thr Leu
    50                  55                  60

Glu Asn Gln Asn Leu Tyr Leu Val Gly Ala Ser Lys Ile Arg Met Leu
65                  70                  75                  80

Leu Gly Ala Glu Ala Val Gly Leu Val Lys Glu Cys Asn Asp Asn Thr
                85                  90                  95

Met Arg Ala Phe Thr Tyr Arg Thr Arg Gln Asn Phe Lys Gly Phe Asp
            100                 105                 110

Asp Asn Asn Asp Asp Phe Leu Thr Met Ala Glu Cys Gln Phe Ile Ile
        115                 120                 125

Lys His Glu Leu Glu Asn Leu Arg Ala Lys Asp Glu Lys Met Ile Pro
    130                 135                 140

Gly Tyr Pro Gln Ala Lys Leu Tyr Pro Gly Lys Ser Leu Leu Arg Arg
145                 150                 155                 160

Leu Leu Thr Ser Gly Ile Val Ile Gln Val Phe Pro Leu His Asp Ser
                165                 170                 175

Glu Ala Leu Lys Lys Leu Glu Asp Thr Trp Tyr Thr Arg Phe Ala Leu
            180                 185                 190

Lys Tyr Gln Pro Ile Asp Ser Ile Arg Gly Tyr Phe Gly Glu Thr Ile
        195                 200                 205

Ala Leu Tyr Phe Gly Phe Leu Glu Tyr Phe Thr Phe Ala Leu Ile Pro
    210                 215                 220

Met Ala Val Ile Gly Leu Pro Tyr Tyr Leu Phe Val Trp Glu Asp Tyr
225                 230                 235                 240

Asp Lys Tyr Val Ile Phe Ala Ser Phe Asn Leu Ile Trp Ser Thr Val
```

```
                245                 250                 255

Ile Leu Glu Leu Trp Lys Arg Gly Cys Ala Asn Met Thr Tyr Arg Trp
            260                 265                 270

Gly Thr Leu Leu Met Lys Arg Lys Phe Glu Glu Pro Arg Pro Gly Phe
        275                 280                 285

His Gly Val Leu Gly Ile Asn Ser Ile Thr Gly Lys Glu Glu Pro Leu
    290                 295                 300

Tyr Pro Ser Tyr Lys Arg Gln Leu Arg Ile Tyr Leu Val Ser Leu Pro
305                 310                 315                 320

Phe Val Cys Leu Cys Leu Tyr Phe Ser Leu Tyr Val Met Met Ile Tyr
                325                 330                 335

Phe Asp Met Glu Val Trp Ala Leu Gly Leu His Glu Asn Ser Gly Ser
            340                 345                 350

Glu Trp Thr Ser Val Leu Leu Tyr Val Pro Ser Ile Ile Tyr Ala Ile
        355                 360                 365

Val Ile Glu Ile Met Asn Arg Leu Tyr Arg Tyr Ala Ala Glu Phe Leu
    370                 375                 380

Thr Ser Trp Glu Asn His Arg Leu Glu Ser Ala Tyr Gln Asn His Leu
385                 390                 395                 400

Ile Leu Lys Val Leu Val Phe Asn Phe Leu Asn Cys Phe Ala Ser Leu
                405                 410                 415

Phe Tyr Ile Ala Phe Val Leu Lys Asp Met Lys Leu Leu Arg Gln Ser
            420                 425                 430

Leu Ala Thr Leu Leu Ile Thr Ser Gln Ile Leu Asn Gln Ile Met Glu
        435                 440                 445

Ser Phe Leu Pro Tyr Trp Leu Gln Arg Lys His Gly Val Arg Val Lys
    450                 455                 460

Arg Lys Val Gln Ala Leu Lys Ala Asp Ile Asp Ala Thr Leu Tyr Glu
465                 470                 475                 480
```

```
Gln Val Ile Leu Glu Lys Glu Met Gly Thr Tyr Leu Gly Thr Phe Asp
                485                 490                 495

Asp Tyr Leu Glu Leu Phe Leu Gln Phe Gly Tyr Val Ser Leu Phe Ser
            500                 505                 510

Cys Val Tyr Pro Leu Ala Ala Ala Phe Ala Val Leu Asn Asn Phe Thr
        515                 520                 525

Glu Val Asn Ser Asp Ala Leu Lys Met Cys Arg Val Phe Lys Arg Pro
    530                 535                 540

Phe Ser Glu Pro Ser Ala Asn Ile Gly Val Trp Gln Leu Ala Phe Glu
545                 550                 555                 560

Thr Met Ser Val Ile Ser Val Val Thr Asn Cys Ala Leu Ile Gly Met
                565                 570                 575

Ser Pro Gln Val Asn Ala Val Phe Pro Glu Ser Lys Ala Asp Leu Ile
            580                 585                 590

Leu Ile Val Val Ala Val Glu His Ala Leu Leu Ala Leu Lys Phe Ile
        595                 600                 605

Leu Ala Phe Ala Ile Pro Asp Lys Pro Arg His Ile Gln Met Lys Leu
    610                 615                 620

Ala Arg Leu Glu Phe Glu Ser Leu Glu Ala Leu Lys Gln Gln Gln Met
625                 630                 635                 640

Lys Leu Val Thr Glu Asn Leu Lys Glu Glu Pro Met Glu Ser Gly Lys
                645                 650                 655

Glu Lys Ala Thr
            660
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<210> 5460
<211> 470
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1184; "

<220>
<221> source
<223> /note="Gene Symbol: ANO10; "

<220>
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<223> /note="Gene Name:
anoctamin 10; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NW15; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000327767"

<400> 5460

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Met Lys Val Thr Leu Ser Ala Leu Asp Thr Ser Glu Ser Ser Phe Thr
1               5                  10                  15

Pro Leu Val Val Ile Glu Leu Ala Gln Asp Val Lys Glu Glu Thr Lys
            20                  25                  30

Glu Trp Leu Lys Asn Arg Ile Ile Ala Lys Lys Lys Asp Gly Gly Ala
        35                  40                  45

Gln Leu Leu Phe Arg Pro Leu Leu Asn Lys Tyr Glu Gln Glu Thr Leu
    50                  55                  60

Glu Asn Gln Asn Leu Tyr Leu Val Gly Ala Ser Lys Ile Arg Met Leu
65                  70                  75                  80

Leu Gly Ala Glu Ala Val Gly Leu Val Lys Glu Cys Asn Asp Asn Thr
                85                  90                  95

Met Arg Ala Phe Thr Tyr Arg Thr Arg Gln Asn Phe Lys Gly Phe Asp
            100                 105                 110

Asp Asn Asn Asp Asp Phe Leu Thr Met Ala Glu Cys Gln Phe Ile Ile
        115                 120                 125

Lys His Glu Leu Glu Asn Leu Arg Ala Lys Asp Glu Lys Met Ile Pro
    130                 135                 140

Gly Tyr Pro Gln Ala Lys Leu Tyr Pro Gly Lys Ser Leu Leu Arg Arg
```

145 150 155 160

Leu Leu Thr Ser Gly Ile Val Ile Gln Val Phe Pro Leu His Asp Ser
165 170 175

Glu Ala Leu Lys Lys Leu Glu Asp Thr Trp Tyr Thr Arg Phe Ala Leu
180 185 190

Lys Tyr Gln Pro Ile Glu Asn His Arg Leu Glu Ser Ala Tyr Gln Asn
195 200 205

His Leu Ile Leu Lys Val Leu Val Phe Asn Phe Leu Asn Cys Phe Ala
210 215 220

Ser Leu Phe Tyr Ile Ala Phe Val Leu Lys Asp Met Lys Leu Leu Arg
225 230 235 240

Gln Ser Leu Ala Thr Leu Leu Ile Thr Ser Gln Ile Leu Asn Gln Ile
245 250 255

Met Glu Ser Phe Leu Pro Tyr Trp Leu Gln Arg Lys His Gly Val Arg
260 265 270

Val Lys Arg Lys Val Gln Ala Leu Lys Ala Asp Ile Asp Ala Thr Leu
275 280 285

Tyr Glu Gln Val Ile Leu Glu Lys Glu Met Gly Thr Tyr Leu Gly Thr
290 295 300

Phe Asp Asp Tyr Leu Glu Leu Phe Leu Gln Phe Gly Tyr Val Ser Leu
305 310 315 320

Phe Ser Cys Val Tyr Pro Leu Ala Ala Ala Phe Ala Val Leu Asn Asn
325 330 335

Phe Thr Glu Val Asn Ser Asp Ala Leu Lys Met Cys Arg Val Phe Lys
340 345 350

Arg Pro Phe Ser Glu Pro Ser Ala Asn Ile Gly Val Trp Gln Leu Ala
355 360 365

Phe Glu Thr Met Ser Val Ile Ser Val Val Thr Asn Cys Ala Leu Ile
370 375 380

```
Gly Met Ser Pro Gln Val Asn Ala Val Phe Pro Glu Ser Lys Ala Asp
385                 390                 395                 400


Leu Ile Leu Ile Val Val Ala Val Glu His Ala Leu Leu Ala Leu Lys
                405                 410                 415


Phe Ile Leu Ala Phe Ala Ile Pro Asp Lys Pro Arg His Ile Gln Met
            420                 425                 430


Lys Leu Ala Arg Leu Glu Phe Glu Ser Leu Glu Ala Leu Lys Gln Gln
        435                 440                 445


Gln Met Lys Leu Val Thr Glu Asn Leu Lys Glu Glu Pro Met Glu Ser
    450                 455                 460


Gly Lys Glu Lys Ala Thr
465                 470


<210> 5461
<211> 594
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1184; "

<220>
<221> source
<223> /note="Gene Symbol: ANO10; "

<220>
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<223> /note="Gene Name:
      anoctamin 10; "

<220>
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<223> /note="Uniprot ID:  Q9NW15; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000379398"

<400> 5461
Met Lys Val Thr Leu Ser Ala Leu Asp Thr Ser Glu Ser Ser Phe Thr
1               5                   10                  15
```

```
Pro Leu Val Val Ile Glu Leu Ala Gln Asp Val Lys Glu Glu Thr Lys
            20                  25                  30

Glu Trp Leu Lys Asn Arg Ile Ile Ala Lys Lys Lys Asp Gly Asp Asn
        35                  40                  45

Asn Asp Asp Phe Leu Thr Met Ala Glu Cys Gln Phe Ile Ile Lys His
    50                  55                  60

Glu Leu Glu Asn Leu Arg Ala Lys Asp Glu Lys Met Ile Pro Gly Tyr
65                  70                  75                  80

Pro Gln Ala Lys Leu Tyr Pro Gly Lys Ser Leu Leu Arg Arg Leu Leu
                85                  90                  95

Thr Ser Gly Ile Val Ile Gln Val Phe Pro Leu His Asp Ser Glu Ala
            100                 105                 110

Leu Lys Lys Leu Glu Asp Thr Trp Tyr Thr Arg Phe Ala Leu Lys Tyr
        115                 120                 125

Gln Pro Ile Asp Ser Ile Arg Gly Tyr Phe Gly Glu Thr Ile Ala Leu
    130                 135                 140

Tyr Phe Gly Phe Leu Glu Tyr Phe Thr Phe Ala Leu Ile Pro Met Ala
145                 150                 155                 160

Val Ile Gly Leu Pro Tyr Tyr Leu Phe Val Trp Glu Asp Tyr Asp Lys
                165                 170                 175

Tyr Val Ile Phe Ala Ser Phe Asn Leu Ile Trp Ser Thr Val Ile Leu
            180                 185                 190

Glu Leu Trp Lys Arg Gly Cys Ala Asn Met Thr Tyr Arg Trp Gly Thr
        195                 200                 205

Leu Leu Met Lys Arg Lys Phe Glu Glu Pro Arg Pro Gly Phe His Gly
    210                 215                 220

Val Leu Gly Ile Asn Ser Ile Thr Gly Lys Glu Glu Pro Leu Tyr Pro
225                 230                 235                 240

Ser Tyr Lys Arg Gln Leu Arg Ile Tyr Leu Val Ser Leu Pro Phe Val
```

```
                245                 250                 255

Cys Leu Cys Leu Tyr Phe Ser Leu Tyr Val Met Met Ile Tyr Phe Asp
            260                 265                 270

Met Glu Val Trp Ala Leu Gly Leu His Glu Asn Ser Gly Ser Glu Trp
        275                 280                 285

Thr Ser Val Leu Leu Tyr Val Pro Ser Ile Ile Tyr Ala Ile Val Ile
    290                 295                 300

Glu Ile Met Asn Arg Leu Tyr Arg Tyr Ala Ala Glu Phe Leu Thr Ser
305                 310                 315                 320

Trp Glu Asn His Arg Leu Glu Ser Ala Tyr Gln Asn His Leu Ile Leu
                325                 330                 335

Lys Val Leu Val Phe Asn Phe Leu Asn Cys Phe Ala Ser Leu Phe Tyr
            340                 345                 350

Ile Ala Phe Val Leu Lys Asp Met Lys Leu Leu Arg Gln Ser Leu Ala
        355                 360                 365

Thr Leu Leu Ile Thr Ser Gln Ile Leu Asn Gln Ile Met Glu Ser Phe
    370                 375                 380

Leu Pro Tyr Trp Leu Gln Arg Lys His Gly Val Arg Val Lys Arg Lys
385                 390                 395                 400

Val Gln Ala Leu Lys Ala Asp Ile Asp Ala Thr Leu Tyr Glu Gln Val
                405                 410                 415

Ile Leu Glu Lys Glu Met Gly Thr Tyr Leu Gly Thr Phe Asp Asp Tyr
            420                 425                 430

Leu Glu Leu Phe Leu Gln Phe Gly Tyr Val Ser Leu Phe Ser Cys Val
        435                 440                 445

Tyr Pro Leu Ala Ala Ala Phe Ala Val Leu Asn Asn Phe Thr Glu Val
    450                 455                 460

Asn Ser Asp Ala Leu Lys Met Cys Arg Val Phe Lys Arg Pro Phe Ser
465                 470                 475                 480
```

```
Glu Pro Ser Ala Asn Ile Gly Val Trp Gln Leu Ala Phe Glu Thr Met
                485                 490                 495

Ser Val Ile Ser Val Val Thr Asn Cys Ala Leu Ile Gly Met Ser Pro
            500                 505                 510

Gln Val Asn Ala Val Phe Pro Glu Ser Lys Ala Asp Leu Ile Leu Ile
        515                 520                 525

Val Val Ala Val Glu His Ala Leu Leu Ala Leu Lys Phe Ile Leu Ala
    530                 535                 540

Phe Ala Ile Pro Asp Lys Pro Arg His Ile Gln Met Lys Leu Ala Arg
545                 550                 555                 560

Leu Glu Phe Glu Ser Leu Glu Ala Leu Lys Gln Gln Gln Met Lys Leu
                565                 570                 575

Val Thr Glu Asn Leu Lys Glu Glu Pro Met Glu Ser Gly Lys Glu Lys
            580                 585                 590

Ala Thr
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<210> 5462
<211> 549
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1184; "

<220>
<221> source
<223> /note="Gene Symbol: ANO10; "

<220>
<221> source
<223> /note="Gene Name:
anoctamin 10; "

<220>
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<223> /note="Uniprot ID: Q9NW15; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000394119"

<400> 5462
Met Lys Val Thr Leu Ser Ala Leu Asp Thr Ser Glu Ser Ser Phe Thr
1 5 10 15

Pro Leu Val Val Ile Glu Leu Ala Gln Asp Val Lys Glu Glu Thr Lys
20 25 30

Glu Trp Leu Lys Asn Arg Ile Ile Ala Lys Lys Lys Asp Gly Val Arg
35 40 45

Arg Leu Leu Thr Ser Gly Ile Val Ile Gln Val Phe Pro Leu His Asp
50 55 60

Ser Glu Ala Leu Lys Lys Leu Glu Asp Thr Trp Tyr Thr Arg Phe Ala
65 70 75 80

Leu Lys Tyr Gln Pro Ile Asp Ser Ile Arg Gly Tyr Phe Gly Glu Thr
85 90 95

Ile Ala Leu Tyr Phe Gly Phe Leu Glu Tyr Phe Thr Phe Ala Leu Ile
100 105 110

Pro Met Ala Val Ile Gly Leu Pro Tyr Tyr Leu Phe Val Trp Glu Asp
115 120 125

Tyr Asp Lys Tyr Val Ile Phe Ala Ser Phe Asn Leu Ile Trp Ser Thr
130 135 140

Val Ile Leu Glu Leu Trp Lys Arg Gly Cys Ala Asn Met Thr Tyr Arg
145 150 155 160

Trp Gly Thr Leu Leu Met Lys Arg Lys Phe Glu Glu Pro Arg Pro Gly
165 170 175

Phe His Gly Val Leu Gly Ile Asn Ser Ile Thr Gly Lys Glu Glu Pro
180 185 190

Leu Tyr Pro Ser Tyr Lys Arg Gln Leu Arg Ile Tyr Leu Val Ser Leu
195 200 205

Pro Phe Val Cys Leu Cys Leu Tyr Phe Ser Leu Tyr Val Met Met Ile

```
    210                 215                 220

Tyr Phe Asp Met Glu Val Trp Ala Leu Gly Leu His Glu Asn Ser Gly
225                 230                 235                 240

Ser Glu Trp Thr Ser Val Leu Leu Tyr Val Pro Ser Ile Ile Tyr Ala
                245                 250                 255

Ile Val Ile Glu Ile Met Asn Arg Leu Tyr Arg Tyr Ala Ala Glu Phe
            260                 265                 270

Leu Thr Ser Trp Glu Asn His Arg Leu Glu Ser Ala Tyr Gln Asn His
        275                 280                 285

Leu Ile Leu Lys Val Leu Val Phe Asn Phe Leu Asn Cys Phe Ala Ser
    290                 295                 300

Leu Phe Tyr Ile Ala Phe Val Leu Lys Asp Met Lys Leu Leu Arg Gln
305                 310                 315                 320

Ser Leu Ala Thr Leu Leu Ile Thr Ser Gln Ile Leu Asn Gln Ile Met
                325                 330                 335

Glu Ser Phe Leu Pro Tyr Trp Leu Gln Arg Lys His Gly Val Arg Val
            340                 345                 350

Lys Arg Lys Val Gln Ala Leu Lys Ala Asp Ile Asp Ala Thr Leu Tyr
        355                 360                 365

Glu Gln Val Ile Leu Glu Lys Glu Met Gly Thr Tyr Leu Gly Thr Phe
    370                 375                 380

Asp Asp Tyr Leu Glu Leu Phe Leu Gln Phe Gly Tyr Val Ser Leu Phe
385                 390                 395                 400

Ser Cys Val Tyr Pro Leu Ala Ala Ala Phe Ala Val Leu Asn Asn Phe
                405                 410                 415

Thr Glu Val Asn Ser Asp Ala Leu Lys Met Cys Arg Val Phe Lys Arg
            420                 425                 430

Pro Phe Ser Glu Pro Ser Ala Asn Ile Gly Val Trp Gln Leu Ala Phe
        435                 440                 445
```

```
Glu Thr Met Ser Val Ile Ser Val Val Thr Asn Cys Ala Leu Ile Gly
    450                 455                 460

Met Ser Pro Gln Val Asn Ala Val Phe Pro Glu Ser Lys Ala Asp Leu
465                 470                 475                 480

Ile Leu Ile Val Val Ala Val Glu His Ala Leu Leu Ala Leu Lys Phe
                485                 490                 495

Ile Leu Ala Phe Ala Ile Pro Asp Lys Pro Arg His Ile Gln Met Lys
            500                 505                 510

Leu Ala Arg Leu Glu Phe Glu Ser Leu Glu Ala Leu Lys Gln Gln Gln
        515                 520                 525

Met Lys Leu Val Thr Glu Asn Leu Lys Glu Glu Pro Met Glu Ser Gly
    530                 535                 540

Lys Glu Lys Ala Thr
545
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<210> 5463
<211> 627
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1184; "

<220>
<221> source
<223> /note="Gene Symbol: ANO10; "

<220>
<221> source
<223> /note="Gene Name:
anoctamin 10; "

<220>
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<223> /note="Uniprot ID: Q9NW15; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000396990"

<400> 5463

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Met Lys Val Thr Leu Ser Ala Leu Asp Thr Ser Glu Ser Ser Phe Thr
1               5                  10                  15

Pro Leu Val Val Ile Glu Leu Ala Gln Asp Val Lys Glu Glu Thr Lys
            20                  25                  30

Glu Trp Leu Lys Asn Arg Ile Ile Ala Lys Lys Lys Asp Gly Gly Ala
        35                  40                  45

Gln Leu Leu Phe Arg Pro Leu Leu Asn Lys Tyr Glu Gln Glu Thr Leu
    50                  55                  60

Glu Asn Gln Asn Leu Tyr Leu Val Gly Ala Ser Lys Ile Arg Met Leu
65                  70                  75                  80

Leu Gly Ala Glu Ala Val Gly Leu Val Lys Glu Cys Asn Asp Asn Thr
                85                  90                  95

Met Arg Ala Phe Thr Tyr Arg Thr Arg Gln Asn Phe Lys Gly Phe Asp
            100                 105                 110

Asp Asn Asn Asp Asp Phe Leu Thr Met Ala Glu Cys Gln Phe Ile Ile
        115                 120                 125

Lys His Glu Leu Glu Asn Leu Arg Ala Lys Asp Glu Lys Met Ile Pro
    130                 135                 140

Gly Tyr Pro Gln Ala Lys Leu Tyr Pro Gly Lys Ser Leu Leu Arg Arg
145                 150                 155                 160

Leu Leu Thr Ser Gly Ile Val Ile Gln Val Phe Pro Leu His Asp Ser
                165                 170                 175

Glu Ala Leu Lys Lys Leu Glu Asp Thr Trp Tyr Thr Arg Phe Ala Leu
            180                 185                 190

Lys Tyr Gln Pro Ile Asp Ser Ile Arg Gly Tyr Phe Gly Glu Thr Ile
        195                 200                 205

Ala Leu Tyr Phe Gly Phe Leu Glu Tyr Phe Thr Phe Ala Leu Ile Pro
    210                 215                 220

Met Ala Val Ile Gly Leu Pro Tyr Tyr Leu Phe Val Trp Glu Asp Tyr
```

225 230 235 240

Asp Lys Tyr Val Ile Phe Ala Ser Phe Asn Leu Ile Trp Ser Thr Val
245 250 255

Ile Leu Glu Leu Trp Lys Arg Gly Cys Ala Asn Met Thr Tyr Arg Trp
260 265 270

Gly Thr Leu Leu Met Lys Arg Lys Phe Glu Glu Pro Arg Pro Gly Phe
275 280 285

His Gly Val Leu Gly Ile Asn Ser Ile Thr Gly Lys Glu Glu Pro Leu
290 295 300

Tyr Pro Ser Tyr Lys Arg Gln Leu Arg Ile Tyr Leu Val Ser Leu Pro
305 310 315 320

Phe Val Cys Leu Cys Leu Tyr Phe Ser Leu Tyr Val Met Met Ile Tyr
325 330 335

Phe Asp Met Glu Val Trp Ala Leu Gly Leu His Glu Asn Ser Gly Ser
340 345 350

Glu Trp Thr Ser Val Leu Leu Tyr Val Pro Ser Ile Ile Tyr Ala Ile
355 360 365

Val Ile Glu Ile Met Asn Arg Leu Tyr Arg Tyr Ala Ala Glu Phe Leu
370 375 380

Thr Ser Trp Glu Asn His Arg Leu Glu Ser Ala Tyr Gln Asn His Leu
385 390 395 400

Ile Leu Lys Val Leu Val Phe Asn Phe Leu Asn Cys Phe Ala Ser Leu
405 410 415

Phe Tyr Ile Ala Phe Val Leu Lys Asp Met Lys Leu Leu Arg Gln Ser
420 425 430

Leu Ala Thr Leu Leu Ile Thr Ser Gln Ile Leu Asn Gln Ile Met Glu
435 440 445

Ser Phe Leu Pro Tyr Trp Leu Gln Arg Lys His Gly Val Arg Val Lys
450 455 460

```
Arg Lys Val Gln Ala Leu Lys Ala Asp Ile Asp Ala Thr Leu Tyr Glu
465                 470                 475                 480

Gln Val Ile Leu Glu Lys Glu Met Gly Thr Tyr Leu Gly Thr Phe Asp
                485                 490                 495

Asp Tyr Leu Glu Leu Phe Leu Gln Phe Gly Tyr Val Ser Leu Phe Ser
            500                 505                 510

Cys Val Tyr Pro Leu Ala Ala Ala Phe Ala Val Leu Asn Asn Phe Thr
        515                 520                 525

Glu Val Asn Ser Asp Ala Leu Lys Met Cys Arg Val Phe Lys Arg Pro
    530                 535                 540

Phe Ser Glu Pro Ser Ala Asn Ile Gly Val Trp Gln Leu Ala Phe Glu
545                 550                 555                 560

Thr Met Ser Val Ile Ser Val Val Thr Asn Cys Ala Leu Ile Gly Met
                565                 570                 575

Ser Pro Gln Val Asn Ala Val Phe Pro Glu Ser Lys Ala Asp Leu Ile
            580                 585                 590

Leu Ile Val Val Ala Val Glu Ala Ala Ser Cys Lys Leu Val Ser Leu
        595                 600                 605

Pro Arg Tyr Ser Trp Ser Thr Asn Ser Val Pro Gly Thr Val Ile Gly
    610                 615                 620

Pro Gly Val
625


<210> 5464
<211> 134
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1184; "

<220>
<221> source
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<223> /note="Gene Symbol: ANO10; "

<220>
<221> source
<223> /note="Gene Name:
anoctamin 10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000397360"

<400> 5464
Met Lys Val Thr Leu Ser Ala Leu Asp Thr Ser Glu Ser Ser Phe Thr
1 5 10 15

Pro Leu Val Val Ile Glu Leu Ala Gln Asp Val Lys Glu Glu Thr Lys
20 25 30

Glu Trp Leu Lys Asn Arg Ile Ile Ala Lys Lys Lys Asp Gly Gly Ala
35 40 45

Gln Leu Leu Phe Arg Pro Leu Leu Asn Lys Tyr Glu Gln Glu Thr Leu
50 55 60

Glu Asn Gln Asn Leu Tyr Leu Val Gly Ala Ser Lys Ile Arg Met Leu
65 70 75 80

Leu Gly Ala Glu Ala Val Gly Leu Val Lys Glu Cys Asn Asp Asn Thr
85 90 95

Met Arg Ala Phe Thr Tyr Arg Thr Arg Gln Asn Phe Lys Gly Phe Asp
100 105 110

Asp Asn Asn Asp Asp Phe Leu Thr Met Ala Glu Cys Gln Phe Ile Ile
115 120 125

Lys His Glu Leu Glu Asn
130

<210> 5465
<211> 140
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1184; "

<220>
<221> source
<223> /note="Gene Symbol: ANO10; "

<220>
<221> source
<223> /note="Gene Name:
anoctamin 10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000399103"

<400> 5465
Met Lys Val Thr Leu Ser Ala Leu Asp Thr Ser Glu Ser Ser Phe Thr
1 5 10 15

Pro Leu Val Val Ile Glu Leu Ala Gln Asp Val Lys Glu Glu Thr Lys
20 25 30

Glu Trp Leu Lys Asn Arg Ile Ile Ala Lys Lys Lys Asp Gly Gly Ala
35 40 45

Gln Leu Leu Phe Arg Pro Leu Leu Asn Lys Tyr Glu Gln Glu Thr Leu
50 55 60

Glu Asn Gln Asn Leu Tyr Leu Val Gly Ala Ser Lys Ile Arg Met Leu
65 70 75 80

Leu Gly Ala Glu Ala Val Gly Leu Val Lys Glu Cys Asn Asp Asn Thr
85 90 95

Met Arg Ala Phe Thr Tyr Arg Thr Arg Gln Asn Phe Lys Gly Phe Asp
100 105 110

Asp Asn Asn Asp Asp Phe Leu Thr Met Ala Glu Cys Gln Phe Ile Ile
115 120 125

Lys His Glu Leu Glu Asn Leu Arg Ala Lys Asp Glu
130 135 140

<210> 5466
<211> 146
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1184; "

<220>
<221> source
<223> /note="Gene Symbol: ANO10; "

<220>
<221> source
<223> /note="Gene Name:
anoctamin 10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000402010"

<400> 5466

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Met Lys Val Thr Leu Ser Ala Leu Asp Thr Ser Glu Ser Ser Phe Thr
1               5                  10                  15

Pro Leu Val Val Ile Glu Leu Ala Gln Asp Val Lys Glu Glu Thr Lys
            20                  25                  30

Glu Trp Leu Lys Asn Arg Ile Ile Ala Lys Lys Lys Asp Gly Gly Ala
        35                  40                  45

Gln Leu Leu Phe Arg Pro Leu Leu Asn Lys Tyr Glu Gln Glu Thr Leu
    50                  55                  60

Glu Asn Gln Asn Leu Tyr Leu Val Gly Ala Ser Lys Ile Arg Met Leu
65                  70                  75                  80

Leu Gly Ala Glu Ala Val Gly Leu Val Lys Glu Cys Asn Asp Asn Thr
                85                  90                  95

Met Arg Ala Phe Thr Tyr Arg Thr Arg Gln Asn Phe Lys Gly Phe Asp
            100                 105                 110

Asp Asn Asn Asp Asp Phe Leu Thr Met Ala Glu Cys Gln Phe Ile Ile
        115                 120                 125

Lys His Glu Leu Glu Asn Leu Arg Ala Lys Asp Glu Lys Met Ile Pro
    130                 135                 140

Gly Tyr
145
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<210> 5467

<211> 141
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1184; "

<220>
<221> source
<223> /note="Gene Symbol: ANO10; "

<220>
<221> source
<223> /note="Gene Name:
anoctamin 10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000402845"

<400> 5467

Met	Lys	Val	Thr	Leu	Ser	Ala	Leu	Asp	Thr	Ser	Glu	Ser	Ser	Phe	Thr
1				5				10					15		

Pro	Leu	Val	Val	Ile	Glu	Leu	Ala	Gln	Asp	Val	Lys	Glu	Glu	Thr	Lys
			20					25					30		

Glu	Trp	Leu	Lys	Asn	Arg	Ile	Ile	Ala	Lys	Lys	Lys	Asp	Gly	Gly	Ala
		35					40					45			

Gln	Leu	Leu	Phe	Arg	Pro	Leu	Leu	Asn	Lys	Tyr	Glu	Gln	Glu	Thr	Leu
	50					55					60				

Glu	Asn	Gln	Asn	Leu	Tyr	Leu	Val	Gly	Ala	Ser	Lys	Ile	Arg	Met	Leu
65					70					75					80

Leu	Gly	Ala	Glu	Ala	Val	Gly	Leu	Val	Lys	Glu	Cys	Asn	Asp	Asn	Thr
				85					90					95	

Met	Arg	Ala	Phe	Thr	Tyr	Arg	Thr	Arg	Gln	Asn	Phe	Lys	Gly	Phe	Asp
			100					105					110		

Asp	Asn	Asn	Asp	Asp	Phe	Leu	Thr	Met	Ala	Glu	Cys	Gln	Phe	Ile	Ile
		115					120					125			

Lys	His	Glu	Leu	Glu	Asn	Leu	Arg	Ala	Lys	Asp	Glu	Lys			
	130					135					140				

<210> 5468
<211> 38
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1184; "

<220>
<221> source
<223> /note="Gene Symbol: ANO10; "

<220>
<221> source
<223> /note="Gene Name:
anoctamin 10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000404988"

<400> 5468
Met Lys Val Thr Leu Ser Ala Leu Asp Thr Ser Glu Ser Ser Phe Thr
1 5 10 15

Pro Leu Val Val Ile Glu Leu Ala Gln Asp Val Lys Glu Glu Thr Lys
20 25 30

Glu Trp Leu Lys Asn Arg
35

<210> 5469
<211> 192
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1184; "

<220>
<221> source
<223> /note="Gene Symbol: ANO10; "

<220>
<221> source
<223> /note="Gene Name:
anoctamin 10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406432"

<400> 5469
Met Lys Val Thr Leu Ser Ala Leu Asp Thr Ser Glu Ser Ser Phe Thr
1 5 10 15

Pro Leu Val Val Ile Glu Leu Ala Gln Asp Val Lys Glu Glu Thr Lys
20 25 30

Glu Trp Leu Lys Asn Arg Ile Ile Ala Lys Lys Lys Asp Gly Gly Ala
35 40 45

Gln Leu Leu Phe Arg Pro Leu Leu Asn Lys Tyr Glu Gln Glu Thr Leu
50 55 60

Glu Asn Gln Asn Leu Tyr Leu Val Gly Ala Ser Lys Ile Arg Met Leu
65 70 75 80

Leu Gly Ala Glu Ala Val Gly Leu Val Lys Glu Cys Asn Asp Asn Thr
85 90 95

Met Arg Ala Phe Thr Tyr Arg Thr Arg Gln Asn Phe Lys Gly Phe Asp
100 105 110

Asp Asn Asn Asp Asp Phe Leu Thr Met Ala Glu Cys Gln Phe Ile Ile
115 120 125

Lys His Glu Leu Glu Asn Leu Arg Ala Lys Asp Glu Lys Met Ile Pro
130 135 140

Gly Tyr Pro Gln Ala Lys Leu Tyr Pro Gly Lys Ser Leu Phe Gln Leu
145 150 155 160

Pro Gln Leu Leu Cys Leu Thr Leu Leu Tyr Cys Leu Cys Leu Glu Arg
165 170 175

Tyr Glu Ala Phe Ala Pro Glu Leu Gly His Ser Pro Asn Tyr Leu Pro
180 185 190

<210> 5470
<211> 112
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1184; "

<220>
<221> source
<223> /note="Gene Symbol: ANO10; "

<220>
<221> source
<223> /note="Gene Name:
anoctamin 10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406712"

<400> 5470

Met	Lys	Val	Thr	Leu	Ser	Ala	Leu	Asp	Thr	Ser	Glu	Ser	Ser	Phe	Thr
1				5				10					15		
Pro	Leu	Val	Val	Ile	Glu	Leu	Ala	Gln	Asp	Val	Lys	Glu	Glu	Thr	Lys
			20					25					30		
Glu	Trp	Leu	Lys	Asn	Arg	Ile	Ile	Ala	Lys	Lys	Lys	Asp	Gly	Gly	Ala
		35					40					45			
Gln	Leu	Leu	Phe	Arg	Pro	Leu	Leu	Asn	Lys	Tyr	Glu	Gln	Glu	Thr	Leu
	50					55					60				
Glu	Asn	Gln	Asn	Leu	Tyr	Leu	Val	Gly	Ala	Ser	Lys	Ile	Arg	Met	Leu
65					70					75					80
Leu	Gly	Ala	Glu	Ala	Val	Gly	Leu	Val	Lys	Glu	Cys	Asn	Asp	Asn	Thr
				85					90					95	
Met	Arg	Ala	Phe	Thr	Tyr	Arg	Thr	Arg	Gln	Asn	Phe	Lys	Gly	Phe	Asp
			100					105					110		

<210> 5471
<211> 188
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1184; "

<220>
<221> source
<223> /note="Gene Symbol: ANO10; "

<220>
<221> source
<223> /note="Gene Name:
anoctamin 10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000412997"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5471

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Xaa Cys Val Tyr Pro Leu Ala Ala Ala Phe Ala Val Leu Asn Asn Phe
1               5                   10                  15

Thr Glu Val Asn Ser Asp Ala Leu Lys Met Cys Arg Val Phe Lys Arg
            20                  25                  30

Pro Phe Ser Glu Pro Ser Ala Asn Ile Gly Val Trp Gln Ile Ile Phe
        35                  40                  45

Cys Leu Asp Thr Gly Val Lys Arg Gly Leu Asn Cys Lys Val Met Arg
    50                  55                  60

Asn Leu Leu Gly Glu Met Glu Met Ser Cys Val Leu Phe Val Val Val
65                  70                  75                  80

Val Val Ser Gln Leu Ala Phe Glu Thr Met Ser Val Ile Ser Val Val
                85                  90                  95

Thr Asn Cys Ala Leu Ile Gly Met Ser Pro Gln Val Asn Ala Val Phe
            100                 105                 110

Pro Glu Ser Lys Ala Asp Leu Ile Leu Ile Val Val Ala Val Glu His
        115                 120                 125

Ala Leu Leu Ala Leu Lys Phe Ile Leu Ala Phe Ala Ile Pro Asp Lys
    130                 135                 140

Pro Arg His Ile Gln Met Lys Leu Ala Arg Leu Glu Phe Glu Ser Leu
145                 150                 155                 160

Glu Ala Leu Lys Gln Gln Gln Met Lys Leu Val Thr Glu Asn Leu Lys
```

```
                165                 170                 175

Glu Glu Pro Met Glu Ser Gly Lys Glu Lys Ala Thr
            180                 185


<210> 5472
<211> 162
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1184; "

<220>
<221> source
<223> /note="Gene Symbol: ANO10; "

<220>
<221> source
<223> /note="Gene Name:
      anoctamin 10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000416266"

<400> 5472
Met Lys Val Thr Leu Ser Ala Leu Asp Thr Ser Glu Ser Ser Phe Thr
1               5                   10                  15


Pro Leu Val Val Ile Glu Leu Ala Gln Asp Val Lys Glu Glu Thr Lys
            20                  25                  30


Glu Trp Leu Lys Asn Arg Ile Ile Ala Lys Lys Lys Asp Gly Val Arg
        35                  40                  45


Arg Leu Leu Thr Ser Gly Ile Val Ile Gln Val Phe Pro Leu His Asp
    50                  55                  60


Ser Glu Ala Leu Lys Lys Leu Glu Asp Thr Trp Tyr Thr Arg Phe Ala
65                  70                  75                  80


Leu Lys Tyr Gln Pro Ile Asp Ser Ile Arg Gly Tyr Phe Gly Glu Thr
                85                  90                  95


Ile Ala Leu Tyr Phe Gly Phe Leu Glu Tyr Phe Thr Phe Ala Leu Ile
            100                 105                 110
```

```
Pro Met Ala Val Ile Gly Leu Pro Tyr Tyr Leu Phe Val Trp Glu Asp
        115                 120                 125

Tyr Asp Lys Tyr Val Ile Phe Ala Ser Phe Asn Leu Ile Trp Ser Thr
    130                 135                 140

Val Ile Leu Glu Leu Trp Lys Arg Gly Cys Ala Asn Met Thr Tyr Arg
145                 150                 155                 160

Trp Gly



<210> 5473
<211> 999
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1185; "

<220>
<221> source
<223> /note="Gene Symbol: ANO2; "

<220>
<221> source
<223> /note="Gene Name:
      anoctamin 2, calcium activated chloride channel; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9NQ90; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000314048"

<400> 5473
Met Pro Glu Asp Ile Pro Leu Leu Pro Gly Ser Pro Arg Arg Leu Ser
1               5                   10                  15

Pro Gln Ala Gly Ser Arg Gly Gly Gln Gly Pro Lys His Gly Gln Gln
            20                  25                  30

Cys Leu Lys Met Pro Gly Pro Arg Ala Pro Gly Leu Gln Gly Gly Ser
        35                  40                  45

Asn Arg Asp Pro Gly Gln Pro Cys Gly Gly Glu Ser Thr Arg Ser Ser
```

```
    50                  55                  60

Ser Val Ile Asn Asn Tyr Leu Asp Ala Asn Glu Pro Val Ser Leu Glu
65                  70                  75                  80

Ala Arg Leu Ser Arg Met His Phe His Asp Ser Gln Arg Lys Val Asp
                85                  90                  95

Tyr Val Leu Ala Tyr His Tyr Arg Lys Arg Gly Val His Leu Ala Gln
            100                 105                 110

Gly Phe Pro Gly His Ser Leu Ala Ile Val Ser Asn Gly Glu Thr Gly
        115                 120                 125

Lys Glu Pro His Ala Gly Gly Pro Gly Asp Ile Glu Leu Gly Pro Leu
    130                 135                 140

Asp Ala Leu Glu Glu Glu Arg Lys Glu Gln Arg Glu Glu Phe Glu His
145                 150                 155                 160

Asn Leu Met Glu Ala Gly Leu Glu Leu Glu Lys Asp Leu Glu Asn Lys
                165                 170                 175

Ser Gln Gly Ser Ile Phe Val Arg Ile His Ala Pro Trp Gln Val Leu
            180                 185                 190

Ala Arg Glu Ala Glu Phe Leu Lys Ile Lys Val Pro Thr Lys Lys Glu
        195                 200                 205

Met Tyr Glu Ile Lys Ala Gly Gly Ser Ile Ala Lys Lys Phe Ser Ala
    210                 215                 220

Ala Leu Gln Lys Leu Ser Ser His Leu Gln Pro Arg Val Pro Glu His
225                 230                 235                 240

Ser Asn Asn Lys Met Lys Asn Leu Ser Tyr Pro Phe Ser Arg Glu Lys
                245                 250                 255

Met Tyr Leu Tyr Asn Ile Gln Glu Lys Asp Thr Phe Phe Asp Asn Ala
            260                 265                 270

Thr Arg Ser Arg Ile Val His Glu Ile Leu Lys Arg Thr Ala Cys Ser
        275                 280                 285
```

```
Arg Ala Asn Asn Thr Met Gly Ile Asn Ser Leu Ile Ala Asn Asn Ile
    290                 295                 300

Tyr Glu Ala Ala Tyr Pro Leu His Asp Gly Glu Tyr Asp Ser Pro Glu
305                 310                 315                 320

Asp Asp Met Asn Asp Arg Lys Leu Leu Tyr Gln Glu Trp Ala Arg Tyr
                325                 330                 335

Gly Val Phe Tyr Lys Phe Gln Pro Ile Asp Leu Ile Arg Lys Tyr Phe
            340                 345                 350

Gly Glu Lys Ile Gly Leu Tyr Phe Ala Trp Leu Gly Leu Tyr Thr Ser
        355                 360                 365

Phe Leu Ile Pro Ser Ser Val Ile Gly Val Ile Val Phe Leu Tyr Gly
    370                 375                 380

Cys Ala Thr Ile Glu Glu Asp Ile Pro Ser Arg Glu Met Cys Asp Gln
385                 390                 395                 400

Gln Asn Ala Phe Thr Met Cys Pro Leu Cys Asp Lys Ser Cys Asp Tyr
                405                 410                 415

Trp Asn Leu Ser Ser Ala Cys Gly Thr Ala Gln Ala Ser His Leu Phe
            420                 425                 430

Asp Asn Pro Ala Thr Val Phe Phe Ser Ile Phe Met Ala Leu Trp Ala
        435                 440                 445

Thr Met Phe Leu Glu Asn Trp Lys Arg Leu Gln Met Arg Leu Gly Tyr
    450                 455                 460

Phe Trp Asp Leu Thr Gly Ile Glu Glu Glu Glu Glu Arg Ala Gln Glu
465                 470                 475                 480

His Ser Arg Pro Glu Tyr Glu Thr Lys Val Arg Glu Lys Met Leu Lys
                485                 490                 495

Glu Ser Asn Gln Ser Ala Val Gln Lys Leu Glu Thr Asn Thr Thr Glu
            500                 505                 510
```

```
Cys Gly Asp Glu Asp Asp Glu Asp Lys Leu Thr Trp Lys Asp Arg Phe
        515                 520                 525

Pro Gly Tyr Leu Met Asn Phe Ala Ser Ile Leu Phe Met Ile Ala Leu
    530                 535                 540

Thr Phe Ser Ile Val Phe Gly Val Ile Val Tyr Arg Ile Thr Thr Ala
545                 550                 555                 560

Ala Ala Leu Ser Leu Asn Lys Ala Thr Arg Ser Asn Val Arg Val Thr
                565                 570                 575

Val Thr Ala Thr Ala Val Ile Ile Asn Leu Val Val Ile Leu Ile Leu
            580                 585                 590

Asp Glu Ile Tyr Gly Ala Val Ala Lys Trp Leu Thr Lys Ile Glu Val
        595                 600                 605

Pro Lys Thr Glu Gln Thr Phe Glu Glu Arg Leu Ile Leu Lys Ala Phe
    610                 615                 620

Leu Leu Lys Phe Val Asn Ala Tyr Ser Pro Ile Phe Tyr Val Ala Phe
625                 630                 635                 640

Phe Lys Gly Arg Phe Val Gly Arg Pro Gly Ser Tyr Val Tyr Val Phe
                645                 650                 655

Asp Gly Tyr Arg Met Glu Glu Cys Ala Pro Gly Gly Cys Leu Met Glu
            660                 665                 670

Leu Cys Ile Gln Leu Ser Ile Ile Met Leu Gly Lys Gln Leu Ile Gln
        675                 680                 685

Asn Asn Ile Phe Glu Ile Gly Val Pro Lys Leu Lys Lys Leu Phe Arg
    690                 695                 700

Lys Leu Lys Asp Glu Thr Glu Ala Gly Glu Thr Asp Ser Ala His Ser
705                 710                 715                 720

Lys His Pro Glu Gln Trp Asp Leu Asp Tyr Ser Leu Glu Pro Tyr Thr
                725                 730                 735
```

```
Gly Leu Thr Pro Glu Tyr Met Glu Met Ile Ile Gln Phe Gly Phe Val
            740                 745                 750

Thr Leu Phe Val Ala Ser Phe Pro Leu Ala Pro Val Phe Ala Leu Leu
        755                 760                 765

Asn Asn Val Ile Glu Val Arg Leu Asp Ala Lys Lys Phe Val Thr Glu
    770                 775                 780

Leu Arg Arg Pro Asp Ala Val Arg Thr Lys Asp Ile Gly Ile Trp Phe
785                 790                 795                 800

Asp Ile Leu Ser Gly Ile Gly Lys Phe Ser Val Ile Ser Asn Ala Phe
                805                 810                 815

Val Ile Ala Ile Thr Ser Asp Phe Ile Pro Arg Leu Val Tyr Gln Tyr
            820                 825                 830

Ser Tyr Ser His Asn Gly Thr Leu His Gly Phe Val Asn His Thr Leu
        835                 840                 845

Ser Phe Phe Asn Val Ser Gln Leu Lys Glu Gly Thr Gln Pro Glu Asn
    850                 855                 860

Ser Gln Phe Asp Gln Glu Val Gln Phe Cys Arg Phe Lys Asp Tyr Arg
865                 870                 875                 880

Glu Pro Pro Trp Ala Pro Asn Pro Tyr Glu Phe Ser Lys Gln Tyr Trp
                885                 890                 895

Phe Ile Leu Ser Ala Arg Leu Ala Phe Val Ile Ile Phe Gln Asn Leu
            900                 905                 910

Val Met Phe Leu Ser Val Leu Val Asp Trp Met Ile Pro Asp Ile Pro
        915                 920                 925

Thr Asp Ile Ser Asp Gln Ile Lys Lys Glu Lys Ser Leu Leu Val Asp
    930                 935                 940

Phe Phe Leu Lys Glu Glu His Glu Lys Leu Lys Leu Met Asp Glu Pro
945                 950                 955                 960

Ala Leu Arg Ser Pro Gly Gly Gly Asp Arg Ser Arg Ser Arg Ala Ala
```

965 970 975

Ser Ser Ala Pro Ser Gly Gln Ser Gln Leu Gly Ser Met Met Ser Ser
980 985 990

Gly Ser Gln His Thr Asn Val
995

<210> 5474
<211> 999
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ANO2; "

<220>
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<223> /note="Gene Name:
anoctamin 2, calcium activated chloride channel; "

<220>
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<223> /note="Uniprot ID: Q9NQ90; "

<220>
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<400> 5474
Met Pro Glu Asp Ile Pro Leu Leu Pro Gly Ser Pro Arg Arg Leu Ser
1 5 10 15

Pro Gln Ala Gly Ser Arg Gly Gly Gln Gly Pro Lys His Gly Gln Gln
20 25 30

Cys Leu Lys Met Pro Gly Pro Arg Ala Pro Gly Leu Gln Gly Gly Ser
35 40 45

Asn Arg Asp Pro Gly Gln Pro Cys Gly Gly Glu Ser Thr Arg Ser Ser
50 55 60

Ser Val Ile Asn Asn Tyr Leu Asp Ala Asn Glu Pro Val Ser Leu Glu
65 70 75 80

```
Ala Arg Leu Ser Arg Met His Phe His Asp Ser Gln Arg Lys Val Asp
                85                  90                  95

Tyr Val Leu Ala Tyr His Tyr Arg Lys Arg Gly Val His Leu Ala Gln
            100                 105                 110

Gly Phe Pro Gly His Ser Leu Ala Ile Val Ser Asn Gly Glu Thr Gly
        115                 120                 125

Lys Glu Pro His Ala Gly Gly Pro Gly Asp Ile Glu Leu Gly Pro Leu
    130                 135                 140

Asp Ala Leu Glu Glu Glu Arg Lys Glu Gln Arg Glu Glu Phe Glu His
145                 150                 155                 160

Asn Leu Met Glu Ala Gly Leu Glu Leu Glu Lys Asp Leu Glu Asn Lys
                165                 170                 175

Ser Gln Gly Ser Ile Phe Val Arg Ile His Ala Pro Trp Gln Val Leu
            180                 185                 190

Ala Arg Glu Ala Glu Phe Leu Lys Ile Lys Val Pro Thr Lys Lys Glu
        195                 200                 205

Met Tyr Glu Ile Lys Ala Gly Gly Ser Ile Ala Lys Lys Phe Ser Ala
    210                 215                 220

Ala Leu Gln Lys Leu Ser Ser His Leu Gln Pro Arg Val Pro Glu His
225                 230                 235                 240

Ser Asn Asn Lys Met Lys Asn Leu Ser Tyr Pro Phe Ser Arg Glu Lys
                245                 250                 255

Met Tyr Leu Tyr Asn Ile Gln Glu Lys Asp Thr Phe Phe Asp Asn Ala
            260                 265                 270

Thr Arg Ser Arg Ile Val His Glu Ile Leu Lys Arg Thr Ala Cys Ser
        275                 280                 285

Arg Ala Asn Asn Thr Met Gly Ile Asn Ser Leu Ile Ala Asn Asn Ile
    290                 295                 300
```

```
Tyr Glu Ala Ala Tyr Pro Leu His Asp Gly Glu Tyr Asp Ser Pro Glu
305                 310                 315                 320

Asp Asp Met Asn Asp Arg Lys Leu Leu Tyr Gln Glu Trp Ala Arg Tyr
                325                 330                 335

Gly Val Phe Tyr Lys Phe Gln Pro Ile Asp Leu Ile Arg Lys Tyr Phe
            340                 345                 350

Gly Glu Lys Ile Gly Leu Tyr Phe Ala Trp Leu Gly Leu Tyr Thr Ser
        355                 360                 365

Phe Leu Ile Pro Ser Ser Val Ile Gly Val Ile Val Phe Leu Tyr Gly
    370                 375                 380

Cys Ala Thr Ile Glu Glu Asp Ile Pro Ser Arg Glu Met Cys Asp Gln
385                 390                 395                 400

Gln Asn Ala Phe Thr Met Cys Pro Leu Cys Asp Lys Ser Cys Asp Tyr
                405                 410                 415

Trp Asn Leu Ser Ser Ala Cys Gly Thr Ala Gln Ala Ser His Leu Phe
            420                 425                 430

Asp Asn Pro Ala Thr Val Phe Phe Ser Ile Phe Met Ala Leu Trp Ala
        435                 440                 445

Thr Met Phe Leu Glu Asn Trp Lys Arg Leu Gln Met Arg Leu Gly Tyr
    450                 455                 460

Phe Trp Asp Leu Thr Gly Ile Glu Glu Glu Glu Glu Arg Ala Gln Glu
465                 470                 475                 480

His Ser Arg Pro Glu Tyr Glu Thr Lys Val Arg Glu Lys Met Leu Lys
                485                 490                 495

Glu Ser Asn Gln Ser Ala Val Gln Lys Leu Glu Thr Asn Thr Thr Glu
            500                 505                 510

Cys Gly Asp Glu Asp Asp Glu Asp Lys Leu Thr Trp Lys Asp Arg Phe
        515                 520                 525

Pro Gly Tyr Leu Met Asn Phe Ala Ser Ile Leu Phe Met Ile Ala Leu
```

```
    530                 535                 540

Thr Phe Ser Ile Val Phe Gly Val Ile Val Tyr Arg Ile Thr Thr Ala
545                 550                 555                 560

Ala Ala Leu Ser Leu Asn Lys Ala Thr Arg Ser Asn Val Arg Val Thr
                565                 570                 575

Val Thr Ala Thr Ala Val Ile Ile Asn Leu Val Val Ile Leu Ile Leu
            580                 585                 590

Asp Glu Ile Tyr Gly Ala Val Ala Lys Trp Leu Thr Lys Ile Glu Val
        595                 600                 605

Pro Lys Thr Glu Gln Thr Phe Glu Glu Arg Leu Ile Leu Lys Ala Phe
    610                 615                 620

Leu Leu Lys Phe Val Asn Ala Tyr Ser Pro Ile Phe Tyr Val Ala Phe
625                 630                 635                 640

Phe Lys Gly Arg Phe Val Gly Arg Pro Gly Ser Tyr Val Tyr Val Phe
                645                 650                 655

Asp Gly Tyr Arg Met Glu Glu Cys Ala Pro Gly Gly Cys Leu Met Glu
            660                 665                 670

Leu Cys Ile Gln Leu Ser Ile Ile Met Leu Gly Lys Gln Leu Ile Gln
        675                 680                 685

Asn Asn Ile Phe Glu Ile Gly Val Pro Lys Leu Lys Lys Leu Phe Arg
    690                 695                 700

Lys Leu Lys Asp Glu Thr Glu Ala Gly Glu Thr Asp Ser Ala His Ser
705                 710                 715                 720

Lys His Pro Glu Gln Trp Asp Leu Asp Tyr Ser Leu Glu Pro Tyr Thr
                725                 730                 735

Gly Leu Thr Pro Glu Tyr Met Glu Met Ile Ile Gln Phe Gly Phe Val
            740                 745                 750

Thr Leu Phe Val Ala Ser Phe Pro Leu Ala Pro Val Phe Ala Leu Leu
        755                 760                 765
```

```
Asn Asn Val Ile Glu Val Arg Leu Asp Ala Lys Lys Phe Val Thr Glu
    770                 775                 780

Leu Arg Arg Pro Asp Ala Val Arg Thr Lys Asp Ile Gly Ile Trp Phe
785                 790                 795                 800

Asp Ile Leu Ser Gly Ile Gly Lys Phe Ser Val Ile Ser Asn Ala Phe
                805                 810                 815

Val Ile Ala Ile Thr Ser Asp Phe Ile Pro Arg Leu Val Tyr Gln Tyr
            820                 825                 830

Ser Tyr Ser His Asn Gly Thr Leu His Gly Phe Val Asn His Thr Leu
        835                 840                 845

Ser Phe Phe Asn Val Ser Gln Leu Lys Glu Gly Thr Gln Pro Glu Asn
    850                 855                 860

Ser Gln Phe Asp Gln Glu Val Gln Phe Cys Arg Phe Lys Asp Tyr Arg
865                 870                 875                 880

Glu Pro Pro Trp Ala Pro Asn Pro Tyr Glu Phe Ser Lys Gln Tyr Trp
                885                 890                 895

Phe Ile Leu Ser Ala Arg Leu Ala Phe Val Ile Ile Phe Gln Asn Leu
            900                 905                 910

Val Met Phe Leu Ser Val Leu Val Asp Trp Met Ile Pro Asp Ile Pro
        915                 920                 925

Thr Asp Ile Ser Asp Gln Ile Lys Lys Glu Lys Ser Leu Leu Val Asp
    930                 935                 940

Phe Phe Leu Lys Glu Glu His Glu Lys Leu Lys Leu Met Asp Glu Pro
945                 950                 955                 960

Ala Leu Arg Ser Pro Gly Gly Gly Asp Arg Ser Arg Ser Arg Ala Ala
                965                 970                 975

Ser Ser Ala Pro Ser Gly Gln Ser Gln Leu Gly Ser Met Met Ser Ser
            980                 985                 990
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Gly Ser Gln His Thr Asn Val
995

<210> 5475
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<220>
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<220>
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<220>
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<223> /note="Gene Name:
anoctamin 2, calcium activated chloride channel; "

<220>
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<223> /note="ENSP ID: ENSP00000440981"

<400> 5475
Met Ala Thr Pro Gly Pro Arg Asp Ile Pro Leu Leu Pro Gly Ser Pro
1 5 10 15

Arg Arg Leu Ser Pro Gln Ala Gly Ser Arg Gly Gly Gln Gly Pro Lys
20 25 30

His Gly Gln Gln Cys Leu Lys Met Pro Gly Pro Arg Ala Pro Gly Leu
35 40 45

Gln Gly Gly Ser Asn Arg Asp Pro Gly Gln Pro Cys Gly Gly Glu Ser
50 55 60

Thr Arg Ser Ser Ser Val Ile Asn Asn Tyr Leu Asp Ala Asn Glu Pro
65 70 75 80

Val Ser Leu Glu Ala Arg Leu Ser Arg Met His Phe His Asp Ser Gln
85 90 95

Arg Lys Val Asp Tyr Val Leu Ala Tyr His Tyr Arg Lys Arg Gly Val
100 105 110

His Leu Ala Gln Gly Phe Pro Gly His Ser Leu Ala Ile Val Ser Asn

```
        115                 120                 125

Gly Glu Thr Gly Lys Glu Pro His Ala Gly Gly Pro Gly Asp Ile Glu
    130                 135                 140

Leu Gly Pro Leu Asp Ala Leu Glu Glu Glu Arg Lys Glu Gln Arg Glu
145                 150                 155                 160

Glu Phe Glu His Asn Leu Met Glu Ala Gly Leu Glu Leu Glu Lys Asp
                165                 170                 175

Leu Glu Asn Lys Ser Gln Gly Ser Ile Phe Val Arg Ile His Ala Pro
            180                 185                 190

Trp Gln Val Leu Ala Arg Glu Ala Glu Phe Leu Lys Ile Lys Val Pro
        195                 200                 205

Thr Lys Lys Glu Met Tyr Glu Ile Lys Ala Gly Gly Ser Ile Ala Lys
    210                 215                 220

Lys Phe Ser Ala Ala Leu Gln Lys Leu Ser Ser His Leu Gln Pro Arg
225                 230                 235                 240

Val Pro Glu His Ser Asn Asn Lys Met Lys Asn Leu Ser Tyr Pro Phe
                245                 250                 255

Ser Arg Glu Lys Met Tyr Leu Tyr Asn Ile Gln Glu Lys Asp Thr Phe
            260                 265                 270

Phe Asp Asn Ala Thr Arg Ser Arg Ile Val His Glu Ile Leu Lys Arg
        275                 280                 285

Thr Ala Cys Ser Arg Ala Asn Asn Thr Met Gly Ile Asn Ser Leu Ile
    290                 295                 300

Ala Asn Asn Ile Tyr Glu Ala Ala Tyr Pro Leu His Asp Gly Glu Tyr
305                 310                 315                 320

Asp Ser Pro Glu Asp Asp Met Asn Asp Arg Lys Leu Leu Tyr Gln Glu
                325                 330                 335

Trp Ala Arg Tyr Gly Val Phe Tyr Lys Phe Gln Pro Ile Asp Leu Ile
            340                 345                 350
```

```
Arg Lys Tyr Phe Gly Glu Lys Ile Gly Leu Tyr Phe Ala Trp Leu Gly
        355                 360                 365

Leu Tyr Thr Ser Phe Leu Ile Pro Ser Ser Val Ile Gly Val Ile Val
    370                 375                 380

Phe Leu Tyr Gly Cys Ala Thr Ile Glu Glu Asp Ile Pro Ser Arg Glu
385                 390                 395                 400

Met Cys Asp Gln Gln Asn Ala Phe Thr Met Cys Pro Leu Cys Asp Lys
                405                 410                 415

Ser Cys Asp Tyr Trp Asn Leu Ser Ser Ala Cys Gly Thr Ala Gln Ala
            420                 425                 430

Ser His Leu Phe Asp Asn Pro Ala Thr Val Phe Phe Ser Ile Phe Met
        435                 440                 445

Ala Leu Trp Ala Thr Met Phe Leu Glu Asn Trp Lys Arg Leu Gln Met
    450                 455                 460

Arg Leu Gly Tyr Phe Trp Asp Leu Thr Gly Ile Glu Glu Glu Glu Val
465                 470                 475                 480

Ser Ser Gln Glu His Ser Arg Pro Glu Tyr Glu Thr Lys Val Arg Glu
                485                 490                 495

Lys Met Leu Lys Glu Ser Asn Gln Ser Ala Val Gln Lys Leu Glu Thr
            500                 505                 510

Asn Thr Thr Glu Cys Gly Asp Glu Asp Asp Glu Asp Lys Leu Thr Trp
        515                 520                 525

Lys Asp Arg Phe Pro Gly Tyr Leu Met Asn Phe Ala Ser Ile Leu Phe
    530                 535                 540

Met Ile Ala Leu Thr Phe Ser Ile Val Phe Gly Val Ile Val Tyr Arg
545                 550                 555                 560

Ile Thr Thr Ala Ala Ala Leu Ser Leu Asn Lys Ala Thr Arg Ser Asn
                565                 570                 575
```

```
Val Arg Val Thr Val Thr Ala Thr Ala Val Ile Ile Asn Leu Val Val
            580                 585                 590

Ile Leu Ile Leu Asp Glu Ile Tyr Gly Ala Val Ala Lys Trp Leu Thr
        595                 600                 605

Lys Ile Glu Val Pro Lys Thr Glu Gln Thr Phe Glu Glu Arg Leu Ile
    610                 615                 620

Leu Lys Ala Phe Leu Leu Lys Phe Val Asn Ala Tyr Ser Pro Ile Phe
625                 630                 635                 640

Tyr Val Ala Phe Phe Lys Gly Arg Phe Val Gly Arg Pro Gly Ser Tyr
                645                 650                 655

Val Tyr Val Phe Asp Gly Tyr Arg Met Glu Glu Cys Ala Pro Gly Gly
            660                 665                 670

Cys Leu Met Glu Leu Cys Ile Gln Leu Ser Ile Ile Met Leu Gly Lys
        675                 680                 685

Gln Leu Ile Gln Asn Asn Ile Phe Glu Ile Gly Val Pro Lys Leu Lys
    690                 695                 700

Lys Leu Phe Arg Lys Leu Lys Asp Glu Thr Glu Ala Gly Glu Thr Asp
705                 710                 715                 720

Ser Ala His Ser Lys His Pro Glu Gln Trp Asp Leu Asp Tyr Ser Leu
                725                 730                 735

Glu Pro Tyr Thr Gly Leu Thr Pro Glu Tyr Met Glu Met Ile Ile Gln
            740                 745                 750

Phe Gly Phe Val Thr Leu Phe Val Ala Ser Phe Pro Leu Ala Pro Val
        755                 760                 765

Phe Ala Leu Leu Asn Asn Val Ile Glu Val Arg Leu Asp Ala Lys Lys
    770                 775                 780

Phe Val Thr Glu Leu Arg Arg Pro Asp Ala Val Arg Thr Lys Asp Ile
785                 790                 795                 800
```

```
Gly Ile Trp Phe Asp Ile Leu Ser Gly Ile Gly Lys Phe Ser Val Ile
                805                 810                 815

Ser Asn Ala Phe Val Ile Ala Ile Thr Ser Asp Phe Ile Pro Arg Leu
            820                 825                 830

Val Tyr Gln Tyr Ser Tyr Ser His Asn Gly Thr Leu His Gly Phe Val
        835                 840                 845

Asn His Thr Leu Ser Phe Phe Asn Val Ser Gln Leu Lys Glu Gly Thr
    850                 855                 860

Gln Pro Glu Asn Ser Gln Phe Asp Gln Glu Val Gln Phe Cys Arg Phe
865                 870                 875                 880

Lys Asp Tyr Arg Glu Pro Pro Trp Ala Pro Asn Pro Tyr Glu Phe Ser
                885                 890                 895

Lys Gln Tyr Trp Phe Ile Leu Ser Ala Arg Leu Ala Phe Val Ile Ile
            900                 905                 910

Phe Gln Asn Leu Val Met Phe Leu Ser Val Leu Val Asp Trp Met Ile
        915                 920                 925

Pro Asp Ile Pro Thr Asp Ile Ser Asp Gln Ile Lys Lys Glu Lys Ser
    930                 935                 940

Leu Leu Val Asp Phe Phe Leu Lys Glu Glu His Glu Lys Leu Lys Leu
945                 950                 955                 960

Met Asp Glu Pro Ala Leu Arg Ser Pro Gly Gly Gly Asp Arg Ser Arg
                965                 970                 975

Ser Arg Ala Ala Ser Ser Ala Pro Ser Gly Gln Ser Gln Leu Gly Ser
            980                 985                 990

Met Met Ser Ser Gly Ser Gln His  Thr Asn Val
        995                 1000
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<210> 5476
<211> 203
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
anoctamin 2, calcium activated chloride channel; "

<220>
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<223> /note="ENSP ID: ENSP00000443813"

<400> 5476

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Met Gly Trp Lys Ala Glu Ser Leu Glu Ser Ala Thr Met Phe Leu Glu
1               5                  10                  15

Asn Trp Lys Arg Leu Gln Met Arg Leu Gly Tyr Phe Trp Asp Leu Thr
            20                  25                  30

Gly Ile Glu Glu Glu Glu Glu His Ser Arg Pro Glu Tyr Glu Thr Lys
        35                  40                  45

Val Arg Glu Lys Met Leu Lys Glu Ser Asn Gln Ser Ala Val Gln Lys
    50                  55                  60

Leu Glu Thr Asn Thr Thr Glu Cys Gly Asp Glu Asp Asp Glu Asp Lys
65                  70                  75                  80

Leu Thr Trp Lys Asp Arg Phe Pro Gly Tyr Leu Met Asn Phe Ala Ser
                85                  90                  95

Ile Leu Phe Met Ile Ala Leu Thr Phe Ser Ile Val Phe Gly Val Ile
            100                 105                 110

Val Tyr Arg Ile Thr Thr Ala Ala Ala Leu Ser Leu Asn Lys Ala Thr
        115                 120                 125

Arg Ser Asn Val Arg Val Thr Val Thr Ala Thr Ala Val Ile Ile Asn
    130                 135                 140

Leu Val Val Ile Leu Ile Leu Asp Glu Ile Tyr Gly Ala Val Ala Lys
145                 150                 155                 160
```

```
Trp Leu Thr Lys Ile Glu Val Pro Lys Thr Glu Gln Thr Phe Glu Glu
                165                 170                 175

Arg Leu Ile Leu Lys Ala Phe Leu Leu Lys Phe Val Asn Ala Tyr Ser
            180                 185                 190

Pro Ile Phe Tyr Val Ala Phe Phe Lys Gly Arg
        195                 200


<210> 5477
<211> 86
<212> PRT
<213> Homo sapiens

<220>
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      anoctamin 2, calcium activated chloride channel; "

<220>
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<400> 5477
Met Phe Leu Ser Val Leu Val Asp Trp Met Ile Pro Asp Ile Pro Thr
1               5                   10                  15

Asp Ile Ser Asp Gln Ile Lys Lys Glu Lys Ser Leu Leu Val Asp Phe
            20                  25                  30

Phe Leu Lys Glu Glu His Glu Lys Leu Lys Leu Met Asp Glu Pro Ala
        35                  40                  45

Leu Arg Ser Pro Gly Gly Gly Asp Arg Ser Arg Ser Arg Ala Ala Ser
    50                  55                  60

Ser Ala Pro Ser Gly Gln Ser Gln Leu Gly Ser Met Met Ser Ser Gly
65                  70                  75                  80

Ser Gln His Thr Asn Val
```

85

<210> 5478
<211> 981
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ANO3; "

<220>
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<223> /note="Gene Name:
anoctamin 3; "

<220>
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<223> /note="Uniprot ID: Q9BYT9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000256737"

<400> 5478
Met Val His His Ser Gly Ser Ile Gln Ser Phe Lys Gln Gln Lys Gly
1   5   10   15

Met Asn Ile Ser Lys Ser Glu Ile Thr Lys Glu Thr Ser Leu Lys Pro
            20   25   30

Ser Arg Arg Ser Leu Pro Cys Leu Ala Gln Ser Tyr Ala Tyr Ser Lys
        35   40   45

Ser Leu Ser Gln Ser Thr Ser Leu Phe Gln Ser Thr Glu Ser Glu Ser
    50   55   60

Gln Ala Pro Thr Ser Ile Thr Leu Ile Ser Thr Asp Lys Ala Glu Gln
65   70   75   80

Val Asn Thr Glu Glu Asn Lys Asn Asp Ser Val Leu Arg Cys Ser Phe
                85   90   95

Ala Asp Leu Ser Asp Phe Cys Leu Ala Leu Gly Lys Asp Lys Asp Tyr
            100   105   110

```
Thr Asp Glu Ser Glu His Ala Thr Tyr Asp Arg Ser Arg Leu Ile Asn
        115                 120                 125

Asp Phe Val Ile Lys Asp Lys Ser Glu Phe Lys Thr Lys Leu Ser Lys
    130                 135                 140

Asn Asp Met Asn Tyr Ile Ala Ser Ser Gly Pro Leu Phe Lys Asp Gly
145                 150                 155                 160

Lys Lys Arg Ile Asp Tyr Ile Leu Val Tyr Arg Lys Thr Asn Ile Gln
                165                 170                 175

Tyr Asp Lys Arg Asn Thr Phe Glu Lys Asn Leu Arg Ala Glu Gly Leu
            180                 185                 190

Met Leu Glu Lys Glu Pro Ala Ile Ala Ser Pro Asp Ile Met Phe Ile
        195                 200                 205

Lys Ile His Ile Pro Trp Asp Thr Leu Cys Lys Tyr Ala Glu Arg Leu
    210                 215                 220

Asn Ile Arg Met Pro Phe Arg Lys Lys Cys Tyr Tyr Thr Asp Gly Arg
225                 230                 235                 240

Ser Lys Ser Met Gly Arg Met Gln Thr Tyr Phe Arg Arg Ile Lys Asn
                245                 250                 255

Trp Met Ala Gln Asn Pro Met Val Leu Asp Lys Ser Ala Phe Pro Asp
            260                 265                 270

Leu Glu Glu Ser Asp Cys Tyr Thr Gly Pro Phe Ser Arg Ala Arg Ile
        275                 280                 285

His His Phe Ile Ile Asn Asn Lys Asp Thr Phe Phe Ser Asn Ala Thr
    290                 295                 300

Arg Ser Arg Ile Val Tyr His Met Leu Glu Arg Thr Lys Tyr Glu Asn
305                 310                 315                 320

Gly Ile Ser Lys Val Gly Ile Arg Lys Leu Ile Asn Asn Gly Ser Tyr
                325                 330                 335
```

```
Ile Ala Ala Phe Pro Pro His Glu Gly Ala Tyr Lys Ser Ser Gln Pro
            340                 345                 350

Ile Lys Thr His Gly Pro Gln Asn Asn Arg His Leu Leu Tyr Glu Arg
        355                 360                 365

Trp Ala Arg Trp Gly Met Trp Tyr Lys His Gln Pro Leu Asp Leu Ile
    370                 375                 380

Arg Leu Tyr Phe Gly Glu Lys Ile Gly Leu Tyr Phe Ala Trp Leu Gly
385                 390                 395                 400

Trp Tyr Thr Gly Met Leu Ile Pro Ala Ala Ile Val Gly Leu Cys Val
                405                 410                 415

Phe Phe Tyr Gly Leu Phe Thr Met Asn Asn Ser Gln Val Ser Gln Glu
            420                 425                 430

Ile Cys Lys Ala Thr Glu Val Phe Met Cys Pro Leu Cys Asp Lys Asn
        435                 440                 445

Cys Ser Leu Gln Arg Leu Asn Asp Ser Cys Ile Tyr Ala Lys Val Thr
    450                 455                 460

Tyr Leu Phe Asp Asn Gly Gly Thr Val Phe Phe Ala Ile Phe Met Ala
465                 470                 475                 480

Ile Trp Ala Thr Val Phe Leu Glu Phe Trp Lys Arg Arg Arg Ser Ile
                485                 490                 495

Leu Thr Tyr Thr Trp Asp Leu Ile Glu Trp Glu Glu Glu Glu Glu Thr
            500                 505                 510

Leu Arg Pro Gln Phe Glu Ala Lys Tyr Tyr Lys Met Glu Ile Val Asn
        515                 520                 525

Pro Ile Thr Gly Lys Pro Glu Pro His Gln Pro Ser Ser Asp Lys Val
    530                 535                 540

Thr Arg Leu Leu Val Ser Val Ser Gly Ile Phe Phe Met Ile Ser Leu
545                 550                 555                 560

Val Ile Thr Ala Val Phe Gly Val Val Val Tyr Arg Leu Val Val Met
```

565 570 575

Glu Gln Phe Ala Ser Phe Lys Trp Asn Phe Ile Lys Gln Tyr Trp Gln
580 585 590

Phe Ala Thr Ser Ala Ala Ala Val Cys Ile Asn Phe Ile Ile Ile Met
595 600 605

Leu Leu Asn Leu Ala Tyr Glu Lys Ile Ala Tyr Leu Leu Thr Asn Leu
610 615 620

Glu Tyr Pro Arg Thr Glu Ser Glu Trp Glu Asn Ser Phe Ala Leu Lys
625 630 635 640

Met Phe Leu Phe Gln Phe Val Asn Leu Asn Ser Ser Ile Phe Tyr Ile
645 650 655

Ala Phe Phe Leu Gly Arg Phe Val Gly His Pro Gly Lys Tyr Asn Lys
660 665 670

Leu Phe Asp Arg Trp Arg Leu Glu Glu Cys His Pro Ser Gly Cys Leu
675 680 685

Ile Asp Leu Cys Leu Gln Met Gly Val Ile Met Phe Leu Lys Gln Ile
690 695 700

Trp Asn Asn Phe Met Glu Leu Gly Tyr Pro Leu Ile Gln Asn Trp Trp
705 710 715 720

Ser Arg His Lys Ile Lys Arg Gly Ile His Asp Ala Ser Ile Pro Gln
725 730 735

Trp Glu Asn Asp Trp Asn Leu Gln Pro Met Asn Leu His Gly Leu Met
740 745 750

Asp Glu Tyr Leu Glu Met Val Leu Gln Phe Gly Phe Thr Thr Ile Phe
755 760 765

Val Ala Ala Phe Pro Leu Ala Pro Leu Leu Ala Leu Leu Asn Asn Ile
770 775 780

Ile Glu Ile Arg Leu Asp Ala Tyr Lys Phe Val Thr Gln Trp Arg Arg
785 790 795 800

```
Pro Leu Pro Ala Arg Ala Thr Asp Ile Gly Ile Trp Leu Gly Ile Leu
                805                 810                 815

Glu Gly Ile Gly Ile Leu Ala Val Ile Thr Asn Ala Phe Val Ile Ala
            820                 825                 830

Ile Thr Ser Asp Tyr Ile Pro Arg Phe Val Tyr Glu Tyr Lys Tyr Gly
        835                 840                 845

Pro Cys Ala Asn His Val Glu Pro Ser Glu Asn Cys Leu Lys Gly Tyr
    850                 855                 860

Val Asn Asn Ser Leu Ser Phe Phe Asp Leu Ser Glu Leu Gly Met Gly
865                 870                 875                 880

Lys Ser Gly Tyr Cys Arg Tyr Arg Asp Tyr Arg Gly Pro Pro Trp Ser
                885                 890                 895

Ser Lys Pro Tyr Glu Phe Thr Leu Gln Tyr Trp His Ile Leu Ala Ala
            900                 905                 910

Arg Leu Ala Phe Ile Ile Val Phe Glu His Leu Val Phe Gly Ile Lys
        915                 920                 925

Ser Phe Ile Ala Tyr Leu Ile Pro Asp Val Pro Lys Gly Leu His Asp
    930                 935                 940

Arg Ile Arg Arg Glu Lys Tyr Leu Val Gln Glu Met Met Tyr Glu Ala
945                 950                 955                 960

Glu Leu Glu His Leu Gln Gln Gln Arg Arg Lys Ser Gly Gln Pro Val
                965                 970                 975

His His Glu Trp Pro
            980


<210> 5479
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<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1186; "

<220>
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<220>
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anoctamin 3; "

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<223> /note="ENSP ID: ENSP00000432394"

<400> 5479

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Met Asn Tyr Ile Ala Ser Ser Gly Pro Leu Phe Lys Asp Gly Lys Lys
1               5                  10                  15

Arg Ile Asp Tyr Ile Leu Val Tyr Arg Lys Thr Asn Ile Gln Tyr Asp
            20                  25                  30

Lys Arg Asn Thr Phe Glu Lys Asn Leu Arg Ala Glu Gly Leu Met Leu
        35                  40                  45

Glu Lys Glu Pro Ala Ile Ala Ser Pro Asp Ile Met Phe Ile Lys Ile
    50                  55                  60

His Ile Pro Trp Asp Thr Leu Cys Lys Tyr Ala Glu Arg Leu Asn Ile
65                  70                  75                  80

Arg Met Pro Phe Arg Lys Lys Cys Tyr Tyr Thr Asp Gly Arg Ser Lys
                85                  90                  95

Ser Met Gly Arg Met Gln Thr Tyr Phe Arg Arg Ile Lys Asn Trp Met
            100                 105                 110

Ala Gln Asn Pro Met Val Leu Asp Lys Ser Ala Phe Pro Asp Leu Glu
        115                 120                 125

Glu Ser Asp Cys Tyr Thr Gly Pro Phe Ser Arg Ala Arg Ile His His
    130                 135                 140

Phe Ile Ile Asn Asn Lys Asp Thr Phe Phe Ser Asn Ala Thr Arg Ser
```

145 150 155 160

Arg Ile Val Tyr His Met Leu Glu Arg Thr Lys Tyr Glu Asn Gly Ile
165 170 175

Ser Lys Val Gly Ile Arg Lys Leu Ile Asn Asn Gly Ser Tyr Ile Ala
180 185 190

Ala Phe Pro Pro His Glu Gly Ala Tyr Lys Ser Ser Gln Pro Ile Lys
195 200 205

Thr His Gly Pro Gln Asn Asn Arg His Leu Leu Tyr Glu Arg Trp Ala
210 215 220

Arg Trp Gly Met Trp Tyr Lys His Gln Pro Leu Asp Leu Ile Arg Leu
225 230 235 240

Tyr Phe Gly Glu Lys Ile Gly Leu Tyr Phe Ala Trp Leu Gly Trp Tyr
245 250 255

Thr Gly Met Leu Ile Pro Ala Ala Ile Val Gly Leu Cys Val Phe Phe
260 265 270

Tyr Gly Leu Phe Thr Met Asn Asn Ser Gln Val Ser Gln Glu Ile Cys
275 280 285

Lys Ala Thr Glu Val Phe Met Cys Pro Leu Cys Asp Lys Asn Cys Ser
290 295 300

Leu Gln Arg Leu Asn Asp Ser Cys Ile Tyr Ala Lys Val Thr Tyr Leu
305 310 315 320

Phe Asp Asn Gly Gly Thr Val Phe Phe Ala Ile Phe Met Ala Ile Trp
325 330 335

Ala Thr Val Phe Leu Glu Phe Trp Lys Arg Arg Arg Ser Ile Leu Thr
340 345 350

Tyr Thr Trp Asp Leu Ile Glu Trp Glu Glu Glu Glu Glu Thr Leu Arg
355 360 365

Pro Gln Phe Glu Ala Lys Tyr Tyr Lys Met Glu Ile Val Asn Pro Ile
370 375 380

```
Thr Gly Lys Pro Glu Pro His Gln Pro Ser Ser Asp Lys Val Thr Arg
385                 390                 395                 400

Leu Leu Val Ser Val Ser Gly Ile Phe Phe Met Ile Ser Leu Val Ile
                405                 410                 415

Thr Ala Val Phe Gly Val Val Val Tyr Arg Leu Val Val Met Glu Gln
            420                 425                 430

Phe Ala Ser Phe Lys Trp Asn Phe Ile Lys Gln Tyr Trp Gln Phe Ala
        435                 440                 445

Thr Ser Ala Ala Ala Val Cys Ile Asn Phe Ile Ile Ile Met Leu Leu
    450                 455                 460

Asn Leu Ala Tyr Glu Lys Ile Ala Tyr Leu Leu Thr Asn Leu Glu Tyr
465                 470                 475                 480

Pro Arg Thr Glu Ser Glu Trp Glu Asn Ser Phe Ala Leu Lys Met Phe
                485                 490                 495

Leu Phe Gln Phe Val Asn Leu Asn Ser Ser Ile Phe Tyr Ile Ala Phe
            500                 505                 510

Phe Leu Gly Arg Phe Val Gly His Pro Gly Lys Tyr Asn Lys Leu Phe
        515                 520                 525

Asp Arg Trp Arg Leu Glu Glu Cys His Pro Ser Gly Cys Leu Ile Asp
    530                 535                 540

Leu Cys Leu Gln Met Gly Val Ile Met Phe Leu Lys Gln Ile Trp Asn
545                 550                 555                 560

Asn Phe Met Glu Leu Gly Tyr Pro Leu Ile Gln Asn Trp Trp Ser Arg
                565                 570                 575

His Lys Ile Lys Arg Gly Ile His Asp Ala Ser Ile Pro Gln Trp Glu
            580                 585                 590

Asn Asp Trp Asn Leu Gln Pro Met Asn Leu His Gly Leu Met Asp Glu
        595                 600                 605
```

```
Tyr Leu Glu Met Val Leu Gln Phe Gly Phe Thr Thr Ile Phe Val Ala
    610                 615                 620

Ala Phe Pro Leu Ala Pro Leu Leu Ala Leu Leu Asn Asn Ile Ile Glu
625                 630                 635                 640

Ile Arg Leu Asp Ala Tyr Lys Phe Val Thr Gln Trp Arg Arg Pro Leu
                645                 650                 655

Pro Ala Arg Ala Thr Asp Ile Gly Ile Trp Leu Gly Ile Leu Glu Gly
            660                 665                 670

Ile Gly Ile Leu Ala Val Ile Thr Asn Ala Phe Val Ile Ala Ile Thr
        675                 680                 685

Ser Asp Tyr Ile Pro Arg Phe Val Tyr Glu Tyr Lys Tyr Gly Pro Cys
    690                 695                 700

Ala Asn His Val Glu Pro Ser Glu Asn Cys Leu Lys Gly Tyr Val Asn
705                 710                 715                 720

Asn Ser Leu Ser Phe Phe Asp Leu Ser Glu Leu Gly Met Gly Lys Ser
                725                 730                 735

Gly Tyr Cys Arg Tyr Arg Asp Tyr Arg Gly Pro Pro Trp Ser Ser Lys
            740                 745                 750

Pro Tyr Glu Phe Thr Leu Gln Tyr Trp His Ile Leu Ala Ala Arg Leu
        755                 760                 765

Ala Phe Ile Ile Val Phe Glu His Leu Val Phe Gly Ile Lys Ser Phe
    770                 775                 780

Ile Ala Tyr Leu Ile Pro Asp Val Pro Lys Gly Leu His Asp Arg Ile
785                 790                 795                 800

Arg Arg Glu Lys Tyr Leu Val Gln Glu Met Met Tyr Glu Ala Glu Leu
                805                 810                 815

Glu His Leu Gln Gln Gln Arg Arg Lys Ser Gly Gln Pro Val His His
            820                 825                 830
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Glu Trp Pro
835

<210> 5480
<211> 965
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ANO3; "

<220>
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<223> /note="Gene Name:
anoctamin 3; "

<220>
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Met Asn Ile Ser Lys Ser Glu Ile Thr Lys Glu Thr Ser Leu Lys Pro
1 5 10 15

Ser Arg Arg Ser Leu Pro Cys Leu Ala Gln Ser Tyr Ala Tyr Ser Lys
20 25 30

Ser Leu Ser Gln Ser Thr Ser Leu Phe Gln Ser Thr Glu Ser Glu Ser
35 40 45

Gln Ala Pro Thr Ser Ile Thr Leu Ile Ser Thr Asp Lys Ala Glu Gln
50 55 60

Val Asn Thr Glu Glu Asn Lys Asn Asp Ser Val Leu Arg Cys Ser Phe
65 70 75 80

Ala Asp Leu Ser Asp Phe Cys Leu Ala Leu Gly Lys Asp Lys Asp Tyr
85 90 95

Thr Asp Glu Ser Glu His Ala Thr Tyr Asp Arg Ser Arg Leu Ile Asn
100 105 110

Asp Phe Val Ile Lys Asp Lys Ser Glu Phe Lys Thr Lys Leu Ser Lys
115 120 125

```
Asn Asp Met Asn Tyr Ile Ala Ser Ser Gly Pro Leu Phe Lys Asp Gly
    130                 135                 140

Lys Lys Arg Ile Asp Tyr Ile Leu Val Tyr Arg Lys Thr Asn Ile Gln
145                 150                 155                 160

Tyr Asp Lys Arg Asn Thr Phe Glu Lys Asn Leu Arg Ala Glu Gly Leu
                165                 170                 175

Met Leu Glu Lys Glu Pro Ala Ile Ala Ser Pro Asp Ile Met Phe Ile
            180                 185                 190

Lys Ile His Ile Pro Trp Asp Thr Leu Cys Lys Tyr Ala Glu Arg Leu
        195                 200                 205

Asn Ile Arg Met Pro Phe Arg Lys Lys Cys Tyr Tyr Thr Asp Gly Arg
    210                 215                 220

Ser Lys Ser Met Gly Arg Met Gln Thr Tyr Phe Arg Arg Ile Lys Asn
225                 230                 235                 240

Trp Met Ala Gln Asn Pro Met Val Leu Asp Lys Ser Ala Phe Pro Asp
                245                 250                 255

Leu Glu Glu Ser Asp Cys Tyr Thr Gly Pro Phe Ser Arg Ala Arg Ile
            260                 265                 270

His His Phe Ile Ile Asn Asn Lys Asp Thr Phe Phe Ser Asn Ala Thr
        275                 280                 285

Arg Ser Arg Ile Val Tyr His Met Leu Glu Arg Thr Lys Tyr Glu Asn
    290                 295                 300

Gly Ile Ser Lys Val Gly Ile Arg Lys Leu Ile Asn Asn Gly Ser Tyr
305                 310                 315                 320

Ile Ala Ala Phe Pro Pro His Glu Gly Ala Tyr Lys Ser Ser Gln Pro
                325                 330                 335

Ile Lys Thr His Gly Pro Gln Asn Asn Arg His Leu Leu Tyr Glu Arg
            340                 345                 350
```

```
Trp Ala Arg Trp Gly Met Trp Tyr Lys His Gln Pro Leu Asp Leu Ile
        355                 360                 365

Arg Leu Tyr Phe Gly Glu Lys Ile Gly Leu Tyr Phe Ala Trp Leu Gly
    370                 375                 380

Trp Tyr Thr Gly Met Leu Ile Pro Ala Ala Ile Val Gly Leu Cys Val
385                 390                 395                 400

Phe Phe Tyr Gly Leu Phe Thr Met Asn Asn Ser Gln Val Ser Gln Glu
                405                 410                 415

Ile Cys Lys Ala Thr Glu Val Phe Met Cys Pro Leu Cys Asp Lys Asn
            420                 425                 430

Cys Ser Leu Gln Arg Leu Asn Asp Ser Cys Ile Tyr Ala Lys Val Thr
        435                 440                 445

Tyr Leu Phe Asp Asn Gly Gly Thr Val Phe Phe Ala Ile Phe Met Ala
    450                 455                 460

Ile Trp Ala Thr Val Phe Leu Glu Phe Trp Lys Arg Arg Arg Ser Ile
465                 470                 475                 480

Leu Thr Tyr Thr Trp Asp Leu Ile Glu Trp Glu Glu Glu Glu Glu Thr
                485                 490                 495

Leu Arg Pro Gln Phe Glu Ala Lys Tyr Tyr Lys Met Glu Ile Val Asn
            500                 505                 510

Pro Ile Thr Gly Lys Pro Glu Pro His Gln Pro Ser Ser Asp Lys Val
        515                 520                 525

Thr Arg Leu Leu Val Ser Val Ser Gly Ile Phe Phe Met Ile Ser Leu
    530                 535                 540

Val Ile Thr Ala Val Phe Gly Val Val Val Tyr Arg Leu Val Val Met
545                 550                 555                 560

Glu Gln Phe Ala Ser Phe Lys Trp Asn Phe Ile Lys Gln Tyr Trp Gln
                565                 570                 575
```

```
Phe Ala Thr Ser Ala Ala Ala Val Cys Ile Asn Phe Ile Ile Ile Met
            580                 585                 590

Leu Leu Asn Leu Ala Tyr Glu Lys Ile Ala Tyr Leu Leu Thr Asn Leu
        595                 600                 605

Glu Tyr Pro Arg Thr Glu Ser Glu Trp Glu Asn Ser Phe Ala Leu Lys
    610                 615                 620

Met Phe Leu Phe Gln Phe Val Asn Leu Asn Ser Ser Ile Phe Tyr Ile
625                 630                 635                 640

Ala Phe Phe Leu Gly Arg Phe Val Gly His Pro Gly Lys Tyr Asn Lys
                645                 650                 655

Leu Phe Asp Arg Trp Arg Leu Glu Glu Cys His Pro Ser Gly Cys Leu
            660                 665                 670

Ile Asp Leu Cys Leu Gln Met Gly Val Ile Met Phe Leu Lys Gln Ile
        675                 680                 685

Trp Asn Asn Phe Met Glu Leu Gly Tyr Pro Leu Ile Gln Asn Trp Trp
    690                 695                 700

Ser Arg His Lys Ile Lys Arg Gly Ile His Asp Ala Ser Ile Pro Gln
705                 710                 715                 720

Trp Glu Asn Asp Trp Asn Leu Gln Pro Met Asn Leu His Gly Leu Met
                725                 730                 735

Asp Glu Tyr Leu Glu Met Val Leu Gln Phe Gly Phe Thr Thr Ile Phe
            740                 745                 750

Val Ala Ala Phe Pro Leu Ala Pro Leu Leu Ala Leu Leu Asn Asn Ile
        755                 760                 765

Ile Glu Ile Arg Leu Asp Ala Tyr Lys Phe Val Thr Gln Trp Arg Arg
    770                 775                 780

Pro Leu Pro Ala Arg Ala Thr Asp Ile Gly Ile Trp Leu Gly Ile Leu
785                 790                 795                 800

Glu Gly Ile Gly Ile Leu Ala Val Ile Thr Asn Ala Phe Val Ile Ala
```

805 810 815

Ile Thr Ser Asp Tyr Ile Pro Arg Phe Val Tyr Glu Tyr Lys Tyr Gly
820 825 830

Pro Cys Ala Asn His Val Glu Pro Ser Glu Asn Cys Leu Lys Gly Tyr
835 840 845

Val Asn Asn Ser Leu Ser Phe Phe Asp Leu Ser Glu Leu Gly Met Gly
850 855 860

Lys Ser Gly Tyr Cys Arg Tyr Arg Asp Tyr Arg Gly Pro Pro Trp Ser
865 870 875 880

Ser Lys Pro Tyr Glu Phe Thr Leu Gln Tyr Trp His Ile Leu Ala Ala
885 890 895

Arg Leu Ala Phe Ile Ile Val Phe Glu His Leu Val Phe Gly Ile Lys
900 905 910

Ser Phe Ile Ala Tyr Leu Ile Pro Asp Val Pro Lys Gly Leu His Asp
915 920 925

Arg Ile Arg Arg Glu Lys Tyr Leu Val Gln Glu Met Met Tyr Glu Ala
930 935 940

Glu Leu Glu His Leu Gln Gln Gln Arg Arg Lys Ser Gly Gln Pro Val
945 950 955 960

His His Glu Trp Pro
965

<210> 5481
<211> 206
<212> PRT
<213> Homo sapiens

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<220>
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<223> /note="Gene Name:
anoctamin 3; "

<220>
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<400> 5481

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Met Val His His Ser Gly Ser Ile Gln Ser Phe Lys Gln Gln Lys Gly
1               5                   10                  15

Met Asn Ile Ser Lys Ser Glu Ile Thr Lys Glu Thr Ser Leu Lys Pro
            20                  25                  30

Ser Arg Arg Ser Leu Pro Cys Leu Ala Gln Ser Tyr Ala Tyr Ser Lys
        35                  40                  45

Ser Leu Ser Gln Ser Thr Ser Leu Phe Gln Ser Thr Glu Ser Glu Ser
    50                  55                  60

Gln Ala Pro Thr Ser Ile Thr Leu Ile Ser Thr Asp Lys Ala Glu Gln
65                  70                  75                  80

Val Asn Thr Glu Glu Asn Lys Asn Asp Ser Val Leu Arg Cys Ser Phe
                85                  90                  95

Ala Asp Leu Ser Asp Phe Cys Leu Ala Leu Gly Lys Asp Lys Asp Tyr
            100                 105                 110

Thr Asp Glu Ser Glu His Ala Thr Tyr Asp Arg Ser Arg Leu Ile Asn
        115                 120                 125

Asp Phe Val Ile Lys Asp Lys Ser Glu Phe Lys Thr Lys Leu Ser Lys
    130                 135                 140

Asn Asp Met Asn Tyr Ile Ala Ser Ser Gly Pro Leu Phe Lys Asp Gly
145                 150                 155                 160

Lys Lys Arg Ile Asp Tyr Ile Leu Val Tyr Arg Lys Thr Asn Ile Gln
                165                 170                 175

Tyr Asp Lys Arg Asn Thr Phe Glu Lys Asn Leu Arg Ala Glu Gly Leu
            180                 185                 190
```

Met Leu Glu Lys Glu Val Gly Ala Leu Leu Leu Leu Val Met
195 200 205

<210> 5482
<211> 955
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ANO4; "

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<223> /note="Gene Name:
anoctamin 4; "

<220>
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<223> /note="Uniprot ID: Q32M45; "

<220>
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<400> 5482
Met Glu Ala Ser Ser Ser Gly Ile Thr Asn Gly Lys Thr Lys Val Phe
1 5 10 15

His Pro Glu Gly Gly Val Asp Leu Gln Gly Tyr Gln Leu Asp Met Gln
20 25 30

Ile Leu Pro Asp Gly Pro Lys Ser Asp Val Asp Phe Ser Glu Ile Leu
35 40 45

Asn Ala Ile Gln Glu Met Ala Lys Asp Val Asn Ile Leu Phe Asp Glu
50 55 60

Leu Glu Ala Val Ser Ser Pro Cys Lys Asp Asp Asp Ser Leu Leu His
65 70 75 80

Pro Gly Asn Leu Thr Ser Thr Ser Asp Asp Ala Ser Arg Leu Glu Ala
85 90 95

Gly Gly Glu Thr Val Pro Glu Arg Asn Lys Ser Asn Gly Leu Tyr Phe
100 105 110

```
Arg Asp Gly Lys Cys Arg Ile Asp Tyr Ile Leu Val Tyr Arg Lys Ser
        115                 120                 125

Asn Pro Gln Thr Glu Lys Arg Glu Val Phe Glu Arg Asn Ile Arg Ala
    130                 135                 140

Glu Gly Leu Gln Met Glu Lys Glu Ser Ser Leu Ile Asn Ser Asp Ile
145                 150                 155                 160

Ile Phe Val Lys Leu His Ala Pro Trp Glu Val Leu Gly Arg Tyr Ala
                165                 170                 175

Glu Gln Met Asn Val Arg Met Pro Phe Arg Arg Lys Ile Tyr Tyr Leu
            180                 185                 190

Pro Arg Arg Tyr Lys Phe Met Ser Arg Ile Asp Lys Gln Ile Ser Arg
        195                 200                 205

Phe Arg Arg Trp Leu Pro Lys Lys Pro Met Arg Leu Asp Lys Glu Thr
    210                 215                 220

Leu Pro Asp Leu Glu Glu Asn Asp Cys Tyr Thr Ala Pro Phe Ser Gln
225                 230                 235                 240

Gln Arg Ile His His Phe Ile Ile His Asn Lys Glu Thr Phe Phe Asn
                245                 250                 255

Asn Ala Thr Arg Ser Arg Ile Val His His Ile Leu Gln Arg Ile Lys
            260                 265                 270

Tyr Glu Glu Gly Lys Asn Lys Ile Gly Leu Asn Arg Leu Leu Thr Asn
        275                 280                 285

Gly Ser Tyr Glu Ala Ala Phe Pro Leu His Glu Gly Ser Tyr Arg Ser
    290                 295                 300

Lys Asn Ser Ile Arg Thr His Gly Ala Glu Asn His Arg His Leu Leu
305                 310                 315                 320

Tyr Glu Cys Trp Ala Ser Trp Gly Val Trp Tyr Lys Tyr Gln Pro Leu
                325                 330                 335
```

```
Asp Leu Val Arg Arg Tyr Phe Gly Glu Lys Ile Gly Leu Tyr Phe Ala
            340                 345                 350

Trp Leu Gly Trp Tyr Thr Gly Met Leu Phe Pro Ala Ala Phe Ile Gly
        355                 360                 365

Leu Phe Val Phe Leu Tyr Gly Val Thr Thr Leu Asp His Ser Gln Val
    370                 375                 380

Ser Lys Glu Val Cys Gln Ala Thr Asp Ile Ile Met Cys Pro Val Cys
385                 390                 395                 400

Asp Lys Tyr Cys Pro Phe Met Arg Leu Ser Asp Ser Cys Val Tyr Ala
                405                 410                 415

Lys Val Thr His Leu Phe Asp Asn Gly Ala Thr Val Phe Phe Ala Val
            420                 425                 430

Phe Met Ala Val Trp Ala Thr Val Phe Leu Glu Phe Trp Lys Arg Arg
        435                 440                 445

Arg Ala Val Ile Ala Tyr Asp Trp Asp Leu Ile Asp Trp Glu Glu Glu
    450                 455                 460

Glu Glu Glu Ile Arg Pro Gln Phe Glu Ala Lys Tyr Ser Lys Lys Glu
465                 470                 475                 480

Arg Met Asn Pro Ile Ser Gly Lys Pro Glu Pro Tyr Gln Ala Phe Thr
                485                 490                 495

Asp Lys Cys Ser Arg Leu Ile Val Ser Ala Ser Gly Ile Phe Phe Met
            500                 505                 510

Ile Cys Val Val Ile Ala Ala Val Phe Gly Ile Val Ile Tyr Arg Val
        515                 520                 525

Val Thr Val Ser Thr Phe Ala Ala Phe Lys Trp Ala Leu Ile Arg Asn
    530                 535                 540

Asn Ser Gln Val Ala Thr Thr Gly Thr Ala Val Cys Ile Asn Phe Cys
545                 550                 555                 560
```

```
Ile Ile Met Leu Leu Asn Val Leu Tyr Glu Lys Val Ala Leu Leu Leu
                565                 570                 575

Thr Asn Leu Glu Gln Pro Arg Thr Glu Ser Glu Trp Glu Asn Ser Phe
            580                 585                 590

Thr Leu Lys Met Phe Leu Phe Gln Phe Val Asn Leu Asn Ser Ser Thr
        595                 600                 605

Phe Tyr Ile Ala Phe Phe Leu Gly Arg Phe Thr Gly His Pro Gly Ala
    610                 615                 620

Tyr Leu Arg Leu Ile Asn Arg Trp Arg Leu Glu Glu Cys His Pro Ser
625                 630                 635                 640

Gly Cys Leu Ile Asp Leu Cys Met Gln Met Gly Ile Ile Met Val Leu
                645                 650                 655

Lys Gln Thr Trp Asn Asn Phe Met Glu Leu Gly Tyr Pro Leu Ile Gln
            660                 665                 670

Asn Trp Trp Thr Arg Arg Lys Val Arg Gln Glu His Gly Pro Glu Arg
        675                 680                 685

Lys Ile Ser Phe Pro Gln Trp Glu Lys Asp Tyr Asn Leu Gln Pro Met
    690                 695                 700

Asn Ala Tyr Gly Leu Phe Asp Glu Tyr Leu Glu Met Ile Leu Gln Phe
705                 710                 715                 720

Gly Phe Thr Thr Ile Phe Val Ala Ala Phe Pro Leu Ala Pro Leu Leu
                725                 730                 735

Ala Leu Leu Asn Asn Ile Ile Glu Ile Arg Leu Asp Ala Tyr Lys Phe
            740                 745                 750

Val Thr Gln Trp Arg Arg Pro Leu Ala Ser Arg Ala Lys Asp Ile Gly
        755                 760                 765

Ile Trp Tyr Gly Ile Leu Glu Gly Ile Gly Ile Leu Ser Val Ile Thr
    770                 775                 780

Asn Ala Phe Val Ile Ala Ile Thr Ser Asp Phe Ile Pro Arg Leu Val
```

785 790 795 800

Tyr Ala Tyr Lys Tyr Gly Pro Cys Ala Gly Gln Gly Glu Ala Gly Gln
805 810 815

Lys Cys Met Val Gly Tyr Val Asn Ala Ser Leu Ser Val Phe Arg Ile
820 825 830

Ser Asp Phe Glu Asn Arg Ser Glu Pro Glu Ser Asp Gly Ser Glu Phe
835 840 845

Ser Gly Thr Pro Leu Lys Tyr Cys Arg Tyr Arg Asp Tyr Arg Asp Pro
850 855 860

Pro His Ser Leu Val Pro Tyr Gly Tyr Thr Leu Gln Phe Trp His Val
865 870 875 880

Leu Ala Ala Arg Leu Ala Phe Ile Ile Val Phe Glu His Leu Val Phe
885 890 895

Cys Ile Lys His Leu Ile Ser Tyr Leu Ile Pro Asp Leu Pro Lys Asp
900 905 910

Leu Arg Asp Arg Met Arg Arg Glu Lys Tyr Leu Ile Gln Glu Met Met
915 920 925

Tyr Glu Ala Glu Leu Glu Arg Leu Gln Lys Glu Arg Lys Glu Arg Lys
930 935 940

Lys Asn Gly Lys Ala His His Asn Glu Trp Pro
945 950 955

<210> 5483
<211> 920
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ANO4; "

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anoctamin 4; "

<220>
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<220>
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<223> /note="ENSP ID: ENSP00000376705"

<400> 5483

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Met Glu Ala Ser Ser Ser Gly Ile Thr Asn Gly Lys Thr Lys Val Phe
1               5                  10                  15

His Pro Val Ala Lys Asp Val Asn Ile Leu Phe Asp Glu Leu Glu Ala
            20                  25                  30

Val Ser Ser Pro Cys Lys Asp Asp Asp Ser Leu Leu His Pro Gly Asn
        35                  40                  45

Leu Thr Ser Thr Ser Asp Asp Ala Ser Arg Leu Glu Ala Gly Gly Glu
    50                  55                  60

Thr Val Pro Glu Arg Asn Lys Ser Asn Gly Leu Tyr Phe Arg Asp Gly
65                  70                  75                  80

Lys Cys Arg Ile Asp Tyr Ile Leu Val Tyr Arg Lys Ser Asn Pro Gln
                85                  90                  95

Thr Glu Lys Arg Glu Val Phe Glu Arg Asn Ile Arg Ala Glu Gly Leu
            100                 105                 110

Gln Met Glu Lys Glu Ser Ser Leu Ile Asn Ser Asp Ile Ile Phe Val
        115                 120                 125

Lys Leu His Ala Pro Trp Glu Val Leu Gly Arg Tyr Ala Glu Gln Met
    130                 135                 140

Asn Val Arg Met Pro Phe Arg Arg Lys Ile Tyr Tyr Leu Pro Arg Arg
145                 150                 155                 160

Tyr Lys Phe Met Ser Arg Ile Asp Lys Gln Ile Ser Arg Phe Arg Arg
                165                 170                 175
```

```
Trp Leu Pro Lys Lys Pro Met Arg Leu Asp Lys Glu Thr Leu Pro Asp
            180                 185                 190

Leu Glu Glu Asn Asp Cys Tyr Thr Ala Pro Phe Ser Gln Gln Arg Ile
        195                 200                 205

His His Phe Ile Ile His Asn Lys Glu Thr Phe Phe Asn Asn Ala Thr
    210                 215                 220

Arg Ser Arg Ile Val His His Ile Leu Gln Arg Ile Lys Tyr Glu Glu
225                 230                 235                 240

Gly Lys Asn Lys Ile Gly Leu Asn Arg Leu Leu Thr Asn Gly Ser Tyr
                245                 250                 255

Glu Ala Ala Phe Pro Leu His Glu Gly Ser Tyr Arg Ser Lys Asn Ser
            260                 265                 270

Ile Arg Thr His Gly Ala Glu Asn His Arg His Leu Leu Tyr Glu Cys
        275                 280                 285

Trp Ala Ser Trp Gly Val Trp Tyr Lys Tyr Gln Pro Leu Asp Leu Val
    290                 295                 300

Arg Arg Tyr Phe Gly Glu Lys Ile Gly Leu Tyr Phe Ala Trp Leu Gly
305                 310                 315                 320

Trp Tyr Thr Gly Met Leu Phe Pro Ala Ala Phe Ile Gly Leu Phe Val
                325                 330                 335

Phe Leu Tyr Gly Val Thr Thr Leu Asp His Ser Gln Val Ser Lys Glu
            340                 345                 350

Val Cys Gln Ala Thr Asp Ile Ile Met Cys Pro Val Cys Asp Lys Tyr
        355                 360                 365

Cys Pro Phe Met Arg Leu Ser Asp Ser Cys Val Tyr Ala Lys Val Thr
    370                 375                 380

His Leu Phe Asp Asn Gly Ala Thr Val Phe Phe Ala Val Phe Met Ala
385                 390                 395                 400

Val Trp Ala Thr Val Phe Leu Glu Phe Trp Lys Arg Arg Arg Ala Val
```

```
                405                 410                 415

Ile Ala Tyr Asp Trp Asp Leu Ile Asp Trp Glu Glu Glu Glu Glu Glu
            420                 425                 430

Ile Arg Pro Gln Phe Glu Ala Lys Tyr Ser Lys Lys Glu Arg Met Asn
        435                 440                 445

Pro Ile Ser Gly Lys Pro Glu Pro Tyr Gln Ala Phe Thr Asp Lys Cys
    450                 455                 460

Ser Arg Leu Ile Val Ser Ala Ser Gly Ile Phe Phe Met Ile Cys Val
465                 470                 475                 480

Val Ile Ala Ala Val Phe Gly Ile Val Ile Tyr Arg Val Val Thr Val
                485                 490                 495

Ser Thr Phe Ala Ala Phe Lys Trp Ala Leu Ile Arg Asn Asn Ser Gln
            500                 505                 510

Val Ala Thr Thr Gly Thr Ala Val Cys Ile Asn Phe Cys Ile Ile Met
        515                 520                 525

Leu Leu Asn Val Leu Tyr Glu Lys Val Ala Leu Leu Leu Thr Asn Leu
    530                 535                 540

Glu Gln Pro Arg Thr Glu Ser Glu Trp Glu Asn Ser Phe Thr Leu Lys
545                 550                 555                 560

Met Phe Leu Phe Gln Phe Val Asn Leu Asn Ser Ser Thr Phe Tyr Ile
                565                 570                 575

Ala Phe Phe Leu Gly Arg Phe Thr Gly His Pro Gly Ala Tyr Leu Arg
            580                 585                 590

Leu Ile Asn Arg Trp Arg Leu Glu Glu Cys His Pro Ser Gly Cys Leu
        595                 600                 605

Ile Asp Leu Cys Met Gln Met Gly Ile Ile Met Val Leu Lys Gln Thr
    610                 615                 620

Trp Asn Asn Phe Met Glu Leu Gly Tyr Pro Leu Ile Gln Asn Trp Trp
625                 630                 635                 640
```

```
Thr Arg Arg Lys Val Arg Gln Glu His Gly Pro Glu Arg Lys Ile Ser
                645                 650                 655

Phe Pro Gln Trp Glu Lys Asp Tyr Asn Leu Gln Pro Met Asn Ala Tyr
            660                 665                 670

Gly Leu Phe Asp Glu Tyr Leu Glu Met Ile Leu Gln Phe Gly Phe Thr
        675                 680                 685

Thr Ile Phe Val Ala Ala Phe Pro Leu Ala Pro Leu Leu Ala Leu Leu
    690                 695                 700

Asn Asn Ile Ile Glu Ile Arg Leu Asp Ala Tyr Lys Phe Val Thr Gln
705                 710                 715                 720

Trp Arg Arg Pro Leu Ala Ser Arg Ala Lys Asp Ile Gly Ile Trp Tyr
                725                 730                 735

Gly Ile Leu Glu Gly Ile Gly Ile Leu Ser Val Ile Thr Asn Ala Phe
            740                 745                 750

Val Ile Ala Ile Thr Ser Asp Phe Ile Pro Arg Leu Val Tyr Ala Tyr
        755                 760                 765

Lys Tyr Gly Pro Cys Ala Gly Gln Gly Glu Ala Gly Gln Lys Cys Met
    770                 775                 780

Val Gly Tyr Val Asn Ala Ser Leu Ser Val Phe Arg Ile Ser Asp Phe
785                 790                 795                 800

Glu Asn Arg Ser Glu Pro Glu Ser Asp Gly Ser Glu Phe Ser Gly Thr
                805                 810                 815

Pro Leu Lys Tyr Cys Arg Tyr Arg Asp Tyr Arg Asp Pro Pro His Ser
            820                 825                 830

Leu Val Pro Tyr Gly Tyr Thr Leu Gln Phe Trp His Val Leu Ala Ala
        835                 840                 845

Arg Leu Ala Phe Ile Ile Val Phe Glu His Leu Val Phe Cys Ile Lys
    850                 855                 860
```

```
His Leu Ile Ser Tyr Leu Ile Pro Asp Leu Pro Lys Asp Leu Arg Asp
865                 870                 875                 880

Arg Met Arg Arg Glu Lys Tyr Leu Ile Gln Glu Met Met Tyr Glu Ala
                885                 890                 895

Glu Leu Glu Arg Leu Gln Lys Glu Arg Lys Glu Arg Lys Lys Asn Gly
            900                 905                 910

Lys Ala His His Asn Glu Trp Pro
        915                 920
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<210> 5484
<211> 11
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1187; "

<220>
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<223> /note="Gene Symbol: ANO4; "

<220>
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<223> /note="Gene Name:
anoctamin 4; "

<220>
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<400> 5484
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Met Glu Ala Ser Ser Ser Gly Ile Thr Asn Gly
1               5                   10
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<210> 5485
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<220>
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<220>
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anoctamin 4; "

<220>
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<400> 5485
Met Glu Ala Ser Ser Ser Gly Ile Thr Asn Gly Lys Thr Lys Val Phe
1 5 10 15

His Pro Glu Gly Gly Val Asp Leu Gln Gly Tyr Gln Leu Asp Met Gln
20 25 30

Ile Leu Pro Asp Gly Pro Lys Ser Asp Val Asp Phe Ser Glu Ile Leu
35 40 45

Asn Ala Ile Gln Glu Met Ala Lys Asp Val Asn Ile Leu Phe Asp Glu
50 55 60

Leu Glu Ala Val Ser Ser Pro Cys Lys Asp Asp Asp Ser Leu Leu His
65 70 75 80

Pro Gly Asn Leu Thr Ser Thr Ser Asp Asp Ala Ser Arg Leu Glu Ala
85 90 95

Gly Gly Glu Thr Val Pro Glu Arg Asn Lys Ser Asn Gly Leu Tyr Phe
100 105 110

Arg Asp Gly Lys Cys Arg Ile Asp Tyr Ile Leu Val Tyr Arg Lys Ser
115 120 125

Asn Pro Gln Thr Glu Lys Arg Glu Val Phe Glu Arg Asn Ile Arg Ala
130 135 140

Glu Gly Leu Gln Met Glu Lys Glu Ser Ser Leu Ile Asn Ser Asp Ile
145 150 155 160

Ile Phe Val Lys Leu His Ala Pro Trp Glu Val Leu Gly Arg Tyr Ala
165 170 175

Glu Gln Met Asn Val Arg Met Pro Phe Ser Ser Asn Cys Asn
180 185 190

<210> 5486
<211> 475
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<213> Homo sapiens

<220>
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<220>
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<220>
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anoctamin 4; "

<220>
<221> source
<223> /note="Uniprot ID: Q32M45; "

<220>
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<223> /note="ENSP ID: ENSP00000450192"

<400> 5486
Met Ala Val Trp Ala Thr Val Phe Leu Glu Phe Trp Lys Arg Arg Arg
1   5   10   15

Ala Val Ile Ala Tyr Asp Trp Asp Leu Ile Asp Trp Glu Glu Glu Glu
            20   25   30

Ile Cys Val Val Ile Ala Ala Val Phe Gly Ile Val Ile Tyr Arg Val
        35   40   45

Val Thr Val Ser Thr Phe Ala Ala Phe Lys Trp Ala Leu Ile Arg Asn
    50   55   60

Asn Ser Gln Val Ala Thr Thr Gly Thr Ala Val Cys Ile Asn Phe Cys
65   70   75   80

Ile Ile Met Leu Leu Asn Val Leu Tyr Glu Lys Val Ala Leu Leu Leu
                85   90   95

Thr Asn Leu Glu Gln Pro Arg Thr Glu Ser Glu Trp Glu Asn Ser Phe
            100   105   110

Thr Leu Lys Met Phe Leu Phe Gln Phe Val Asn Leu Asn Ser Ser Thr

```
        115                 120                 125

Phe Tyr Ile Ala Phe Phe Leu Gly Arg Phe Thr Gly His Pro Gly Ala
    130                 135                 140

Tyr Leu Arg Leu Ile Asn Arg Trp Arg Leu Glu Glu Cys His Pro Ser
145                 150                 155                 160

Gly Cys Leu Ile Asp Leu Cys Met Gln Met Gly Ile Ile Met Val Leu
                165                 170                 175

Lys Gln Thr Trp Asn Asn Phe Met Glu Leu Gly Tyr Pro Leu Ile Gln
            180                 185                 190

Asn Trp Trp Thr Arg Arg Lys Val Arg Gln Glu His Gly Pro Glu Arg
        195                 200                 205

Lys Ile Ser Phe Pro Gln Trp Glu Lys Asp Tyr Asn Leu Gln Pro Met
    210                 215                 220

Asn Ala Tyr Gly Leu Phe Asp Glu Tyr Leu Glu Met Ile Leu Gln Phe
225                 230                 235                 240

Gly Phe Thr Thr Ile Phe Val Ala Ala Phe Pro Leu Ala Pro Leu Leu
                245                 250                 255

Ala Leu Leu Asn Asn Ile Ile Glu Ile Arg Leu Asp Ala Tyr Lys Phe
            260                 265                 270

Val Thr Gln Trp Arg Arg Pro Leu Ala Ser Arg Ala Lys Asp Ile Gly
        275                 280                 285

Ile Trp Tyr Gly Ile Leu Glu Gly Ile Gly Ile Leu Ser Val Ile Thr
    290                 295                 300

Asn Ala Phe Val Ile Ala Ile Thr Ser Asp Phe Ile Pro Arg Leu Val
305                 310                 315                 320

Tyr Ala Tyr Lys Tyr Gly Pro Cys Ala Gly Gln Gly Glu Ala Gly Gln
                325                 330                 335

Lys Cys Met Val Gly Tyr Val Asn Ala Ser Leu Ser Val Phe Arg Ile
            340                 345                 350
```

```
Ser Asp Phe Glu Asn Arg Ser Glu Pro Glu Ser Asp Gly Ser Glu Phe
        355                 360                 365

Ser Gly Thr Pro Leu Lys Tyr Cys Arg Tyr Arg Asp Tyr Arg Asp Pro
    370                 375                 380

Pro His Ser Leu Val Pro Tyr Gly Tyr Thr Leu Gln Phe Trp His Val
385                 390                 395                 400

Leu Ala Ala Arg Leu Ala Phe Ile Ile Val Phe Glu His Leu Val Phe
                405                 410                 415

Cys Ile Lys His Leu Ile Ser Tyr Leu Ile Pro Asp Leu Pro Lys Asp
            420                 425                 430

Leu Arg Asp Arg Met Arg Arg Glu Lys Tyr Leu Ile Gln Glu Met Met
        435                 440                 445

Tyr Glu Ala Glu Leu Glu Arg Leu Gln Lys Glu Arg Lys Glu Arg Lys
    450                 455                 460

Lys Asn Gly Lys Ala His His Asn Glu Trp Pro
465                 470                 475


<210> 5487
<211> 176
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ANO4; "

<220>
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<223> /note="Gene Name:
      anoctamin 4; "

<220>
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<220>
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<221> source
<223> /note="ENSP ID: ENSP00000469449"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5487
Xaa Ser Val Ile Thr Asn Ala Phe Val Ile Ala Ile Thr Ser Asp Phe
1 5 10 15

Ile Pro Arg Leu Val Tyr Ala Tyr Lys Tyr Gly Pro Cys Ala Gly Gln
20 25 30

Gly Glu Ala Gly Gln Lys Cys Met Val Gly Tyr Val Asn Ala Ser Leu
35 40 45

Ser Val Phe Arg Ile Ser Asp Phe Glu Asn Arg Ser Glu Pro Glu Ser
50 55 60

Asp Gly Ser Glu Phe Ser Gly Thr Pro Leu Lys Tyr Cys Arg Tyr Arg
65 70 75 80

Asp Tyr Arg Asp Pro Pro His Ser Leu Val Pro Tyr Gly Tyr Thr Leu
85 90 95

Gln Phe Trp His Val Leu Ala Ala Arg Leu Ala Phe Ile Ile Val Phe
100 105 110

Glu His Leu Val Phe Cys Ile Lys His Leu Ile Ser Tyr Leu Ile Pro
115 120 125

Asp Leu Pro Lys Asp Leu Arg Asp Arg Met Arg Arg Glu Lys Tyr Leu
130 135 140

Ile Gln Glu Met Met Tyr Glu Ala Glu Leu Glu Arg Leu Gln Lys Glu
145 150 155 160

Arg Lys Glu Arg Lys Lys Asn Gly Lys Ala His His Asn Glu Trp Pro
165 170 175

<210> 5488
<211> 176
<212> PRT

<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1187; "

<220>
<221> source
<223> /note="Gene Symbol: ANO4; "

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<223> /note="Gene Name:
anoctamin 4; "

<220>
<221> source
<223> /note="Uniprot ID: Q32M45; "

<220>
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<223> /note="ENSP ID: ENSP00000470039"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5488

```
Xaa Ser Val Ile Thr Asn Ala Phe Val Ile Ala Ile Thr Ser Asp Phe
1               5                  10                  15

Ile Pro Arg Leu Val Tyr Ala Tyr Lys Tyr Gly Pro Cys Ala Gly Gln
            20                  25                  30

Gly Glu Ala Gly Gln Lys Cys Met Val Gly Tyr Val Asn Ala Ser Leu
        35                  40                  45

Ser Val Phe Arg Ile Ser Asp Phe Glu Asn Arg Ser Glu Pro Glu Ser
    50                  55                  60

Asp Gly Ser Glu Phe Ser Gly Thr Pro Leu Lys Tyr Cys Arg Tyr Arg
65                  70                  75                  80

Asp Tyr Arg Asp Pro Pro His Ser Leu Val Pro Tyr Gly Tyr Thr Leu
                85                  90                  95

Gln Phe Trp His Val Leu Ala Ala Arg Leu Ala Phe Ile Ile Val Phe
            100                 105                 110
```

```
Glu His Leu Val Phe Cys Ile Lys His Leu Ile Ser Tyr Leu Ile Pro
        115                 120                 125

Asp Leu Pro Lys Asp Leu Arg Asp Arg Met Arg Arg Glu Lys Tyr Leu
    130                 135                 140

Ile Gln Glu Met Met Tyr Glu Ala Glu Leu Glu Arg Leu Gln Lys Glu
145                 150                 155                 160

Arg Lys Glu Arg Lys Lys Asn Gly Lys Ala His His Asn Glu Trp Pro
                165                 170                 175


<210> 5489
<211> 176
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
      anoctamin 4; "

<220>
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000471431"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5489
Xaa Ser Val Ile Thr Asn Ala Phe Val Ile Ala Ile Thr Ser Asp Phe
1               5                   10                  15

Ile Pro Arg Leu Val Tyr Ala Tyr Lys Tyr Gly Pro Cys Ala Gly Gln
            20                  25                  30
```

```
Gly Glu Ala Gly Gln Lys Cys Met Val Gly Tyr Val Asn Ala Ser Leu
        35                  40                  45

Ser Val Phe Arg Ile Ser Asp Phe Glu Asn Arg Ser Glu Pro Glu Ser
    50                  55                  60

Asp Gly Ser Glu Phe Ser Gly Thr Pro Leu Lys Tyr Cys Arg Tyr Arg
65                  70                  75                  80

Asp Tyr Arg Asp Pro Pro His Ser Leu Val Pro Tyr Gly Tyr Thr Leu
                85                  90                  95

Gln Phe Trp His Val Leu Ala Ala Arg Leu Ala Phe Ile Ile Val Phe
            100                 105                 110

Glu His Leu Val Phe Cys Ile Lys His Leu Ile Ser Tyr Leu Ile Pro
        115                 120                 125

Asp Leu Pro Lys Asp Leu Arg Asp Arg Met Arg Arg Glu Lys Tyr Leu
    130                 135                 140

Ile Gln Glu Met Met Tyr Glu Ala Glu Leu Glu Arg Leu Gln Lys Glu
145                 150                 155                 160

Arg Lys Glu Arg Lys Lys Asn Gly Lys Ala His His Asn Glu Trp Pro
                165                 170                 175


<210> 5490
<211> 913
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1188; "

<220>
<221> source
<223> /note="Gene Symbol: ANO5; "

<220>
<221> source
<223> /note="Gene Name:
      anoctamin 5; "

<220>
<221> source
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<223> /note="Uniprot ID: Q75V66; "

<220>
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<223> /note="ENSP ID: ENSP00000315371"

<400> 5490
Met Gly Asp Pro Asp Leu Leu Glu Val Leu Ala Glu Glu Gly Glu Lys
1   5   10   15

Val Asn Lys His Ile Asp Tyr Ser Phe Gln Met Ser Glu Gln Ser Leu
            20   25   30

Ser Ser Arg Glu Thr Ser Phe Leu Ile Asn Glu Glu Thr Met Pro Ala
        35   40   45

Lys Arg Phe Asn Leu Phe Leu Arg Arg Arg Leu Met Phe Gln Lys Asn
    50   55   60

Gln Gln Ser Lys Asp Ser Ile Phe Phe Arg Asp Gly Ile Arg Gln Ile
65   70   75   80

Asp Phe Val Leu Ser Tyr Val Asp Asp Val Lys Lys Asp Ala Glu Leu
                85   90   95

Lys Ala Glu Arg Arg Lys Glu Phe Glu Thr Asn Leu Arg Lys Thr Gly
            100   105   110

Leu Glu Leu Glu Ile Glu Asp Lys Arg Asp Ser Glu Asp Gly Arg Thr
        115   120   125

Tyr Phe Val Lys Ile His Ala Pro Trp Glu Val Leu Val Thr Tyr Ala
    130   135   140

Glu Val Leu Gly Ile Lys Met Pro Ile Lys Glu Ser Asp Ile Pro Arg
145   150   155   160

Pro Lys His Thr Pro Ile Ser Tyr Val Leu Gly Pro Val Arg Leu Pro
                165   170   175

Leu Ser Val Lys Tyr Pro His Pro Glu Tyr Phe Thr Ala Gln Phe Ser
            180   185   190

Arg His Arg Gln Glu Leu Phe Leu Ile Glu Asp Gln Ala Thr Phe Phe
        195   200   205

```
Pro Ser Ser Ser Arg Asn Arg Ile Val Tyr Tyr Ile Leu Ser Arg Cys
    210                 215                 220

Pro Phe Gly Ile Glu Asp Gly Lys Lys Arg Phe Gly Ile Glu Arg Leu
225                 230                 235                 240

Leu Asn Ser Asn Thr Tyr Ser Ser Ala Tyr Pro Leu His Asp Gly Gln
                245                 250                 255

Tyr Trp Lys Pro Ser Glu Pro Pro Asn Pro Thr Asn Glu Arg Tyr Thr
            260                 265                 270

Leu His Gln Asn Trp Ala Arg Phe Ser Tyr Phe Tyr Lys Glu Gln Pro
        275                 280                 285

Leu Asp Leu Ile Lys Asn Tyr Tyr Gly Glu Lys Ile Gly Ile Tyr Phe
    290                 295                 300

Val Phe Leu Gly Phe Tyr Thr Glu Met Leu Phe Phe Ala Ala Val Val
305                 310                 315                 320

Gly Leu Ala Cys Phe Ile Tyr Gly Leu Leu Ser Met Glu His Asn Thr
                325                 330                 335

Ser Ser Thr Glu Ile Cys Asp Pro Glu Ile Gly Gly Gln Met Ile Met
            340                 345                 350

Cys Pro Leu Cys Asp Gln Val Cys Asp Tyr Trp Arg Leu Asn Ser Thr
        355                 360                 365

Cys Leu Ala Ser Lys Phe Ser His Leu Phe Asp Asn Glu Ser Thr Val
    370                 375                 380

Phe Phe Ala Ile Phe Met Gly Ile Trp Val Thr Leu Phe Leu Glu Phe
385                 390                 395                 400

Trp Lys Gln Arg Gln Ala Arg Leu Glu Tyr Glu Trp Asp Leu Val Asp
                405                 410                 415

Phe Glu Glu Glu Gln Gln Gln Leu Gln Leu Arg Pro Glu Phe Glu Ala
            420                 425                 430
```

```
Met Cys Lys His Arg Lys Leu Asn Ala Val Thr Lys Glu Met Glu Pro
        435                 440                 445

Tyr Met Pro Leu Tyr Thr Arg Ile Pro Trp Tyr Phe Leu Ser Gly Ala
    450                 455                 460

Thr Val Thr Leu Trp Met Ser Leu Val Val Thr Ser Met Val Ala Val
465                 470                 475                 480

Ile Val Tyr Arg Leu Ser Val Phe Ala Thr Phe Ala Ser Phe Met Glu
                485                 490                 495

Ser Asp Ala Ser Leu Lys Gln Val Lys Ser Phe Leu Thr Pro Gln Ile
            500                 505                 510

Thr Thr Ser Leu Thr Gly Ser Cys Leu Asn Phe Ile Val Ile Leu Ile
        515                 520                 525

Leu Asn Phe Phe Tyr Glu Lys Ile Ser Ala Trp Ile Thr Lys Met Glu
    530                 535                 540

Ile Pro Arg Thr Tyr Gln Glu Tyr Glu Ser Ser Leu Thr Leu Lys Met
545                 550                 555                 560

Phe Leu Phe Gln Phe Val Asn Phe Tyr Ser Ser Cys Phe Tyr Val Ala
                565                 570                 575

Phe Phe Lys Gly Lys Phe Val Gly Tyr Pro Gly Lys Tyr Thr Tyr Leu
            580                 585                 590

Phe Asn Glu Trp Arg Ser Glu Glu Cys Asp Pro Gly Gly Cys Leu Ile
        595                 600                 605

Glu Leu Thr Thr Gln Leu Thr Ile Ile Met Thr Gly Lys Gln Ile Phe
    610                 615                 620

Gly Asn Ile Lys Glu Ala Ile Tyr Pro Leu Ala Leu Asn Trp Trp Arg
625                 630                 635                 640

Arg Arg Lys Ala Arg Thr Asn Ser Glu Lys Leu Tyr Ser Arg Trp Glu
                645                 650                 655
```

```
Gln Asp His Asp Leu Glu Ser Phe Gly Pro Leu Gly Leu Phe Tyr Glu
            660                 665                 670

Tyr Leu Glu Thr Val Thr Gln Phe Gly Phe Val Thr Leu Phe Val Ala
        675                 680                 685

Ser Phe Pro Leu Ala Pro Leu Leu Ala Leu Ile Asn Asn Ile Val Glu
    690                 695                 700

Ile Arg Val Asp Ala Trp Lys Leu Thr Thr Gln Tyr Arg Arg Thr Val
705                 710                 715                 720

Ala Ser Lys Ala His Ser Ile Gly Val Trp Gln Asp Ile Leu Tyr Gly
                725                 730                 735

Met Ala Val Leu Ser Val Ala Thr Asn Ala Phe Ile Val Ala Phe Thr
            740                 745                 750

Ser Asp Ile Ile Pro Arg Leu Val Tyr Tyr Tyr Ala Tyr Ser Thr Asn
        755                 760                 765

Ala Thr Gln Pro Met Thr Gly Tyr Val Asn Asn Ser Leu Ser Val Phe
    770                 775                 780

Leu Ile Ala Asp Phe Pro Asn His Thr Ala Pro Ser Glu Lys Arg Asp
785                 790                 795                 800

Phe Ile Thr Cys Arg Tyr Arg Asp Tyr Arg Tyr Pro Pro Asp Asp Glu
                805                 810                 815

Asn Lys Tyr Phe His Asn Met Gln Phe Trp His Val Leu Ala Ala Lys
            820                 825                 830

Met Thr Phe Ile Ile Val Met Glu His Val Val Phe Leu Val Lys Phe
        835                 840                 845

Leu Leu Ala Trp Met Ile Pro Asp Val Pro Lys Asp Val Val Glu Arg
    850                 855                 860

Ile Lys Arg Glu Lys Leu Met Thr Ile Lys Ile Leu His Asp Phe Glu
865                 870                 875                 880

Leu Asn Lys Leu Lys Glu Asn Leu Gly Ile Asn Ser Asn Glu Phe Ala
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885 890 895

Lys His Val Met Ile Glu Glu Asn Lys Ala Gln Leu Ala Lys Ser Thr
900 905 910

Leu

<210> 5491
<211> 910
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1189; "

<220>
<221> source
<223> /note="Gene Symbol: ANO6; "

<220>
<221> source
<223> /note="Gene Name:
anoctamin 6; "

<220>
<221> source
<223> /note="Uniprot ID: Q4KMQ2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000320087"

<400> 5491
Met Lys Lys Met Ser Arg Asn Val Leu Leu Gln Met Glu Glu Glu Glu
1 5 10 15

Asp Asp Asp Asp Gly Asp Ile Val Leu Glu Asn Leu Gly Gln Thr Ile
20 25 30

Val Pro Asp Leu Gly Ser Leu Glu Ser Gln His Asp Phe Arg Thr Pro
35 40 45

Glu Phe Glu Glu Phe Asn Gly Lys Pro Asp Ser Leu Phe Phe Asn Asp
50 55 60

Gly Gln Arg Arg Ile Asp Phe Val Leu Val Tyr Glu Asp Glu Ser Arg
65 70 75 80

```
Lys Glu Thr Asn Lys Lys Gly Thr Asn Glu Lys Gln Arg Arg Lys Arg
                85                  90                  95

Gln Ala Tyr Glu Ser Asn Leu Ile Cys His Gly Leu Gln Leu Glu Ala
            100                 105                 110

Thr Arg Ser Val Leu Asp Asp Lys Leu Val Phe Val Lys Val His Ala
        115                 120                 125

Pro Trp Glu Val Leu Cys Thr Tyr Ala Glu Ile Met His Ile Lys Leu
    130                 135                 140

Pro Leu Lys Pro Asn Asp Leu Lys Asn Arg Ser Ser Ala Phe Gly Thr
145                 150                 155                 160

Leu Asn Trp Phe Thr Lys Val Leu Ser Val Asp Glu Ser Ile Ile Lys
                165                 170                 175

Pro Glu Gln Glu Phe Phe Thr Ala Pro Phe Glu Lys Asn Arg Met Asn
            180                 185                 190

Asp Phe Tyr Ile Val Asp Arg Asp Ala Phe Phe Asn Pro Ala Thr Arg
        195                 200                 205

Ser Arg Ile Val Tyr Phe Ile Leu Ser Arg Val Lys Tyr Gln Val Ile
    210                 215                 220

Asn Asn Val Ser Lys Phe Gly Ile Asn Arg Leu Val Asn Ser Gly Ile
225                 230                 235                 240

Tyr Lys Ala Ala Phe Pro Leu His Asp Cys Lys Phe Arg Arg Gln Ser
                245                 250                 255

Glu Asp Pro Ser Cys Pro Asn Glu Arg Tyr Leu Leu Tyr Arg Glu Trp
            260                 265                 270

Ala His Pro Arg Ser Ile Tyr Lys Lys Gln Pro Leu Asp Leu Ile Arg
        275                 280                 285

Lys Tyr Tyr Gly Glu Lys Ile Gly Ile Tyr Phe Ala Trp Leu Gly Tyr
    290                 295                 300
```

```
Tyr Thr Gln Met Leu Leu Leu Ala Ala Val Val Gly Val Ala Cys Phe
305                 310                 315                 320

Leu Tyr Gly Tyr Leu Asn Gln Asp Asn Cys Thr Trp Ser Lys Glu Val
                325                 330                 335

Cys His Pro Asp Ile Gly Gly Lys Ile Ile Met Cys Pro Gln Cys Asp
            340                 345                 350

Arg Leu Cys Pro Phe Trp Lys Leu Asn Ile Thr Cys Glu Ser Ser Lys
        355                 360                 365

Lys Leu Cys Ile Phe Asp Ser Phe Gly Thr Leu Val Phe Ala Val Phe
    370                 375                 380

Met Gly Val Trp Val Thr Leu Phe Leu Glu Phe Trp Lys Arg Arg Gln
385                 390                 395                 400

Ala Glu Leu Glu Tyr Glu Trp Asp Thr Val Glu Leu Gln Gln Glu Glu
                405                 410                 415

Gln Ala Arg Pro Glu Tyr Glu Ala Arg Cys Thr His Val Val Ile Asn
            420                 425                 430

Glu Ile Thr Gln Glu Glu Glu Arg Ile Pro Phe Thr Ala Trp Gly Lys
        435                 440                 445

Cys Ile Arg Ile Thr Leu Cys Ala Ser Ala Val Phe Phe Trp Ile Leu
    450                 455                 460

Leu Ile Ile Ala Ser Val Ile Gly Ile Ile Val Tyr Arg Leu Ser Val
465                 470                 475                 480

Phe Ile Val Phe Ser Ala Lys Leu Pro Lys Asn Ile Asn Gly Thr Asp
                485                 490                 495

Pro Ile Gln Lys Tyr Leu Thr Pro Gln Thr Ala Thr Ser Ile Thr Ala
            500                 505                 510

Ser Ile Ile Ser Phe Ile Ile Ile Met Ile Leu Asn Thr Ile Tyr Glu
        515                 520                 525

Lys Val Ala Ile Met Ile Thr Asn Phe Glu Leu Pro Arg Thr Gln Thr
```

```
    530                 535                 540

Asp Tyr Glu Asn Ser Leu Thr Met Lys Met Phe Leu Phe Gln Phe Val
545                 550                 555                 560

Asn Tyr Tyr Ser Ser Cys Phe Tyr Ile Ala Phe Phe Lys Gly Lys Phe
                565                 570                 575

Val Gly Tyr Pro Gly Asp Pro Val Tyr Trp Leu Gly Lys Tyr Arg Asn
            580                 585                 590

Glu Glu Cys Asp Pro Gly Gly Cys Leu Leu Glu Leu Thr Thr Gln Leu
        595                 600                 605

Thr Ile Ile Met Gly Gly Lys Ala Ile Trp Asn Asn Ile Gln Glu Val
    610                 615                 620

Leu Leu Pro Trp Ile Met Asn Leu Ile Gly Arg Phe His Arg Val Ser
625                 630                 635                 640

Gly Ser Glu Lys Ile Thr Pro Arg Trp Glu Gln Asp Tyr His Leu Gln
                645                 650                 655

Pro Met Gly Lys Leu Gly Leu Phe Tyr Glu Tyr Leu Glu Met Ile Ile
            660                 665                 670

Gln Phe Gly Phe Val Thr Leu Phe Val Ala Ser Phe Pro Leu Ala Pro
        675                 680                 685

Leu Leu Ala Leu Val Asn Asn Ile Leu Glu Ile Arg Val Asp Ala Trp
    690                 695                 700

Lys Leu Thr Thr Gln Phe Arg Arg Leu Val Pro Glu Lys Ala Gln Asp
705                 710                 715                 720

Ile Gly Ala Trp Gln Pro Ile Met Gln Gly Ile Ala Ile Leu Ala Val
                725                 730                 735

Val Thr Asn Ala Met Ile Ile Ala Phe Thr Ser Asp Met Ile Pro Arg
            740                 745                 750

Leu Val Tyr Tyr Trp Ser Phe Ser Val Pro Pro Tyr Gly Asp His Thr
        755                 760                 765
```

```
Ser Tyr Thr Met Glu Gly Tyr Ile Asn Asn Thr Leu Ser Ile Phe Lys
    770                 775                 780

Val Ala Asp Phe Lys Asn Lys Ser Lys Gly Asn Pro Tyr Ser Asp Leu
785                 790                 795                 800

Gly Asn His Thr Thr Cys Arg Tyr Arg Asp Phe Arg Tyr Pro Pro Gly
                805                 810                 815

His Pro Gln Glu Tyr Lys His Asn Ile Tyr Tyr Trp His Val Ile Ala
            820                 825                 830

Ala Lys Leu Ala Phe Ile Ile Val Met Glu His Val Ile Tyr Ser Val
        835                 840                 845

Lys Phe Phe Ile Ser Tyr Ala Ile Pro Asp Val Ser Lys Arg Thr Lys
    850                 855                 860

Ser Lys Ile Gln Arg Glu Lys Tyr Leu Thr Gln Lys Leu Leu His Glu
865                 870                 875                 880

Asn His Leu Lys Asp Met Thr Lys Asn Met Gly Val Ile Ala Glu Arg
                885                 890                 895

Met Ile Glu Ala Val Asp Asn Asn Leu Arg Pro Lys Ser Glu
            900                 905                 910


<210> 5492
<211> 929
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1189; "

<220>
<221> source
<223> /note="Gene Symbol: ANO6; "

<220>
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<223> /note="Gene Name:
      anoctamin 6; "

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<221> source
<223> /note="Uniprot ID: Q4KMQ2; "

<220>
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<223> /note="ENSP ID: ENSP00000391417"

<400> 5492
Met Lys Lys Met Ser Arg Asn Val Leu Leu Gln Met Glu Glu Glu Glu
1   5   10   15

Asp Asp Asp Asp Gly Asp Ile Val Leu Glu Asn Leu Gly Gln Thr Ile
            20   25   30

Val Pro Asp Leu Gly Ser Leu Glu Ser Gln His Asp Phe Arg Thr Pro
        35   40   45

Glu Phe Glu Glu Phe Asn Gly Lys Pro Asp Ser Leu Phe Phe Asn Asp
    50   55   60

Gly Gln Arg Arg Ile Asp Phe Val Leu Val Tyr Glu Asp Glu Ser Arg
65   70   75   80

Lys Glu Thr Asn Lys Lys Gly Thr Asn Glu Lys Gln Arg Arg Lys Arg
                85   90   95

Gln Ala Tyr Glu Ser Asn Leu Ile Cys His Gly Leu Gln Leu Glu Ala
            100   105   110

Thr Arg Ser Val Leu Asp Asp Lys Leu Val Phe Val Lys Val His Ala
        115   120   125

Pro Trp Glu Val Leu Cys Thr Tyr Ala Glu Ile Met His Ile Lys Leu
    130   135   140

Pro Leu Lys Pro Asn Asp Leu Lys Asn Arg Ser Ser Ala Phe Gly Thr
145   150   155   160

Leu Asn Trp Phe Thr Lys Val Leu Ser Val Asp Glu Ser Ile Ile Lys
                165   170   175

Pro Glu Gln Glu Phe Phe Thr Ala Pro Phe Glu Lys Asn Arg Met Asn
            180   185   190

Asp Phe Tyr Ile Val Asp Arg Asp Ala Phe Phe Asn Pro Ala Thr Arg

```
        195                 200                 205

Ser Arg Ile Val Tyr Phe Ile Leu Ser Arg Val Lys Tyr Gln Val Ile
    210                 215                 220

Asn Asn Val Ser Lys Phe Gly Ile Asn Arg Leu Val Asn Ser Gly Ile
225                 230                 235                 240

Tyr Lys Ala Ala Phe Pro Leu His Asp Cys Lys Phe Arg Arg Gln Ser
                245                 250                 255

Glu Asp Pro Ser Cys Pro Asn Glu Arg Tyr Leu Leu Tyr Arg Glu Trp
            260                 265                 270

Ala His Pro Arg Ser Ile Tyr Lys Lys Gln Pro Leu Asp Leu Ile Arg
        275                 280                 285

Lys Tyr Tyr Gly Glu Lys Ile Gly Ile Tyr Phe Ala Trp Leu Gly Tyr
    290                 295                 300

Tyr Thr Gln Met Leu Leu Leu Ala Ala Val Val Gly Val Ala Cys Phe
305                 310                 315                 320

Leu Tyr Gly Tyr Leu Asn Gln Asp Asn Cys Thr Trp Ser Lys Glu Val
                325                 330                 335

Cys His Pro Asp Ile Gly Gly Lys Ile Ile Met Cys Pro Gln Cys Asp
            340                 345                 350

Arg Leu Cys Pro Phe Trp Lys Leu Asn Ile Thr Cys Glu Ser Ser Lys
        355                 360                 365

Lys Leu Cys Ile Phe Asp Ser Phe Gly Thr Leu Val Phe Ala Val Phe
    370                 375                 380

Met Gly Val Trp Val Thr Leu Phe Leu Glu Phe Trp Lys Arg Arg Gln
385                 390                 395                 400

Ala Glu Leu Glu Tyr Glu Trp Asp Thr Val Glu Leu Gln Gln Glu Glu
                405                 410                 415

Gln Ala Arg Pro Glu Tyr Glu Ala Arg Cys Thr His Val Val Ile Asn
            420                 425                 430
```

```
Glu Ile Thr Gln Glu Glu Glu Arg Ile Pro Phe Thr Ala Trp Gly Lys
        435                 440                 445

Cys Ile Arg Ile Thr Leu Cys Ala Ser Ala Val Phe Phe Trp Ile Leu
    450                 455                 460

Leu Ile Ile Ala Ser Val Ile Gly Ile Ile Val Tyr Arg Leu Ser Val
465                 470                 475                 480

Phe Ile Val Phe Ser Ala Lys Leu Pro Lys Asn Ile Asn Gly Thr Asp
                485                 490                 495

Pro Ile Gln Lys Tyr Leu Thr Pro Gln Thr Ala Thr Ser Ile Thr Ala
            500                 505                 510

Ser Ile Ile Ser Phe Ile Ile Ile Met Ile Leu Asn Thr Ile Tyr Glu
        515                 520                 525

Lys Val Ala Ile Met Ile Thr Asn Phe Glu Leu Pro Arg Thr Gln Thr
    530                 535                 540

Asp Tyr Glu Asn Ser Leu Thr Met Lys Met Phe Leu Phe Gln Phe Val
545                 550                 555                 560

Asn Tyr Tyr Ser Ser Cys Phe Tyr Ile Ala Phe Phe Lys Gly Lys Phe
                565                 570                 575

Val Gly Tyr Pro Gly Asp Pro Val Tyr Trp Leu Gly Lys Tyr Arg Asn
            580                 585                 590

Glu Glu Cys Asp Pro Gly Gly Cys Leu Leu Glu Leu Thr Thr Gln Leu
        595                 600                 605

Thr Ile Ile Met Gly Gly Lys Ala Ile Trp Asn Asn Ile Gln Glu Val
    610                 615                 620

Leu Leu Pro Trp Ile Met Asn Leu Ile Gly Arg Phe His Arg Val Ser
625                 630                 635                 640

Gly Ser Glu Lys Ile Thr Pro Arg Trp Glu Gln Asp Tyr His Leu Gln
                645                 650                 655
```

```
Pro Met Gly Lys Leu Gly Leu Phe Tyr Glu Tyr Leu Glu Met Ile Ile
            660                 665                 670

Gln Phe Gly Phe Val Thr Leu Phe Val Ala Ser Phe Pro Leu Ala Pro
        675                 680                 685

Leu Leu Ala Leu Val Asn Asn Ile Leu Glu Ile Arg Val Asp Ala Trp
    690                 695                 700

Lys Leu Thr Thr Gln Phe Arg Arg Leu Val Pro Glu Lys Ala Gln Asp
705                 710                 715                 720

Ile Gly Ala Trp Gln Pro Ile Met Gln Gly Ile Ala Ile Leu Ala Val
                725                 730                 735

Val Thr Asn Ala Met Ile Ile Ala Phe Thr Ser Asp Met Ile Pro Arg
            740                 745                 750

Leu Val Tyr Tyr Trp Ser Phe Ser Val Pro Pro Tyr Gly Asp His Thr
        755                 760                 765

Ser Tyr Thr Met Glu Gly Tyr Ile Asn Asn Thr Leu Ser Ile Phe Lys
    770                 775                 780

Val Ala Asp Phe Lys Asn Lys Ser Lys Gly Asn Pro Tyr Ser Asp Leu
785                 790                 795                 800

Gly Asn His Thr Thr Cys Arg Tyr Arg Asp Phe Arg Tyr Pro Pro Gly
                805                 810                 815

His Pro Gln Glu Tyr Lys His Asn Ile Tyr Tyr Trp His Val Ile Ala
            820                 825                 830

Ala Lys Leu Ala Phe Ile Ile Val Met Glu Tyr Leu Ala Leu Leu Pro
        835                 840                 845

Arg Leu Gly His Ser Gly Met Ile Leu Ala His Cys Asn Leu Arg Leu
    850                 855                 860

Pro Val Asp Cys Cys Met Cys Tyr Arg Phe Val Asp Glu Ile Arg Leu
865                 870                 875                 880
```

```
Leu Glu Gln Leu Thr Ser Asp Phe Ile Asp Ser Leu Tyr Tyr Ile Phe
                885                 890                 895

Ser Ile Ser Ile Ile Ser Ile Phe Phe Ser Val Thr Phe Phe Phe Leu
            900                 905                 910

Leu Leu Ser Leu Gly Pro Thr Pro Cys Phe Ser Val Ser Asn Phe Leu
        915                 920                 925

Ser
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<210> 5493
<211> 931
<212> PRT
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<220>
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<223> /note="Gene Name:
anoctamin 6; "

<220>
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<220>
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<400> 5493

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Met Lys Lys Met Ser Arg Asn Val Leu Leu Gln Met Glu Glu Glu Glu
1               5                   10                  15

Asp Asp Asp Asp Gly Asp Ile Gly Asp Val Pro Ala Ser Arg Arg Pro
            20                  25                  30

Phe Leu Thr Pro His Thr His Leu Pro Ser Ser Leu Val Leu Glu Asn
        35                  40                  45

Leu Gly Gln Thr Ile Val Pro Asp Leu Gly Ser Leu Glu Ser Gln His
    50                  55                  60
```

```
Asp Phe Arg Thr Pro Glu Phe Glu Glu Phe Asn Gly Lys Pro Asp Ser
65                  70                  75                  80

Leu Phe Phe Asn Asp Gly Gln Arg Arg Ile Asp Phe Val Leu Val Tyr
                85                  90                  95

Glu Asp Glu Ser Arg Lys Glu Thr Asn Lys Lys Gly Thr Asn Glu Lys
            100                 105                 110

Gln Arg Arg Lys Arg Gln Ala Tyr Glu Ser Asn Leu Ile Cys His Gly
        115                 120                 125

Leu Gln Leu Glu Ala Thr Arg Ser Val Leu Asp Asp Lys Leu Val Phe
    130                 135                 140

Val Lys Val His Ala Pro Trp Glu Val Leu Cys Thr Tyr Ala Glu Ile
145                 150                 155                 160

Met His Ile Lys Leu Pro Leu Lys Pro Asn Asp Leu Lys Asn Arg Ser
                165                 170                 175

Ser Ala Phe Gly Thr Leu Asn Trp Phe Thr Lys Val Leu Ser Val Asp
            180                 185                 190

Glu Ser Ile Ile Lys Pro Glu Gln Glu Phe Phe Thr Ala Pro Phe Glu
        195                 200                 205

Lys Asn Arg Met Asn Asp Phe Tyr Ile Val Asp Arg Asp Ala Phe Phe
    210                 215                 220

Asn Pro Ala Thr Arg Ser Arg Ile Val Tyr Phe Ile Leu Ser Arg Val
225                 230                 235                 240

Lys Tyr Gln Val Ile Asn Asn Val Ser Lys Phe Gly Ile Asn Arg Leu
                245                 250                 255

Val Asn Ser Gly Ile Tyr Lys Ala Ala Phe Pro Leu His Asp Cys Lys
            260                 265                 270

Phe Arg Arg Gln Ser Glu Asp Pro Ser Cys Pro Asn Glu Arg Tyr Leu
        275                 280                 285
```

```
Leu Tyr Arg Glu Trp Ala His Pro Arg Ser Ile Tyr Lys Lys Gln Pro
    290                 295                 300

Leu Asp Leu Ile Arg Lys Tyr Tyr Gly Glu Lys Ile Gly Ile Tyr Phe
305                 310                 315                 320

Ala Trp Leu Gly Tyr Tyr Thr Gln Met Leu Leu Leu Ala Ala Val Val
                325                 330                 335

Gly Val Ala Cys Phe Leu Tyr Gly Tyr Leu Asn Gln Asp Asn Cys Thr
            340                 345                 350

Trp Ser Lys Glu Val Cys His Pro Asp Ile Gly Gly Lys Ile Ile Met
        355                 360                 365

Cys Pro Gln Cys Asp Arg Leu Cys Pro Phe Trp Lys Leu Asn Ile Thr
    370                 375                 380

Cys Glu Ser Ser Lys Lys Leu Cys Ile Phe Asp Ser Phe Gly Thr Leu
385                 390                 395                 400

Val Phe Ala Val Phe Met Gly Val Trp Val Thr Leu Phe Leu Glu Phe
                405                 410                 415

Trp Lys Arg Arg Gln Ala Glu Leu Glu Tyr Glu Trp Asp Thr Val Glu
            420                 425                 430

Leu Gln Gln Glu Glu Gln Ala Arg Pro Glu Tyr Glu Ala Arg Cys Thr
        435                 440                 445

His Val Val Ile Asn Glu Ile Thr Gln Glu Glu Glu Arg Ile Pro Phe
    450                 455                 460

Thr Ala Trp Gly Lys Cys Ile Arg Ile Thr Leu Cys Ala Ser Ala Val
465                 470                 475                 480

Phe Phe Trp Ile Leu Leu Ile Ile Ala Ser Val Ile Gly Ile Ile Val
                485                 490                 495

Tyr Arg Leu Ser Val Phe Ile Val Phe Ser Ala Lys Leu Pro Lys Asn
            500                 505                 510
```

```
Ile Asn Gly Thr Asp Pro Ile Gln Lys Tyr Leu Thr Pro Gln Thr Ala
        515                 520                 525

Thr Ser Ile Thr Ala Ser Ile Ile Ser Phe Ile Ile Ile Met Ile Leu
    530                 535                 540

Asn Thr Ile Tyr Glu Lys Val Ala Ile Met Ile Thr Asn Phe Glu Leu
545                 550                 555                 560

Pro Arg Thr Gln Thr Asp Tyr Glu Asn Ser Leu Thr Met Lys Met Phe
                565                 570                 575

Leu Phe Gln Phe Val Asn Tyr Tyr Ser Ser Cys Phe Tyr Ile Ala Phe
            580                 585                 590

Phe Lys Gly Lys Phe Val Gly Tyr Pro Gly Asp Pro Val Tyr Trp Leu
        595                 600                 605

Gly Lys Tyr Arg Asn Glu Glu Cys Asp Pro Gly Gly Cys Leu Leu Glu
    610                 615                 620

Leu Thr Thr Gln Leu Thr Ile Ile Met Gly Gly Lys Ala Ile Trp Asn
625                 630                 635                 640

Asn Ile Gln Glu Val Leu Leu Pro Trp Ile Met Asn Leu Ile Gly Arg
                645                 650                 655

Phe His Arg Val Ser Gly Ser Glu Lys Ile Thr Pro Arg Trp Glu Gln
            660                 665                 670

Asp Tyr His Leu Gln Pro Met Gly Lys Leu Gly Leu Phe Tyr Glu Tyr
        675                 680                 685

Leu Glu Met Ile Ile Gln Phe Gly Phe Val Thr Leu Phe Val Ala Ser
    690                 695                 700

Phe Pro Leu Ala Pro Leu Leu Ala Leu Val Asn Asn Ile Leu Glu Ile
705                 710                 715                 720

Arg Val Asp Ala Trp Lys Leu Thr Thr Gln Phe Arg Arg Leu Val Pro
                725                 730                 735

Glu Lys Ala Gln Asp Ile Gly Ala Trp Gln Pro Ile Met Gln Gly Ile
```

```
            740                 745                 750

Ala Ile Leu Ala Val Val Thr Asn Ala Met Ile Ile Ala Phe Thr Ser
        755                 760                 765

Asp Met Ile Pro Arg Leu Val Tyr Tyr Trp Ser Phe Ser Val Pro Pro
    770                 775                 780

Tyr Gly Asp His Thr Ser Tyr Thr Met Glu Gly Tyr Ile Asn Asn Thr
785                 790                 795                 800

Leu Ser Ile Phe Lys Val Ala Asp Phe Lys Asn Lys Ser Lys Gly Asn
                805                 810                 815

Pro Tyr Ser Asp Leu Gly Asn His Thr Thr Cys Arg Tyr Arg Asp Phe
            820                 825                 830

Arg Tyr Pro Pro Gly His Pro Gln Glu Tyr Lys His Asn Ile Tyr Tyr
        835                 840                 845

Trp His Val Ile Ala Ala Lys Leu Ala Phe Ile Ile Val Met Glu His
    850                 855                 860

Val Ile Tyr Ser Val Lys Phe Phe Ile Ser Tyr Ala Ile Pro Asp Val
865                 870                 875                 880

Ser Lys Arg Thr Lys Ser Lys Ile Gln Arg Glu Lys Tyr Leu Thr Gln
                885                 890                 895

Lys Leu Leu His Glu Asn His Leu Lys Asp Met Thr Lys Asn Met Gly
            900                 905                 910

Val Ile Ala Glu Arg Met Ile Glu Ala Val Asp Asn Asn Leu Arg Pro
        915                 920                 925

Lys Ser Glu
    930


<210> 5494
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<213> Homo sapiens

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<220>
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<223> /note="Gene Name:
anoctamin 6; "

<220>
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<223> /note="Uniprot ID: Q4KMQ2; "

<220>
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<400> 5494

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Met Phe Cys Ala Ala Val Leu Glu Asn Leu Gly Gln Thr Ile Val Pro
1               5                  10                  15

Asp Leu Gly Ser Leu Glu Ser Gln His Asp Phe Arg Thr Pro Glu Phe
            20                  25                  30

Glu Glu Phe Asn Gly Lys Pro Asp Ser Leu Phe Phe Asn Asp Gly Gln
        35                  40                  45

Arg Arg Ile Asp Phe Val Leu Val Tyr Glu Asp Glu Ser Arg Lys Glu
    50                  55                  60

Thr Asn Lys Lys Gly Thr Asn Glu Lys Gln Arg Arg Lys Arg Gln Ala
65                  70                  75                  80

Tyr Glu Ser Asn Leu Ile Cys His Gly Leu Gln Leu Glu Ala Thr Arg
                85                  90                  95

Ser Val Leu Asp Asp Lys Leu Val Phe Val Lys Val His Ala Pro Trp
            100                 105                 110

Glu Val Leu Cys Thr Tyr Ala Glu Ile Met His Ile Lys Leu Pro Leu
        115                 120                 125

Lys Pro Asn Asp Leu Lys Asn Arg Ser Ser Ala Phe Gly Thr Leu Asn
    130                 135                 140
```

```
Trp Phe Thr Lys Val Leu Ser Val Asp Glu Ser Ile Ile Lys Pro Glu
145                 150                 155                 160

Gln Glu Phe Phe Thr Ala Pro Phe Glu Lys Asn Arg Met Asn Asp Phe
                165                 170                 175

Tyr Ile Val Asp Arg Asp Ala Phe Phe Asn Pro Ala Thr Arg Ser Arg
            180                 185                 190

Ile Val Tyr Phe Ile Leu Ser Arg Val Lys Tyr Gln Val Ile Asn Asn
        195                 200                 205

Val Ser Lys Phe Gly Ile Asn Arg Leu Val Asn Ser Gly Ile Tyr Lys
    210                 215                 220

Ala Ala Phe Pro Leu His Asp Cys Lys Phe Arg Arg Gln Ser Glu Asp
225                 230                 235                 240

Pro Ser Cys Pro Asn Glu Arg Tyr Leu Leu Tyr Arg Glu Trp Ala His
                245                 250                 255

Pro Arg Ser Ile Tyr Lys Lys Gln Pro Leu Asp Leu Ile Arg Lys Tyr
            260                 265                 270

Tyr Gly Glu Lys Ile Gly Ile Tyr Phe Ala Trp Leu Gly Tyr Tyr Thr
        275                 280                 285

Gln Met Leu Leu Leu Ala Ala Val Val Gly Val Ala Cys Phe Leu Tyr
    290                 295                 300

Gly Tyr Leu Asn Gln Asp Asn Cys Thr Trp Ser Lys Glu Val Cys His
305                 310                 315                 320

Pro Asp Ile Gly Gly Lys Ile Ile Met Cys Pro Gln Cys Asp Arg Leu
                325                 330                 335

Cys Pro Phe Trp Lys Leu Asn Ile Thr Cys Glu Ser Ser Lys Lys Leu
            340                 345                 350

Cys Ile Phe Asp Ser Phe Gly Thr Leu Val Phe Ala Val Phe Met Gly
        355                 360                 365

Val Trp Val Thr Leu Phe Leu Glu Phe Trp Lys Arg Arg Gln Ala Glu
```

370 375 380

Leu Glu Tyr Glu Trp Asp Thr Val Glu Leu Gln Gln Glu Glu Gln Ala
385 390 395 400

Arg Pro Glu Tyr Glu Ala Arg Cys Thr His Val Val Ile Asn Glu Ile
405 410 415

Thr Gln Glu Glu Glu Arg Ile Pro Phe Thr Ala Trp Gly Lys Cys Ile
420 425 430

Arg Ile Thr Leu Cys Ala Ser Ala Val Phe Phe Trp Ile Leu Leu Ile
435 440 445

Ile Ala Ser Val Ile Gly Ile Ile Val Tyr Arg Leu Ser Val Phe Ile
450 455 460

Val Phe Ser Ala Lys Leu Pro Lys Asn Ile Asn Gly Thr Asp Pro Ile
465 470 475 480

Gln Lys Tyr Leu Thr Pro Gln Thr Ala Thr Ser Ile Thr Ala Ser Ile
485 490 495

Ile Ser Phe Ile Ile Ile Met Ile Leu Asn Thr Ile Tyr Glu Lys Val
500 505 510

Ala Ile Met Ile Thr Asn Phe Glu Leu Pro Arg Thr Gln Thr Asp Tyr
515 520 525

Glu Asn Ser Leu Thr Met Lys Met Phe Leu Phe Gln Phe Val Asn Tyr
530 535 540

Tyr Ser Ser Cys Phe Tyr Ile Ala Phe Phe Lys Gly Lys Phe Val Gly
545 550 555 560

Tyr Pro Gly Asp Pro Val Tyr Trp Leu Gly Lys Tyr Arg Asn Glu Glu
565 570 575

Cys Asp Pro Gly Gly Cys Leu Leu Glu Leu Thr Thr Gln Leu Thr Ile
580 585 590

Ile Met Gly Gly Lys Ala Ile Trp Asn Asn Ile Gln Glu Val Leu Leu
595 600 605

```
Pro Trp Ile Met Asn Leu Ile Gly Arg Phe His Arg Val Ser Gly Ser
    610                 615                 620

Glu Lys Ile Thr Pro Arg Trp Glu Gln Asp Tyr His Leu Gln Pro Met
625                 630                 635                 640

Gly Lys Leu Gly Leu Phe Tyr Glu Tyr Leu Glu Met Ile Ile Gln Phe
                645                 650                 655

Gly Phe Val Thr Leu Phe Val Ala Ser Phe Pro Leu Ala Pro Leu Leu
            660                 665                 670

Ala Leu Val Asn Asn Ile Leu Glu Ile Arg Val Asp Ala Trp Lys Leu
        675                 680                 685

Thr Thr Gln Phe Arg Arg Leu Val Pro Glu Lys Ala Gln Asp Ile Gly
    690                 695                 700

Ala Trp Gln Pro Ile Met Gln Gly Ile Ala Ile Leu Ala Val Val Thr
705                 710                 715                 720

Asn Ala Met Ile Ile Ala Phe Thr Ser Asp Met Ile Pro Arg Leu Val
                725                 730                 735

Tyr Tyr Trp Ser Phe Ser Val Pro Pro Tyr Gly Asp His Thr Ser Tyr
            740                 745                 750

Thr Met Glu Gly Tyr Ile Asn Asn Thr Leu Ser Ile Phe Lys Val Ala
        755                 760                 765

Asp Phe Lys Asn Lys Ser Lys Gly Asn Pro Tyr Ser Asp Leu Gly Asn
    770                 775                 780

His Thr Thr Cys Arg Tyr Arg Asp Phe Arg Tyr Pro Pro Gly His Pro
785                 790                 795                 800

Gln Glu Tyr Lys His Asn Ile Tyr Tyr Trp His Val Ile Ala Ala Lys
                805                 810                 815

Leu Ala Phe Ile Ile Val Met Glu His Val Ile Tyr Ser Val Lys Phe
            820                 825                 830
```

```
Phe Ile Ser Tyr Ala Ile Pro Asp Val Ser Lys Arg Thr Lys Ser Lys
        835                 840                 845

Ile Gln Arg Glu Lys Tyr Leu Thr Gln Lys Leu Leu His Glu Asn His
    850                 855                 860

Leu Lys Asp Met Thr Lys Asn Met Gly Val Ile Ala Glu Arg Met Ile
865                 870                 875                 880

Glu Ala Val Asp Asn Asn Leu Arg Pro Lys Ser Glu
                885                 890


<210> 5495
<211> 45
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1189; "

<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<400> 5495
Met Lys Lys Met Ser Arg Asn Val Leu Leu Gln Met Glu Glu Glu Glu
1               5                   10                  15

Asp Asp Asp Asp Gly Asp Ile Gly Leu Lys Cys Ser Ser Gly Val Ala
            20                  25                  30

Gln Ser Trp Leu Thr Val Ala Leu Thr Pro Arg Leu Asn
        35                  40                  45


<210> 5496
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<212> PRT
<213> Homo sapiens
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<220>
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<220>
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<220>
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<223> /note="Gene Name:
anoctamin 7; "

<220>
<221> source
<223> /note="Uniprot ID: Q6IWH7; "

<220>
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<223> /note="ENSP ID: ENSP00000274979"

<400> 5496
Met Arg Met Ala Ala Thr Ala Trp Ala Gly Leu Gln Gly Pro Pro Leu
1   5   10   15

Pro Thr Leu Cys Pro Ala Val Arg Thr Gly Leu Tyr Cys Arg Asp Gln
            20   25   30

Ala His Ala Glu Arg Trp Ala Met Thr Ser Glu Thr Ser Ser Gly Ser
        35   40   45

His Cys Ala Arg Ser Arg Met Leu Arg Arg Arg Ala Gln Glu Glu Asp
    50   55   60

Ser Thr Val Leu Ile Asp Val Ser Pro Pro Glu Ala Glu Lys Arg Gly
65   70   75   80

Ser Tyr Gly Ser Thr Ala His Ala Ser Glu Pro Gly Gly Gln Gln Ala
                85   90   95

Ala Ala Cys Arg Ala Gly Ser Pro Ala Lys Pro Arg Ile Ala Asp Phe
            100   105   110

Val Leu Val Trp Glu Glu Asp Leu Lys Leu Asp Arg Gln Gln Asp Ser
        115   120   125

Ala Ala Arg Asp Arg Thr Asp Met His Arg Thr Trp Arg Glu Thr Phe
    130   135   140

```
Leu Asp Asn Leu Arg Ala Ala Gly Leu Cys Val Asp Gln Gln Asp Val
145                 150                 155                 160

Gln Asp Gly Asn Thr Thr Val His Tyr Ala Leu Leu Ser Ala Ser Trp
                165                 170                 175

Ala Val Leu Cys Tyr Tyr Ala Glu Asp Leu Arg Leu Lys Leu Pro Leu
            180                 185                 190

Gln Glu Leu Pro Asn Gln Ala Ser Asn Trp Ser Ala Gly Leu Leu Ala
        195                 200                 205

Trp Leu Gly Ile Pro Asn Val Leu Leu Glu Val Val Pro Asp Val Pro
    210                 215                 220

Pro Glu Tyr Tyr Ser Cys Arg Phe Arg Val Asn Lys Leu Pro Arg Phe
225                 230                 235                 240

Leu Gly Ser Asp Asn Gln Asp Thr Phe Phe Thr Ser Thr Lys Arg His
                245                 250                 255

Gln Ile Leu Phe Glu Ile Leu Ala Lys Thr Pro Tyr Gly His Glu Lys
            260                 265                 270

Lys Asn Leu Leu Gly Ile His Gln Leu Leu Ala Glu Gly Val Leu Ser
        275                 280                 285

Ala Ala Phe Pro Leu His Asp Gly Pro Phe Lys Thr Pro Pro Glu Gly
    290                 295                 300

Pro Gln Ala Pro Arg Leu Asn Gln Arg Gln Val Leu Phe Gln His Trp
305                 310                 315                 320

Ala Arg Trp Gly Lys Trp Asn Lys Tyr Gln Pro Leu Asp His Val Arg
                325                 330                 335

Arg Tyr Phe Gly Glu Lys Val Ala Leu Tyr Phe Ala Trp Leu Gly Phe
            340                 345                 350

Tyr Thr Gly Trp Leu Leu Pro Ala Ala Val Val Gly Thr Leu Val Phe
        355                 360                 365
```

```
Leu Val Gly Cys Phe Leu Val Phe Ser Asp Ile Pro Thr Gln Glu Leu
    370                 375                 380

Cys Gly Ser Lys Asp Ser Phe Glu Met Cys Pro Leu Cys Leu Asp Cys
385                 390                 395                 400

Pro Phe Trp Leu Leu Ser Ser Ala Cys Ala Leu Ala Gln Ala Gly Arg
                405                 410                 415

Leu Phe Asp His Gly Gly Thr Val Phe Phe Ser Leu Phe Met Ala Leu
            420                 425                 430

Trp Ala Val Leu Leu Leu Glu Tyr Trp Lys Arg Lys Ser Ala Thr Leu
        435                 440                 445

Ala Tyr Arg Trp Asp Cys Ser Asp Tyr Glu Asp Thr Glu Glu Arg Pro
    450                 455                 460

Arg Pro Gln Phe Ala Ala Ser Ala Pro Met Thr Ala Pro Asn Pro Ile
465                 470                 475                 480

Thr Gly Glu Asp Glu Pro Tyr Phe Pro Glu Arg Ser Arg Ala Arg Arg
                485                 490                 495

Met Leu Ala Gly Ser Val Val Ile Val Val Met Val Ala Val Val Val
            500                 505                 510

Met Cys Leu Val Ser Ile Ile Leu Tyr Arg Ala Ile Met Ala Ile Val
        515                 520                 525

Val Ser Arg Ser Gly Asn Thr Leu Leu Ala Ala Trp Ala Ser Arg Ile
    530                 535                 540

Ala Ser Leu Thr Gly Ser Val Val Asn Leu Val Phe Ile Leu Ile Leu
545                 550                 555                 560

Ser Lys Ile Tyr Val Ser Leu Ala His Val Leu Thr Arg Trp Glu Met
                565                 570                 575

His Arg Thr Gln Thr Lys Phe Glu Asp Ala Phe Thr Leu Lys Val Phe
            580                 585                 590

Ile Phe Gln Phe Val Asn Phe Tyr Ser Ser Pro Val Tyr Ile Ala Phe
```

595 600 605

Phe Lys Gly Arg Phe Val Gly Tyr Pro Gly Asn Tyr His Thr Leu Phe
610 615 620

Gly Val Arg Asn Glu Glu Cys Ala Ala Gly Gly Cys Leu Ile Glu Leu
625 630 635 640

Ala Gln Glu Leu Leu Val Ile Met Val Gly Lys Gln Val Ile Asn Asn
645 650 655

Met Gln Glu Val Leu Ile Pro Lys Leu Lys Gly Trp Trp Gln Lys Phe
660 665 670

Arg Leu Arg Ser Lys Lys Arg Lys Ala Gly Ala Ser Ala Gly Ala Ser
675 680 685

Gln Gly Pro Trp Glu Asp Asp Tyr Glu Leu Val Pro Cys Glu Gly Leu
690 695 700

Phe Asp Glu Tyr Leu Glu Met Val Leu Gln Phe Gly Phe Val Thr Ile
705 710 715 720

Phe Val Ala Ala Cys Pro Leu Ala Pro Leu Phe Ala Leu Leu Asn Asn
725 730 735

Trp Val Glu Ile Arg Leu Asp Ala Arg Lys Phe Val Cys Glu Tyr Arg
740 745 750

Arg Pro Val Ala Glu Arg Ala Gln Asp Ile Gly Ile Trp Phe His Ile
755 760 765

Leu Ala Gly Leu Thr His Leu Ala Val Ile Ser Asn Ala Phe Leu Leu
770 775 780

Ala Phe Ser Ser Asp Phe Leu Pro Arg Ala Tyr Tyr Arg Trp Thr Arg
785 790 795 800

Ala His Asp Leu Arg Gly Phe Leu Asn Phe Thr Leu Ala Arg Ala Pro
805 810 815

Ser Ser Phe Ala Ala Ala His Asn Arg Thr Cys Arg Tyr Arg Ala Phe
820 825 830

```
Arg Asp Asp Asp Gly His Tyr Ser Gln Thr Tyr Trp Asn Leu Leu Ala
        835                 840                 845

Ile Arg Leu Ala Phe Val Ile Val Phe Glu His Val Val Phe Ser Val
    850                 855                 860

Gly Arg Leu Leu Asp Leu Leu Val Pro Asp Ile Pro Glu Ser Val Glu
865                 870                 875                 880

Ile Lys Val Lys Arg Glu Tyr Tyr Leu Ala Lys Gln Ala Leu Ala Glu
                885                 890                 895

Asn Glu Val Leu Phe Gly Thr Asn Gly Thr Lys Asp Glu Gln Pro Glu
            900                 905                 910

Gly Ser Glu Leu Ser Ser His Trp Thr Pro Phe Thr Val Pro Lys Ala
        915                 920                 925

Ser Gln Leu Gln Gln
    930


<210> 5497
<211> 179
<212> PRT
<213> Homo sapiens

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<220>
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<223> /note="Uniprot ID:  Q6IWH7; "

<220>
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<223> /note="ENSP ID: ENSP00000383985"

<400> 5497
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```
Met Arg Met Ala Ala Thr Ala Trp Ala Gly Leu Gln Gly Pro Pro Leu
1               5                   10                  15

Pro Thr Leu Cys Pro Ala Val Arg Thr Gly Leu Tyr Cys Arg Asp Gln
            20                  25                  30

Ala His Ala Glu Arg Trp Ala Met Thr Ser Glu Thr Ser Ser Gly Ser
        35                  40                  45

His Cys Ala Arg Ser Arg Met Leu Arg Arg Arg Ala Gln Glu Glu Asp
    50                  55                  60

Ser Thr Val Leu Ile Asp Val Ser Pro Pro Glu Ala Glu Lys Arg Gly
65                  70                  75                  80

Ser Tyr Gly Ser Thr Ala His Ala Ser Glu Pro Gly Gly Gln Gln Ala
                85                  90                  95

Ala Ala Cys Arg Ala Gly Ser Pro Ala Lys Pro Arg Ile Asp Phe Val
            100                 105                 110

Leu Val Trp Glu Glu Asp Leu Lys Leu Asp Arg Gln Gln Asp Ser Ala
        115                 120                 125

Ala Arg Asp Arg Thr Asp Met His Arg Thr Trp Arg Glu Thr Phe Leu
    130                 135                 140

Asp Asn Leu Arg Ala Ala Gly Leu Cys Val Asp Gln Val Arg Gly Gly
145                 150                 155                 160

Cys His Gly Gln Gly Pro Arg Pro Cys Ile His Ser Val Thr His Asp
                165                 170                 175

Leu Ala Ala
```

<210> 5498
<211> 883
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
anoctamin 7; "

<220>
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<223> /note="Uniprot ID: Q6IWH7; "

<220>
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<223> /note="ENSP ID: ENSP00000385418"

<400> 5498

```
Met Arg Met Ala Ala Thr Ala Trp Ala Gly Leu Gln Gly Pro Pro Leu
1               5                  10                  15

Pro Thr Leu Cys Pro Ala Val Arg Thr Gly Leu Tyr Cys Arg Asp Gln
            20                  25                  30

Ala His Ala Glu Arg Trp Ala Met Thr Ser Glu Thr Ser Ser Gly Ser
        35                  40                  45

His Cys Ala Arg Ser Arg Met Leu Arg Arg Arg Ala Gln Glu Glu Asp
    50                  55                  60

Ser Thr Val Leu Ile Asp Val Ser Pro Pro Glu Ala Glu Lys Arg Gly
65                  70                  75                  80

Ser Tyr Gly Ser Thr Ala His Ala Ser Glu Pro Gly Gly Gln Gln Ala
                85                  90                  95

Ala Ala Cys Arg Ala Gly Ser Pro Ala Lys Pro Arg Ile Asp Phe Val
            100                 105                 110

Leu Val Trp Glu Glu Asp Leu Lys Leu Asp Arg Gln Gln Asp Ser Ala
        115                 120                 125

Ala Arg Asp Arg Thr Asp Met His Arg Thr Trp Arg Glu Thr Phe Leu
    130                 135                 140

Asp Asn Leu Arg Ala Ala Gly Leu Cys Val Asp Gln Gln Asp Val Gln
145                 150                 155                 160
```

```
Asp Gly Asn Thr Thr Val His Tyr Ala Leu Leu Ser Ala Ser Trp Ala
                165                 170                 175

Val Leu Cys Tyr Tyr Ala Glu Asp Leu Arg Leu Lys Leu Pro Leu Gln
            180                 185                 190

Glu Leu Pro Asn Gln Ala Ser Asn Trp Ser Ala Gly Leu Leu Ala Trp
        195                 200                 205

Leu Gly Ile Pro Asn Val Leu Leu Glu Val Val Pro Asp Val Pro Pro
    210                 215                 220

Glu Tyr Tyr Ser Cys Arg Phe Arg Val Asn Lys Leu Pro Arg Phe Leu
225                 230                 235                 240

Gly Ser Asp Asn Gln Asp Thr Phe Phe Thr Ser Thr Lys Arg His Gln
                245                 250                 255

Ile Leu Phe Glu Ile Leu Ala Lys Thr Pro Tyr Gly His Glu Lys Lys
            260                 265                 270

Asn Leu Leu Gly Ile His Gln Leu Leu Ala Glu Gly Val Leu Ser Ala
        275                 280                 285

Ala Phe Pro Leu His Asp Gly Pro Phe Lys Thr Pro Pro Glu Gly Pro
    290                 295                 300

Gln Ala Pro Arg Leu Asn Gln Arg Gln Val Leu Phe Gln His Trp Ala
305                 310                 315                 320

Arg Trp Gly Lys Trp Asn Lys Tyr Gln Pro Leu Asp His Val Arg Arg
                325                 330                 335

Tyr Phe Gly Glu Lys Val Ala Leu Tyr Phe Ala Trp Leu Gly Phe Tyr
            340                 345                 350

Thr Gly Trp Leu Leu Pro Ala Ala Val Val Gly Thr Leu Val Phe Leu
        355                 360                 365

Val Gly Cys Phe Leu Val Phe Ser Asp Ile Pro Thr Gln Glu Leu Cys
    370                 375                 380
```

```
Gly Ser Lys Asp Ser Phe Glu Met Cys Pro Leu Cys Leu Asp Cys Pro
385                 390                 395                 400

Phe Trp Leu Leu Ser Ser Ala Cys Ala Leu Ala Gln Ala Gly Arg Leu
                405                 410                 415

Phe Asp His Gly Gly Thr Val Phe Phe Ser Leu Phe Met Ala Leu Trp
            420                 425                 430

Ala Val Leu Leu Leu Glu Tyr Trp Lys Arg Lys Ser Ala Thr Leu Ala
        435                 440                 445

Tyr Arg Trp Asp Cys Ser Asp Tyr Glu Asp Thr Glu Glu Arg Pro Arg
    450                 455                 460

Pro Gln Phe Ala Ala Ser Ala Pro Met Thr Ala Pro Asn Pro Ile Thr
465                 470                 475                 480

Gly Glu Asp Glu Pro Tyr Phe Pro Glu Arg Ser Arg Ala Arg Arg Met
                485                 490                 495

Leu Ala Gly Ser Val Val Ile Val Val Met Val Ala Val Val Val Met
            500                 505                 510

Cys Leu Val Ser Ile Ile Leu Tyr Arg Ala Ile Met Ala Ile Val Val
        515                 520                 525

Ser Arg Ser Gly Asn Thr Leu Leu Ala Ala Trp Ala Ser Arg Ile Ala
    530                 535                 540

Ser Leu Thr Gly Ser Val Val Asn Leu Val Phe Ile Leu Ile Leu Ser
545                 550                 555                 560

Lys Ile Tyr Val Ser Leu Ala His Val Leu Thr Arg Trp Glu Met His
                565                 570                 575

Arg Thr Gln Thr Lys Phe Glu Asp Ala Phe Thr Leu Lys Val Phe Ile
            580                 585                 590

Phe Gln Phe Val Asn Phe Tyr Ser Ser Pro Val Tyr Ile Ala Phe Phe
        595                 600                 605

Lys Gly Arg Phe Val Gly Tyr Pro Gly Asn Tyr His Thr Leu Phe Gly
```

610 615 620

Val Arg Asn Glu Glu Cys Ala Ala Gly Gly Cys Leu Ile Glu Leu Ala
625 630 635 640

Gln Glu Leu Leu Val Ile Met Val Gly Lys Gln Val Ile Asn Asn Met
645 650 655

Gln Glu Val Leu Ile Pro Lys Leu Lys Gly Trp Trp Gln Lys Phe Arg
660 665 670

Leu Arg Ser Lys Lys Arg Lys Ala Gly Ala Ser Ala Gly Ala Ser Gln
675 680 685

Gly Pro Trp Glu Asp Asp Tyr Glu Leu Val Pro Cys Glu Gly Leu Phe
690 695 700

Asp Glu Tyr Leu Glu Met Val Leu Gln Phe Gly Phe Val Thr Ile Phe
705 710 715 720

Val Ala Ala Cys Pro Leu Ala Pro Leu Phe Ala Leu Leu Asn Asn Trp
725 730 735

Val Glu Ile Arg Leu Asp Ala Arg Lys Phe Val Cys Glu Tyr Arg Arg
740 745 750

Pro Val Ala Glu Arg Ala Gln Asp Ile Gly Ile Trp Phe His Ile Leu
755 760 765

Ala Gly Leu Thr His Leu Ala Val Ile Ser Asn Ala Phe Leu Leu Ala
770 775 780

Phe Ser Ser Asp Phe Leu Pro Arg Ala Tyr Tyr Arg Trp Thr Arg Ala
785 790 795 800

His Asp Leu Arg Gly Phe Leu Asn Phe Thr Leu Ala Arg Ala Pro Ser
805 810 815

Ser Phe Ala Ala Ala His Asn Arg Thr Cys Arg Tyr Arg Ala Phe Arg
820 825 830

Asp Asp Asp Gly His Tyr Ser Gln Thr Tyr Trp Asn Leu Leu Ala Ile
835 840 845

```
Arg Leu Ala Phe Val Ile Val Phe Glu Val Ala Glu Ala Pro Ala Gly
    850                 855                 860

Ser Pro Ile His Gly Met Arg Pro Arg Pro Cys Ala Leu Pro Asn Ser
865                 870                 875                 880

Ser Thr Trp
```

<210> 5499
<211> 185
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1190; "

<220>
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<220>
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<223> /note="Gene Name:
anoctamin 7; "

<220>
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<223> /note="ENSP ID: ENSP00000403625"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5499

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Xaa Ala Gly Gly Ala Phe Arg Gly Leu Arg Ala Asp Gly Gly Gly Glu
1               5                   10                  15

Pro Gly Arg Asp Pro Leu Pro Ala Val Leu Gln Phe Gly Phe Val Thr
            20                  25                  30

Ile Phe Val Ala Ala Cys Pro Leu Ala Pro Leu Phe Ala Leu Leu Asn
        35                  40                  45

Asn Trp Val Glu Ile Arg Leu Asp Ala Arg Lys Phe Val Cys Glu Tyr
    50                  55                  60
```

```
Arg Arg Pro Val Ala Glu Arg Ala Gln Asp Ile Gly Ile Trp Phe His
65                  70                  75                  80

Ile Leu Ala Gly Leu Thr His Leu Ala Val Ile Ser Asn Ala Phe Leu
                85                  90                  95

Leu Ala Phe Ser Ser Asp Phe Leu Pro Arg Ala Tyr Tyr Arg Trp Thr
            100                 105                 110

Arg Ala His Asp Leu Arg Gly Phe Leu Asn Phe Thr Leu Ala Arg Ala
        115                 120                 125

Pro Ser Ser Phe Ala Ala Ala His Asn Arg Thr Cys Arg Tyr Arg Ala
    130                 135                 140

Phe Arg Asp Asp Asp Gly His Tyr Ser Gln Thr Tyr Trp Asn Leu Leu
145                 150                 155                 160

Ala Ile Arg Leu Ala Phe Val Ile Val Phe Glu His Val Val Phe Ser
                165                 170                 175

Val Gly Arg Leu Leu Asp Leu Leu Val
            180                 185


<210> 5500
<211> 1232
<212> PRT
<213> Homo sapiens

<220>
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<220>
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      anoctamin 8; "

<220>
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<223> /note="Uniprot ID:  Q9HCE9; "

<220>
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<221> source
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<400> 5500
Met Ala Glu Ala Ala Ser Gly Ala Gly Gly Thr Ser Leu Glu Gly Glu
1 5 10 15

Arg Gly Lys Arg Pro Pro Pro Glu Gly Glu Pro Ala Ala Pro Ala Ser
20 25 30

Gly Val Leu Asp Lys Leu Phe Gly Lys Arg Leu Leu Gln Ala Gly Arg
35 40 45

Tyr Leu Val Ser His Lys Ala Trp Met Lys Thr Val Pro Thr Glu Asn
50 55 60

Cys Asp Val Leu Met Thr Phe Pro Asp Thr Thr Asp Asp His Thr Leu
65 70 75 80

Leu Trp Leu Leu Asn His Ile Arg Val Gly Ile Pro Glu Leu Ile Val
85 90 95

Gln Val Arg His His Arg His Thr Arg Ala Tyr Ala Phe Phe Val Thr
100 105 110

Ala Thr Tyr Glu Ser Leu Leu Arg Gly Ala Asp Glu Leu Gly Leu Arg
115 120 125

Lys Ala Val Lys Ala Glu Phe Gly Gly Gly Thr Arg Gly Phe Ser Cys
130 135 140

Glu Glu Asp Phe Ile Tyr Glu Asn Val Glu Ser Glu Leu Arg Phe Phe
145 150 155 160

Thr Ser Gln Glu Arg Gln Ser Ile Ile Arg Phe Trp Leu Gln Asn Leu
165 170 175

Arg Ala Lys Gln Gly Glu Ala Leu His Asn Val Arg Phe Leu Glu Asp
180 185 190

Gln Pro Ile Ile Pro Glu Leu Ala Ala Arg Gly Ile Ile Gln Gln Val
195 200 205

Phe Pro Val His Glu Gln Arg Ile Leu Asn Arg Leu Met Lys Ser Trp

```
    210                 215                 220

Val Gln Ala Val Cys Glu Asn Gln Pro Leu Asp Asp Ile Cys Asp Tyr
225                 230                 235                 240

Phe Gly Val Lys Ile Ala Met Tyr Phe Ala Trp Leu Gly Phe Tyr Thr
                245                 250                 255

Ser Ala Met Val Tyr Pro Ala Val Phe Gly Ser Val Leu Tyr Thr Phe
            260                 265                 270

Thr Glu Ala Asp Gln Thr Ser Arg Asp Val Ser Cys Val Val Phe Ala
        275                 280                 285

Leu Phe Asn Val Ile Trp Ser Thr Leu Phe Leu Glu Glu Trp Lys Arg
    290                 295                 300

Arg Gly Ala Glu Leu Ala Tyr Lys Trp Gly Thr Leu Asp Ser Pro Gly
305                 310                 315                 320

Glu Ala Val Glu Glu Pro Arg Pro Gln Phe Arg Gly Val Arg Arg Ile
                325                 330                 335

Ser Pro Ile Thr Arg Ala Glu Glu Phe Tyr Tyr Pro Pro Trp Lys Arg
            340                 345                 350

Leu Leu Phe Gln Leu Leu Val Ser Leu Pro Leu Cys Leu Ala Cys Leu
        355                 360                 365

Val Cys Val Phe Leu Leu Met Leu Gly Cys Phe Gln Leu Gln Glu Leu
    370                 375                 380

Val Leu Ser Val Lys Gly Leu Pro Arg Leu Ala Arg Phe Leu Pro Lys
385                 390                 395                 400

Val Met Leu Ala Leu Leu Val Ser Val Ser Ala Glu Gly Tyr Lys Lys
                405                 410                 415

Leu Ala Ile Trp Leu Asn Asp Met Glu Asn Tyr Arg Leu Glu Ser Ala
            420                 425                 430

Tyr Glu Lys His Leu Ile Ile Lys Val Val Leu Phe Gln Phe Val Asn
        435                 440                 445
```

```
Ser Tyr Leu Ser Leu Phe Tyr Ile Gly Phe Tyr Leu Lys Asp Met Glu
    450                 455                 460

Arg Leu Lys Glu Met Leu Ala Thr Leu Leu Ile Thr Arg Gln Phe Leu
465                 470                 475                 480

Gln Asn Val Arg Glu Val Leu Gln Pro His Leu Tyr Arg Arg Leu Gly
                485                 490                 495

Arg Gly Glu Leu Gly Leu Arg Ala Val Trp Glu Leu Ala Arg Ala Leu
            500                 505                 510

Leu Gly Leu Leu Ser Leu Arg Arg Pro Ala Pro Arg Arg Leu Glu Pro
        515                 520                 525

Gln Ala Asp Glu Gly Gly Gly Gly Gly Ser Gly Gly Gly Gly Arg Arg
    530                 535                 540

Cys Leu Ser Gly Gly Cys Gly Ala Pro Glu Glu Glu Glu Glu Ala Ala
545                 550                 555                 560

Leu Val Glu Arg Arg Arg Ala Gly Glu Gly Gly Glu Glu Gly Asp Gly
                565                 570                 575

Pro Pro Gly Gly Lys Glu Glu Asp Glu Asp Asp Glu Glu Glu Glu Asp
            580                 585                 590

Glu Glu Glu Glu Glu Asp Glu Glu Glu Gly Glu Glu Gly Gly Leu Leu
        595                 600                 605

Asp Cys Gly Leu Arg Leu Lys Lys Val Ser Phe Ala Glu Arg Gly Ala
    610                 615                 620

Gly Arg Arg Arg Pro Gly Pro Ser Pro Glu Ala Leu Leu Glu Glu Gly
625                 630                 635                 640

Ser Pro Thr Met Val Glu Lys Gly Leu Glu Pro Gly Val Phe Thr Leu
                645                 650                 655

Ala Glu Glu Asp Asp Glu Ala Glu Gly Ala Pro Gly Ser Pro Glu Arg
            660                 665                 670
```

```
Glu Pro Pro Ala Ile Leu Phe Arg Arg Ala Gly Gly Glu Gly Arg Asp
        675                 680                 685

Gln Gly Pro Asp Gly Gly Pro Asp Pro Glu Pro Gly Ser Asn Ser Asp
    690                 695                 700

Ser Thr Arg Arg Gln Arg Arg Gln Asn Arg Ser Ser Trp Ile Asp Pro
705                 710                 715                 720

Pro Glu Glu Glu His Ser Pro Gln Leu Thr Gln Ala Glu Leu Glu Ser
                725                 730                 735

Cys Met Lys Lys Tyr Glu Asp Thr Phe Gln Asp Tyr Gln Glu Met Phe
            740                 745                 750

Val Gln Phe Gly Tyr Val Val Leu Phe Ser Ser Ala Phe Pro Leu Ala
        755                 760                 765

Ala Leu Cys Ala Leu Val Asn Asn Leu Ile Glu Ile Arg Ser Asp Ala
    770                 775                 780

Phe Lys Leu Cys Thr Gly Leu Gln Arg Pro Phe Gly Gln Arg Val Glu
785                 790                 795                 800

Ser Ile Gly Gln Trp Gln Lys Val Met Glu Ala Met Gly Val Leu Ala
                805                 810                 815

Ile Val Val Asn Cys Tyr Leu Ile Gly Gln Cys Gly Gln Leu Gln Arg
            820                 825                 830

Leu Phe Pro Trp Leu Ser Pro Glu Ala Ala Ile Val Ser Val Val Val
        835                 840                 845

Leu Glu His Phe Ala Leu Leu Leu Lys Tyr Leu Ile His Val Ala Ile
    850                 855                 860

Pro Asp Ile Pro Gly Trp Val Ala Glu Glu Met Ala Lys Leu Glu Tyr
865                 870                 875                 880

Gln Arg Arg Glu Ala Phe Lys Arg His Glu Arg Gln Ala Gln His Arg
                885                 890                 895
```

```
Tyr Gln Gln Gln Gln Arg Arg Arg Arg Glu Glu Glu Glu Arg Gln Arg
            900                 905                 910

His Ala Glu His His Ala Arg Arg Glu His Asp Ser Gly Gly Arg Glu
        915                 920                 925

Glu Ala Arg Ala Glu Gly Ser Gly Leu Asp Pro Ala Thr Ser Ser Glu
    930                 935                 940

Lys Ala Ser Ala Lys Ala Lys Gly Ser Thr Ala Gly Gly His Gly Pro
945                 950                 955                 960

Glu Arg Pro Lys Arg Pro Gly Ser Leu Leu Ala Pro Asn Asn Val Met
                965                 970                 975

Lys Leu Lys Gln Ile Ile Pro Leu Gln Gly Lys Phe Leu Ser Ser Gly
            980                 985                 990

Ala Thr Ser Ser Leu Ala Ala Ala  Gly Ala Gly Ala Thr  Thr Arg
Pro
        995                 1000                1005

Pro Pro  Ala Gln Ser Pro Thr  Gly Ser Asp Thr Arg  Leu Pro Ala
    1010                1015                1020

Phe Leu  Ser Phe Lys Phe Leu  Lys Ser Pro Glu Thr  Arg Arg Asp
    1025                1030                1035

Ser Glu  Arg Ser His Ser Pro  Pro Lys Ala Phe His  Ala Gly Lys
    1040                1045                1050

Leu Phe  Pro Phe Gly Gly Thr  Arg Ala Glu Pro Gly  Ser Asn Gly
    1055                1060                1065

Ala Gly  Gly Gln Ala Arg Pro  Asp Gly Thr Pro Ser  Ser Gly Ser
    1070                1075                1080

Ser Arg  Val Gln Arg Ser Gly  Pro Val Asp Glu Ala  Leu Ala Glu
    1085                1090                1095

Glu Leu  Glu Ala Pro Arg Pro  Glu Glu Glu Gly Ser  Gly Thr Ala
    1100                1105                1110
```

```
Leu Ala  Pro Val Gly Ala Pro  Ala Leu Arg Thr Arg  Arg Ser Arg
    1115                1120                1125

Ser Pro  Ala Pro Pro Pro Pro  Met Pro Leu Pro Arg  Pro Pro Thr
    1130                1135                1140

Pro Pro  Ala Gly Cys Trp Gln  Trp Asp Gly Pro Trp  Gly Cys Gly
    1145                1150                1155

Gly Glu  Gly Ala Ala Pro Arg  Gln Ala Leu Ala Ala  Ala Glu Cys
    1160                1165                1170

Pro Pro  Cys Ala Met Ala Gly  Pro Pro Pro Ala Pro  Gln Pro Leu
    1175                1180                1185

Pro Gly  Asp Ala Ser Phe Tyr  Ser Leu Pro Pro Pro  Pro Leu Pro
    1190                1195                1200

Pro Thr  Ser Asp Pro Leu Glu  Thr Pro Ala Pro Ser  Pro Ser Pro
    1205                1210                1215

Ser Pro  Ser Pro Gln Ala Val  Cys Trp Pro Ser Gly  Trp His
    1220                1225                1230
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<210> 5501
<211> 581
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1191; "

<220>
<221> source
<223> /note="Gene Symbol: ANO8; "

<220>
<221> source
<223> /note="Gene Name:
anoctamin 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000469751"

<400> 5501

```
Met Ala Glu Ala Ala Ser Gly Ala Gly Gly Thr Ser Leu Glu Gly Glu
1               5                  10                  15
```

```
Arg Gly Lys Arg Pro Pro Pro Glu Gly Glu Pro Ala Ala Pro Ala Ser
            20                  25                  30

Gly Val Leu Asp Lys Leu Phe Gly Lys Arg Leu Leu Gln Ala Gly Arg
        35                  40                  45

Tyr Leu Val Ser His Lys Ala Trp Met Lys Thr Val Pro Thr Glu Asn
    50                  55                  60

Cys Asp Val Leu Met Thr Phe Pro Asp Thr Thr Asp Asp His Thr Leu
65                  70                  75                  80

Leu Trp Leu Leu Asn His Ile Arg Val Gly Ile Pro Glu Leu Ile Val
                85                  90                  95

Gln Val Arg His His Arg His Thr Arg Ala Tyr Ala Phe Phe Val Thr
            100                 105                 110

Ala Thr Tyr Glu Ser Leu Leu Arg Gly Ala Asp Glu Leu Gly Leu Arg
        115                 120                 125

Lys Ala Val Lys Ala Glu Phe Gly Gly Gly Thr Arg Gly Phe Ser Cys
    130                 135                 140

Glu Glu Asp Phe Ile Tyr Glu Asn Val Glu Ser Glu Leu Arg Phe Phe
145                 150                 155                 160

Thr Ser Gln Glu Arg Gln Ser Ile Ile Arg Phe Trp Leu Gln Asn Leu
                165                 170                 175

Arg Ala Lys Gln Gly Glu Ala Leu His Asn Val Arg Phe Leu Glu Asp
            180                 185                 190

Gln Pro Ile Ile Pro Glu Leu Ala Ala Arg Gly Ile Ile Gln Gln Val
        195                 200                 205

Phe Pro Val His Glu Gln Arg Ile Leu Asn Arg Leu Met Lys Ser Trp
    210                 215                 220

Val Gln Ala Val Cys Glu Asn Gln Pro Leu Asp Asp Ile Cys Asp Tyr
225                 230                 235                 240
```

```
Phe Gly Val Lys Ile Ala Met Tyr Phe Ala Trp Leu Gly Phe Tyr Thr
                245                 250                 255

Ser Ala Met Val Tyr Pro Ala Val Phe Gly Ser Val Leu Tyr Thr Phe
            260                 265                 270

Thr Glu Ala Asp Gln Thr Ser Arg Asp Val Ser Cys Val Val Phe Ala
        275                 280                 285

Leu Phe Asn Val Ile Trp Ser Thr Leu Phe Leu Glu Glu Trp Lys Arg
    290                 295                 300

Arg Gly Ala Glu Leu Ala Tyr Lys Trp Gly Thr Leu Asp Ser Pro Gly
305                 310                 315                 320

Glu Ala Val Glu Glu Pro Arg Pro Gln Phe Arg Gly Val Arg Arg Ile
                325                 330                 335

Ser Pro Ile Thr Arg Ala Glu Glu Phe Tyr Tyr Pro Pro Trp Lys Arg
            340                 345                 350

Leu Leu Phe Gln Leu Leu Val Ser Leu Pro Leu Cys Leu Ala Cys Leu
        355                 360                 365

Val Cys Val Phe Leu Leu Met Leu Gly Cys Phe Gln Leu Gln Glu Leu
    370                 375                 380

Val Leu Ser Val Lys Gly Leu Pro Arg Leu Ala Arg Phe Leu Pro Lys
385                 390                 395                 400

Val Met Leu Ala Leu Leu Val Ser Val Ser Ala Glu Gly Tyr Lys Lys
                405                 410                 415

Leu Ala Ile Trp Leu Asn Asp Met Glu Asn Tyr Arg Leu Glu Ser Ala
            420                 425                 430

Tyr Glu Lys His Leu Ile Ile Lys Val Val Leu Phe Gln Phe Val Asn
        435                 440                 445

Ser Tyr Leu Ser Leu Phe Tyr Ile Gly Phe Tyr Leu Lys Asp Met Glu
    450                 455                 460
```

```
Arg Leu Lys Glu Leu Leu Leu Val Leu Ser Leu Ser Gln Ser Leu Glu
465                 470                 475                 480

Arg Gln Leu Gln Ala Val Leu Val Pro Leu Ala Ala Leu Arg Phe Arg
                485                 490                 495

Leu Leu Leu Leu Ser Leu Arg Gly Leu Leu Leu Ala Ala Arg Ala Lys
            500                 505                 510

Val Arg Ala Gly Gly Glu Pro Val Gly Pro Arg Arg Gly Gly Gln Arg
        515                 520                 525

Gly Cys Ala Gly Gly Leu Ala Arg Arg Ala Glu Gly Ala Cys Ala Glu
    530                 535                 540

Gly Ile Trp Gly Arg Gly Arg Pro Ala Ser Arg Cys Arg Arg Leu Gly
545                 550                 555                 560

Ala His Ala Ala Gln Cys Thr Asp Arg Ala Arg Gly Gly Val Glu Thr
                565                 570                 575

Arg Trp Ala Cys Pro
            580
```

<210> 5502
<211> 581
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1191; "

<220>
<221> source
<223> /note="Gene Symbol: ANO8; "

<220>
<221> source
<223> /note="Gene Name:
anoctamin 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000486865"

<400> 5502

```
Met Ala Glu Ala Ala Ser Gly Ala Gly Gly Thr Ser Leu Glu Gly Glu
1               5                   10                  15
```

```
Arg Gly Lys Arg Pro Pro Pro Glu Gly Glu Pro Ala Ala Pro Ala Ser
            20                  25                  30

Gly Val Leu Asp Lys Leu Phe Gly Lys Arg Leu Leu Gln Ala Gly Arg
        35                  40                  45

Tyr Leu Val Ser His Lys Ala Trp Met Lys Thr Val Pro Thr Glu Asn
    50                  55                  60

Cys Asp Val Leu Met Thr Phe Pro Asp Thr Thr Asp Asp His Thr Leu
65                  70                  75                  80

Leu Trp Leu Leu Asn His Ile Arg Val Gly Ile Pro Glu Leu Ile Val
                85                  90                  95

Gln Val Arg His His Arg His Thr Arg Ala Tyr Ala Phe Phe Val Thr
            100                 105                 110

Ala Thr Tyr Glu Ser Leu Leu Arg Gly Ala Asp Glu Leu Gly Leu Arg
        115                 120                 125

Lys Ala Val Lys Ala Glu Phe Gly Gly Gly Thr Arg Gly Phe Ser Cys
    130                 135                 140

Glu Glu Asp Phe Ile Tyr Glu Asn Val Glu Ser Glu Leu Arg Phe Phe
145                 150                 155                 160

Thr Ser Gln Glu Arg Gln Ser Ile Ile Arg Phe Trp Leu Gln Asn Leu
                165                 170                 175

Arg Ala Lys Gln Gly Glu Ala Leu His Asn Val Arg Phe Leu Glu Asp
            180                 185                 190

Gln Pro Ile Ile Pro Glu Leu Ala Ala Arg Gly Ile Ile Gln Gln Val
        195                 200                 205

Phe Pro Val His Glu Gln Arg Ile Leu Asn Arg Leu Met Lys Ser Trp
    210                 215                 220

Val Gln Ala Val Cys Glu Asn Gln Pro Leu Asp Asp Ile Cys Asp Tyr
225                 230                 235                 240
```

```
Phe Gly Val Lys Ile Ala Met Tyr Phe Ala Trp Leu Gly Phe Tyr Thr
                245                 250                 255

Ser Ala Met Val Tyr Pro Ala Val Phe Gly Ser Val Leu Tyr Thr Phe
            260                 265                 270

Thr Glu Ala Asp Gln Thr Ser Arg Asp Val Ser Cys Val Val Phe Ala
        275                 280                 285

Leu Phe Asn Val Ile Trp Ser Thr Leu Phe Leu Glu Glu Trp Lys Arg
    290                 295                 300

Arg Gly Ala Glu Leu Ala Tyr Lys Trp Gly Thr Leu Asp Ser Pro Gly
305                 310                 315                 320

Glu Ala Val Glu Glu Pro Arg Pro Gln Phe Arg Gly Val Arg Arg Ile
                325                 330                 335

Ser Pro Ile Thr Arg Ala Glu Glu Phe Tyr Tyr Pro Pro Trp Lys Arg
            340                 345                 350

Leu Leu Phe Gln Leu Leu Val Ser Leu Pro Leu Cys Leu Ala Cys Leu
        355                 360                 365

Val Cys Val Phe Leu Leu Met Leu Gly Cys Phe Gln Leu Gln Glu Leu
    370                 375                 380

Val Leu Ser Val Lys Gly Leu Pro Arg Leu Ala Arg Phe Leu Pro Lys
385                 390                 395                 400

Val Met Leu Ala Leu Leu Val Ser Val Ser Ala Glu Gly Tyr Lys Lys
                405                 410                 415

Leu Ala Ile Trp Leu Asn Asp Met Glu Asn Tyr Arg Leu Glu Ser Ala
            420                 425                 430

Tyr Glu Lys His Leu Ile Ile Lys Val Val Leu Phe Gln Phe Val Asn
        435                 440                 445

Ser Tyr Leu Ser Leu Phe Tyr Ile Gly Phe Tyr Leu Lys Asp Met Glu
    450                 455                 460
```

```
Arg Leu Lys Glu Leu Leu Leu Val Leu Ser Leu Ser Gln Ser Leu Glu
465                 470                 475                 480

Arg Gln Leu Gln Ala Val Leu Val Pro Leu Ala Ala Leu Arg Phe Arg
                485                 490                 495

Leu Leu Leu Leu Ser Leu Arg Gly Leu Leu Leu Ala Ala Arg Ala Lys
            500                 505                 510

Val Arg Ala Gly Gly Glu Pro Val Gly Pro Arg Arg Gly Gly Gln Arg
        515                 520                 525

Gly Cys Ala Gly Gly Leu Ala Arg Arg Ala Glu Gly Ala Cys Ala Glu
    530                 535                 540

Gly Ile Trp Gly Arg Gly Arg Pro Ala Ser Arg Cys Arg Arg Leu Gly
545                 550                 555                 560

Ala His Ala Ala Gln Cys Thr Asp Arg Ala Arg Gly Gly Val Glu Thr
                565                 570                 575

Arg Trp Ala Cys Pro
            580
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<210> 5503
<211> 782
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1192; "

<220>
<221> source
<223> /note="Gene Symbol: ANO9; "

<220>
<221> source
<223> /note="Gene Name:
anoctamin 9; "

<220>
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<223> /note="Uniprot ID: A1A5B4; "

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<400> 5503
Met Gln Gly Glu Glu Ser Leu Arg Ile Leu Val Glu Pro Glu Gly Asp
1 5 10 15

Ser Phe Pro Leu Met Glu Ile Ser Thr Cys Glu Thr Glu Ala Ser Glu
20 25 30

Gln Trp Asp Tyr Val Leu Val Ala Gln Arg His Thr Gln Arg Asp Pro
35 40 45

Arg Gln Ala Arg Gln Gln Gln Phe Leu Glu Glu Leu Arg Arg Lys Gly
50 55 60

Phe His Ile Lys Val Ile Arg Asp Gln Lys Gln Val Phe Phe Gly Ile
65 70 75 80

Arg Ala Asp Asn Ser Val Phe Gly Leu Tyr Arg Thr Leu Leu Leu Glu
85 90 95

Pro Glu Gly Pro Ala Pro His Ala Glu Leu Ala Ala Pro Thr Thr Ile
100 105 110

Pro Val Thr Thr Ser Leu Arg Ile Arg Ile Val Asn Phe Val Val Met
115 120 125

Asn Asn Lys Thr Ser Ala Gly Glu Thr Phe Glu Asp Leu Met Lys Asp
130 135 140

Gly Val Phe Glu Ala Arg Phe Pro Leu His Lys Gly Glu Gly Arg Leu
145 150 155 160

Lys Lys Thr Trp Ala Arg Trp Arg His Met Phe Arg Glu Gln Pro Val
165 170 175

Asp Glu Ile Arg Asn Tyr Phe Gly Glu Lys Val Ala Leu Tyr Phe Val
180 185 190

Trp Leu Gly Trp Tyr Thr Tyr Met Leu Val Pro Ala Ala Leu Thr Gly
195 200 205

Leu Leu Val Phe Leu Ser Gly Phe Ser Leu Phe Glu Ala Ser Gln Ile
210 215 220

```
Ser Lys Glu Ile Cys Glu Ala His Asp Ile Leu Met Cys Pro Leu Gly
225                 230                 235                 240

Asp His Ser Arg Arg Tyr Gln Arg Leu Ser Glu Thr Cys Thr Phe Ala
                245                 250                 255

Lys Leu Thr His Leu Phe Asp Asn Asp Gly Thr Val Val Phe Ala Ile
            260                 265                 270

Phe Met Ala Leu Trp Ala Thr Val Phe Leu Glu Ile Trp Lys Arg Gln
        275                 280                 285

Arg Ala Arg Val Val Leu His Trp Asp Leu Tyr Val Trp Asp Glu Glu
    290                 295                 300

Gln Glu Glu Met Ala Leu Gln Leu Ile Asn Cys Pro Asp Tyr Lys Leu
305                 310                 315                 320

Arg Pro Tyr Gln His Ser Tyr Leu Arg Ser Thr Val Ile Leu Val Leu
                325                 330                 335

Thr Leu Leu Met Ile Cys Leu Met Ile Gly Met Ala His Val Leu Val
            340                 345                 350

Val Tyr Arg Val Leu Ala Ser Ala Leu Phe Ser Ser Ser Ala Val Pro
        355                 360                 365

Phe Leu Glu Glu Gln Val Thr Thr Ala Val Val Val Thr Gly Ala Leu
    370                 375                 380

Val His Tyr Val Thr Ile Ile Ile Met Thr Lys Ile Asn Arg Cys Val
385                 390                 395                 400

Ala Leu Lys Leu Cys Asp Phe Glu Met Pro Arg Thr Phe Ser Glu Arg
                405                 410                 415

Glu Ser Arg Phe Thr Ile Arg Phe Phe Thr Leu Gln Phe Phe Thr His
            420                 425                 430

Phe Ser Ser Leu Ile Tyr Ile Ala Phe Ile Leu Gly Arg Ile Asn Gly
        435                 440                 445
```

```
His Pro Gly Lys Ser Thr Arg Leu Ala Gly Leu Trp Lys Leu Glu Glu
     450                 455                 460

Cys His Ala Ser Gly Cys Met Met Asp Leu Phe Val Gln Met Ala Ile
465                 470                 475                 480

Ile Met Gly Leu Lys Gln Thr Leu Ser Asn Cys Val Glu Tyr Leu Val
                 485                 490                 495

Pro Trp Val Thr His Lys Cys Arg Ser Leu Arg Ala Ser Glu Ser Gly
             500                 505                 510

His Leu Pro Arg Asp Pro Glu Leu Arg Asp Trp Arg Arg Asn Tyr Leu
         515                 520                 525

Leu Asn Pro Val Asn Thr Phe Ser Leu Phe Asp Glu Phe Met Glu Met
     530                 535                 540

Met Ile Gln Tyr Gly Phe Thr Thr Ile Phe Val Ala Ala Phe Pro Leu
545                 550                 555                 560

Ala Pro Leu Leu Ala Leu Phe Ser Asn Leu Val Glu Ile Arg Leu Asp
                 565                 570                 575

Ala Ile Lys Met Val Trp Leu Gln Arg Arg Leu Val Pro Arg Lys Ala
             580                 585                 590

Lys Asp Ile Gly Thr Trp Leu Gln Val Leu Glu Thr Ile Gly Val Leu
         595                 600                 605

Ala Val Ile Ala Asn Gly Met Val Ile Ala Phe Thr Ser Glu Phe Ile
     610                 615                 620

Pro Arg Val Val Tyr Lys Tyr Arg Tyr Ser Pro Cys Leu Lys Glu Gly
625                 630                 635                 640

Asn Ser Thr Val Asp Cys Leu Lys Gly Tyr Val Asn His Ser Leu Ser
                 645                 650                 655

Val Phe His Thr Lys Asp Phe Gln Asp Pro Asp Gly Ile Glu Gly Ser
             660                 665                 670

Glu Asn Val Thr Leu Cys Arg Tyr Arg Asp Tyr Arg Asn Pro Pro Asp
```

675 680 685

Tyr Asn Phe Ser Glu Gln Phe Trp Phe Leu Leu Ala Ile Arg Leu Ala
690 695 700

Phe Val Ile Leu Phe Glu His Val Ala Leu Cys Ile Lys Leu Ile Ala
705 710 715 720

Ala Trp Phe Val Pro Asp Ile Pro Gln Ser Val Lys Asn Lys Val Leu
725 730 735

Glu Val Lys Tyr Gln Arg Leu Arg Glu Lys Met Trp His Gly Arg Gln
740 745 750

Arg Leu Gly Gly Val Gly Ala Gly Ser Arg Pro Pro Met Pro Ala His
755 760 765

Pro Thr Pro Ala Ser Ile Phe Ser Ala Arg Ser Thr Asp Val
770 775 780

<210> 5504
<211> 379
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1193; "

<220>
<221> source
<223> /note="Gene Symbol: ANHX; "

<220>
<221> source
<223> /note="Gene Name:
anomalous homeobox; "

<220>
<221> source
<223> /note="Uniprot ID: E9PGG2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000409950"

<400> 5504
Met Gln Ser Phe Leu Thr Leu Leu Lys Glu His Glu Asp Thr Cys Ala
1 5 10 15

```
Pro Pro Ala Glu Leu Val Thr Leu Ala Gly Arg Leu Cys Arg Asp Phe
            20                  25                  30

Gln Asp Asp Leu Ala Gln Leu Gln Pro Leu Val Thr Ala Ile Leu Asp
        35                  40                  45

Ser Gln Leu Arg Leu His Leu Leu Asp Asn Ala Asp Val Ala Leu Ala
    50                  55                  60

Cys Ala Arg Val Leu Asp Gln Gln Glu Gln Gln Gln Ala Ala Cys Arg
65                  70                  75                  80

Leu Leu Glu Gly Cys Gln Val Pro Gly Gly Ser Gln Glu Leu Val Gln
                85                  90                  95

Leu Trp Asn Asp Ile His Tyr Arg Leu Val Met Arg Arg Leu Gly Val
            100                 105                 110

Ala Ala Leu Thr Pro Val Gln Lys Phe Arg Cys Arg Lys Arg Asn Pro
        115                 120                 125

Pro Pro Pro Ser Leu Cys Pro Glu Gly Leu Lys Ser Arg Asn Phe Pro
    130                 135                 140

Arg Glu Val Arg Glu Lys Leu His Asn Phe Ala Val Gly Val Asn Thr
145                 150                 155                 160

Asn Pro Ser Lys Ala Glu Arg Glu Asn Leu Ala Leu Glu Thr Ser Leu
                165                 170                 175

Thr Pro Glu Gln Val Tyr Asn Trp Phe Ala Asn Tyr Arg Arg Arg Gln
            180                 185                 190

Arg Ala Leu Pro Gln His Met Lys Pro Ala Gln Gln Ala Thr Ala Glu
        195                 200                 205

Asp Pro Gly Ala Arg Glu Arg Gly Pro Asp Leu Leu Gln Pro Ser Gly
    210                 215                 220

Asn Pro Arg Val Asp Ser Gly Phe Val Asp Arg Pro Gln Trp Ser Glu
225                 230                 235                 240
```

```
Glu Arg Glu Glu Lys Gly Pro Pro Gln Ser Pro Gln Thr Thr Gln Gly
                245                 250                 255

Pro Trp Glu Pro Leu Ala Leu Ala Pro Asp Phe Pro Ala Asp Glu Thr
            260                 265                 270

Val Ser Lys Pro Leu Asp Val Ser Gly His Pro Gln Ser Val Gln Leu
        275                 280                 285

Glu Glu Gly Leu Gly Thr Ser Ser Gly Arg Thr Glu Leu Arg Val Gly
    290                 295                 300

Ser Phe Leu Val Thr Gln Pro Pro Leu Gln Ala Pro Glu Phe Ile Leu
305                 310                 315                 320

Thr Gln Ser Pro Pro Glu Leu Ala Pro Ala Pro Ser Ala Phe Pro Gly
                325                 330                 335

Pro Val Ser Ala Met Glu Leu Ser Gln Ala Leu Pro Ser Ser Gln Val
            340                 345                 350

Gln Cys Ser Asp Ser Gln Ala Ser Gly Asp Ala Phe Trp Gly Ala Arg
        355                 360                 365

Met Leu Leu Glu Phe Ser Gly Ser Ser Leu Gly
    370                 375


<210> 5505
<211> 379
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ANHX; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID:  E9PGG2; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000439513"

<400> 5505
Met Gln Ser Phe Leu Thr Leu Leu Lys Glu His Glu Asp Thr Cys Ala
1   5   10   15

Pro Pro Ala Glu Leu Val Thr Leu Ala Gly Arg Leu Cys Arg Asp Phe
            20   25   30

Gln Asp Asp Leu Ala Gln Leu Gln Pro Leu Val Thr Ala Ile Leu Asp
        35   40   45

Ser Gln Leu Arg Leu His Leu Leu Asp Asn Ala Asp Val Ala Leu Ala
    50   55   60

Cys Ala Arg Val Leu Asp Gln Gln Glu Gln Gln Gln Ala Ala Cys Arg
65   70   75   80

Leu Leu Glu Gly Cys Gln Val Pro Gly Gly Ser Gln Glu Leu Val Gln
                85   90   95

Leu Trp Asn Asp Ile His Tyr Arg Leu Val Met Arg Arg Leu Gly Val
            100   105   110

Ala Ala Leu Thr Pro Val Gln Lys Phe Arg Cys Arg Lys Arg Asn Pro
        115   120   125

Pro Pro Pro Ser Leu Cys Pro Glu Gly Leu Lys Ser Arg Asn Phe Pro
    130   135   140

Arg Glu Val Arg Glu Lys Leu His Asn Phe Ala Val Gly Val Asn Thr
145   150   155   160

Asn Pro Ser Lys Ala Glu Arg Glu Asn Leu Ala Leu Glu Thr Ser Leu
                165   170   175

Thr Pro Glu Gln Val Tyr Asn Trp Phe Ala Asn Tyr Arg Arg Arg Gln
            180   185   190

Arg Ala Leu Pro Gln His Met Lys Pro Ala Gln Gln Ala Thr Ala Glu
        195   200   205

```
Asp Pro Gly Ala Arg Glu Arg Gly Pro Asp Leu Leu Gln Pro Ser Gly
    210                 215                 220

Asn Pro Arg Val Asp Ser Gly Phe Val Asp Arg Pro Gln Trp Ser Glu
225                 230                 235                 240

Glu Arg Glu Glu Lys Gly Pro Pro Gln Ser Pro Gln Thr Thr Gln Gly
                245                 250                 255

Pro Trp Glu Pro Leu Ala Leu Ala Pro Asp Phe Pro Ala Asp Glu Thr
            260                 265                 270

Val Ser Lys Pro Leu Asp Val Ser Gly His Pro Gln Ser Val Gln Leu
        275                 280                 285

Glu Glu Gly Leu Gly Thr Ser Ser Gly Arg Thr Glu Leu Arg Val Gly
    290                 295                 300

Ser Phe Leu Val Thr Gln Pro Pro Leu Gln Ala Pro Glu Phe Ile Leu
305                 310                 315                 320

Thr Gln Ser Pro Pro Glu Leu Ala Pro Ala Pro Ser Ala Phe Pro Gly
                325                 330                 335

Pro Val Ser Ala Met Glu Leu Ser Gln Ala Leu Pro Ser Ser Gln Val
            340                 345                 350

Gln Cys Ser Asp Ser Gln Ala Ser Gly Asp Ala Phe Trp Gly Ala Arg
        355                 360                 365

Met Leu Leu Glu Phe Ser Gly Ser Ser Leu Gly
    370                 375


<210> 5506
<211> 680
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1194; "

<220>
<221> source
<223> /note="Gene Symbol: ANOS1; "
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<220>
<221> source
<223> /note="Gene Name:
anosmin 1; "

<220>
<221> source
<223> /note="Uniprot ID: P23352; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000262648"

<400> 5506
Met Val Pro Gly Val Pro Gly Ala Val Leu Thr Leu Cys Leu Trp Leu
1   5   10   15

Ala Ala Ser Ser Gly Cys Leu Ala Ala Gly Pro Gly Ala Ala Ala Ala
            20   25   30

Arg Arg Leu Asp Glu Ser Leu Ser Ala Gly Ser Val Gln Arg Ala Arg
        35   40   45

Cys Ala Ser Arg Cys Leu Ser Leu Gln Ile Thr Arg Ile Ser Ala Phe
    50   55   60

Phe Gln His Phe Gln Asn Asn Gly Ser Leu Val Trp Cys Gln Asn His
65   70   75   80

Lys Gln Cys Ser Lys Cys Leu Glu Pro Cys Lys Glu Ser Gly Asp Leu
                85   90   95

Arg Lys His Gln Cys Gln Ser Phe Cys Glu Pro Leu Phe Pro Lys Lys
            100   105   110

Ser Tyr Glu Cys Leu Thr Ser Cys Glu Phe Leu Lys Tyr Ile Leu Leu
        115   120   125

Val Lys Gln Gly Asp Cys Pro Ala Pro Glu Lys Ala Ser Gly Phe Ala
    130   135   140

Ala Ala Cys Val Glu Ser Cys Glu Val Asp Asn Glu Cys Ser Gly Val
145   150   155   160

Lys Lys Cys Cys Ser Asn Gly Cys Gly His Thr Cys Gln Val Pro Lys
                165   170   175

```
Thr Leu Tyr Lys Gly Val Pro Leu Lys Pro Arg Lys Glu Leu Arg Phe
            180                 185                 190

Thr Glu Leu Gln Ser Gly Gln Leu Glu Val Lys Trp Ser Ser Lys Phe
        195                 200                 205

Asn Ile Ser Ile Glu Pro Val Ile Tyr Val Val Gln Arg Arg Trp Asn
    210                 215                 220

Tyr Gly Ile His Pro Ser Glu Asp Asp Ala Thr His Trp Gln Thr Val
225                 230                 235                 240

Ala Gln Thr Thr Asp Glu Arg Val Gln Leu Thr Asp Ile Arg Pro Ser
                245                 250                 255

Arg Trp Tyr Gln Phe Arg Val Ala Ala Val Asn Val His Gly Thr Arg
            260                 265                 270

Gly Phe Thr Ala Pro Ser Lys His Phe Arg Ser Ser Lys Asp Pro Ser
        275                 280                 285

Ala Pro Pro Ala Pro Ala Asn Leu Arg Leu Ala Asn Ser Thr Val Asn
    290                 295                 300

Ser Asp Gly Ser Val Thr Val Thr Ile Val Trp Asp Leu Pro Glu Glu
305                 310                 315                 320

Pro Asp Ile Pro Val His His Tyr Lys Val Phe Trp Ser Trp Met Val
                325                 330                 335

Ser Ser Lys Ser Leu Val Pro Thr Lys Lys Lys Arg Arg Lys Thr Thr
            340                 345                 350

Asp Gly Phe Gln Asn Ser Val Ile Leu Glu Lys Leu Gln Pro Asp Cys
        355                 360                 365

Asp Tyr Val Val Glu Leu Gln Ala Ile Thr Tyr Trp Gly Gln Thr Arg
    370                 375                 380

Leu Lys Ser Ala Lys Val Ser Leu His Phe Thr Ser Thr His Ala Thr
385                 390                 395                 400
```

```
Asn Asn Lys Glu Gln Leu Val Lys Thr Arg Lys Gly Gly Ile Gln Thr
                405                 410                 415

Gln Leu Pro Phe Gln Arg Arg Arg Pro Thr Arg Pro Leu Glu Val Gly
            420                 425                 430

Ala Pro Phe Tyr Gln Asp Gly Gln Leu Gln Val Lys Val Tyr Trp Lys
        435                 440                 445

Lys Thr Glu Asp Pro Thr Val Asn Arg Tyr His Val Arg Trp Phe Pro
    450                 455                 460

Glu Ala Cys Ala His Asn Arg Thr Thr Gly Ser Glu Ala Ser Ser Gly
465                 470                 475                 480

Met Thr His Glu Asn Tyr Ile Ile Leu Gln Asp Leu Ser Phe Ser Cys
                485                 490                 495

Lys Tyr Lys Val Thr Val Gln Pro Ile Arg Pro Lys Ser His Ser Lys
            500                 505                 510

Ala Glu Ala Val Phe Phe Thr Thr Pro Pro Cys Ser Ala Leu Lys Gly
        515                 520                 525

Lys Ser His Lys Pro Val Gly Cys Leu Gly Glu Ala Gly His Val Leu
    530                 535                 540

Ser Lys Val Leu Ala Lys Pro Glu Asn Leu Ser Ala Ser Phe Ile Val
545                 550                 555                 560

Gln Asp Val Asn Ile Thr Gly His Phe Ser Trp Lys Met Ala Lys Ala
                565                 570                 575

Asn Leu Tyr Gln Pro Met Thr Gly Phe Gln Val Thr Trp Ala Glu Val
            580                 585                 590

Thr Thr Glu Ser Arg Gln Asn Ser Leu Pro Asn Ser Ile Ile Ser Gln
        595                 600                 605

Ser Gln Ile Leu Pro Ser Asp His Tyr Val Leu Thr Val Pro Asn Leu
    610                 615                 620
```

```
Arg Pro Ser Thr Leu Tyr Arg Leu Glu Val Gln Val Leu Thr Pro Gly
625                 630                 635                 640

Gly Glu Gly Pro Ala Thr Ile Lys Thr Phe Arg Thr Pro Glu Leu Pro
                645                 650                 655

Pro Ser Ser Ala His Arg Ser His Leu Lys His Arg His Pro His His
            660                 665                 670

Tyr Lys Pro Ser Pro Glu Arg Tyr
        675                 680


<210> 5507
<211> 679
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1194; "

<220>
<221> source
<223> /note="Gene Symbol: ANOS1; "

<220>
<221> source
<223> /note="Gene Name:
      anosmin 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000478734"

<400> 5507
Met Val Pro Gly Val Pro Gly Ala Val Leu Thr Leu Cys Leu Trp Leu
1               5                   10                  15

Ala Ala Ser Ser Gly Ala Trp Arg Pro Ala Pro Ala Arg Leu Cys Ala
            20                  25                  30

Ala Ala Gly Arg Val Ala Val Cys Arg Glu Arg Pro Ala Arg Ser Cys
        35                  40                  45

Ala Ser Arg Cys Leu Ser Leu Gln Ile Thr Arg Ile Ser Ala Phe Phe
    50                  55                  60

Gln His Phe Gln Asn Asn Gly Ser Leu Val Trp Cys Gln Asn His Lys
65                  70                  75                  80
```

```
Gln Cys Ser Lys Cys Leu Glu Pro Cys Lys Glu Ser Gly Asp Leu Arg
                85                  90                  95

Lys His Gln Cys Gln Ser Phe Cys Glu Pro Leu Phe Pro Lys Lys Ser
            100                 105                 110

Tyr Glu Cys Leu Thr Ser Cys Glu Phe Leu Lys Tyr Ile Leu Leu Val
        115                 120                 125

Lys Gln Gly Asp Cys Pro Ala Pro Glu Lys Ala Ser Gly Phe Ala Ala
    130                 135                 140

Ala Cys Val Glu Ser Cys Glu Val Asp Asn Glu Cys Ser Gly Val Lys
145                 150                 155                 160

Lys Cys Cys Ser Asn Gly Cys Gly His Thr Cys Gln Val Pro Lys Thr
                165                 170                 175

Leu Tyr Lys Gly Val Pro Leu Lys Pro Arg Lys Glu Leu Arg Phe Thr
            180                 185                 190

Glu Leu Gln Ser Gly Gln Leu Glu Val Lys Trp Ser Ser Lys Phe Asn
        195                 200                 205

Ile Ser Ile Glu Pro Val Ile Tyr Val Val Gln Arg Arg Trp Asn Tyr
    210                 215                 220

Gly Ile His Pro Ser Glu Asp Asp Ala Thr His Trp Gln Thr Val Ala
225                 230                 235                 240

Gln Thr Thr Asp Glu Arg Val Gln Leu Thr Asp Ile Arg Pro Ser Arg
                245                 250                 255

Trp Tyr Gln Phe Arg Val Ala Ala Val Asn Val His Gly Thr Arg Gly
            260                 265                 270

Phe Thr Ala Pro Ser Lys His Phe Arg Ser Ser Lys Asp Pro Ser Ala
        275                 280                 285

Pro Pro Ala Pro Ala Asn Leu Arg Leu Ala Asn Ser Thr Val Asn Ser
    290                 295                 300
```

```
Asp Gly Ser Val Thr Val Thr Ile Val Trp Asp Leu Pro Glu Glu Pro
305                 310                 315                 320

Asp Ile Pro Val His His Tyr Lys Val Phe Trp Ser Trp Met Val Ser
                325                 330                 335

Ser Lys Ser Leu Val Pro Thr Lys Lys Lys Arg Arg Lys Thr Thr Asp
            340                 345                 350

Gly Phe Gln Asn Ser Val Ile Leu Glu Lys Leu Gln Pro Asp Cys Asp
        355                 360                 365

Tyr Val Val Glu Leu Gln Ala Ile Thr Tyr Trp Gly Gln Thr Arg Leu
    370                 375                 380

Lys Ser Ala Lys Val Ser Leu His Phe Thr Ser Thr His Ala Thr Asn
385                 390                 395                 400

Asn Lys Glu Gln Leu Val Lys Thr Arg Lys Gly Gly Ile Gln Thr Gln
                405                 410                 415

Leu Pro Phe Gln Arg Arg Arg Pro Thr Arg Pro Leu Glu Val Gly Ala
            420                 425                 430

Pro Phe Tyr Gln Asp Gly Gln Leu Gln Val Lys Val Tyr Trp Lys Lys
        435                 440                 445

Thr Glu Asp Pro Thr Val Asn Arg Tyr His Val Arg Trp Phe Pro Glu
    450                 455                 460

Ala Cys Ala His Asn Arg Thr Thr Gly Ser Glu Ala Ser Ser Gly Met
465                 470                 475                 480

Thr His Glu Asn Tyr Ile Ile Leu Gln Asp Leu Ser Phe Ser Cys Lys
                485                 490                 495

Tyr Lys Val Thr Val Gln Pro Ile Arg Pro Lys Ser His Ser Lys Ala
            500                 505                 510

Glu Ala Val Phe Phe Thr Thr Pro Pro Cys Ser Ala Leu Lys Gly Lys
        515                 520                 525
```

```
Ser His Lys Pro Val Gly Cys Leu Gly Glu Ala Gly His Val Leu Ser
    530                 535                 540

Lys Val Leu Ala Lys Pro Glu Asn Leu Ser Ala Ser Phe Ile Val Gln
545                 550                 555                 560

Asp Val Asn Ile Thr Gly His Phe Ser Trp Lys Met Ala Lys Ala Asn
                565                 570                 575

Leu Tyr Gln Pro Met Thr Gly Phe Gln Val Thr Trp Ala Glu Val Thr
            580                 585                 590

Thr Glu Ser Arg Gln Asn Ser Leu Pro Asn Ser Ile Ile Ser Gln Ser
        595                 600                 605

Gln Ile Leu Pro Ser Asp His Tyr Val Leu Thr Val Pro Asn Leu Arg
    610                 615                 620

Pro Ser Thr Leu Tyr Arg Leu Glu Val Gln Val Leu Thr Pro Gly Gly
625                 630                 635                 640

Glu Gly Pro Ala Thr Ile Lys Thr Phe Arg Thr Pro Glu Leu Pro Pro
                645                 650                 655

Ser Ser Ala His Arg Ser His Leu Lys His Arg His Pro His His Tyr
            660                 665                 670

Lys Pro Ser Pro Glu Arg Tyr
        675


<210> 5508
<211> 258
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1195; "

<220>
<221> source
<223> /note="Gene Symbol: AMN1; "

<220>
<221> source
<223> /note="Gene Name:
      antagonist of mitotic exit network 1 homolog; "
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<220>
<221> source
<223> /note="Uniprot ID: Q8IY45; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000281471"

<400> 5508
Met Pro Arg Pro Arg Arg Val Ser Gln Leu Leu Asp Leu Cys Leu Trp
1   5   10   15

Cys Phe Met Lys Asn Ile Ser Arg Tyr Leu Thr Asp Ile Lys Pro Leu
            20   25   30

Pro Pro Asn Ile Lys Asp Arg Leu Ile Lys Ile Met Ser Met Gln Gly
        35   40   45

Gln Ile Thr Asp Ser Asn Ile Ser Glu Ile Leu His Pro Glu Val Gln
    50   55   60

Thr Leu Asp Leu Arg Ser Cys Asp Ile Ser Asp Ala Ala Leu Leu His
65   70   75   80

Leu Ser Asn Cys Arg Lys Leu Lys Lys Leu Asn Leu Asn Ala Ser Lys
                85   90   95

Gly Asn Arg Val Ser Val Thr Ser Glu Gly Ile Lys Ala Val Ala Ser
            100   105   110

Ser Cys Ser Tyr Leu His Glu Ala Ser Leu Lys Arg Cys Cys Asn Leu
        115   120   125

Thr Asp Glu Gly Val Val Ala Leu Ala Leu Asn Cys Gln Leu Leu Lys
    130   135   140

Ile Ile Asp Leu Gly Gly Cys Leu Ser Ile Thr Asp Val Ser Leu His
145   150   155   160

Ala Leu Gly Lys Asn Cys Pro Phe Leu Gln Cys Val Asp Phe Ser Ala
                165   170   175

Thr Gln Val Ser Asp Ser Gly Val Ile Ala Leu Val Ser Gly Pro Cys
            180   185   190

```
Ala Lys Lys Leu Glu Glu Ile His Met Gly His Cys Val Asn Leu Thr
        195                 200                 205

Asp Gly Ala Val Glu Ala Val Leu Thr Tyr Cys Pro Gln Ile Arg Ile
    210                 215                 220

Leu Leu Phe His Gly Cys Pro Leu Ile Thr Asp His Ser Arg Glu Val
225                 230                 235                 240

Leu Glu Gln Leu Val Gly Pro Asn Lys Leu Lys Gln Val Thr Trp Thr
                245                 250                 255

Val Tyr
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<210> 5509
<211> 98
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1195; "

<220>
<221> source
<223> /note="Gene Symbol: AMN1; "

<220>
<221> source
<223> /note="Gene Name:
antagonist of mitotic exit network 1 homolog; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000396145"

<400> 5509

```
Met Lys Asn Ile Ser Arg Tyr Leu Thr Asp Ile Lys Pro Leu Pro Pro
1               5                   10                  15

Asn Ile Lys Asp Arg Leu Ile Lys Ile Met Ser Met Gln Gly Gln Ile
            20                  25                  30

Thr Asp Ser Asn Ile Ser Glu Gly His Ala Pro Leu Pro Arg Leu Glu
        35                  40                  45

Tyr Ser Gly Ala Ile Ser Ala His Cys Asn Leu Arg Cys Leu Asp Leu
```

```
    50                  55                  60

Glu Thr Gly Phe His His Val Ala Gln Ala Gly Leu Glu Leu Arg Ser
65                  70                  75                  80

Ser Ser Asp Pro Ser Ala Ser Ala Ser Gln Asn Ala Gly Ile Thr Asp
                85                  90                  95

Phe Thr
```

<210> 5510
<211> 216
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1195; "

<220>
<221> source
<223> /note="Gene Symbol: AMN1; "

<220>
<221> source
<223> /note="Gene Name:
antagonist of mitotic exit network 1 homolog; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000438990"

<400> 5510

```
Met Lys Asn Ile Ser Arg Tyr Leu Thr Asp Ile Lys Pro Leu Pro Pro
1               5                   10                  15

Asn Ile Lys Asp Arg Leu Ile Lys Ile Met Ser Met Gln Gly Gln Ile
            20                  25                  30

Thr Asp Ser Asn Ile Ser Glu Ile Leu His Pro Glu Val Gln Thr Leu
        35                  40                  45

Asp Leu Arg Ser Cys Asp Ile Ser Asp Ala Ala Leu Leu His Leu Ser
    50                  55                  60

Asn Cys Arg Lys Leu Lys Lys Leu Asn Leu Asn Ala Ser Lys Gly Asn
65                  70                  75                  80
```

```
Arg Val Ser Val Thr Ser Glu Gly Ile Lys Ala Val Ala Ser Ser Cys
                85                  90                  95

Ser Tyr Leu His Glu Ala Ser Leu Lys Arg Cys Cys Asn Leu Thr Asp
            100                 105                 110

Glu Gly Val Val Ala Leu Ala Leu Asn Cys Gln Leu Leu Lys Ile Ile
        115                 120                 125

Asp Leu Gly Gly Cys Leu Ser Ile Thr Asp Val Ser Leu His Ala Leu
    130                 135                 140

Gly Lys Asn Cys Pro Phe Leu Gln Cys Val Asp Phe Ser Ala Thr Gln
145                 150                 155                 160

Val Ser Asp Ser Gly Val Ile Ala Leu Val Ser Gly Pro Cys Ala Lys
                165                 170                 175

Lys Leu Glu Glu Ile His Met Gly His Cys Val Asn Leu Thr Asp Gly
            180                 185                 190

Ala Val Glu Ala Val Leu Thr Tyr Cys Pro Gln Ile Arg Ile Leu Leu
        195                 200                 205

Phe His Gly Cys Pro Leu Ile Thr
    210                 215


<210> 5511
<211> 58
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1195; "

<220>
<221> source
<223> /note="Gene Symbol: AMN1; "

<220>
<221> source
<223> /note="Gene Name:
      antagonist of mitotic exit network 1 homolog; "

<220>
<221> source
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<223> /note="ENSP ID: ENSP00000439171"

<400> 5511
Met Gly His Cys Val Asn Leu Thr Asp Gly Ala Val Glu Ala Val Leu
1   5   10   15

Thr Tyr Cys Pro Gln Ile Arg Ile Leu Leu Phe His Gly Cys Pro Leu
            20   25   30

Ile Thr Asp His Ser Arg Glu Val Leu Glu Gln Leu Val Gly Pro Asn
        35   40   45

Lys Leu Lys Gln Val Thr Trp Thr Val Tyr
    50   55

<210> 5512
<211> 105
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1195; "

<220>
<221> source
<223> /note="Gene Symbol: AMN1; "

<220>
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<223> /note="Gene Name:
antagonist of mitotic exit network 1 homolog; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000439438"

<400> 5512
Met Lys Asn Ile Ser Arg Tyr Leu Thr Asp Ile Lys Pro Leu Pro Pro
1   5   10   15

Asn Ile Lys Asp Arg Leu Ile Lys Ile Met Ser Met Gln Gly Gln Ile
            20   25   30

Thr Asp Ser Asn Ile Ser Glu Gly His Ala Pro Leu Pro Arg Leu Glu
        35   40   45

Tyr Ser Gly Ala Ile Ser Ala His Cys Asn Leu Arg Cys Leu Asp Leu
    50   55   60

```
Val Gln Thr Leu Asp Leu Arg Ser Cys Asp Ile Ser Asp Ala Ala Leu
65                  70                  75                  80


Leu His Leu Ser Asn Cys Arg Lys Leu Lys Lys Leu Asn Leu Asn Ala
                85                  90                  95


Ser Lys Gly Asn Arg Val Ser Val Thr
            100                 105


<210> 5513
<211> 240
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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      antagonist of mitotic exit network 1 homolog; "

<220>
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<223> /note="Uniprot ID:  Q8IY45; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000440967"

<400> 5513
Met Lys Asn Ile Ser Arg Tyr Leu Thr Asp Ile Lys Pro Leu Pro Pro
1               5                   10                  15


Asn Ile Lys Asp Arg Leu Ile Lys Ile Met Ser Met Gln Gly Gln Ile
            20                  25                  30


Thr Asp Ser Asn Ile Ser Glu Ile Leu His Pro Glu Val Gln Thr Leu
        35                  40                  45


Asp Leu Arg Ser Cys Asp Ile Ser Asp Ala Ala Leu Leu His Leu Ser
    50                  55                  60


Asn Cys Arg Lys Leu Lys Lys Leu Asn Leu Asn Ala Ser Lys Gly Asn
```

65 70 75 80

Arg Val Ser Val Thr Ser Glu Gly Ile Lys Ala Val Ala Ser Ser Cys
85 90 95

Ser Tyr Leu His Glu Ala Ser Leu Lys Arg Cys Cys Asn Leu Thr Asp
100 105 110

Glu Gly Val Val Ala Leu Ala Leu Asn Cys Gln Leu Leu Lys Ile Ile
115 120 125

Asp Leu Gly Gly Cys Leu Ser Ile Thr Asp Val Ser Leu His Ala Leu
130 135 140

Gly Lys Asn Cys Pro Phe Leu Gln Cys Val Asp Phe Ser Ala Thr Gln
145 150 155 160

Val Ser Asp Ser Gly Val Ile Ala Leu Val Ser Gly Pro Cys Ala Lys
165 170 175

Lys Leu Glu Glu Ile His Met Gly His Cys Val Asn Leu Thr Asp Gly
180 185 190

Ala Val Glu Ala Val Leu Thr Tyr Cys Pro Gln Ile Arg Ile Leu Leu
195 200 205

Phe His Gly Cys Pro Leu Ile Thr Asp His Ser Arg Glu Val Leu Glu
210 215 220

Gln Leu Val Gly Pro Asn Lys Leu Lys Gln Val Thr Trp Thr Val Tyr
225 230 235 240

<210> 5514
<211> 240
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: AMN1; "

<220>

<221> source
<223> /note="Gene Name:
antagonist of mitotic exit network 1 homolog; "

<220>
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<223> /note="Uniprot ID: Q8IY45; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000441419"

<400> 5514

```
Met Lys Asn Ile Ser Arg Tyr Leu Thr Asp Ile Lys Pro Leu Pro Pro
1               5                  10                  15

Asn Ile Lys Asp Arg Leu Ile Lys Ile Met Ser Met Gln Gly Gln Ile
            20                  25                  30

Thr Asp Ser Asn Ile Ser Glu Ile Leu His Pro Glu Val Gln Thr Leu
        35                  40                  45

Asp Leu Arg Ser Cys Asp Ile Ser Asp Ala Ala Leu Leu His Leu Ser
    50                  55                  60

Asn Cys Arg Lys Leu Lys Lys Leu Asn Leu Asn Ala Ser Lys Gly Asn
65                  70                  75                  80

Arg Val Ser Val Thr Ser Glu Gly Ile Lys Ala Val Ala Ser Ser Cys
                85                  90                  95

Ser Tyr Leu His Glu Ala Ser Leu Lys Arg Cys Cys Asn Leu Thr Asp
            100                 105                 110

Glu Gly Val Val Ala Leu Ala Leu Asn Cys Gln Leu Leu Lys Ile Ile
        115                 120                 125

Asp Leu Gly Gly Cys Leu Ser Ile Thr Asp Val Ser Leu His Ala Leu
    130                 135                 140

Gly Lys Asn Cys Pro Phe Leu Gln Cys Val Asp Phe Ser Ala Thr Gln
145                 150                 155                 160

Val Ser Asp Ser Gly Val Ile Ala Leu Val Ser Gly Pro Cys Ala Lys
                165                 170                 175
```

```
Lys Leu Glu Glu Ile His Met Gly His Cys Val Asn Leu Thr Asp Gly
            180                 185                 190

Ala Val Glu Ala Val Leu Thr Tyr Cys Pro Gln Ile Arg Ile Leu Leu
        195                 200                 205

Phe His Gly Cys Pro Leu Ile Thr Asp His Ser Arg Glu Val Leu Glu
    210                 215                 220

Gln Leu Val Gly Pro Asn Lys Leu Lys Gln Val Thr Trp Thr Val Tyr
225                 230                 235                 240
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<210> 5515
<211> 87
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: AMN1; "

<220>
<221> source
<223> /note="Gene Name:
antagonist of mitotic exit network 1 homolog; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000441846"

<400> 5515

```
Met Lys Asn Ile Ser Arg Tyr Leu Thr Asp Ile Lys Pro Leu Pro Pro
1               5                  10                  15

Asn Ile Lys Asp Arg Leu Ile Lys Ile Met Ser Met Gln Gly Gln Ile
            20                  25                  30

Thr Asp Ser Asn Ile Ser Glu Ile Leu His Pro Glu Val Gln Thr Leu
        35                  40                  45

Asp Leu Arg Ser Cys Asp Ile Ser Asp Ala Ala Leu Leu His Leu Ser
    50                  55                  60

Asn Cys Arg Lys Leu Lys Lys Leu Asn Leu Asn Ala Ser Lys Gly Asn
65                  70                  75                  80
```

Arg Val Ser Val Thr Ser Glu
85

<210> 5516
<211> 35
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1195; "

<220>
<221> source
<223> /note="Gene Symbol: AMN1; "

<220>
<221> source
<223> /note="Gene Name:
antagonist of mitotic exit network 1 homolog; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000442272"

<400> 5516
Met Gly His Cys Val Asn Leu Thr Asp Gly Ala Val Glu Ala Val Leu
1 5 10 15

Thr Tyr Cys Pro Gln Ile Arg Ile Leu Leu Phe His Gly Cys Pro Leu
20 25 30

Ile Thr Gly
35

<210> 5517
<211> 188
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1196; "

<220>
<221> source
<223> /note="Gene Symbol: AGR2; "

<220>
<221> source
<223> /note="Gene Name:

anterior gradient 2, prt disulphide isomerase family member; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000386025"

<400> 5517

```
Met Glu Lys Ile Pro Val Ser Ala Phe Leu Leu Leu Val Ala Leu Ser
1               5                  10                  15

Tyr Thr Leu Ala Arg Asp Thr Thr Val Lys Pro Gly Ala Lys Lys Asp
            20                  25                  30

Thr Lys Asp Ser Arg Pro Lys Leu Pro Gln Thr Leu Ser Arg Gly Trp
        35                  40                  45

Gly Asp Gln Leu Ile Trp Thr Gln Thr Tyr Glu Glu Ala Leu Tyr Lys
    50                  55                  60

Ser Lys Thr Ser Asn Lys Pro Leu Met Ile Ile His His Leu Asp Glu
65                  70                  75                  80

Cys Pro His Ser Gln Ala Leu Lys Lys Val Phe Ala Glu Asn Lys Glu
                85                  90                  95

Ile Gln Lys Leu Ala Glu Gln Phe Val Leu Leu Asn Leu Val Tyr Glu
            100                 105                 110

Thr Thr Asp Lys His Leu Ser Pro Asp Gly Gln Tyr Val Pro Arg Ile
        115                 120                 125

Met Phe Val Asp Pro Ser Leu Thr Val Arg Ala Asp Ile Thr Gly Arg
    130                 135                 140

Tyr Ser Asn Arg Leu Tyr Ala Tyr Glu Pro Ala Asp Thr Ala Leu Cys
145                 150                 155                 160

Lys Cys Asp Leu Gln Phe Gly Cys Cys Pro Arg Val Glu His Leu Tyr
                165                 170                 175

Cys Cys Ser Asp Gly Thr Arg Gly Cys Met Val Arg
            180                 185
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<210> 5518

<211> 175
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1196; "

<220>
<221> source
<223> /note="Gene Symbol: AGR2; "

<220>
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<223> /note="Gene Name:
anterior gradient 2, prt disulphide isomerase family
member; "

<220>
<221> source
<223> /note="Uniprot ID: O95994; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000391490"

<400> 5518

Met	Glu	Lys	Ile	Pro	Val	Ser	Ala	Phe	Leu	Leu
1				5				10		
Val	Ala	Leu	Ser	Tyr	Thr	Leu	Ala	Arg	Asp	Thr
		15					20			
Thr	Val	Lys	Pro	Gly	Ala	Lys	Lys	Asp	Thr	Lys
			25					30		
Asp	Ser	Arg	Pro	Lys	Leu	Pro	Gln	Thr	Leu	Ser
		35					40			
Arg	Gly	Trp	Gly	Asp	Gln	Leu	Ile	Trp	Thr	Gln
			45					50		
Thr	Tyr	Glu	Glu	Ala	Leu	Tyr	Lys	Ser	Lys	Thr
		55					60			
Ser	Asn	Lys	Pro	Leu	Met	Ile	Ile	His	His	Leu
			65					70		
Asp	Glu	Cys	Pro	His	Ser	Gln	Ala	Leu	Lys	Lys
		75					80			
Val	Phe	Ala	Glu	Asn	Lys	Glu	Ile	Gln	Lys	Leu
			85					90		
Ala	Glu	Gln	Phe	Val	Leu	Leu	Asn	Leu	Val	Tyr
		95					100			
Glu	Thr	Thr	Asp	Lys	His	Leu	Ser	Pro	Asp	Gly
			105					110		
Gln	Tyr	Val	Pro	Arg	Ile	Thr	Thr	Asp	Lys	His
		115					120			
Leu	Ser	Pro	Asp	Gly	Gln	Tyr	Val	Pro	Arg	Ile
			125							

```
Met Phe Val Asp Pro Ser Leu Thr Val Arg Ala Asp Ile Thr Gly Arg
    130                 135                 140

Tyr Ser Asn Arg Leu Tyr Ala Tyr Glu Pro Ala Asp Thr Ala Leu Leu
145                 150                 155                 160

Leu Asp Asn Met Lys Lys Ala Leu Lys Leu Leu Lys Thr Glu Leu
                165                 170                 175
```

<210> 5519
<211> 131
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1196; "

<220>
<221> source
<223> /note="Gene Symbol: AGR2; "

<220>
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<223> /note="Gene Name:
anterior gradient 2, prt disulphide isomerase family
member; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000411969"

<400> 5519

```
Met Glu Lys Ile Pro Val Ser Ala Phe Leu Leu Leu Val Ala Leu Ser
1               5                   10                  15

Tyr Thr Leu Ala Arg Asp Thr Thr Val Lys Pro Gly Ala Lys Lys Asp
            20                  25                  30

Thr Lys Asp Ser Arg Pro Lys Leu Pro Gln Thr Leu Ser Arg Gly Trp
        35                  40                  45

Gly Asp Gln Leu Ile Trp Thr Gln Thr Tyr Glu Glu Ala Leu Tyr Lys
    50                  55                  60

Ser Lys Thr Ser Asn Lys Pro Leu Met Ile Ile His His Leu Asp Glu
65                  70                  75                  80
```

```
Cys Pro His Ser Gln Ala Leu Lys Lys Val Phe Ala Glu Asn Lys Glu
                85                  90                  95

Ile Gln Lys Leu Ala Glu Gln Phe Val Leu Leu Asn Leu Val Tyr Glu
            100                 105                 110

Thr Thr Asp Lys His Leu Ser Pro Asp Gly Gln Tyr Val Pro Arg Ile
        115                 120                 125

Met Phe Val
    130


<210> 5520
<211> 119
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1196; "

<220>
<221> source
<223> /note="Gene Symbol: AGR2; "

<220>
<221> source
<223> /note="Gene Name:
      anterior gradient 2, prt disulphide isomerase family
      member; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000414806"

<400> 5520
Pro Leu Met Ile Ile His His Leu Asp Glu Cys Pro His Ser Gln Ala
1               5                  10                  15

Leu Lys Lys Val Phe Ala Glu Asn Lys Glu Ile Gln Lys Leu Ala Glu
            20                  25                  30

Gln Phe Val Leu Leu Asn Leu Val Tyr Glu Thr Thr Asp Lys His Leu
        35                  40                  45

Ser Pro Asp Gly Gln Tyr Val Pro Arg Ile Met Phe Val Asp Pro Ser
    50                  55                  60
```

```
Leu Thr Val Arg Ala Asp Ile Thr Gly Arg Tyr Ser Asn Arg Leu Tyr
65                  70                  75                  80


Ala Tyr Glu Pro Ala Asp Thr Ala Leu Cys Lys Cys Asp Leu Gln Phe
                85                  90                  95


Gly Cys Cys Pro Arg Val Glu His Leu Tyr Cys Cys Ser Asp Gly Thr
            100                 105                 110


Arg Gly Cys Met Val Ser Ala
        115


<210> 5521
<211> 166
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1197; "

<220>
<221> source
<223> /note="Gene Symbol: AGR3; "

<220>
<221> source
<223> /note="Gene Name:
      anterior gradient 3, prt disulphide isomerase family
      member; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8TD06; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000308606"

<400> 5521
Met Met Leu His Ser Ala Leu Gly Leu Cys Leu Leu Leu Val Thr Val
1               5                   10                  15


Ser Ser Asn Leu Ala Ile Ala Ile Lys Lys Glu Lys Arg Pro Pro Gln
            20                  25                  30


Thr Leu Ser Arg Gly Trp Gly Asp Asp Ile Thr Trp Val Gln Thr Tyr
        35                  40                  45


Glu Glu Gly Leu Phe Tyr Ala Gln Lys Ser Lys Lys Pro Leu Met Val
```

```
    50                  55                  60

Ile His His Leu Glu Asp Cys Gln Tyr Ser Gln Ala Leu Lys Lys Val
65                  70                  75                  80

Phe Ala Gln Asn Glu Glu Ile Gln Glu Met Ala Gln Asn Lys Phe Ile
                85                  90                  95

Met Leu Asn Leu Met His Glu Thr Thr Asp Lys Asn Leu Ser Pro Asp
            100                 105                 110

Gly Gln Tyr Val Pro Arg Ile Met Phe Val Asp Pro Ser Leu Thr Val
        115                 120                 125

Arg Ala Asp Ile Ala Gly Arg Tyr Ser Asn Arg Leu Tyr Thr Tyr Glu
    130                 135                 140

Pro Arg Asp Leu Pro Leu Leu Ile Glu Asn Met Lys Lys Ala Leu Arg
145                 150                 155                 160

Leu Ile Gln Ser Glu Leu
                165


<210> 5522
<211> 163
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1197; "

<220>
<221> source
<223> /note="Gene Symbol: AGR3; "

<220>
<221> source
<223> /note="Gene Name:
      anterior gradient 3, prt disulphide isomerase family
      member; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000386016"

<400> 5522
Met Met Leu His Ser Ala Leu Gly Leu Cys Leu Leu Leu Val Thr Val
1               5                   10                  15
```

```
Ser Ser Asn Leu Ala Ile Ala Ile Lys Lys Glu Lys Arg Pro Pro Gln
            20                  25                  30

Thr Leu Ser Arg Gly Trp Gly Asp Asp Ile Thr Trp Val Gln Thr Tyr
        35                  40                  45

Glu Glu Gly Leu Phe Tyr Ala Gln Lys Ser Lys Lys Pro Leu Met Val
    50                  55                  60

Ile His His Leu Glu Asp Cys Gln Tyr Ser Gln Ala Leu Lys Lys Val
65                  70                  75                  80

Phe Ala Gln Asn Glu Glu Ile Gln Glu Met Ala Gln Asn Lys Phe Ile
                85                  90                  95

Met Leu Asn Leu Met His Glu Thr Thr Asp Lys Asn Leu Ser Pro Asp
            100                 105                 110

Gly Gln Tyr Val Pro Arg Ile Met Phe Val Asp Pro Ser Leu Thr Val
        115                 120                 125

Arg Ala Asp Ile Ala Gly Arg Tyr Ser Asn Arg Leu Tyr Thr Tyr Glu
    130                 135                 140

Pro Arg Asp Leu Pro Leu Cys Lys Tyr Ser Gln Met Ile Ser Asn Ser
145                 150                 155                 160

Gly His Ser
```

<210> 5523
<211> 129
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1197; "

<220>
<221> source
<223> /note="Gene Symbol: AGR3; "

<220>
<221> source

<223> /note="Gene Name:
anterior gradient 3, prt disulphide isomerase family
member; "

<220>
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<223> /note="ENSP ID: ENSP00000392818"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5523
Xaa Asn Ile Gln Asn Thr Phe Pro Thr Arg Ala Leu Ala Lys Ser Gly
1 5 10 15

Trp Gly Asp Asp Ile Thr Trp Val Gln Thr Tyr Glu Glu Gly Leu Phe
20 25 30

Tyr Ala Gln Lys Ser Lys Lys Pro Leu Met Val Ile His His Leu Glu
35 40 45

Asp Cys Gln Tyr Ser Gln Ala Leu Lys Lys Val Phe Ala Gln Asn Glu
50 55 60

Glu Ile Gln Glu Met Ala Gln Asn Lys Phe Ile Met Leu Asn Leu Met
65 70 75 80

His Glu Thr Thr Asp Lys Asn Leu Ser Pro Asp Gly Gln Tyr Val Pro
85 90 95

Arg Ile Met Phe Val Asp Pro Ser Leu Thr Val Arg Ala Asp Ile Ala
100 105 110

Gly Arg Tyr Ser Asn Arg Leu Tyr Thr Tyr Glu Pro Arg Asp Leu Pro
115 120 125

Leu

<210> 5524
<211> 564
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1198; "

<220>
<221> source
<223> /note="Gene Symbol: ANTXR1; "

<220>
<221> source
<223> /note="Gene Name:
anthrax toxin receptor 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q9H6X2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000301945"

<400> 5524

```
Met Ala Thr Ala Glu Arg Arg Ala Leu Gly Ile Gly Phe Gln Trp Leu
1               5                  10                  15

Ser Leu Ala Thr Leu Val Leu Ile Cys Ala Gly Gln Gly Gly Arg Arg
            20                  25                  30

Glu Asp Gly Gly Pro Ala Cys Tyr Gly Gly Phe Asp Leu Tyr Phe Ile
        35                  40                  45

Leu Asp Lys Ser Gly Ser Val Leu His His Trp Asn Glu Ile Tyr Tyr
    50                  55                  60

Phe Val Glu Gln Leu Ala His Lys Phe Ile Ser Pro Gln Leu Arg Met
65                  70                  75                  80

Ser Phe Ile Val Phe Ser Thr Arg Gly Thr Thr Leu Met Lys Leu Thr
                85                  90                  95

Glu Asp Arg Glu Gln Ile Arg Gln Gly Leu Glu Glu Leu Gln Lys Val
            100                 105                 110

Leu Pro Gly Gly Asp Thr Tyr Met His Glu Gly Phe Glu Arg Ala Ser
        115                 120                 125

Glu Gln Ile Tyr Tyr Glu Asn Arg Gln Gly Tyr Arg Thr Ala Ser Val
    130                 135                 140
```

```
Ile Ile Ala Leu Thr Asp Gly Glu Leu His Glu Asp Leu Phe Phe Tyr
145                 150                 155                 160

Ser Glu Arg Glu Ala Asn Arg Ser Arg Asp Leu Gly Ala Ile Val Tyr
                165                 170                 175

Cys Val Gly Val Lys Asp Phe Asn Glu Thr Gln Leu Ala Arg Ile Ala
            180                 185                 190

Asp Ser Lys Asp His Val Phe Pro Val Asn Asp Gly Phe Gln Ala Leu
        195                 200                 205

Gln Gly Ile Ile His Ser Ile Leu Lys Lys Ser Cys Ile Glu Ile Leu
    210                 215                 220

Ala Ala Glu Pro Ser Thr Ile Cys Ala Gly Glu Ser Phe Gln Val Val
225                 230                 235                 240

Val Arg Gly Asn Gly Phe Arg His Ala Arg Asn Val Asp Arg Val Leu
                245                 250                 255

Cys Ser Phe Lys Ile Asn Asp Ser Val Thr Leu Asn Glu Lys Pro Phe
            260                 265                 270

Ser Val Glu Asp Thr Tyr Leu Leu Cys Pro Ala Pro Ile Leu Lys Glu
        275                 280                 285

Val Gly Met Lys Ala Ala Leu Gln Val Ser Met Asn Asp Gly Leu Ser
    290                 295                 300

Phe Ile Ser Ser Ser Val Ile Ile Thr Thr Thr His Cys Ser Asp Gly
305                 310                 315                 320

Ser Ile Leu Ala Ile Ala Leu Leu Ile Leu Phe Leu Leu Leu Ala Leu
                325                 330                 335

Ala Leu Leu Trp Trp Phe Trp Pro Leu Cys Cys Thr Val Ile Ile Lys
            340                 345                 350

Glu Val Pro Pro Pro Pro Ala Glu Glu Ser Glu Glu Glu Asp Asp Asp
        355                 360                 365

Gly Leu Pro Lys Lys Lys Trp Pro Thr Val Asp Ala Ser Tyr Tyr Gly
```

370 375 380

Gly Arg Gly Val Gly Gly Ile Lys Arg Met Glu Val Arg Trp Gly Glu
385 390 395 400

Lys Gly Ser Thr Glu Glu Gly Ala Lys Leu Glu Lys Ala Lys Asn Ala
405 410 415

Arg Val Lys Met Pro Glu Gln Glu Tyr Glu Phe Pro Glu Pro Arg Asn
420 425 430

Leu Asn Asn Asn Met Arg Arg Pro Ser Ser Pro Arg Lys Trp Tyr Ser
435 440 445

Pro Ile Lys Gly Lys Leu Asp Ala Leu Trp Val Leu Leu Arg Lys Gly
450 455 460

Tyr Asp Arg Val Ser Val Met Arg Pro Gln Pro Gly Asp Thr Gly Arg
465 470 475 480

Cys Ile Asn Phe Thr Arg Val Lys Asn Asn Gln Pro Ala Lys Tyr Pro
485 490 495

Leu Asn Asn Ala Tyr His Thr Ser Ser Pro Pro Pro Ala Pro Ile Tyr
500 505 510

Thr Pro Pro Pro Pro Ala Pro His Cys Pro Pro Pro Pro Pro Ser Ala
515 520 525

Pro Thr Pro Pro Ile Pro Ser Pro Pro Ser Thr Leu Pro Pro Pro Pro
530 535 540

Gln Ala Pro Pro Pro Asn Arg Ala Pro Pro Pro Ser Arg Pro Pro Pro
545 550 555 560

Arg Pro Ser Val

<210> 5525
<211> 368
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1198; "

<220>
<221> source
<223> /note="Gene Symbol: ANTXR1; "

<220>
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<223> /note="Gene Name:
anthrax toxin receptor 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q9H6X2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000386494"

<400> 5525

```
Met Ala Thr Ala Glu Arg Arg Ala Leu Gly Ile Gly Phe Gln Trp Leu
1               5                  10                  15

Ser Leu Ala Thr Leu Val Leu Ile Cys Ala Gly Gln Gly Gly Arg Arg
            20                  25                  30

Glu Asp Gly Gly Pro Ala Cys Tyr Gly Gly Phe Asp Leu Tyr Phe Ile
        35                  40                  45

Leu Asp Lys Ser Gly Ser Val Leu His His Trp Asn Glu Ile Tyr Tyr
    50                  55                  60

Phe Val Glu Gln Leu Ala His Lys Phe Ile Ser Pro Gln Leu Arg Met
65                  70                  75                  80

Ser Phe Ile Val Phe Ser Thr Arg Gly Thr Thr Leu Met Lys Leu Thr
                85                  90                  95

Glu Asp Arg Glu Gln Ile Arg Gln Gly Leu Glu Glu Leu Gln Lys Val
            100                 105                 110

Leu Pro Gly Gly Asp Thr Tyr Met His Glu Gly Phe Glu Arg Ala Ser
        115                 120                 125

Glu Gln Ile Tyr Tyr Glu Asn Arg Gln Gly Tyr Arg Thr Ala Ser Val
    130                 135                 140
```

Ile Ile Ala Leu Thr Asp Gly Glu Leu His Glu Asp Leu Phe Phe Tyr
145 150 155 160

Ser Glu Arg Glu Ala Asn Arg Ser Arg Asp Leu Gly Ala Ile Val Tyr
165 170 175

Cys Val Gly Val Lys Asp Phe Asn Glu Thr Gln Leu Ala Arg Ile Ala
180 185 190

Asp Ser Lys Asp His Val Phe Pro Val Asn Asp Gly Phe Gln Ala Leu
195 200 205

Gln Gly Ile Ile His Ser Ile Leu Lys Lys Ser Cys Ile Glu Ile Leu
210 215 220

Ala Ala Glu Pro Ser Thr Ile Cys Ala Gly Glu Ser Phe Gln Val Val
225 230 235 240

Val Arg Gly Asn Gly Phe Arg His Ala Arg Asn Val Asp Arg Val Leu
245 250 255

Cys Ser Phe Lys Ile Asn Asp Ser Val Thr Leu Asn Glu Lys Pro Phe
260 265 270

Ser Val Glu Asp Thr Tyr Leu Leu Cys Pro Ala Pro Ile Leu Lys Glu
275 280 285

Val Gly Met Lys Ala Ala Leu Gln Val Ser Met Asn Asp Gly Leu Ser
290 295 300

Phe Ile Ser Ser Ser Val Ile Ile Thr Thr Thr His Cys Ser Asp Gly
305 310 315 320

Ser Ile Leu Ala Ile Ala Leu Leu Ile Leu Phe Leu Leu Leu Ala Leu
325 330 335

Ala Leu Leu Trp Trp Phe Trp Pro Leu Cys Cys Thr Val Ile Ile Lys
340 345 350

Glu Val Pro Pro Pro Pro Ala Glu Glu Ser Glu Glu Asn Lys Ile Lys
355 360 365

<210> 5526

<211> 333
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1198; "

<220>
<221> source
<223> /note="Gene Symbol: ANTXR1; "

<220>
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<223> /note="Gene Name:
anthrax toxin receptor 1; "

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<223> /note="Uniprot ID: Q9H6X2; "

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<400> 5526

Met	Ala	Thr	Ala	Glu	Arg	Arg	Ala	Leu	Gly	Ile	Gly	Phe	Gln	Trp	Leu
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Ser	Leu	Ala	Thr	Leu	Val	Leu	Ile	Cys	Ala	Gly	Gln	Gly	Gly	Arg	Arg
		20					25					30			
Glu	Asp	Gly	Gly	Pro	Ala	Cys	Tyr	Gly	Gly	Phe	Asp	Leu	Tyr	Phe	Ile
	35					40					45				
Leu	Asp	Lys	Ser	Gly	Ser	Val	Leu	His	His	Trp	Asn	Glu	Ile	Tyr	Tyr
50					55					60					
Phe	Val	Glu	Gln	Leu	Ala	His	Lys	Phe	Ile	Ser	Pro	Gln	Leu	Arg	Met
65				70					75					80	
Ser	Phe	Ile	Val	Phe	Ser	Thr	Arg	Gly	Thr	Thr	Leu	Met	Lys	Leu	Thr
			85					90					95		
Glu	Asp	Arg	Glu	Gln	Ile	Arg	Gln	Gly	Leu	Glu	Glu	Leu	Gln	Lys	Val
		100					105					110			
Leu	Pro	Gly	Gly	Asp	Thr	Tyr	Met	His	Glu	Gly	Phe	Glu	Arg	Ala	Ser
	115					120					125				

```
Glu Gln Ile Tyr Tyr Glu Asn Arg Gln Gly Tyr Arg Thr Ala Ser Val
    130                 135                 140

Ile Ile Ala Leu Thr Asp Gly Glu Leu His Glu Asp Leu Phe Phe Tyr
145                 150                 155                 160

Ser Glu Arg Glu Ala Asn Arg Ser Arg Asp Leu Gly Ala Ile Val Tyr
                165                 170                 175

Cys Val Gly Val Lys Asp Phe Asn Glu Thr Gln Leu Ala Arg Ile Ala
            180                 185                 190

Asp Ser Lys Asp His Val Phe Pro Val Asn Asp Gly Phe Gln Ala Leu
        195                 200                 205

Gln Gly Ile Ile His Ser Ile Leu Lys Lys Ser Cys Ile Glu Ile Leu
    210                 215                 220

Ala Ala Glu Pro Ser Thr Ile Cys Ala Gly Glu Ser Phe Gln Val Val
225                 230                 235                 240

Val Arg Gly Asn Gly Phe Arg His Ala Arg Asn Val Asp Arg Val Leu
                245                 250                 255

Cys Ser Phe Lys Ile Asn Asp Ser Val Thr Leu Asn Glu Lys Pro Phe
            260                 265                 270

Ser Val Glu Asp Thr Tyr Leu Leu Cys Pro Ala Pro Ile Leu Lys Glu
        275                 280                 285

Val Gly Met Lys Ala Ala Leu Gln Val Ser Met Asn Asp Gly Leu Ser
    290                 295                 300

Phe Ile Ser Ser Ser Val Ile Ile Thr Thr Thr His Cys Ser Leu His
305                 310                 315                 320

Lys Ile Ala Ser Gly Pro Thr Thr Ala Ala Cys Met Glu
                325                 330
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<210> 5527
<211> 179
<212> PRT
<213> Homo sapiens

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<223> /note="Gene Symbol: ANTXR1; "

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<223> /note="Gene Name:
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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 5527
Xaa Asp Leu Gly Ala Ile Val Tyr Cys Val Gly Val Lys Asp Phe Asn
1 5 10 15

Glu Thr Gln Leu Ala Arg Ile Ala Asp Ser Lys Asp His Val Phe Pro
20 25 30

Val Asn Asp Gly Phe Gln Ala Leu Gln Gly Ile Ile His Ser Ile Leu
35 40 45

Lys Lys Ser Cys Ile Glu Ile Leu Ala Ala Glu Pro Ser Thr Ile Cys
50 55 60

Ala Gly Glu Ser Phe Gln Val Val Val Arg Gly Asn Gly Phe Arg His
65 70 75 80

Ala Arg Asn Val Asp Arg Val Leu Cys Ser Phe Lys Ile Asn Asp Ser
85 90 95

Val Thr Leu Asn Glu Lys Pro Phe Ser Val Glu Asp Thr Tyr Leu Leu
100 105 110

Cys Pro Ala Pro Ile Leu Lys Glu Val Gly Met Lys Ala Ala Leu Gln
115 120 125

Val Ser Met Asn Asp Gly Leu Ser Phe Ile Ser Ser Ser Val Ile Ile
130 135 140

Thr Thr Thr His Cys Asp Gly Leu Trp Phe Tyr Ile Gln Ser Leu Glu
145 150 155 160

Thr Val Lys Asp His Arg Asn Ile Arg Val Arg Asn Ser Asp Leu Lys
165 170 175

Tyr Cys Leu

<210> 5528
<211> 489
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1199; "

<220>
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<223> /note="Gene Symbol: ANTXR2; "

<220>
<221> source
<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID: P58335; "

<220>
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<400> 5528
Met Val Ala Glu Arg Ser Pro Ala Arg Ser Pro Gly Ser Trp Leu Phe
1 5 10 15

Pro Gly Leu Trp Leu Leu Val Leu Ser Gly Pro Gly Gly Leu Leu Arg
20 25 30

Ala Gln Glu Gln Pro Ser Cys Arg Arg Ala Phe Asp Leu Tyr Phe Val
35 40 45

Leu Asp Lys Ser Gly Ser Val Ala Asn Asn Trp Ile Glu Ile Tyr Asn
50 55 60

```
Phe Val Gln Gln Leu Ala Glu Arg Phe Val Ser Pro Glu Met Arg Leu
65                  70                  75                  80

Ser Phe Ile Val Phe Ser Ser Gln Ala Thr Ile Ile Leu Pro Leu Thr
                85                  90                  95

Gly Asp Arg Gly Lys Ile Ser Lys Gly Leu Glu Asp Leu Lys Arg Val
            100                 105                 110

Ser Pro Val Gly Glu Thr Tyr Ile His Glu Gly Leu Lys Leu Ala Asn
        115                 120                 125

Glu Gln Ile Gln Lys Ala Gly Gly Leu Lys Thr Ser Ser Ile Ile Ile
    130                 135                 140

Ala Leu Thr Asp Gly Lys Leu Asp Gly Leu Val Pro Ser Tyr Ala Glu
145                 150                 155                 160

Lys Glu Ala Lys Ile Ser Arg Ser Leu Gly Ala Ser Val Tyr Cys Val
                165                 170                 175

Gly Val Leu Asp Phe Glu Gln Ala Gln Leu Glu Arg Ile Ala Asp Ser
            180                 185                 190

Lys Glu Gln Val Phe Pro Val Lys Gly Gly Phe Gln Ala Leu Lys Gly
        195                 200                 205

Ile Ile Asn Ser Ile Leu Ala Gln Ser Cys Thr Glu Ile Leu Glu Leu
    210                 215                 220

Gln Pro Ser Ser Val Cys Val Gly Glu Glu Phe Gln Ile Val Leu Ser
225                 230                 235                 240

Gly Arg Gly Phe Met Leu Gly Ser Arg Asn Gly Ser Val Leu Cys Thr
                245                 250                 255

Tyr Thr Val Asn Glu Thr Tyr Thr Thr Ser Val Lys Pro Val Ser Val
            260                 265                 270

Gln Leu Asn Ser Met Leu Cys Pro Ala Pro Ile Leu Asn Lys Ala Gly
        275                 280                 285
```

```
Glu Thr Leu Asp Val Ser Val Ser Phe Asn Gly Gly Lys Ser Val Ile
    290                 295                 300

Ser Gly Ser Leu Ile Val Thr Ala Thr Glu Cys Ser Asn Gly Ile Ala
305                 310                 315                 320

Ala Ile Ile Val Ile Leu Val Leu Leu Leu Leu Leu Gly Ile Gly Leu
                325                 330                 335

Met Trp Trp Phe Trp Pro Leu Cys Cys Lys Val Val Ile Lys Asp Pro
            340                 345                 350

Pro Pro Pro Pro Ala Pro Ala Pro Lys Glu Glu Glu Glu Glu Pro Leu
        355                 360                 365

Pro Thr Lys Lys Trp Pro Thr Val Asp Ala Ser Tyr Tyr Gly Gly Arg
    370                 375                 380

Gly Val Gly Gly Ile Lys Arg Met Glu Val Arg Trp Gly Asp Lys Gly
385                 390                 395                 400

Ser Thr Glu Glu Gly Ala Arg Leu Glu Lys Ala Lys Asn Ala Val Val
                405                 410                 415

Lys Ile Pro Glu Glu Thr Glu Glu Pro Ile Arg Pro Arg Pro Pro Arg
            420                 425                 430

Pro Lys Pro Thr His Gln Pro Pro Gln Thr Lys Trp Tyr Thr Pro Ile
        435                 440                 445

Lys Gly Arg Leu Asp Ala Leu Trp Ala Leu Leu Arg Arg Gln Tyr Asp
    450                 455                 460

Arg Val Ser Leu Met Arg Pro Gln Glu Gly Asp Glu Val Cys Ile Trp
465                 470                 475                 480

Glu Cys Ile Glu Lys Glu Leu Thr Ala
                485
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<210> 5529
<211> 386
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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anthrax toxin receptor 2; "

<220>
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<223> /note="Uniprot ID: P58335; "

<220>
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<400> 5529

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Met Val Ala Glu Arg Ser Pro Ala Arg Ser Pro Gly Ser Trp Leu Phe
1               5                  10                  15

Pro Gly Leu Trp Leu Leu Val Leu Ser Gly Pro Gly Gly Leu Leu Arg
            20                  25                  30

Ala Gln Glu Gln Pro Ser Cys Arg Arg Ala Phe Asp Leu Tyr Phe Val
        35                  40                  45

Leu Asp Lys Ser Gly Ser Val Ala Asn Asn Trp Ile Glu Ile Tyr Asn
    50                  55                  60

Phe Val Gln Gln Leu Ala Glu Arg Phe Val Ser Pro Glu Met Arg Leu
65                  70                  75                  80

Ser Phe Ile Val Phe Ser Ser Gln Ala Thr Ile Ile Leu Pro Leu Thr
                85                  90                  95

Gly Asp Arg Gly Lys Ile Ser Lys Gly Leu Glu Asp Leu Lys Arg Val
            100                 105                 110

Ser Pro Val Gly Glu Thr Tyr Ile His Glu Gly Leu Lys Leu Ala Asn
        115                 120                 125

Glu Gln Ile Gln Lys Ala Gly Gly Leu Lys Thr Ser Ser Ile Ile Ile
    130                 135                 140
```

```
Ala Leu Thr Asp Gly Lys Leu Asp Gly Leu Val Pro Ser Tyr Ala Glu
145                 150                 155                 160

Lys Glu Ala Lys Ile Ser Arg Ser Leu Gly Ala Ser Val Tyr Cys Val
                165                 170                 175

Gly Val Leu Asp Phe Glu Gln Ala Gln Leu Glu Arg Ile Ala Asp Ser
            180                 185                 190

Lys Glu Gln Val Phe Pro Val Lys Gly Gly Phe Gln Ala Leu Lys Gly
        195                 200                 205

Ile Ile Asn Ser Ser Asn Gly Ile Ala Ala Ile Ile Val Ile Leu Val
    210                 215                 220

Leu Leu Leu Leu Leu Gly Ile Gly Leu Met Trp Trp Phe Trp Pro Leu
225                 230                 235                 240

Cys Cys Lys Val Val Ile Lys Asp Pro Pro Pro Pro Pro Ala Pro Ala
                245                 250                 255

Pro Lys Glu Glu Glu Glu Glu Pro Leu Pro Thr Lys Lys Trp Pro Thr
            260                 265                 270

Val Asp Ala Ser Tyr Tyr Gly Gly Arg Gly Val Gly Gly Ile Lys Arg
        275                 280                 285

Met Glu Val Arg Trp Gly Asp Lys Gly Ser Thr Glu Glu Gly Ala Arg
    290                 295                 300

Leu Glu Lys Ala Lys Asn Ala Val Val Lys Ile Pro Glu Glu Thr Glu
305                 310                 315                 320

Glu Pro Ile Arg Pro Arg Pro Pro Arg Pro Lys Pro Thr His Gln Pro
                325                 330                 335

Pro Gln Thr Lys Trp Tyr Thr Pro Ile Lys Gly Arg Leu Asp Ala Leu
            340                 345                 350

Trp Ala Leu Leu Arg Arg Gln Tyr Asp Arg Val Ser Leu Met Arg Pro
        355                 360                 365
```

Gln Glu Gly Asp Glu Val Cys Ile Trp Glu Cys Ile Glu Lys Glu Leu
370 375 380

Thr Ala
385

<210> 5530
<211> 411
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1199; "

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<220>
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<223> /note="Gene Name:
anthrax toxin receptor 2; "

<220>
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<223> /note="ENSP ID: ENSP00000384028"

<400> 5530
Met Arg Leu Ser Phe Ile Val Phe Ser Ser Gln Ala Thr Ile Ile Leu
1 5 10 15

Pro Leu Thr Gly Asp Arg Gly Lys Ile Ser Lys Gly Leu Glu Asp Leu
20 25 30

Lys Arg Val Ser Pro Val Gly Glu Thr Tyr Ile His Glu Gly Leu Lys
35 40 45

Leu Ala Asn Glu Gln Ile Gln Lys Ala Gly Gly Leu Lys Thr Ser Ser
50 55 60

Ile Ile Ile Ala Leu Thr Asp Gly Lys Leu Asp Gly Leu Val Pro Ser
65 70 75 80

Tyr Ala Glu Lys Glu Ala Lys Ile Ser Arg Ser Leu Gly Ala Ser Val
85 90 95

Tyr Cys Val Gly Val Leu Asp Phe Glu Gln Ala Gln Leu Glu Arg Ile

```
            100                 105                 110

Ala Asp Ser Lys Glu Gln Val Phe Pro Val Lys Gly Gly Phe Gln Ala
        115                 120                 125

Leu Lys Gly Ile Ile Asn Ser Ile Leu Ala Gln Ser Cys Thr Glu Ile
    130                 135                 140

Leu Glu Leu Gln Pro Ser Ser Val Cys Val Gly Glu Glu Phe Gln Ile
145                 150                 155                 160

Val Leu Ser Gly Arg Gly Phe Met Leu Gly Ser Arg Asn Gly Ser Val
                165                 170                 175

Leu Cys Thr Tyr Thr Val Asn Glu Thr Tyr Thr Thr Ser Val Lys Pro
            180                 185                 190

Val Ser Val Gln Leu Asn Ser Met Leu Cys Pro Ala Pro Ile Leu Asn
        195                 200                 205

Lys Ala Gly Glu Thr Leu Asp Val Ser Val Ser Phe Asn Gly Gly Lys
    210                 215                 220

Ser Val Ile Ser Gly Ser Leu Ile Val Thr Ala Thr Glu Cys Ser Asn
225                 230                 235                 240

Gly Ile Ala Ala Ile Ile Val Ile Leu Val Leu Leu Leu Leu Leu Gly
                245                 250                 255

Ile Gly Leu Met Trp Trp Phe Trp Pro Leu Cys Cys Lys Val Val Ile
            260                 265                 270

Lys Asp Pro Pro Pro Pro Pro Ala Pro Ala Pro Lys Glu Glu Glu Glu
        275                 280                 285

Glu Pro Leu Pro Thr Lys Lys Trp Pro Thr Val Asp Ala Ser Tyr Tyr
    290                 295                 300

Gly Gly Arg Gly Val Gly Gly Ile Lys Arg Met Glu Val Arg Trp Gly
305                 310                 315                 320

Asp Lys Gly Ser Thr Glu Glu Gly Ala Arg Leu Glu Lys Ala Lys Asn
                325                 330                 335
```

```
Ala Val Val Lys Ile Pro Glu Glu Thr Glu Glu Pro Ile Arg Pro Arg
            340                 345                 350

Pro Pro Arg Pro Lys Pro Thr His Gln Pro Pro Gln Thr Lys Trp Tyr
        355                 360                 365

Thr Pro Ile Lys Gly Arg Leu Asp Ala Leu Trp Ala Leu Leu Arg Arg
    370                 375                 380

Gln Tyr Asp Arg Val Ser Leu Met Arg Pro Gln Glu Gly Asp Glu Gly
385                 390                 395                 400

Arg Cys Ile Asn Phe Ser Arg Val Pro Ser Gln
                405                 410


<210> 5531
<211> 488
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Uniprot ID:  P58335; "

<220>
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<223> /note="ENSP ID: ENSP00000385575"

<400> 5531
Met Val Ala Glu Arg Ser Pro Ala Arg Ser Pro Gly Ser Trp Leu Phe
1               5                   10                  15

Pro Gly Leu Trp Leu Leu Val Leu Ser Gly Pro Gly Gly Leu Leu Arg
            20                  25                  30
```

```
Ala Gln Glu Gln Pro Ser Cys Arg Arg Ala Phe Asp Leu Tyr Phe Val
        35                  40                  45

Leu Asp Lys Ser Gly Ser Val Ala Asn Asn Trp Ile Glu Ile Tyr Asn
    50                  55                  60

Phe Val Gln Gln Leu Ala Glu Arg Phe Val Ser Pro Glu Met Arg Leu
65                  70                  75                  80

Ser Phe Ile Val Phe Ser Ser Gln Ala Thr Ile Ile Leu Pro Leu Thr
                85                  90                  95

Gly Asp Arg Gly Lys Ile Ser Lys Gly Leu Glu Asp Leu Lys Arg Val
            100                 105                 110

Ser Pro Val Gly Glu Thr Tyr Ile His Glu Gly Leu Lys Leu Ala Asn
        115                 120                 125

Glu Gln Ile Gln Lys Ala Gly Gly Leu Lys Thr Ser Ser Ile Ile Ile
    130                 135                 140

Ala Leu Thr Asp Gly Lys Leu Asp Gly Leu Val Pro Ser Tyr Ala Glu
145                 150                 155                 160

Lys Glu Ala Lys Ile Ser Arg Ser Leu Gly Ala Ser Val Tyr Cys Val
                165                 170                 175

Gly Val Leu Asp Phe Glu Gln Ala Gln Leu Glu Arg Ile Ala Asp Ser
            180                 185                 190

Lys Glu Gln Val Phe Pro Val Lys Gly Gly Phe Gln Ala Leu Lys Gly
        195                 200                 205

Ile Ile Asn Ser Ile Leu Ala Gln Ser Cys Thr Glu Ile Leu Glu Leu
    210                 215                 220

Gln Pro Ser Ser Val Cys Val Gly Glu Glu Phe Gln Ile Val Leu Ser
225                 230                 235                 240

Gly Arg Gly Phe Met Leu Gly Ser Arg Asn Gly Ser Val Leu Cys Thr
                245                 250                 255

Tyr Thr Val Asn Glu Thr Tyr Thr Thr Ser Val Lys Pro Val Ser Val
```

```
            260                 265                 270

Gln Leu Asn Ser Met Leu Cys Pro Ala Pro Ile Leu Asn Lys Ala Gly
        275                 280                 285

Glu Thr Leu Asp Val Ser Val Ser Phe Asn Gly Gly Lys Ser Val Ile
    290                 295                 300

Ser Gly Ser Leu Ile Val Thr Ala Thr Glu Cys Ser Asn Gly Ile Ala
305                 310                 315                 320

Ala Ile Ile Val Ile Leu Val Leu Leu Leu Leu Leu Gly Ile Gly Leu
                325                 330                 335

Met Trp Trp Phe Trp Pro Leu Cys Cys Lys Val Val Ile Lys Asp Pro
            340                 345                 350

Pro Pro Pro Pro Ala Pro Ala Pro Lys Glu Glu Glu Glu Glu Pro Leu
        355                 360                 365

Pro Thr Lys Lys Trp Pro Thr Val Asp Ala Ser Tyr Tyr Gly Gly Arg
    370                 375                 380

Gly Val Gly Gly Ile Lys Arg Met Glu Val Arg Trp Gly Asp Lys Gly
385                 390                 395                 400

Ser Thr Glu Glu Gly Ala Arg Leu Glu Lys Ala Lys Asn Ala Val Val
                405                 410                 415

Lys Ile Pro Glu Glu Thr Glu Glu Pro Ile Arg Pro Arg Pro Pro Arg
            420                 425                 430

Pro Lys Pro Thr His Gln Pro Pro Gln Thr Lys Trp Tyr Thr Pro Ile
        435                 440                 445

Lys Gly Arg Leu Asp Ala Leu Trp Ala Leu Leu Arg Arg Gln Tyr Asp
    450                 455                 460

Arg Val Ser Leu Met Arg Pro Gln Glu Gly Asp Glu Gly Arg Cys Ile
465                 470                 475                 480

Asn Phe Ser Arg Val Pro Ser Gln
                485
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<210> 5532
<211> 245
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<213> Homo sapiens

<220>
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<221> source
<223> /note="Gene Name:
anthrax toxin receptor 2; "

<220>
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Met Arg Leu Ser Phe Ile Val Phe Ser Ser Gln Ala Thr Ile Ile Leu
1 5 10 15

Pro Leu Thr Gly Asp Arg Gly Lys Ile Ser Lys Gly Leu Glu Asp Leu
20 25 30

Lys Arg Val Ser Pro Val Gly Glu Thr Tyr Ile His Glu Gly Leu Lys
35 40 45

Leu Ala Asn Glu Gln Ile Gln Lys Ala Gly Gly Leu Lys Thr Ser Ser
50 55 60

Ile Ile Ile Ala Leu Thr Asp Gly Lys Leu Asp Gly Leu Val Pro Ser
65 70 75 80

Tyr Ala Glu Lys Glu Ala Lys Ile Ser Arg Ser Leu Gly Ala Ser Val
85 90 95

Tyr Cys Val Gly Val Leu Asp Phe Glu Gln Ala Gln Leu Glu Arg Ile
100 105 110

Ala Asp Ser Lys Glu Gln Val Phe Pro Val Lys Gly Gly Phe Gln Ala
115 120 125

```
Leu Lys Gly Ile Ile Asn Ser Ile Leu Ala Gln Ser Cys Thr Glu Ile
    130                 135                 140

Leu Glu Leu Gln Pro Ser Ser Val Cys Val Gly Glu Glu Phe Gln Ile
145                 150                 155                 160

Val Leu Ser Gly Arg Gly Phe Met Leu Gly Ser Arg Asn Gly Ser Val
                165                 170                 175

Leu Cys Thr Tyr Thr Val Asn Glu Thr Tyr Thr Thr Ser Val Lys Pro
            180                 185                 190

Val Ser Val Gln Leu Asn Ser Met Leu Cys Pro Ala Pro Ile Leu Asn
        195                 200                 205

Lys Ala Gly Glu Trp Gly Leu Thr Val Thr Gln Ala Gly Val Lys Trp
    210                 215                 220

His Asp Leu Thr His Cys Thr Phe Gly Leu Ser Gly Ser Gly Asp Pro
225                 230                 235                 240

Pro Thr Ser Ala Ser
                245
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<210> 5533
<211> 112
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<220>
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<220>
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<223> /note="Gene Symbol: ANTXRL; "

<220>
<221> source
<223> /note="Gene Name:
anthrax toxin receptor-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000479364"

<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 5533
Xaa Ala Gln Lys Ala Arg Lys Leu Gly Ala Asn Val Tyr Thr Leu Gly
1   5   10   15

Val Ala Asp Tyr Asn Leu Asp Gln Ile Thr Ala Ile Ala Asp Ser Pro
            20   25   30

Gly His Val Phe Ala Val Glu Asn Gly Phe Lys Ala Leu Arg Ser Thr
        35   40   45

Ile Asp Ala Leu Thr Ser Lys Val Cys Leu Asp Val Thr Ser Val Glu
    50   55   60

Pro Ser Ser Glu Cys Val Gly Glu Pro Tyr His Val Val Ile His Gly
65   70   75   80

Asn Gly Phe Gln Asn Leu Lys Lys Arg Asp Glu Val Ile Cys Arg Phe
                85   90   95

Ile Phe Asn Glu Ser Thr Ile Ile Gly Ser Thr Leu Leu Lys Ser Ala
            100   105   110

<210> 5534
<211> 565
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<223> /note="Gene Symbol: ANTXRL; "

<220>
<221> source
<223> /note="Gene Name:
      anthrax toxin receptor-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000479655"

<400> 5534
Met Gly Ser His Glu Ser Leu Gly Pro Tyr Phe Leu Val Phe Leu Leu
1   5   10   15

```
Leu Leu Leu Leu Pro Pro Pro Leu Phe Arg Ala Gly Ser Leu Arg Tyr
            20                  25                  30

His Gly Pro Asp Trp Arg Ile Phe His Arg Leu Ala Leu Gly Ser Arg
        35                  40                  45

Arg Ala His His His His Gly Pro Gly Trp Arg Gln His Trp Arg Gln
    50                  55                  60

Gly Gln Ala Gly His Arg Cys Gln Gly Ser Phe Asp Leu Tyr Phe Ile
65                  70                  75                  80

Leu Asp Lys Ser Gly Ser Val Asn Asn Asn Trp Ile Asp Leu Tyr Met
                85                  90                  95

Trp Val Glu Glu Thr Val Ala Arg Phe Gln Ser Pro Asn Ile Arg Met
            100                 105                 110

Cys Phe Ile Thr Tyr Ser Thr Asp Gly Gln Thr Val Leu Pro Leu Thr
        115                 120                 125

Ser Asp Lys Asn Arg Ile Lys Asn Gly Leu Asp Gln Leu Gln Lys Ile
    130                 135                 140

Val Pro Asp Gly His Thr Phe Met Gln Ala Gly Phe Arg Lys Ala Ile
145                 150                 155                 160

Gln Gln Ile Glu Ser Phe Asn Ser Gly Asn Lys Val Pro Ser Met Ile
                165                 170                 175

Ile Ala Met Thr Asp Gly Glu Leu Val Ala His Ala Phe Gln Asp Thr
            180                 185                 190

Leu Arg Glu Ala Gln Lys Ala Arg Lys Leu Gly Ala Asn Val Tyr Thr
        195                 200                 205

Leu Gly Val Ala Asp Tyr Asn Leu Asp Gln Ile Thr Ala Ile Ala Asp
    210                 215                 220

Ser Pro Gly His Val Phe Ala Val Glu Asn Gly Phe Lys Ala Leu Arg
225                 230                 235                 240
```

```
Ser Thr Ile Asp Ala Leu Thr Ser Lys Val Cys Leu Asp Val Thr Ser
                245                 250                 255

Val Glu Pro Ser Ser Glu Cys Val Gly Glu Pro Tyr His Val Val Ile
            260                 265                 270

His Gly Asn Gly Phe Gln Asn Leu Lys Lys Arg Asp Glu Val Ile Cys
        275                 280                 285

Arg Phe Ile Phe Asn Glu Ser Thr Ile Ile Asp Glu Lys Pro Thr Ser
    290                 295                 300

Ile Asp Asn Asn Ser Met Asn Cys Pro Gly Pro Lys Leu Glu Lys Pro
305                 310                 315                 320

Gly Glu Glu Tyr Ser Ile Glu Val Ser Leu Asn Lys Gly Lys Thr Phe
                325                 330                 335

Phe Lys Ser Asn Val Ser Ile Thr Ser Thr Thr Cys Gly Ile Phe Arg
            340                 345                 350

Asn Trp Leu Tyr Phe Val Pro Leu Leu Leu Leu Val Pro Leu Leu Leu
        355                 360                 365

Cys Cys Val Trp Arg Leu Cys Arg Lys Gln Thr Val Lys Glu Pro Pro
    370                 375                 380

Pro Val Gln Lys Pro Glu Lys Glu Pro Glu Gln Glu Lys Pro Pro Ser
385                 390                 395                 400

Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Leu Pro Pro Pro Pro
                405                 410                 415

Pro Ala Pro Val Asn Thr Cys Pro Thr Val Ile Ile Cys Cys Cys Gly
            420                 425                 430

Cys Gln Gly Val Gly Gly Met Arg Arg Ile Glu Gly Asn Leu Asp Thr
        435                 440                 445

Phe Cys Asp Leu Ser His Ala Ser Cys His Gln Val Pro Trp Met Cys
    450                 455                 460
```

```
Cys Gln Ser Arg Asp Gln Gly Arg Tyr Leu Ser Leu Ala Leu Ala Gln
465                 470                 475                 480


Ser Gln Tyr Ala Gln Ala Pro Cys Cys Pro Arg Ile Cys Phe Pro His
                485                 490                 495


Ser Gln Glu Pro Lys Asp Leu Pro Glu Thr Gln Pro Gly Val Leu Phe
            500                 505                 510


Pro Ser Thr Asp Ser Val Gln Pro Lys Glu Leu Pro Ser Thr Gln Pro
        515                 520                 525


Gly Val Pro Arg Cys Cys Arg Cys Cys Pro His Cys Ser Gly Thr Arg
    530                 535                 540


Gln Asn Pro Leu Cys His Ser Pro Pro Gln Ser Pro Thr Ser Lys Ala
545                 550                 555                 560


Pro Asn Thr Gln Asp
                565


<210> 5535
<211> 61
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
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<220>
<221> source
<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000479836"

<400> 5535
Met Trp Val Glu Glu Thr Val Ala Arg Phe Gln Ser Pro Asn Ile Arg
1               5                   10                  15


Met Cys Phe Ile Thr Tyr Ser Thr Asp Gly Gln Thr Val Leu Pro Leu
            20                  25                  30
```

```
Thr Ser Asp Lys Asn Arg Ile Lys Asn Gly Leu Asp Gln Leu Gln Lys
        35                  40                  45


Ile Val Pro Asp Gly His Thr Phe Met Gln Ala Gly Phe
    50                  55                  60


<210> 5536
<211> 631
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1200; "

<220>
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<223> /note="Gene Symbol: ANTXRL; "

<220>
<221> source
<223> /note="Gene Name:
      anthrax toxin receptor-like; "

<220>
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<223> /note="Uniprot ID:  A6NF34; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000480615"

<400> 5536
Met Gly Ser His Glu Ser Leu Gly Pro Tyr Phe Leu Val Phe Leu Leu
1               5                   10                  15


Leu Leu Leu Leu Pro Pro Pro Leu Phe Arg Ala Gly Ser Leu Arg Tyr
            20                  25                  30


His Gly Pro Asp Trp Arg Ile Phe His Arg Leu Ala Leu Gly Ser Arg
        35                  40                  45


Arg Ala His His His His Gly Pro Gly Trp Arg Gln His Trp Arg Gln
    50                  55                  60


Gly Gln Ala Gly His Arg Cys Gln Gly Ser Phe Asp Leu Tyr Phe Ile
65                  70                  75                  80
```

```
Leu Asp Lys Ser Gly Ser Val Asn Asn Asn Trp Ile Asp Leu Tyr Met
                85                  90                  95

Trp Val Glu Glu Thr Val Ala Arg Phe Gln Ser Pro Asn Ile Arg Met
            100                 105                 110

Cys Phe Ile Thr Tyr Ser Thr Asp Gly Gln Thr Val Leu Pro Leu Thr
        115                 120                 125

Ser Asp Lys Asn Arg Ile Lys Asn Gly Leu Asp Gln Leu Gln Lys Ile
    130                 135                 140

Val Pro Asp Gly His Thr Phe Met Gln Ala Gly Phe Arg Lys Ala Ile
145                 150                 155                 160

Gln Gln Ile Glu Ser Phe Asn Ser Gly Asn Lys Val Pro Ser Met Ile
                165                 170                 175

Ile Ala Met Thr Asp Gly Glu Leu Val Ala His Ala Phe Gln Asp Thr
            180                 185                 190

Leu Arg Glu Ala Gln Lys Ala Arg Lys Leu Gly Ala Asn Val Tyr Thr
        195                 200                 205

Leu Gly Val Ala Asp Tyr Asn Leu Asp Gln Ile Thr Ala Ile Ala Asp
    210                 215                 220

Ser Pro Gly His Val Phe Ala Val Glu Asn Gly Phe Lys Ala Leu Arg
225                 230                 235                 240

Ser Thr Ile Asp Ala Leu Thr Ser Lys Val Cys Leu Asp Val Thr Ser
                245                 250                 255

Val Glu Pro Ser Ser Glu Cys Val Gly Glu Pro Tyr His Val Val Ile
            260                 265                 270

His Gly Asn Gly Phe Gln Asn Leu Lys Lys Arg Asp Glu Val Ile Cys
        275                 280                 285

Arg Phe Ile Phe Asn Glu Ser Thr Ile Ile Asp Glu Lys Pro Thr Ser
    290                 295                 300

Ile Asp Asn Asn Ser Met Asn Cys Pro Gly Pro Lys Leu Glu Lys Pro
```

305 310 315 320

Gly Glu Glu Tyr Ser Ile Glu Val Ser Leu Asn Lys Gly Lys Thr Phe
325 330 335

Phe Lys Ser Asn Val Ser Ile Thr Ser Thr Thr Cys Gly Ile Phe Arg
340 345 350

Asn Trp Leu Tyr Phe Val Pro Leu Leu Leu Leu Val Pro Leu Leu Leu
355 360 365

Cys Cys Val Trp Arg Leu Cys Arg Lys Gln Thr Val Lys Glu Pro Pro
370 375 380

Pro Val Gln Lys Pro Glu Lys Glu Pro Glu Gln Glu Lys Pro Pro Ser
385 390 395 400

Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Pro Leu Pro Pro Pro Pro
405 410 415

Pro Ala Pro Val Asn Thr Cys Pro Thr Val Ile Ile Cys Cys Cys Gly
420 425 430

Cys Gln Gly Val Gly Gly Met Arg Arg Ile Glu Gly Asn Leu Asp Thr
435 440 445

Phe Cys Asp Leu Ser His Ala Ser Cys His Gln Val Pro Trp Met Cys
450 455 460

Cys Gln Ser Arg Asp Gln Gly Arg Tyr Leu Ser Leu Ala Leu Ala Gln
465 470 475 480

Ser Gln Tyr Ala Gln Ala Pro Cys Cys Pro Arg Ile Cys Phe Pro His
485 490 495

Ser Gln Glu Cys Leu Ser Leu Pro Gln Ala Pro Cys Ser Pro Arg Met
500 505 510

Cys Leu Arg His Ser Arg Glu Cys Leu Ala Leu Lys Gln Ala Arg Cys
515 520 525

Ser Pro Asn Ile Cys Leu Arg His Ser Gln His Ser Arg Glu Cys Leu
530 535 540

```
Ala Arg Lys Gln Ala Pro Cys Ser Pro Arg Ile Cys Leu Arg His Ser
545                 550                 555                 560


Pro Glu Tyr Phe Ser Gln Ala Gln Thr Leu Cys Asn Pro Lys Ser Cys
                565                 570                 575


Leu Gln Pro Ser Arg Glu Cys Leu Pro Leu Thr Cys Ser Ser Arg Cys
            580                 585                 590


Arg Leu Pro Pro Ala Arg Cys Leu Arg Pro Pro Ser Arg Met Leu Pro
        595                 600                 605


Leu Leu Ser Pro Leu Leu Arg His Thr Ala Glu Pro Pro Leu Ser Leu
    610                 615                 620


Pro Pro Ser Glu Pro Asn Phe
625                 630


<210> 5537
<211> 257
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1200; "

<220>
<221> source
<223> /note="Gene Symbol: ANTXRL; "

<220>
<221> source
<223> /note="Gene Name:
      anthrax toxin receptor-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000481410"

<400> 5537
Met Trp Val Glu Glu Thr Val Ala Arg Phe Gln Ser Pro Asn Ile Arg
1               5                   10                  15


Met Cys Phe Ile Thr Tyr Ser Thr Asp Gly Gln Thr Val Leu Pro Leu
            20                  25                  30
```

Thr Ser Asp Lys Asn Arg Ile Lys Asn Gly Leu Asp Gln Leu Gln Lys
35 40 45

Ile Val Pro Asp Gly His Thr Phe Met Gln Ala Gly Phe Arg Lys Ala
50 55 60

Ile Gln Gln Ile Glu Ser Phe Asn Ser Gly Asn Lys Val Pro Ser Met
65 70 75 80

Ile Ile Ala Met Thr Asp Gly Glu Leu Val Ala His Ala Phe Gln Asp
85 90 95

Thr Leu Arg Glu Ala Gln Lys Ala Arg Lys Leu Gly Ala Asn Val Tyr
100 105 110

Thr Leu Gly Val Ala Asp Tyr Asn Leu Asp Gln Ile Thr Ala Ile Ala
115 120 125

Asp Ser Pro Gly His Val Phe Ala Val Glu Asn Gly Phe Lys Ala Leu
130 135 140

Arg Ser Thr Ile Asp Ala Leu Thr Ser Lys Val Cys Leu Asp Val Thr
145 150 155 160

Ser Val Glu Pro Ser Ser Glu Cys Val Gly Glu Pro Tyr His Val Val
165 170 175

Ile His Gly Asn Gly Phe Gln Asn Leu Lys Lys Arg Asp Glu Val Ile
180 185 190

Cys Arg Phe Ile Phe Asn Glu Ser Thr Ile Ile Asp Glu Lys Pro Thr
195 200 205

Ser Ile Asp Asn Asn Ser Met Asn Cys Pro Gly Pro Lys Leu Glu Lys
210 215 220

Pro Gly Glu Glu Tyr Ser Ile Glu Val Ser Leu Asn Lys Gly Lys Thr
225 230 235 240

Phe Phe Lys Ser Asn Val Ser Ile Thr Ser Thr Thr Cys Pro Ser Leu
245 250 255

Lys

<210> 5538
<211> 738
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1201; "

<220>
<221> source
<223> /note="Gene Symbol: MFI2; "

<220>
<221> source
<223> /note="Gene Name:
antigen p97 (melanoma associated) identified by
monoclonal antibodies 133.2 and 96.5; "

<220>
<221> source
<223> /note="Uniprot ID: P08582; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000296350"

<400> 5538
Met Arg Gly Pro Ser Gly Ala Leu Trp Leu Leu Leu Ala Leu Arg Thr
1   5   10   15

Val Leu Gly Gly Met Glu Val Arg Trp Cys Ala Thr Ser Asp Pro Glu
            20   25   30

Gln His Lys Cys Gly Asn Met Ser Glu Ala Phe Arg Glu Ala Gly Ile
        35   40   45

Gln Pro Ser Leu Leu Cys Val Arg Gly Thr Ser Ala Asp His Cys Val
    50   55   60

Gln Leu Ile Ala Ala Gln Glu Ala Asp Ala Ile Thr Leu Asp Gly Gly
65   70   75   80

Ala Ile Tyr Glu Ala Gly Lys Glu His Gly Leu Lys Pro Val Val Gly
                85   90   95

Glu Val Tyr Asp Gln Glu Val Gly Thr Ser Tyr Tyr Ala Val Ala Val
            100   105   110

```
Val Arg Arg Ser Ser His Val Thr Ile Asp Thr Leu Lys Gly Val Lys
        115                 120                 125

Ser Cys His Thr Gly Ile Asn Arg Thr Val Gly Trp Asn Val Pro Val
    130                 135                 140

Gly Tyr Leu Val Glu Ser Gly Arg Leu Ser Val Met Gly Cys Asp Val
145                 150                 155                 160

Leu Lys Ala Val Ser Asp Tyr Phe Gly Gly Ser Cys Val Pro Gly Ala
                165                 170                 175

Gly Glu Thr Ser Tyr Ser Glu Ser Leu Cys Arg Leu Cys Arg Gly Asp
            180                 185                 190

Ser Ser Gly Glu Gly Val Cys Asp Lys Ser Pro Leu Glu Arg Tyr Tyr
        195                 200                 205

Asp Tyr Ser Gly Ala Phe Arg Cys Leu Ala Glu Gly Ala Gly Asp Val
    210                 215                 220

Ala Phe Val Lys His Ser Thr Val Leu Glu Asn Thr Asp Gly Lys Thr
225                 230                 235                 240

Leu Pro Ser Trp Gly Gln Ala Leu Leu Ser Gln Asp Phe Glu Leu Leu
                245                 250                 255

Cys Arg Asp Gly Ser Arg Ala Asp Val Thr Glu Trp Arg Gln Cys His
            260                 265                 270

Leu Ala Arg Val Pro Ala His Ala Val Val Val Arg Ala Asp Thr Asp
        275                 280                 285

Gly Gly Leu Ile Phe Arg Leu Leu Asn Glu Gly Gln Arg Leu Phe Ser
    290                 295                 300

His Glu Gly Ser Ser Phe Gln Met Phe Ser Ser Glu Ala Tyr Gly Gln
305                 310                 315                 320

Lys Asp Leu Leu Phe Lys Asp Ser Thr Ser Glu Leu Val Pro Ile Ala
                325                 330                 335
```

```
Thr Gln Thr Tyr Glu Ala Trp Leu Gly His Glu Tyr Leu His Ala Met
            340                 345                 350

Lys Gly Leu Leu Cys Asp Pro Asn Arg Leu Pro Pro Tyr Leu Arg Trp
        355                 360                 365

Cys Val Leu Ser Thr Pro Glu Ile Gln Lys Cys Gly Asp Met Ala Val
    370                 375                 380

Ala Phe Arg Arg Gln Arg Leu Lys Pro Glu Ile Gln Cys Val Ser Ala
385                 390                 395                 400

Lys Ser Pro Gln His Cys Met Glu Arg Ile Gln Ala Glu Gln Val Asp
                405                 410                 415

Ala Val Thr Leu Ser Gly Glu Asp Ile Tyr Thr Ala Gly Lys Thr Tyr
            420                 425                 430

Gly Leu Val Pro Ala Ala Gly Glu His Tyr Ala Pro Glu Asp Ser Ser
        435                 440                 445

Asn Ser Tyr Tyr Val Val Ala Val Val Arg Arg Asp Ser Ser His Ala
    450                 455                 460

Phe Thr Leu Asp Glu Leu Arg Gly Lys Arg Ser Cys His Ala Gly Phe
465                 470                 475                 480

Gly Ser Pro Ala Gly Trp Asp Val Pro Val Gly Ala Leu Ile Gln Arg
                485                 490                 495

Gly Phe Ile Arg Pro Lys Asp Cys Asp Val Leu Thr Ala Val Ser Glu
            500                 505                 510

Phe Phe Asn Ala Ser Cys Val Pro Val Asn Asn Pro Lys Asn Tyr Pro
        515                 520                 525

Ser Ser Leu Cys Ala Leu Cys Val Gly Asp Glu Gln Gly Arg Asn Lys
    530                 535                 540

Cys Val Gly Asn Ser Gln Glu Arg Tyr Tyr Gly Tyr Arg Gly Ala Phe
545                 550                 555                 560
```

```
Arg Cys Leu Val Glu Asn Ala Gly Asp Val Ala Phe Val Arg His Thr
                565                 570                 575

Thr Val Phe Asp Asn Thr Asn Gly His Asn Ser Glu Pro Trp Ala Ala
            580                 585                 590

Glu Leu Arg Ser Glu Asp Tyr Glu Leu Leu Cys Pro Asn Gly Ala Arg
        595                 600                 605

Ala Glu Val Ser Gln Phe Ala Ala Cys Asn Leu Ala Gln Ile Pro Pro
    610                 615                 620

His Ala Val Met Val Arg Pro Asp Thr Asn Ile Phe Thr Val Tyr Gly
625                 630                 635                 640

Leu Leu Asp Lys Ala Gln Asp Leu Phe Gly Asp Asp His Asn Lys Asn
                645                 650                 655

Gly Phe Lys Met Phe Asp Ser Ser Asn Tyr His Gly Gln Asp Leu Leu
            660                 665                 670

Phe Lys Asp Ala Thr Val Arg Ala Val Pro Val Gly Glu Lys Thr Thr
        675                 680                 685

Tyr Arg Gly Trp Leu Gly Leu Asp Tyr Val Ala Ala Leu Glu Gly Met
    690                 695                 700

Ser Ser Gln Gln Cys Ser Gly Ala Ala Ala Pro Ala Pro Gly Ala Pro
705                 710                 715                 720

Leu Leu Pro Leu Leu Leu Pro Ala Leu Ala Ala Arg Leu Leu Pro Pro
                725                 730                 735

Ala Leu
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<210> 5539
<211> 302
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1201; "

<220>
<221> source
<223> /note="Gene Symbol: MFI2; "

<220>
<221> source
<223> /note="Gene Name:
antigen p97 (melanoma associated) identified by
monoclonal antibodies 133.2 and 96.5; "

<220>
<221> source
<223> /note="Uniprot ID: P08582; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000296351"

<400> 5539
Met Arg Gly Pro Ser Gly Ala Leu Trp Leu Leu Leu Ala Leu Arg Thr
1 5 10 15

Val Leu Gly Gly Met Glu Val Arg Trp Cys Ala Thr Ser Asp Pro Glu
20 25 30

Gln His Lys Cys Gly Asn Met Ser Glu Ala Phe Arg Glu Ala Gly Ile
35 40 45

Gln Pro Ser Leu Leu Cys Val Arg Gly Thr Ser Ala Asp His Cys Val
50 55 60

Gln Leu Ile Ala Ala Gln Glu Ala Asp Ala Ile Thr Leu Asp Gly Gly
65 70 75 80

Ala Ile Tyr Glu Ala Gly Lys Glu His Gly Leu Lys Pro Val Val Gly
85 90 95

Glu Val Tyr Asp Gln Glu Val Gly Thr Ser Tyr Tyr Ala Val Ala Val
100 105 110

Val Arg Arg Ser Ser His Val Thr Ile Asp Thr Leu Lys Gly Val Lys
115 120 125

Ser Cys His Thr Gly Ile Asn Arg Thr Val Gly Trp Asn Val Pro Val
130 135 140

Gly Tyr Leu Val Glu Ser Gly Arg Leu Ser Val Met Gly Cys Asp Val
145 150 155 160

```
Leu Lys Ala Val Ser Asp Tyr Phe Gly Gly Ser Cys Val Pro Gly Ala
                165                 170                 175

Gly Glu Thr Ser Tyr Ser Glu Ser Leu Cys Arg Leu Cys Arg Gly Asp
            180                 185                 190

Ser Ser Gly Glu Gly Val Cys Asp Lys Ser Pro Leu Glu Arg Tyr Tyr
        195                 200                 205

Asp Tyr Ser Gly Ala Phe Arg Cys Leu Ala Glu Gly Ala Gly Asp Val
    210                 215                 220

Ala Phe Val Lys His Ser Thr Val Leu Glu Asn Thr Asp Glu Ser Pro
225                 230                 235                 240

Ser Arg Arg Gln Thr Trp Thr Arg Ser Glu Glu Glu Glu Gly Glu Cys
                245                 250                 255

Pro Ala His Glu Glu Ala Arg Arg Thr Met Arg Ser Ser Ala Gly Gln
            260                 265                 270

Ala Trp Lys Trp Ala Pro Val His Arg Pro Gln Asp Glu Ser Asp Lys
        275                 280                 285

Gly Glu Phe Gly Lys Arg Ala Lys Ser Arg Asp Met Leu Gly
    290                 295                 300


<210> 5540
<211> 181
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1201; "

<220>
<221> source
<223> /note="Gene Symbol: MFI2; "

<220>
<221> source
<223> /note="Gene Name:
      antigen p97 (melanoma associated) identified by
      monoclonal antibodies 133.2 and 96.5; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000393439"

<400> 5540
Met Arg Gly Pro Ser Gly Ala Leu Trp Leu Leu Leu Ala Leu Arg Thr
1   5   10   15

Val Leu Gly Gly Met Glu Val Arg Trp Cys Ala Thr Ser Asp Pro Glu
            20   25   30

Gln His Lys Cys Gly Asn Met Ser Glu Ala Phe Arg Glu Ala Gly Ile
        35   40   45

Gln Pro Ser Leu Leu Cys Val Arg Gly Thr Ser Ala Asp His Cys Val
    50   55   60

Gln Leu Ile Ala Ala Gln Glu Ala Asp Ala Ile Thr Leu Asp Gly Gly
65   70   75   80

Ala Ile Tyr Glu Ala Gly Lys Glu His Gly Leu Lys Pro Val Val Gly
                85   90   95

Glu Val Tyr Asp Gln Glu Val Gly Thr Ser Tyr Tyr Ala Val Ala Val
            100   105   110

Val Arg Arg Ser Ser His Val Thr Ile Asp Thr Leu Lys Gly Val Lys
        115   120   125

Ser Cys His Thr Gly Ile Asn Arg Thr Val Gly Trp Asn Val Pro Val
    130   135   140

Gly Tyr Leu Val Glu Ser Gly Arg Leu Ser Val Met Gly Cys Asp Val
145   150   155   160

Leu Lys Gly Pro Lys Arg Gly Ala Asp Leu His Pro Glu Ser Ser Gln
                165   170   175

Val Ala His Gln Pro
            180

<210> 5541
<211> 560
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1202; "

<220>
<221> source
<223> /note="Gene Symbol: AMH; "

<220>
<221> source
<223> /note="Gene Name:
anti-Mullerian hormone; "

<220>
<221> source
<223> /note="Uniprot ID: P03971; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000221496"

<400> 5541

```
Met Arg Asp Leu Pro Leu Thr Ser Leu Ala Leu Val Leu Ser Ala Leu
1               5                  10                  15

Gly Ala Leu Leu Gly Thr Glu Ala Leu Arg Ala Glu Glu Pro Ala Val
            20                  25                  30

Gly Thr Ser Gly Leu Ile Phe Arg Glu Asp Leu Asp Trp Pro Pro Gly
        35                  40                  45

Ser Pro Gln Glu Pro Leu Cys Leu Val Ala Leu Gly Gly Asp Ser Asn
    50                  55                  60

Gly Ser Ser Ser Pro Leu Arg Val Val Gly Ala Leu Ser Ala Tyr Glu
65                  70                  75                  80

Gln Ala Phe Leu Gly Ala Val Gln Arg Ala Arg Trp Gly Pro Arg Asp
                85                  90                  95

Leu Ala Thr Phe Gly Val Cys Asn Thr Gly Asp Arg Gln Ala Ala Leu
            100                 105                 110

Pro Ser Leu Arg Arg Leu Gly Ala Trp Leu Arg Asp Pro Gly Gly Gln
        115                 120                 125

Arg Leu Val Val Leu His Leu Glu Glu Val Thr Trp Glu Pro Thr Pro
    130                 135                 140
```

```
Ser Leu Arg Phe Gln Glu Pro Pro Pro Gly Gly Ala Gly Pro Pro Glu
145                 150                 155                 160

Leu Ala Leu Leu Val Leu Tyr Pro Gly Pro Gly Pro Glu Val Thr Val
                165                 170                 175

Thr Arg Ala Gly Leu Pro Gly Ala Gln Ser Leu Cys Pro Ser Arg Asp
            180                 185                 190

Thr Arg Tyr Leu Val Leu Ala Val Asp Arg Pro Ala Gly Ala Trp Arg
        195                 200                 205

Gly Ser Gly Leu Ala Leu Thr Leu Gln Pro Arg Gly Glu Asp Ser Arg
    210                 215                 220

Leu Ser Thr Ala Arg Leu Gln Ala Leu Leu Phe Gly Asp Asp His Arg
225                 230                 235                 240

Cys Phe Thr Arg Met Thr Pro Ala Leu Leu Leu Leu Pro Arg Ser Glu
                245                 250                 255

Pro Ala Pro Leu Pro Ala His Gly Gln Leu Asp Thr Val Pro Phe Pro
            260                 265                 270

Pro Pro Arg Pro Ser Ala Glu Leu Glu Glu Ser Pro Pro Ser Ala Asp
        275                 280                 285

Pro Phe Leu Glu Thr Leu Thr Arg Leu Val Arg Ala Leu Arg Val Pro
    290                 295                 300

Pro Ala Arg Ala Ser Ala Pro Arg Leu Ala Leu Asp Pro Asp Ala Leu
305                 310                 315                 320

Ala Gly Phe Pro Gln Gly Leu Val Asn Leu Ser Asp Pro Ala Ala Leu
                325                 330                 335

Glu Arg Leu Leu Asp Gly Glu Glu Pro Leu Leu Leu Leu Leu Arg Pro
            340                 345                 350

Thr Ala Ala Thr Thr Gly Asp Pro Ala Pro Leu His Asp Pro Thr Ser
        355                 360                 365
```

```
Ala Pro Trp Ala Thr Ala Leu Ala Arg Arg Val Ala Ala Glu Leu Gln
    370                 375                 380

Ala Ala Ala Ala Glu Leu Arg Ser Leu Pro Gly Leu Pro Pro Ala Thr
385                 390                 395                 400

Ala Pro Leu Leu Ala Arg Leu Leu Ala Leu Cys Pro Gly Gly Pro Gly
                405                 410                 415

Gly Leu Gly Asp Pro Leu Arg Ala Leu Leu Leu Leu Lys Ala Leu Gln
            420                 425                 430

Gly Leu Arg Val Glu Trp Arg Gly Arg Asp Pro Arg Gly Pro Gly Arg
        435                 440                 445

Ala Gln Arg Ser Ala Gly Ala Thr Ala Ala Asp Gly Pro Cys Ala Leu
    450                 455                 460

Arg Glu Leu Ser Val Asp Leu Arg Ala Glu Arg Ser Val Leu Ile Pro
465                 470                 475                 480

Glu Thr Tyr Gln Ala Asn Asn Cys Gln Gly Val Cys Gly Trp Pro Gln
                485                 490                 495

Ser Asp Arg Asn Pro Arg Tyr Gly Asn His Val Val Leu Leu Leu Lys
            500                 505                 510

Met Gln Val Arg Gly Ala Ala Leu Ala Arg Pro Pro Cys Cys Val Pro
        515                 520                 525

Thr Ala Tyr Ala Gly Lys Leu Leu Ile Ser Leu Ser Glu Glu Arg Ile
    530                 535                 540

Ser Ala His His Val Pro Asn Met Val Ala Thr Glu Cys Gly Cys Arg
545                 550                 555                 560


<210> 5542
<211> 573
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1203; "
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<220>
<221> source
<223> /note="Gene Symbol: AMHR2; "

<220>
<221> source
<223> /note="Gene Name:
anti-Mullerian hormone receptor, type II; "

<220>
<221> source
<223> /note="Uniprot ID: Q16671; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000257863"

<400> 5542
Met Leu Gly Ser Leu Gly Leu Trp Ala Leu Leu Pro Thr Ala Val Glu
1   5   10   15

Ala Pro Pro Asn Arg Arg Thr Cys Val Phe Phe Glu Ala Pro Gly Val
            20   25   30

Arg Gly Ser Thr Lys Thr Leu Gly Glu Leu Leu Asp Thr Gly Thr Glu
        35   40   45

Leu Pro Arg Ala Ile Arg Cys Leu Tyr Ser Arg Cys Cys Phe Gly Ile
    50   55   60

Trp Asn Leu Thr Gln Asp Arg Ala Gln Val Glu Met Gln Gly Cys Arg
65   70   75   80

Asp Ser Asp Glu Pro Gly Cys Glu Ser Leu His Cys Asp Pro Ser Pro
                85   90   95

Arg Ala His Pro Ser Pro Gly Ser Thr Leu Phe Thr Cys Ser Cys Gly
            100   105   110

Thr Asp Phe Cys Asn Ala Asn Tyr Ser His Leu Pro Pro Pro Gly Ser
        115   120   125

Pro Gly Thr Pro Gly Ser Gln Gly Pro Gln Ala Ala Pro Gly Glu Ser
    130   135   140

Ile Trp Met Ala Leu Val Leu Leu Gly Leu Phe Leu Leu Leu Leu Leu
145   150   155   160

```
Leu Leu Gly Ser Ile Ile Leu Ala Leu Leu Gln Arg Lys Asn Tyr Arg
                165                 170                 175

Val Arg Gly Glu Pro Val Pro Glu Pro Arg Pro Asp Ser Gly Arg Asp
            180                 185                 190

Trp Ser Val Glu Leu Gln Glu Leu Pro Glu Leu Cys Phe Ser Gln Val
        195                 200                 205

Ile Arg Glu Gly Gly His Ala Val Val Trp Ala Gly Gln Leu Gln Gly
    210                 215                 220

Lys Leu Val Ala Ile Lys Ala Phe Pro Pro Arg Ser Val Ala Gln Phe
225                 230                 235                 240

Gln Ala Glu Arg Ala Leu Tyr Glu Leu Pro Gly Leu Gln His Asp His
                245                 250                 255

Ile Val Arg Phe Ile Thr Ala Ser Arg Gly Gly Pro Gly Arg Leu Leu
            260                 265                 270

Ser Gly Pro Leu Leu Val Leu Glu Leu His Pro Lys Gly Ser Leu Cys
        275                 280                 285

His Tyr Leu Thr Gln Tyr Thr Ser Asp Trp Gly Ser Ser Leu Arg Met
    290                 295                 300

Ala Leu Ser Leu Ala Gln Gly Leu Ala Phe Leu His Glu Glu Arg Trp
305                 310                 315                 320

Gln Asn Gly Gln Tyr Lys Pro Gly Ile Ala His Arg Asp Leu Ser Ser
                325                 330                 335

Gln Asn Val Leu Ile Arg Glu Asp Gly Ser Cys Ala Ile Gly Asp Leu
            340                 345                 350

Gly Leu Ala Leu Val Leu Pro Gly Leu Thr Gln Pro Pro Ala Trp Thr
        355                 360                 365

Pro Thr Gln Pro Gln Gly Pro Ala Ala Ile Met Glu Ala Gly Thr Gln
    370                 375                 380
```

```
Arg Tyr Met Ala Pro Glu Leu Leu Asp Lys Thr Leu Asp Leu Gln Asp
385                 390                 395                 400

Trp Gly Met Ala Leu Arg Arg Ala Asp Ile Tyr Ser Leu Ala Leu Leu
                405                 410                 415

Leu Trp Glu Ile Leu Ser Arg Cys Pro Asp Leu Arg Pro Asp Ser Ser
            420                 425                 430

Pro Pro Pro Phe Gln Leu Ala Tyr Glu Ala Glu Leu Gly Asn Thr Pro
        435                 440                 445

Thr Ser Asp Glu Leu Trp Ala Leu Ala Val Gln Glu Arg Arg Arg Pro
    450                 455                 460

Tyr Ile Pro Ser Thr Trp Arg Cys Phe Ala Thr Asp Pro Asp Gly Leu
465                 470                 475                 480

Arg Glu Leu Leu Glu Asp Cys Trp Asp Ala Asp Pro Glu Ala Arg Leu
                485                 490                 495

Thr Ala Glu Cys Val Gln Gln Arg Leu Ala Ala Leu Ala His Pro Gln
            500                 505                 510

Glu Ser His Pro Phe Pro Glu Ser Cys Pro Arg Gly Cys Pro Pro Leu
        515                 520                 525

Cys Pro Glu Asp Cys Thr Ser Ile Pro Ala Pro Thr Ile Leu Pro Cys
    530                 535                 540

Arg Pro Gln Arg Ser Ala Cys His Phe Ser Val Gln Gln Gly Pro Cys
545                 550                 555                 560

Ser Arg Asn Pro Gln Pro Ala Cys Thr Leu Ser Pro Val
                565                 570


<210> 5543
<211> 478
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1203; "
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<220>
<221> source
<223> /note="Gene Symbol: AMHR2; "

<220>
<221> source
<223> /note="Gene Name:
anti-Mullerian hormone receptor, type II; "

<220>
<221> source
<223> /note="Uniprot ID: Q16671; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000369117"

<400> 5543
Met Leu Gly Ser Leu Gly Leu Trp Ala Leu Leu Pro Thr Ala Val Glu
1   5   10   15

Ala Pro Pro Asn Arg Arg Thr Cys Val Phe Phe Glu Ala Pro Gly Val
            20   25   30

Arg Gly Ser Thr Lys Thr Leu Gly Glu Leu Leu Asp Thr Gly Thr Glu
        35   40   45

Leu Pro Arg Ala Ile Arg Cys Leu Tyr Ser Arg Cys Cys Phe Gly Ile
    50   55   60

Trp Asn Leu Thr Gln Asp Arg Ala Gln Val Glu Met Gln Gly Cys Arg
65   70   75   80

Asp Ser Asp Glu Pro Gly Cys Glu Ser Leu His Cys Asp Pro Ser Pro
                85   90   95

Arg Ala His Pro Ser Pro Gly Ser Thr Leu Phe Thr Cys Ser Cys Gly
            100   105   110

Thr Asp Phe Cys Asn Ala Asn Tyr Ser His Leu Pro Pro Pro Gly Ser
        115   120   125

Pro Gly Thr Pro Gly Ser Gln Gly Pro Gln Ala Ala Pro Gly Glu Ser
    130   135   140

Ile Trp Met Ala Leu Val Leu Leu Gly Leu Phe Leu Leu Leu Leu Leu
145   150   155   160

```
Leu Leu Gly Ser Ile Ile Leu Ala Leu Leu Gln Arg Lys Asn Tyr Arg
                165                 170                 175

Val Arg Gly Glu Pro Val Pro Glu Pro Arg Pro Asp Ser Gly Arg Asp
            180                 185                 190

Trp Ser Val Glu Leu Gln Glu Leu Pro Glu Leu Cys Phe Ser Gln Val
        195                 200                 205

Ile Arg Glu Gly Gly His Ala Val Val Trp Ala Gly Gln Leu Gln Gly
    210                 215                 220

Lys Leu Val Ala Ile Lys Ala Phe Pro Pro Arg Ser Val Ala Gln Phe
225                 230                 235                 240

Gln Ala Glu Arg Ala Leu Tyr Glu Leu Pro Gly Leu Gln His Asp His
                245                 250                 255

Ile Val Arg Phe Ile Thr Ala Ser Arg Gly Gly Pro Gly Arg Leu Leu
            260                 265                 270

Ser Gly Pro Leu Leu Val Leu Glu Leu His Pro Lys Gly Ser Leu Cys
        275                 280                 285

His Tyr Leu Thr Gln Tyr Thr Ser Asp Trp Gly Ser Ser Leu Arg Met
    290                 295                 300

Ala Leu Ser Leu Ala Gln Gly Leu Ala Phe Leu His Glu Glu Arg Trp
305                 310                 315                 320

Gln Asn Gly Gln Tyr Lys Pro Gly Ile Ala His Arg Asp Leu Ser Ser
                325                 330                 335

Gln Asn Val Leu Ile Arg Glu Asp Gly Ser Cys Ala Ile Gly Asp Leu
            340                 345                 350

Gly Leu Ala Leu Val Leu Pro Gly Leu Thr Gln Pro Pro Ala Trp Thr
        355                 360                 365

Pro Thr Gln Pro Gln Gly Pro Ala Ala Ile Met Glu Asp Pro Asp Gly
    370                 375                 380
```

```
Leu Arg Glu Leu Leu Glu Asp Cys Trp Asp Ala Asp Pro Glu Ala Arg
385                 390                 395                 400


Leu Thr Ala Glu Cys Val Gln Gln Arg Leu Ala Ala Leu Ala His Pro
                405                 410                 415


Gln Glu Ser His Pro Phe Pro Glu Ser Cys Pro Arg Gly Cys Pro Pro
            420                 425                 430


Leu Cys Pro Glu Asp Cys Thr Ser Ile Pro Ala Pro Thr Ile Leu Pro
        435                 440                 445


Cys Arg Pro Gln Arg Ser Ala Cys His Phe Ser Val Gln Gln Gly Pro
    450                 455                 460


Cys Ser Arg Asn Pro Gln Pro Ala Cys Thr Leu Ser Pro Val
465                 470                 475


<210> 5544
<211> 478
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1203; "

<220>
<221> source
<223> /note="Gene Symbol: AMHR2; "

<220>
<221> source
<223> /note="Gene Name:
      anti-Mullerian hormone receptor, type II; "

<220>
<221> source
<223> /note="Uniprot ID:  Q16671; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000446661"

<400> 5544
Met Leu Gly Ser Leu Gly Leu Trp Ala Leu Leu Pro Thr Ala Val Glu
1               5                   10                  15


Ala Pro Pro Asn Arg Arg Thr Cys Val Phe Phe Glu Ala Pro Gly Val
```

```
            20                  25                  30

Arg Gly Ser Thr Lys Thr Leu Gly Glu Leu Leu Asp Thr Gly Thr Glu
        35                  40                  45

Leu Pro Arg Ala Ile Arg Cys Leu Tyr Ser Arg Cys Cys Phe Gly Ile
    50                  55                  60

Trp Asn Leu Thr Gln Asp Arg Ala Gln Val Glu Met Gln Gly Cys Arg
65                  70                  75                  80

Asp Ser Asp Glu Pro Gly Cys Glu Ser Leu His Cys Asp Pro Ser Pro
                85                  90                  95

Arg Ala His Pro Ser Pro Gly Ser Thr Leu Phe Thr Cys Ser Cys Gly
            100                 105                 110

Thr Asp Phe Cys Asn Ala Asn Tyr Ser His Leu Pro Pro Pro Gly Ser
        115                 120                 125

Pro Gly Thr Pro Gly Ser Gln Gly Pro Gln Ala Ala Pro Gly Glu Ser
    130                 135                 140

Ile Trp Met Ala Leu Val Leu Leu Gly Leu Phe Leu Leu Leu Leu Leu
145                 150                 155                 160

Leu Leu Gly Ser Ile Ile Leu Ala Leu Leu Gln Arg Lys Asn Tyr Arg
                165                 170                 175

Val Arg Gly Glu Pro Val Pro Glu Pro Arg Pro Asp Ser Gly Arg Asp
            180                 185                 190

Trp Ser Val Glu Leu Gln Glu Leu Pro Glu Leu Cys Phe Ser Gln Val
        195                 200                 205

Ile Arg Glu Gly Gly His Ala Val Val Trp Ala Gly Gln Leu Gln Gly
    210                 215                 220

Lys Leu Val Ala Ile Lys Ala Phe Pro Pro Arg Ser Val Ala Gln Phe
225                 230                 235                 240

Gln Ala Glu Arg Ala Leu Tyr Glu Leu Pro Gly Leu Gln His Asp His
                245                 250                 255
```

```
Ile Val Arg Phe Ile Thr Ala Ser Arg Gly Gly Pro Gly Arg Leu Leu
            260                 265                 270

Ser Gly Pro Leu Leu Val Leu Glu Leu His Pro Lys Gly Ser Leu Cys
        275                 280                 285

His Tyr Leu Thr Gln Tyr Thr Ser Asp Trp Gly Ser Ser Leu Arg Met
    290                 295                 300

Ala Leu Ser Leu Ala Gln Gly Leu Ala Phe Leu His Glu Glu Arg Trp
305                 310                 315                 320

Gln Asn Gly Gln Tyr Lys Pro Gly Ile Ala His Arg Asp Leu Ser Ser
                325                 330                 335

Gln Asn Val Leu Ile Arg Glu Asp Gly Ser Cys Ala Ile Gly Asp Leu
            340                 345                 350

Gly Leu Ala Leu Val Leu Pro Gly Leu Thr Gln Pro Pro Ala Trp Thr
        355                 360                 365

Pro Thr Gln Pro Gln Gly Pro Ala Ala Ile Met Glu Ala Gly Thr Gln
    370                 375                 380

Arg Tyr Met Ala Pro Glu Leu Leu Asp Lys Thr Leu Asp Leu Gln Asp
385                 390                 395                 400

Trp Gly Met Ala Leu Arg Arg Ala Asp Ile Tyr Ser Leu Ala Leu Leu
                405                 410                 415

Leu Trp Glu Ile Leu Ser Arg Cys Pro Asp Leu Arg Pro Ala Val His
            420                 425                 430

His Pro Ser Asn Trp Pro Met Arg Gln Asn Trp Ala Ile Pro Leu Pro
        435                 440                 445

Leu Met Ser Tyr Gly Pro Trp Gln Cys Arg Arg Gly Gly Val Pro Thr
    450                 455                 460

Ser His Pro Pro Gly Ala Ala Leu Pro Gln Thr Leu Met Gly
465                 470                 475
```

<210> 5545
<211> 172
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1203; "

<220>
<221> source
<223> /note="Gene Symbol: AMHR2; "

<220>
<221> source
<223> /note="Gene Name:
anti-Mullerian hormone receptor, type II; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000455338"

<400> 5545
Met Ala Leu Ser Leu Ala Gln Gly Leu Ala Phe Leu His Glu Glu Arg
1 5 10 15

Trp Gln Asn Gly Gln Tyr Lys Pro Gly Ile Ala His Arg Asp Leu Ser
20 25 30

Ser Gln Asn Val Leu Ile Arg Glu Asp Gly Ser Cys Ala Ile Gly Asp
35 40 45

Leu Gly Leu Ala Leu Val Leu Pro Gly Leu Thr Gln Pro Pro Ala Trp
50 55 60

Thr Pro Thr Gln Pro Gln Gly Pro Ala Ala Ile Met Glu Ala Gly Thr
65 70 75 80

Gln Arg Tyr Met Ala Pro Glu Leu Leu Asp Lys Thr Leu Asp Leu Gln
85 90 95

Asp Trp Gly Met Ala Leu Arg Arg Ala Asp Ile Tyr Ser Leu Ala Leu
100 105 110

Leu Leu Trp Glu Ile Leu Ser Arg Cys Pro Asp Leu Arg Pro Asp Ser
115 120 125

Ser Pro Pro Pro Phe Gln Leu Ala Tyr Glu Ala Glu Leu Gly Asn Thr

```
    130                 135                 140

Pro Thr Ser Asp Glu Leu Trp Ala Leu Ala Val Gln Glu Arg Arg Arg
145                 150                 155                 160

Pro Tyr Ile Pro Ser Thr Trp Arg Cys Phe Ala Thr
                165                 170


<210> 5546
<211> 68
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1204; "

<220>
<221> source
<223> /note="Gene Symbol: ATOX1; "

<220>
<221> source
<223> /note="Gene Name:
      antioxidant 1 copper chaperone; "

<220>
<221> source
<223> /note="Uniprot ID:  O00244; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000316854"

<400> 5546
Met Pro Lys His Glu Phe Ser Val Asp Met Thr Cys Gly Gly Cys Ala
1               5                   10                  15

Glu Ala Val Ser Arg Val Leu Asn Lys Leu Gly Gly Val Lys Tyr Asp
            20                  25                  30

Ile Asp Leu Pro Asn Lys Lys Val Cys Ile Glu Ser Glu His Ser Met
        35                  40                  45

Asp Thr Leu Leu Ala Thr Leu Lys Lys Thr Gly Lys Thr Val Ser Tyr
    50                  55                  60

Leu Gly Leu Glu
65
```

<210> 5547
<211> 73
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1204; "

<220>
<221> source
<223> /note="Gene Symbol: ATOX1; "

<220>
<221> source
<223> /note="Gene Name:
antioxidant 1 copper chaperone; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429366"

<400> 5547
Met Lys Ala Glu Ser Pro Gly Lys His Glu Phe Ser Val Asp Met Thr
1 5 10 15

Cys Gly Gly Cys Ala Glu Ala Val Ser Arg Val Leu Asn Lys Leu Gly
20 25 30

Gly Val Lys Tyr Asp Ile Asp Leu Pro Asn Lys Lys Val Cys Ile Glu
35 40 45

Ser Glu His Ser Met Asp Thr Leu Leu Ala Thr Leu Lys Lys Thr Gly
50 55 60

Lys Thr Val Ser Tyr Leu Gly Leu Glu
65 70

<210> 5548
<211> 68
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1204; "

<220>
<221> source
<223> /note="Gene Symbol: ATOX1; "

<220>
<221> source
<223> /note="Gene Name:
antioxidant 1 copper chaperone; "

<220>
<221> source
<223> /note="Uniprot ID: O00244; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429814"

<400> 5548
Met Pro Lys His Glu Phe Ser Val Asp Met Thr Cys Gly Gly Cys Ala
1   5   10   15

Glu Ala Val Ser Arg Val Leu Asn Lys Leu Gly Gly Val Lys Tyr Asp
            20   25   30

Ile Asp Leu Pro Asn Lys Lys Val Cys Ile Glu Ser Glu His Ser Met
        35   40   45

Asp Thr Leu Leu Ala Thr Leu Lys Lys Thr Gly Lys Thr Val Ser Tyr
    50   55   60

Leu Gly Leu Glu
65

<210> 5549
<211> 59
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1204; "

<220>
<221> source
<223> /note="Gene Symbol: ATOX1; "

<220>
<221> source
<223> /note="Gene Name:
antioxidant 1 copper chaperone; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429982"

<400> 5549

```
Met Thr Cys Gly Gly Cys Ala Glu Ala Val Ser Arg Val Leu Asn Lys
1               5                   10                  15


Leu Gly Gly Val Lys Tyr Asp Ile Asp Leu Pro Asn Lys Lys Val Cys
            20                  25                  30


Ile Glu Ser Glu His Ser Met Asp Thr Leu Leu Ala Thr Leu Lys Lys
        35                  40                  45


Thr Gly Lys Thr Val Ser Tyr Leu Gly Leu Glu
    50                  55


<210> 5550
<211> 59
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1204; "

<220>
<221> source
<223> /note="Gene Symbol: ATOX1; "

<220>
<221> source
<223> /note="Gene Name:
      antioxidant 1 copper chaperone; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430028"

<400> 5550
Met Thr Cys Gly Gly Cys Ala Glu Ala Val Ser Arg Val Leu Asn Lys
1               5                   10                  15


Leu Gly Gly Val Lys Tyr Asp Ile Asp Leu Pro Asn Lys Lys Val Cys
            20                  25                  30


Ile Glu Ser Glu His Ser Met Asp Thr Leu Leu Ala Thr Leu Lys Lys
        35                  40                  45


Thr Gly Lys Thr Val Ser Tyr Leu Gly Leu Glu
    50                  55


<210> 5551
<211> 68
```

<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1204; "

<220>
<221> source
<223> /note="Gene Symbol: ATOX1; "

<220>
<221> source
<223> /note="Gene Name:
antioxidant 1 copper chaperone; "

<220>
<221> source
<223> /note="Uniprot ID: O00244; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430598"

<400> 5551
Met Pro Lys His Glu Phe Ser Val Asp Met Thr Cys Gly Gly Cys Ala
1   5   10   15

Glu Ala Val Ser Arg Val Leu Asn Lys Leu Gly Gly Val Lys Tyr Asp
            20   25   30

Ile Asp Leu Pro Asn Lys Lys Val Cys Ile Glu Ser Glu His Ser Met
        35   40   45

Asp Thr Leu Leu Ala Thr Leu Lys Lys Thr Gly Lys Thr Val Ser Tyr
    50   55   60

Leu Gly Leu Glu
65

<210> 5552
<211> 204
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1205; "

<220>
<221> source
<223> /note="Gene Symbol: ASF1A; "

<220>
<221> source
<223> /note="Gene Name:
anti-silencing function 1A histone chaperone; "

<220>
<221> source
<223> /note="Uniprot ID: Q9Y294; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000229595"

<400> 5552
Met Ala Lys Val Gln Val Asn Asn Val Val Val Leu Asp Asn Pro Ser
1 5 10 15

Pro Phe Tyr Asn Pro Phe Gln Phe Glu Ile Thr Phe Glu Cys Ile Glu
20 25 30

Asp Leu Ser Glu Asp Leu Glu Trp Lys Ile Ile Tyr Val Gly Ser Ala
35 40 45

Glu Ser Glu Glu Tyr Asp Gln Val Leu Asp Ser Val Leu Val Gly Pro
50 55 60

Val Pro Ala Gly Arg His Met Phe Val Phe Gln Ala Asp Ala Pro Asn
65 70 75 80

Pro Gly Leu Ile Pro Asp Ala Asp Ala Val Gly Val Thr Val Val Leu
85 90 95

Ile Thr Cys Thr Tyr Arg Gly Gln Glu Phe Ile Arg Val Gly Tyr Tyr
100 105 110

Val Asn Asn Glu Tyr Thr Glu Thr Glu Leu Arg Glu Asn Pro Pro Val
115 120 125

Lys Pro Asp Phe Ser Lys Leu Gln Arg Asn Ile Leu Ala Ser Asn Pro
130 135 140

Arg Val Thr Arg Phe His Ile Asn Trp Glu Asp Asn Thr Glu Lys Leu
145 150 155 160

Glu Asp Ala Glu Ser Ser Asn Pro Asn Leu Gln Ser Leu Leu Ser Thr
165 170 175

```
Asp Ala Leu Pro Ser Ala Ser Lys Gly Trp Ser Thr Ser Glu Asn Ser
            180                 185                 190


Leu Asn Val Met Leu Glu Ser His Met Asp Cys Met
        195                 200


<210> 5553
<211> 202
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1206; "

<220>
<221> source
<223> /note="Gene Symbol: ASF1B; "

<220>
<221> source
<223> /note="Gene Name:
      anti-silencing function 1B histone chaperone; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9NVP2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000263382"

<400> 5553
Met Ala Lys Val Ser Val Leu Asn Val Ala Val Leu Glu Asn Pro Ser
1               5                   10                  15


Pro Phe His Ser Pro Phe Arg Phe Glu Ile Ser Phe Glu Cys Ser Glu
            20                  25                  30


Ala Leu Ala Asp Asp Leu Glu Trp Lys Ile Ile Tyr Val Gly Ser Ala
        35                  40                  45


Glu Ser Glu Glu Phe Asp Gln Ile Leu Asp Ser Val Leu Val Gly Pro
    50                  55                  60


Val Pro Ala Gly Arg His Met Phe Val Phe Gln Ala Asp Ala Pro Asn
65                  70                  75                  80
```

```
Pro Ser Leu Ile Pro Glu Thr Asp Ala Val Gly Val Thr Val Val Leu
                85                  90                  95

Ile Thr Cys Thr Tyr His Gly Gln Glu Phe Ile Arg Val Gly Tyr Tyr
            100                 105                 110

Val Asn Asn Glu Tyr Leu Asn Pro Glu Leu Arg Glu Asn Pro Pro Met
        115                 120                 125

Lys Pro Asp Phe Ser Gln Leu Gln Arg Asn Ile Leu Ala Ser Asn Pro
    130                 135                 140

Arg Val Thr Arg Phe His Ile Asn Trp Asp Asn Asn Met Asp Arg Leu
145                 150                 155                 160

Glu Ala Ile Glu Thr Gln Asp Pro Ser Leu Gly Cys Gly Leu Pro Leu
                165                 170                 175

Asn Cys Thr Pro Ile Lys Gly Leu Gly Leu Pro Gly Cys Ile Pro Gly
            180                 185                 190

Leu Leu Pro Glu Asn Ser Met Asp Cys Ile
        195                 200


<210> 5554
<211> 81
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1206; "

<220>
<221> source
<223> /note="Gene Symbol: ASF1B; "

<220>
<221> source
<223> /note="Gene Name:
      anti-silencing function 1B histone chaperone; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000464802"

<400> 5554
Met Ala Lys Val Ser Val Leu Asn Val Ala Val Leu Glu Asn Pro Ser
1               5                  10                  15
```

```
Pro Phe His Ser Pro Phe Arg Phe Glu Ile Ser Phe Glu Cys Ser Glu
            20                  25                  30

Ala Leu Ala Asp Asp Leu Glu Trp Lys Ile Ile Tyr Val Gly Ser Ala
        35                  40                  45

Glu Ser Glu Glu Phe Asp Gln Ile Leu Asp Ser Val Leu Val Gly Pro
    50                  55                  60

Val Pro Ala Gly Arg His Met Phe Val Phe Gln Arg Leu Met Pro Trp
65                  70                  75                  80

Val
```

<210> 5555
<211> 165
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1206; "

<220>
<221> source
<223> /note="Gene Symbol: ASF1B; "

<220>
<221> source
<223> /note="Gene Name:
anti-silencing function 1B histone chaperone; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466257"

<400> 5555

```
Met Ala Lys Val Ser Val Leu Asn Val Ala Val Leu Glu Asn Pro Ser
1               5                   10                  15

Pro Phe His Ser Pro Phe Arg Phe Glu Ile Ser Phe Glu Cys Ser Glu
            20                  25                  30

Ala Leu Ala Asp Asp Leu Glu Trp Lys Ile Ile Tyr Val Gly Ser Ala
        35                  40                  45
```

```
Glu Ser Glu Glu Phe Asp Gln Ile Leu Asp Ser Val Leu Val Gly Pro
    50                  55                  60

Val Pro Ala Gly Arg His Met Phe Val Phe Gln Ala Asp Ala Pro Asn
65                  70                  75                  80

Pro Ser Leu Ile Pro Glu Thr Asp Ala Val Gly Val Thr Val Val Leu
                85                  90                  95

Ile Thr Cys Thr Tyr His Gly Gln Glu Phe Ile Arg Val Gly Tyr Tyr
            100                 105                 110

Val Asn Asn Glu Tyr Leu Asn Pro Glu Leu Arg Glu Asn Pro Pro Met
        115                 120                 125

Lys Pro Asp Phe Ser Gln Val Gly Pro Val Ser Thr Ser Cys Phe Pro
    130                 135                 140

Gln Gly Arg Ser Leu Tyr Leu Gly Gly Val Gln Pro Phe Lys Leu Arg
145                 150                 155                 160

Val Lys Val Thr Ser
                165


<210> 5556
<211> 48
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1206; "

<220>
<221> source
<223> /note="Gene Symbol: ASF1B; "

<220>
<221> source
<223> /note="Gene Name:
      anti-silencing function 1B histone chaperone; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466409"

<400> 5556
Met Ala Lys Val Ser Val Leu Asn Val Ala Val Leu Glu Asn Pro Ser
1               5                   10                  15
```

```
Pro Phe His Ser Pro Phe Arg Phe Glu Ile Ser Phe Glu Cys Ser Glu
            20                  25                  30

Ala Leu Ala Asp Gly Arg Arg Pro Gln Pro Ile Pro His Pro Arg Asp
        35                  40                  45


<210> 5557
<211> 143
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1206; "

<220>
<221> source
<223> /note="Gene Symbol: ASF1B; "

<220>
<221> source
<223> /note="Gene Name:
      anti-silencing function 1B histone chaperone; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000468513"

<400> 5557
Met Ala Lys Val Ser Val Leu Asn Val Ala Val Leu Glu Asn Pro Ser
1               5                   10                  15

Pro Phe His Ser Pro Phe Arg Phe Glu Ile Ser Phe Glu Cys Ser Glu
            20                  25                  30

Ala Leu Ala Asp Asp Leu Glu Trp Lys Ile Ile Tyr Val Gly Ser Ala
        35                  40                  45

Glu Ser Glu Glu Phe Asp Gln Ile Leu Asp Ser Val Leu Val Gly Pro
    50                  55                  60

Val Pro Ala Gly Arg His Met Phe Val Phe Gln Leu Gln Arg Asn Ile
65                  70                  75                  80

Leu Ala Ser Asn Pro Arg Val Thr Arg Phe His Ile Asn Trp Asp Asn
                85                  90                  95
```

```
Asn Met Asp Arg Leu Glu Ala Ile Glu Thr Gln Asp Pro Ser Leu Gly
            100                 105                 110

Cys Gly Leu Pro Leu Asn Cys Thr Pro Ile Lys Gly Leu Gly Leu Pro
        115                 120                 125

Gly Cys Ile Pro Gly Leu Leu Pro Glu Asn Ser Met Asp Cys Ile
    130                 135                 140
```

<210> 5558
<211> 448
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1207; "

<220>
<221> source
<223> /note="Gene Symbol: AZIN1; "

<220>
<221> source
<223> /note="Gene Name:
antizyme inhibitor 1; "

<220>
<221> source
<223> /note="Uniprot ID: O14977; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000321507"

<400> 5558

```
Met Lys Gly Phe Ile Asp Asp Ala Asn Tyr Ser Val Gly Leu Leu Asp
1               5                  10                  15

Glu Gly Thr Asn Leu Gly Asn Val Ile Asp Asn Tyr Val Tyr Glu His
            20                  25                  30

Thr Leu Thr Gly Lys Asn Ala Phe Phe Val Gly Asp Leu Gly Lys Ile
        35                  40                  45

Val Lys Lys His Ser Gln Trp Gln Asn Val Val Ala Gln Ile Lys Pro
    50                  55                  60

Phe Tyr Thr Val Lys Cys Asn Ser Ala Pro Ala Val Leu Glu Ile Leu
65                  70                  75                  80
```

```
Ala Ala Leu Gly Thr Gly Phe Ala Cys Ser Ser Lys Asn Glu Met Ala
                85                  90                  95

Leu Val Gln Glu Leu Gly Val Pro Pro Glu Asn Ile Ile Tyr Ile Ser
            100                 105                 110

Pro Cys Lys Gln Val Ser Gln Ile Lys Tyr Ala Ala Lys Val Gly Val
        115                 120                 125

Asn Ile Leu Thr Cys Asp Asn Glu Ile Glu Leu Lys Lys Ile Ala Arg
    130                 135                 140

Asn His Pro Asn Ala Lys Val Leu Leu His Ile Ala Thr Glu Asp Asn
145                 150                 155                 160

Ile Gly Gly Glu Glu Gly Asn Met Lys Phe Gly Thr Thr Leu Lys Asn
                165                 170                 175

Cys Arg His Leu Leu Glu Cys Ala Lys Glu Leu Asp Val Gln Ile Ile
            180                 185                 190

Gly Val Lys Phe His Val Ser Ser Ala Cys Lys Glu Ser Gln Val Tyr
        195                 200                 205

Val His Ala Leu Ser Asp Ala Arg Cys Val Phe Asp Met Ala Gly Glu
    210                 215                 220

Ile Gly Phe Thr Met Asn Met Leu Asp Ile Gly Gly Gly Phe Thr Gly
225                 230                 235                 240

Thr Glu Phe Gln Leu Glu Glu Val Asn His Val Ile Ser Pro Leu Leu
                245                 250                 255

Asp Ile Tyr Phe Pro Glu Gly Ser Gly Val Lys Ile Ile Ser Glu Pro
            260                 265                 270

Gly Ser Tyr Tyr Val Ser Ser Ala Phe Thr Leu Ala Val Asn Ile Ile
        275                 280                 285

Ala Lys Lys Val Val Glu Asn Asp Lys Phe Pro Ser Gly Val Glu Lys
    290                 295                 300
```

```
Thr Gly Ser Asp Glu Pro Ala Phe Met Tyr Tyr Met Asn Asp Gly Val
305                 310                 315                 320

Tyr Gly Ser Phe Ala Ser Lys Leu Ser Glu Asp Leu Asn Thr Ile Pro
                325                 330                 335

Glu Val His Lys Lys Tyr Lys Glu Asp Glu Pro Leu Phe Thr Ser Ser
            340                 345                 350

Leu Trp Gly Pro Ser Cys Asp Glu Leu Asp Gln Ile Val Glu Ser Cys
        355                 360                 365

Leu Leu Pro Glu Leu Asn Val Gly Asp Trp Leu Ile Phe Asp Asn Met
    370                 375                 380

Gly Ala Asp Ser Phe His Glu Pro Ser Ala Phe Asn Asp Phe Gln Arg
385                 390                 395                 400

Pro Ala Ile Tyr Tyr Met Met Ser Phe Ser Asp Trp Tyr Glu Met Gln
                405                 410                 415

Asp Ala Gly Ile Thr Ser Asp Ser Met Met Lys Asn Phe Phe Phe Val
            420                 425                 430

Pro Ser Cys Ile Gln Leu Ser Gln Glu Asp Ser Phe Ser Ala Glu Ala
        435                 440                 445


<210> 5559
<211> 448
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1207; "

<220>
<221> source
<223> /note="Gene Symbol: AZIN1; "

<220>
<221> source
<223> /note="Gene Name:
      antizyme inhibitor 1; "

<220>
<221> source
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<223> /note="Uniprot ID: O14977; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000337180"

<400> 5559
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Met Lys Gly Phe Ile Asp Asp Ala Asn Tyr Ser Val Gly Leu Leu Asp
1               5                  10                  15

Glu Gly Thr Asn Leu Gly Asn Val Ile Asp Asn Tyr Val Tyr Glu His
            20                  25                  30

Thr Leu Thr Gly Lys Asn Ala Phe Phe Val Gly Asp Leu Gly Lys Ile
        35                  40                  45

Val Lys Lys His Ser Gln Trp Gln Asn Val Val Ala Gln Ile Lys Pro
    50                  55                  60

Phe Tyr Thr Val Lys Cys Asn Ser Ala Pro Ala Val Leu Glu Ile Leu
65                  70                  75                  80

Ala Ala Leu Gly Thr Gly Phe Ala Cys Ser Ser Lys Asn Glu Met Ala
                85                  90                  95

Leu Val Gln Glu Leu Gly Val Pro Pro Glu Asn Ile Ile Tyr Ile Ser
            100                 105                 110

Pro Cys Lys Gln Val Ser Gln Ile Lys Tyr Ala Ala Lys Val Gly Val
        115                 120                 125

Asn Ile Leu Thr Cys Asp Asn Glu Ile Glu Leu Lys Lys Ile Ala Arg
    130                 135                 140

Asn His Pro Asn Ala Lys Val Leu Leu His Ile Ala Thr Glu Asp Asn
145                 150                 155                 160

Ile Gly Gly Glu Glu Gly Asn Met Lys Phe Gly Thr Thr Leu Lys Asn
                165                 170                 175

Cys Arg His Leu Leu Glu Cys Ala Lys Glu Leu Asp Val Gln Ile Ile
            180                 185                 190

Gly Val Lys Phe His Val Ser Ser Ala Cys Lys Glu Ser Gln Val Tyr
        195                 200                 205
```

```
Val His Ala Leu Ser Asp Ala Arg Cys Val Phe Asp Met Ala Gly Glu
    210                 215                 220

Ile Gly Phe Thr Met Asn Met Leu Asp Ile Gly Gly Gly Phe Thr Gly
225                 230                 235                 240

Thr Glu Phe Gln Leu Glu Glu Val Asn His Val Ile Ser Pro Leu Leu
                245                 250                 255

Asp Ile Tyr Phe Pro Glu Gly Ser Gly Val Lys Ile Ile Ser Glu Pro
            260                 265                 270

Gly Ser Tyr Tyr Val Ser Ser Ala Phe Thr Leu Ala Val Asn Ile Ile
        275                 280                 285

Ala Lys Lys Val Val Glu Asn Asp Lys Phe Pro Ser Gly Val Glu Lys
    290                 295                 300

Thr Gly Ser Asp Glu Pro Ala Phe Met Tyr Tyr Met Asn Asp Gly Val
305                 310                 315                 320

Tyr Gly Ser Phe Ala Ser Lys Leu Ser Glu Asp Leu Asn Thr Ile Pro
                325                 330                 335

Glu Val His Lys Lys Tyr Lys Glu Asp Glu Pro Leu Phe Thr Ser Ser
            340                 345                 350

Leu Trp Gly Pro Ser Cys Asp Glu Leu Asp Gln Ile Val Glu Ser Cys
        355                 360                 365

Leu Leu Pro Glu Leu Asn Val Gly Asp Trp Leu Ile Phe Asp Asn Met
    370                 375                 380

Gly Ala Asp Ser Phe His Glu Pro Ser Ala Phe Asn Asp Phe Gln Arg
385                 390                 395                 400

Pro Ala Ile Tyr Tyr Met Met Ser Phe Ser Asp Trp Tyr Glu Met Gln
                405                 410                 415

Asp Ala Gly Ile Thr Ser Asp Ser Met Met Lys Asn Phe Phe Phe Val
            420                 425                 430
```

Pro Ser Cys Ile Gln Leu Ser Gln Glu Asp Ser Phe Ser Ala Glu Ala
435 440 445

<210> 5560
<211> 33
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1207; "

<220>
<221> source
<223> /note="Gene Symbol: AZIN1; "

<220>
<221> source
<223> /note="Gene Name:
antizyme inhibitor 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429215"

<400> 5560
Met Lys Gly Phe Ile Asp Asp Ala Asn Tyr Ser Val Gly Leu Leu Asp
1 5 10 15

Glu Gly Thr Asn Leu Gly Asn Val Ile Asp Asn Tyr Val Tyr Glu His
20 25 30

Thr

<210> 5561
<211> 97
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1207; "

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Name:
antizyme inhibitor 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429449"

<400> 5561
Met Lys Gly Phe Ile Asp Asp Ala Asn Tyr Ser Val Gly Leu Leu Asp
1   5   10   15

Glu Gly Thr Asn Leu Gly Asn Val Ile Asp Asn Tyr Val Tyr Glu His
            20   25   30

Thr Leu Thr Gly Lys Asn Ala Phe Phe Val Gly Asp Leu Gly Lys Ile
        35   40   45

Val Lys Lys His Ser Gln Trp Gln Asn Val Val Ala Gln Ile Lys Pro
    50   55   60

Phe Tyr Thr Val Lys Cys Asn Ser Ala Pro Ala Val Leu Glu Ile Leu
65   70   75   80

Ala Ala Leu Gly Thr Gly Phe Ala Cys Ser Ser Lys Asn Glu Met Ala
                85   90   95

Leu

<210> 5562
<211> 165
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: AZIN1; "

<220>
<221> source
<223> /note="Gene Name:
antizyme inhibitor 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000475919"

<400> 5562

```
Met Lys Gly Phe Ile Asp Asp Ala Asn Tyr Ser Val Gly Leu Leu Asp
1               5                  10                  15

Glu Gly Thr Asn Leu Gly Asn Val Ile Asp Asn Tyr Val Tyr Glu His
            20                  25                  30

Thr Leu Asn Glu Met Ala Leu Val Gln Glu Leu Gly Val Pro Pro Glu
        35                  40                  45

Asn Ile Ile Tyr Ile Ser Pro Cys Lys Gln Val Ser Gln Ile Lys Tyr
    50                  55                  60

Ala Ala Lys Val Gly Val Asn Ile Leu Thr Cys Asp Asn Glu Ile Glu
65                  70                  75                  80

Leu Lys Lys Ile Ala Arg Asn His Pro Asn Ala Lys Val Leu Leu His
                85                  90                  95

Ile Ala Thr Glu Asp Asn Ile Gly Gly Glu Glu Gly Asn Met Lys Phe
            100                 105                 110

Gly Thr Thr Leu Lys Asn Cys Arg His Leu Leu Glu Cys Ala Lys Glu
        115                 120                 125

Leu Asp Val Gln Ile Ile Gly Val Lys Phe His Val Ser Ser Ala Cys
    130                 135                 140

Lys Glu Ser Gln Val Tyr Val His Ala Leu Ser Asp Ala Arg Cys Val
145                 150                 155                 160

Phe Asp Met Ala Gly
                165


<210> 5563
<211> 460
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1208; "

<220>
<221> source
<223> /note="Gene Symbol: AZIN2; "
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<220>
<221> source
<223> /note="Gene Name:
antizyme inhibitor 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q96A70; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000294517"

<400> 5563

```
Met Ala Gly Tyr Leu Ser Glu Ser Asp Phe Val Met Val Glu Glu Gly
1               5                  10                  15

Phe Ser Thr Arg Asp Leu Leu Lys Glu Leu Thr Leu Gly Ala Ser Gln
            20                  25                  30

Ala Thr Thr Asp Glu Val Ala Ala Phe Phe Val Ala Asp Leu Gly Ala
        35                  40                  45

Ile Val Arg Lys His Phe Cys Phe Leu Lys Cys Leu Pro Arg Val Arg
    50                  55                  60

Pro Phe Tyr Ala Val Lys Cys Asn Ser Ser Pro Gly Val Leu Lys Val
65                  70                  75                  80

Leu Ala Gln Leu Gly Leu Gly Phe Ser Cys Ala Asn Lys Ala Glu Met
                85                  90                  95

Glu Leu Val Gln His Ile Gly Ile Pro Ala Ser Lys Ile Ile Cys Ala
            100                 105                 110

Asn Pro Cys Lys Gln Ile Ala Gln Ile Lys Tyr Ala Ala Lys His Gly
        115                 120                 125

Ile Gln Leu Leu Ser Phe Asp Asn Glu Met Glu Leu Ala Lys Val Val
    130                 135                 140

Lys Ser His Pro Ser Ala Lys Met Val Leu Cys Ile Ala Thr Asp Asp
145                 150                 155                 160

Ser His Ser Leu Ser Cys Leu Ser Leu Lys Phe Gly Val Ser Leu Lys
                165                 170                 175
```

```
Ser Cys Arg His Leu Leu Glu Asn Ala Lys Lys His His Val Glu Val
            180                 185                 190

Val Gly Val Ser Phe His Ile Gly Ser Gly Cys Pro Asp Pro Gln Ala
        195                 200                 205

Tyr Ala Gln Ser Ile Ala Asp Ala Arg Leu Val Phe Glu Met Gly Thr
    210                 215                 220

Glu Leu Gly His Lys Met His Val Leu Asp Leu Gly Gly Gly Phe Pro
225                 230                 235                 240

Gly Thr Glu Gly Ala Lys Val Arg Phe Glu Glu Ile Ala Ser Val Ile
                245                 250                 255

Asn Ser Ala Leu Asp Leu Tyr Phe Pro Glu Gly Cys Gly Val Asp Ile
            260                 265                 270

Phe Ala Glu Leu Gly Arg Tyr Tyr Val Thr Ser Ala Phe Thr Val Ala
        275                 280                 285

Val Ser Ile Ile Ala Lys Lys Glu Val Leu Leu Asp Gln Pro Gly Arg
    290                 295                 300

Glu Glu Glu Asn Gly Ser Thr Ser Lys Thr Ile Val Tyr His Leu Asp
305                 310                 315                 320

Glu Gly Val Tyr Gly Ile Phe Asn Ser Val Leu Phe Asp Asn Ile Cys
                325                 330                 335

Pro Thr Pro Ile Leu Gln Lys Lys Pro Ser Thr Glu Gln Pro Leu Tyr
            340                 345                 350

Ser Ser Ser Leu Trp Gly Pro Ala Val Asp Gly Cys Asp Cys Val Ala
        355                 360                 365

Glu Gly Leu Trp Leu Pro Gln Leu His Val Gly Asp Trp Leu Val Phe
    370                 375                 380

Asp Asn Met Gly Ala Tyr Thr Val Gly Met Gly Ser Pro Phe Trp Gly
385                 390                 395                 400
```

```
Thr Gln Ala Cys His Ile Thr Tyr Ala Met Ser Arg Val Ala Trp Glu
                405                 410                 415


Ala Leu Arg Arg Gln Leu Met Ala Ala Glu Gln Glu Asp Asp Val Glu
            420                 425                 430


Gly Val Cys Lys Pro Leu Ser Cys Gly Trp Glu Ile Thr Asp Thr Leu
        435                 440                 445


Cys Val Gly Pro Val Phe Thr Pro Ala Ser Ile Met
    450                 455                 460


<210> 5564
<211> 204
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1208; "

<220>
<221> source
<223> /note="Gene Symbol: AZIN2; "

<220>
<221> source
<223> /note="Gene Name:
      antizyme inhibitor 2; "

<220>
<221> source
<223> /note="Uniprot ID:  Q96A70; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000362539"

<400> 5564
Met Ala Gly Tyr Leu Ser Glu Ser Asp Phe Val Met Val Glu Glu Gly
1               5                   10                  15


Phe Ser Thr Arg Asp Leu Leu Lys Glu Leu Thr Leu Gly Ala Ser Gln
            20                  25                  30


Ala Thr Thr Asp Glu Val Ala Ala Phe Phe Val Ala Asp Leu Gly Ala
        35                  40                  45


Ile Val Arg Lys His Phe Cys Phe Leu Lys Cys Leu Pro Arg Val Arg
    50                  55                  60
```

```
Pro Phe Tyr Ala Val Lys Cys Asn Ser Ser Pro Gly Val Leu Lys Val
65                  70                  75                  80

Leu Ala Gln Leu Gly Leu Gly Phe Ser Cys Ala Asn Lys Ile Ala Ser
                85                  90                  95

Val Ile Asn Ser Ala Leu Asp Leu Tyr Phe Pro Glu Gly Cys Gly Val
            100                 105                 110

Asp Ile Phe Ala Glu Leu Gly Arg Tyr Tyr Val Thr Ser Ala Phe Thr
        115                 120                 125

Val Ala Val Ser Ile Ile Ala Lys Lys Glu Val Leu Leu Asp Gln Pro
    130                 135                 140

Gly Arg Glu Glu Glu Asn Gly Ser Thr Ser Lys Thr Ile Val Tyr His
145                 150                 155                 160

Leu Asp Glu Gly Val Tyr Gly Ile Phe Asn Ser Val Leu Phe Asp Asn
                165                 170                 175

Ile Cys Pro Thr Pro Ile Leu Gln Lys Ser Lys Asn His Ser Pro Cys
            180                 185                 190

Tyr Met Ser Leu Glu Ser Ile His Phe Ile Ala Val
        195                 200


<210> 5565
<211> 480
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1208; "

<220>
<221> source
<223> /note="Gene Symbol: AZIN2; "

<220>
<221> source
<223> /note="Gene Name:
      antizyme inhibitor 2; "

<220>
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<221> source
<223> /note="Uniprot ID: Q96A70; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000362540"

<400> 5565

```
Met Ala Gly Tyr Leu Ser Glu Ser Asp Phe Val Met Val Glu Glu Gly
1               5                  10                  15

Phe Ser Thr Arg Asp Leu Leu Lys Glu Leu Thr Leu Gly Ala Ser Gln
            20                  25                  30

Ala Thr Thr Asp Glu Val Ala Ala Phe Phe Val Ala Asp Leu Gly Ala
        35                  40                  45

Ile Val Arg Lys His Phe Cys Phe Leu Lys Cys Leu Pro Arg Val Arg
    50                  55                  60

Pro Phe Tyr Ala Val Lys Cys Asn Ser Ser Pro Gly Val Leu Lys Val
65                  70                  75                  80

Leu Ala Gln Leu Gly Leu Gly Phe Ser Cys Ala Asn Lys Ala Glu Met
                85                  90                  95

Glu Leu Val Gln His Ile Gly Ile Pro Ala Ser Lys Ile Ile Cys Ala
            100                 105                 110

Asn Pro Cys Lys Gln Ile Ala Gln Ile Lys Tyr Ala Ala Lys His Gly
        115                 120                 125

Ile Gln Leu Leu Ser Phe Asp Asn Glu Met Glu Leu Ala Lys Val Val
    130                 135                 140

Lys Ser His Pro Ser Ala Lys Met Val Leu Cys Ile Ala Thr Asp Asp
145                 150                 155                 160

Ser His Ser Leu Ser Cys Leu Ser Leu Lys Phe Gly Val Ser Leu Lys
                165                 170                 175

Ser Cys Arg His Leu Leu Glu Asn Ala Lys Lys His His Val Glu Val
            180                 185                 190

Val Gly Val Ser Phe His Ile Gly Ser Gly Cys Pro Asp Pro Gln Ala
```

```
        195                 200                 205

Tyr Ala Gln Ser Ile Ala Asp Ala Arg Leu Val Phe Glu Met Gly Thr
    210                 215                 220

Glu Leu Gly His Lys Met His Val Leu Asp Leu Gly Gly Gly Phe Pro
225                 230                 235                 240

Gly Thr Glu Gly Ala Lys Val Arg Phe Glu Glu Ile Ala Ser Val Ile
                245                 250                 255

Asn Ser Ala Leu Asp Leu Tyr Phe Pro Glu Gly Cys Gly Val Asp Ile
            260                 265                 270

Phe Ala Glu Leu Gly Arg Tyr Tyr Val Thr Ser Ala Phe Thr Val Ala
        275                 280                 285

Val Ser Ile Ile Ala Lys Lys Glu Val Leu Leu Asp Gln Pro Gly Arg
    290                 295                 300

Glu Ala Pro Leu Pro Pro Pro His Ile Ala Thr Cys Ala Ala Ser Glu
305                 310                 315                 320

Pro Ser Pro Pro Ala Glu Glu Asn Gly Ser Thr Ser Lys Thr Ile Val
                325                 330                 335

Tyr His Leu Asp Glu Gly Val Tyr Gly Ile Phe Asn Ser Val Leu Phe
            340                 345                 350

Asp Asn Ile Cys Pro Thr Pro Ile Leu Gln Lys Lys Pro Ser Thr Glu
        355                 360                 365

Gln Pro Leu Tyr Ser Ser Ser Leu Trp Gly Pro Ala Val Asp Gly Cys
    370                 375                 380

Asp Cys Val Ala Glu Gly Leu Trp Leu Pro Gln Leu His Val Gly Asp
385                 390                 395                 400

Trp Leu Val Phe Asp Asn Met Gly Ala Tyr Thr Val Gly Met Gly Ser
                405                 410                 415

Pro Phe Trp Gly Thr Gln Ala Cys His Ile Thr Tyr Ala Met Ser Arg
            420                 425                 430
```

```
Val Ala Trp Glu Ala Leu Arg Arg Gln Leu Met Ala Ala Glu Gln Glu
        435                 440                 445

Asp Asp Val Glu Gly Val Cys Lys Pro Leu Ser Cys Gly Trp Glu Ile
    450                 455                 460

Thr Asp Thr Leu Cys Val Gly Pro Val Phe Thr Pro Ala Ser Ile Met
465                 470                 475                 480


<210> 5566
<211> 460
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1208; "

<220>
<221> source
<223> /note="Gene Symbol: AZIN2; "

<220>
<221> source
<223> /note="Gene Name:
      antizyme inhibitor 2; "

<220>
<221> source
<223> /note="Uniprot ID:  Q96A70; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000362542"

<400> 5566
Met Ala Gly Tyr Leu Ser Glu Ser Asp Phe Val Met Val Glu Glu Gly
1               5                   10                  15

Phe Ser Thr Arg Asp Leu Leu Lys Glu Leu Thr Leu Gly Ala Ser Gln
            20                  25                  30

Ala Thr Thr Asp Glu Val Ala Ala Phe Phe Val Ala Asp Leu Gly Ala
        35                  40                  45

Ile Val Arg Lys His Phe Cys Phe Leu Lys Cys Leu Pro Arg Val Arg
    50                  55                  60
```

```
Pro Phe Tyr Ala Val Lys Cys Asn Ser Ser Pro Gly Val Leu Lys Val
65                  70                  75                  80

Leu Ala Gln Leu Gly Leu Gly Phe Ser Cys Ala Asn Lys Ala Glu Met
                85                  90                  95

Glu Leu Val Gln His Ile Gly Ile Pro Ala Ser Lys Ile Ile Cys Ala
            100                 105                 110

Asn Pro Cys Lys Gln Ile Ala Gln Ile Lys Tyr Ala Ala Lys His Gly
        115                 120                 125

Ile Gln Leu Leu Ser Phe Asp Asn Glu Met Glu Leu Ala Lys Val Val
    130                 135                 140

Lys Ser His Pro Ser Ala Lys Met Val Leu Cys Ile Ala Thr Asp Asp
145                 150                 155                 160

Ser His Ser Leu Ser Cys Leu Ser Leu Lys Phe Gly Val Ser Leu Lys
                165                 170                 175

Ser Cys Arg His Leu Leu Glu Asn Ala Lys Lys His His Val Glu Val
            180                 185                 190

Val Gly Val Ser Phe His Ile Gly Ser Gly Cys Pro Asp Pro Gln Ala
        195                 200                 205

Tyr Ala Gln Ser Ile Ala Asp Ala Arg Leu Val Phe Glu Met Gly Thr
    210                 215                 220

Glu Leu Gly His Lys Met His Val Leu Asp Leu Gly Gly Gly Phe Pro
225                 230                 235                 240

Gly Thr Glu Gly Ala Lys Val Arg Phe Glu Glu Ile Ala Ser Val Ile
                245                 250                 255

Asn Ser Ala Leu Asp Leu Tyr Phe Pro Glu Gly Cys Gly Val Asp Ile
            260                 265                 270

Phe Ala Glu Leu Gly Arg Tyr Tyr Val Thr Ser Ala Phe Thr Val Ala
        275                 280                 285

Val Ser Ile Ile Ala Lys Lys Glu Val Leu Leu Asp Gln Pro Gly Arg
```

```
    290                 295                 300

Glu Glu Glu Asn Gly Ser Thr Ser Lys Thr Ile Val Tyr His Leu Asp
305                 310                 315                 320

Glu Gly Val Tyr Gly Ile Phe Asn Ser Val Leu Phe Asp Asn Ile Cys
                325                 330                 335

Pro Thr Pro Ile Leu Gln Lys Lys Pro Ser Thr Glu Gln Pro Leu Tyr
            340                 345                 350

Ser Ser Ser Leu Trp Gly Pro Ala Val Asp Gly Cys Asp Cys Val Ala
        355                 360                 365

Glu Gly Leu Trp Leu Pro Gln Leu His Val Gly Asp Trp Leu Val Phe
    370                 375                 380

Asp Asn Met Gly Ala Tyr Thr Val Gly Met Gly Ser Pro Phe Trp Gly
385                 390                 395                 400

Thr Gln Ala Cys His Ile Thr Tyr Ala Met Ser Arg Val Ala Trp Glu
                405                 410                 415

Ala Leu Arg Arg Gln Leu Met Ala Ala Glu Gln Glu Asp Asp Val Glu
            420                 425                 430

Gly Val Cys Lys Pro Leu Ser Cys Gly Trp Glu Ile Thr Asp Thr Leu
        435                 440                 445

Cys Val Gly Pro Val Phe Thr Pro Ala Ser Ile Met
    450                 455                 460


<210> 5567
<211> 297
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1209; "

<220>
<221> source
<223> /note="Gene Symbol:; "

<220>
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<221> source
<223> /note="Gene Name:
AP000275.65; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000391771"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5567

```
Xaa Val Tyr Asn Gly Arg Leu Lys Val Gln Arg Leu Cys Ser Glu Met
1               5                   10                  15

Glu Glu Leu Ala Glu His Gly Ile Phe Leu Pro Pro Asn Met Gln Gly
            20                  25                  30

Leu Thr Asp Asp Gln Ile Glu Glu Leu Lys Leu Lys Asp Glu Trp Gly
        35                  40                  45

Glu Lys Cys Val Pro Ser Gly Gly Ala Val Phe Lys Lys Asp Asp Ile
    50                  55                  60

Gly Arg Arg Asn Gly Gln Ala Pro Asn Glu Lys Met Lys Gln Val Leu
65                  70                  75                  80

Lys Lys Thr Ile Glu Glu Ala Lys Ala Ile Ile Ser Lys Lys Gln Val
                85                  90                  95

Glu Ala Gly Val Cys Val Thr Met Glu Met Val Lys Asp Ala Leu Asp
            100                 105                 110

Gln Leu Arg Gly Ala Val Met Ile Val Tyr Pro Met Gly Leu Pro Pro
        115                 120                 125

Tyr Asp Pro Ile Arg Met Glu Phe Glu Asn Lys Glu Asp Leu Ser Gly
    130                 135                 140

Thr Gln Ala Gly Leu Asn Val Ile Lys Glu Ala Glu Ala Gln Leu Trp
145                 150                 155                 160

Trp Ala Ala Lys Glu Leu Arg Arg Thr Lys Lys Leu Ser Asp Tyr Val
                165                 170                 175
```

```
Gly Lys Asn Glu Lys Thr Lys Ile Ile Ala Lys Ile Gln Gln Arg Gly
            180                 185                 190

Gln Gly Ala Pro Ala Arg Glu Pro Ile Ile Ser Ser Glu Glu Gln Lys
        195                 200                 205

Gln Leu Met Leu Tyr Tyr His Arg Arg Gln Glu Glu Leu Lys Pro Leu
    210                 215                 220

Gln Gln Gln Ile Ile Arg Leu His Gln Glu Leu Gly Arg Gln Lys Ser
225                 230                 235                 240

Leu Trp Ala Asp Val His Gly Lys Leu Arg Ser His Ile Asp Ala Leu
                245                 250                 255

Arg Glu Gln Asn Met Glu Leu Arg Glu Lys Leu Arg Ala Leu Gln Leu
            260                 265                 270

Gln Arg Trp Lys Ala Arg Lys Lys Ser Ala Ala Ser Pro His Ala Gly
        275                 280                 285

Gln Glu Ser His Thr Leu Ala Leu Glu
    290                 295
```

<210> 5568
<211> 297
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1209; "

<220>
<221> source
<223> /note="Gene Symbol:; "

<220>
<221> source
<223> /note="Gene Name:
AP000275.65; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000446874"

<400> 5568

```
Met Val Leu Leu His Val Lys Arg Gly Asp Glu Ser Gln Phe Leu Leu
1               5                  10                  15

Gln Ala Pro Gly Ser Thr Glu Leu Glu Glu Leu Thr Val Gln Val Ala
            20                  25                  30

Arg Val Tyr Asn Gly Arg Leu Lys Val Gln Arg Leu Cys Ser Glu Met
        35                  40                  45

Glu Glu Leu Ala Glu His Gly Ile Phe Leu Pro Pro Asn Met Gln Gly
    50                  55                  60

Leu Thr Asp Asp Gln Ile Glu Glu Leu Lys Leu Lys Asp Glu Trp Gly
65                  70                  75                  80

Glu Lys Cys Val Pro Ser Gly Gly Ala Val Phe Lys Lys Asp Asp Ile
                85                  90                  95

Gly Arg Arg Asn Gly Gln Ala Pro Asn Glu Lys Met Lys Gln Val Leu
            100                 105                 110

Lys Lys Thr Ile Glu Glu Ala Lys Ala Ile Ile Ser Lys Lys Gln Val
        115                 120                 125

Glu Ala Gly Val Cys Val Thr Met Glu Met Val Lys Asp Ala Leu Asp
    130                 135                 140

Gln Leu Arg Gly Ala Val Met Ile Val Tyr Pro Met Gly Leu Pro Pro
145                 150                 155                 160

Tyr Asp Pro Ile Arg Met Glu Phe Glu Asn Lys Glu Asp Leu Ser Gly
                165                 170                 175

Thr Gln Ala Gly Leu Asn Val Ile Lys Glu Ala Glu Ala Gln Leu Trp
            180                 185                 190

Trp Ala Ala Lys Glu Leu Arg Arg Thr Lys Lys Leu Ser Asp Tyr Val
        195                 200                 205

Gly Lys Asn Glu Lys Thr Lys Ile Ile Ala Lys Ile Gln Gln Pro Leu
    210                 215                 220

Gln Gln Gln Ile Ile Arg Leu His Gln Glu Leu Gly Arg Gln Lys Ser
```

225 230 235 240

Leu Trp Ala Asp Val His Gly Lys Leu Arg Ser His Ile Asp Ala Leu
245 250 255

Arg Glu Gln Asn Met Glu Leu Arg Glu Lys Leu Arg Ala Leu Gln Leu
260 265 270

Gln Arg Trp Lys Ala Arg Lys Lys Ser Ala Ala Ser Pro His Ala Gly
275 280 285

Gln Glu Ser His Thr Leu Ala Leu Glu
290 295

<210> 5569
<211> 333
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1210; "

<220>
<221> source
<223> /note="Gene Symbol:; "

<220>
<221> source
<223> /note="Gene Name:
AP000295.9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000388223"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5569
Xaa Asp Leu Thr Asp Glu Trp Arg Ser Thr His Glu Ala Tyr Val Thr
1 5 10 15

Val Leu Glu Gly Phe Ser Gly Asn Thr Thr Leu Phe Ser Cys Ser His
20 25 30

Asn Phe Trp Leu Ala Ile Asp Met Ser Phe Glu Pro Pro Glu Phe Glu

```
        35                  40                  45

Ile Val Gly Phe Thr Asn His Ile Asn Val Met Val Lys Phe Pro Ser
    50                  55                  60

Ile Val Glu Glu Glu Leu Gln Phe Asp Leu Ser Leu Val Ile Glu Glu
65                  70                  75                  80

Gln Ser Glu Gly Ile Val Lys Lys His Lys Pro Glu Ile Lys Gly Asn
                85                  90                  95

Met Ser Gly Asn Phe Thr Tyr Ile Ile Asp Lys Leu Ile Pro Asn Thr
            100                 105                 110

Asn Tyr Cys Val Ser Val Tyr Leu Glu His Ser Asp Glu Gln Ala Val
        115                 120                 125

Ile Lys Ser Pro Leu Lys Cys Thr Leu Leu Pro Pro Gly Gln Glu Ser
    130                 135                 140

Ala Leu Gly Met Val Pro Pro Pro Glu Asn Val Arg Met Asn Ser Val
145                 150                 155                 160

Asn Phe Lys Asn Ile Leu Gln Trp Glu Ser Pro Ala Phe Ala Lys Gly
                165                 170                 175

Asn Leu Thr Phe Thr Ala Gln Tyr Leu Ser Tyr Arg Ile Phe Gln Asp
            180                 185                 190

Lys Cys Met Asn Thr Thr Leu Thr Glu Cys Asp Phe Ser Ser Leu Ser
        195                 200                 205

Lys Tyr Gly Asp His Thr Leu Arg Val Arg Ala Glu Phe Ala Asp Glu
    210                 215                 220

His Ser Asp Trp Val Asn Ile Thr Phe Cys Pro Val Asp Asp Thr Ile
225                 230                 235                 240

Ile Gly Pro Pro Gly Met Gln Val Glu Val Leu Ala Asp Ser Leu His
                245                 250                 255

Met Arg Phe Leu Ala Pro Lys Ile Glu Asn Glu Tyr Glu Thr Trp Thr
            260                 265                 270
```

Met Lys Asn Val Tyr Asn Ser Trp Thr Tyr Asn Val Gln Tyr Trp Lys
275 280 285

Asn Gly Thr Asp Glu Lys Phe Gln Ile Thr Pro Gln Tyr Asp Phe Glu
290 295 300

Val Leu Arg Asn Leu Glu Pro Trp Thr Thr Tyr Cys Val Gln Val Arg
305 310 315 320

Gly Phe Leu Pro Asp Arg Asn Lys Ala Gly Glu Trp Ser
325 330

<210> 5570
<211> 112
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1210; "

<220>
<221> source
<223> /note="Gene Symbol:; "

<220>
<221> source
<223> /note="Gene Name:
AP000295.9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000413946"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5570
Xaa Glu Pro Pro Glu Phe Glu Ile Val Gly Phe Thr Asn His Ile Asn
1 5 10 15

Val Met Val Lys Phe Pro Ser Ile Val Glu Glu Glu Leu Gln Phe Asp
20 25 30

Leu Ser Leu Val Ile Glu Glu Gln Ser Glu Gly Ile Val Lys Lys His
35 40 45

```
Lys Pro Glu Ile Lys Gly Asn Met Ser Gly Asn Phe Thr Tyr Ile Ile
    50                  55                  60

Asp Lys Leu Ile Pro Asn Thr Asn Tyr Cys Val Ser Val Tyr Leu Glu
65                  70                  75                  80

His Ser Asp Glu Gln Ala Val Ile Lys Ser Pro Leu Lys Cys Thr Leu
                85                  90                  95

Leu Pro Pro Gly Gln Glu Ser Val Ile Gly Tyr Ser Lys Ile Asn Ala
            100                 105                 110


<210> 5571
<211> 242
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1211; "

<220>
<221> source
<223> /note="Gene Symbol:; "

<220>
<221> source
<223> /note="Gene Name:
      AP000304.12; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000394107"

<400> 5571
Met Ala Ala Pro Ala Val Ser Gly Leu Ser Arg Gln Val Arg Cys Phe
1               5                   10                  15

Ser Thr Ser Val Val Arg Pro Phe Ala Lys Leu Val Arg Pro Pro Val
            20                  25                  30

Gln Val Tyr Gly Ile Glu Gly Arg Tyr Ala Thr Ala Leu Tyr Ser Ala
        35                  40                  45

Ala Ser Lys Gln Asn Lys Leu Glu Gln Val Glu Lys Glu Leu Leu Arg
    50                  55                  60
```

```
Val Ala Gln Ile Leu Lys Glu Pro Lys Val Ala Ala Ser Val Leu Asn
65                  70                  75                  80

Pro Tyr Val Lys Arg Ser Ile Lys Val Lys Ser Leu Asn Asp Ile Thr
                85                  90                  95

Ala Lys Glu Arg Phe Ser Pro Leu Thr Thr Asn Leu Ile Asn Leu Leu
            100                 105                 110

Ala Glu Asn Gly Arg Leu Ser Asn Thr Gln Gly Val Val Ser Ala Phe
        115                 120                 125

Ser Thr Met Met Ser Val His Arg Gly Glu Val Pro Cys Thr Val Thr
    130                 135                 140

Ser Ala Ser Thr Ser His Val Ser Phe Ser Glu Pro Asp Ile Pro Ser
145                 150                 155                 160

Ser Lys Ser Thr Glu Leu Pro Val Asp Trp Ser Ile Lys Thr Arg Leu
                165                 170                 175

Leu Phe Thr Ser Ser Gln Pro Phe Thr Trp Ala Asp His Leu Lys Ala
            180                 185                 190

Gln Glu Glu Ala Gln Gly Leu Val Gln His Cys Arg Ala Thr Glu Val
        195                 200                 205

Thr Leu Pro Lys Ser Ile Gln Asp Pro Lys Leu Ser Ser Glu Leu Arg
    210                 215                 220

Cys Thr Phe Gln Gln Ser Leu Ile Tyr Trp Leu His Pro Ala Leu Ser
225                 230                 235                 240

Trp Leu
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<210> 5572
<211> 139
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1212; "

<220>
<221> source
<223> /note="Gene Symbol:; "

<220>
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<223> /note="Gene Name:
AP000322.53; "

<220>
<221> source
<223> /note="Uniprot ID: A8MWV9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000397039"

<400> 5572
Met Glu Trp Ala Lys Trp Thr Pro His Glu Ala Ser Asn Gln Thr Gln
1   5   10   15

Ala Ser Thr Leu Leu Gly Leu Leu Leu Gly Asp His Thr Glu Gly Arg
            20   25   30

Asn Asp Thr Asn Ser Thr Arg Ala Leu Lys Val Pro Asp Gly Thr Ser
        35   40   45

Ala Ala Trp Tyr Ile Leu Thr Ile Ile Gly Ile Tyr Ala Val Ile Phe
    50   55   60

Val Phe Arg Leu Ala Ser Asn Ile Leu Arg Lys Asn Asp Lys Ser Leu
65   70   75   80

Glu Asp Val Tyr Tyr Ser Asn Leu Thr Ser Glu Leu Lys Met Thr Gly
                85   90   95

Leu Gln Gly Lys Val Ala Lys Cys Ser Thr Leu Ser Ile Ser Asn Arg
            100   105   110

Ala Val Leu Gln Pro Cys Gln Ala His Leu Gly Ala Lys Gly Gly Ser
        115   120   125

Ser Gly Pro Gln Thr Ala Thr Pro Glu Thr Pro
    130   135

<210> 5573
<211> 249
<212> PRT

<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1213; "

<220>
<221> source
<223> /note="Gene Symbol:; "

<220>
<221> source
<223> /note="Gene Name:
AP000349.1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000469183"

<400> 5573
Met Gly Pro Gln His Pro Cys Phe Ser Ala Ser Pro Trp Lys Glu Pro
1 5 10 15

His Asn Arg Asp Thr Ala Arg Thr Leu Gln Phe Pro Gln Ser Cys His
20 25 30

Gly Ala Thr Leu Arg Asp Arg Asp Gly Asp Arg Ala Ala Arg Phe Ala
35 40 45

Arg Thr Cys Ile Ala Gly Pro Arg Leu Pro Phe Leu Leu Ser His Ala
50 55 60

Lys Ala Ser Leu Pro Ser Leu Arg Gln Ser Leu Ala Gly Asp His Asp
65 70 75 80

Leu Arg Gly Pro Pro Gly Ser Cys His Gly Gly Cys Thr Pro Pro His
85 90 95

Pro Pro Glu Glu Thr Trp Ala Gln Ser His Ala Trp Cys Pro Gln Pro
100 105 110

Gln Arg Trp Pro Trp Val Ser Ser Leu Ile Phe Val Ala Trp Gln Gly
115 120 125

Ser Ala Pro Leu Arg Ala Ser Lys Pro Trp Ser Glu Glu Ser Val Gly
130 135 140

Arg Leu Gly Thr Ala Lys Glu Val Arg Thr His Glu Thr Gly Glu Ala

```
145                 150                 155                 160

Phe Gln Ser Leu His Leu His Arg Val Lys Leu Pro Val Glu Ala Ala
                165                 170                 175

Ala Gln Glu Val Gly Ile Ala Ile Ser Ile Leu Glu Gly Ser Val Asp
            180                 185                 190

Leu Arg Gly His Pro Ser Pro Val Ser Gly Cys Gly Ala Arg Asp Cys
        195                 200                 205

Leu His Ala Gly Cys Trp Gly Gly Asn Ala Ser Ser Pro Cys Leu Gly
    210                 215                 220

Arg Ser Arg Ser Cys Ser Ser Arg Asp Pro Arg Pro Arg Gln His Gly
225                 230                 235                 240

Pro Gly Thr Ser Pro Gly Pro Ala Arg
                245


<210> 5574
<211> 249
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1214; "

<220>
<221> source
<223> /note="Gene Symbol:; "

<220>
<221> source
<223> /note="Gene Name:
      AP000349.2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000485053"

<400> 5574
Met Gly Pro Gln His Pro Cys Phe Ser Ala Ser Pro Trp Lys Glu Pro
1               5                   10                  15

His Asn Arg Asp Thr Ala Arg Thr Leu Gln Phe Pro Gln Ser Cys His
            20                  25                  30
```

```
Gly Ala Thr Leu Arg Asp Arg Asp Gly Asp Arg Ala Ala Arg Phe Ala
        35                  40                  45

Arg Thr Cys Ile Ala Gly Pro Arg Leu Pro Phe Leu Leu Ser His Ala
    50                  55                  60

Lys Ala Ser Leu Pro Ser Leu Arg Gln Ser Leu Ala Gly Asp His Asp
65                  70                  75                  80

Leu Arg Gly Pro Pro Gly Ser Cys His Gly Gly Cys Thr Pro Pro His
                85                  90                  95

Pro Pro Glu Glu Thr Trp Ala Gln Ser His Ala Trp Cys Pro Gln Pro
            100                 105                 110

Gln Arg Trp Pro Trp Val Ser Ser Leu Ile Phe Val Ala Trp Gln Gly
        115                 120                 125

Ser Ala Pro Leu Arg Ala Ser Lys Pro Trp Ser Glu Glu Ser Val Gly
    130                 135                 140

Arg Leu Gly Thr Ala Lys Glu Val Arg Thr His Glu Thr Gly Glu Ala
145                 150                 155                 160

Phe Gln Ser Leu His Leu His Arg Val Lys Leu Pro Val Glu Ala Ala
                165                 170                 175

Ala Gln Glu Val Gly Ile Ala Ile Ser Ile Leu Glu Gly Ser Val Asp
            180                 185                 190

Leu Arg Gly His Pro Ser Pro Val Ser Gly Cys Gly Ala Arg Asp Cys
        195                 200                 205

Leu His Ala Gly Cys Trp Gly Gly Asn Ala Ser Ser Pro Cys Leu Gly
    210                 215                 220

Arg Ser Arg Ser Cys Ser Ser Arg Asp Pro Arg Pro Arg Gln His Gly
225                 230                 235                 240

Pro Gly Thr Ser Pro Gly Pro Ala Arg
                245
```

<210> 5575
<211> 209
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1215; "

<220>
<221> source
<223> /note="Gene Symbol:; "

<220>
<221> source
<223> /note="Gene Name:
AP000350.10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000400325"

<400> 5575

```
Asn Ala Pro Thr Leu His Ile Gln Glu Phe Thr Asn Glu Thr Trp Gln
1               5                  10                  15

Ala Arg Thr Gly Glu Pro Leu Pro Asp His Leu Val Leu Leu Met Trp
            20                  25                  30

Ser Leu Ile Val Ser Leu Tyr Pro Leu Gly Gly Leu Phe Gly Ala Leu
        35                  40                  45

Leu Ala Gly Pro Leu Ala Ile Thr Leu Gly Arg Lys Lys Ser Leu Leu
    50                  55                  60

Val Asn Asn Ile Phe Val Val Ser Ala Ala Ile Leu Phe Gly Phe Ser
65                  70                  75                  80

Arg Lys Ala Gly Ser Phe Glu Met Ile Met Leu Gly Arg Leu Leu Val
                85                  90                  95

Gly Val Asn Ala Gly Val Ser Met Asn Ile Gln Pro Met Tyr Leu Gly
            100                 105                 110

Glu Ser Ala Pro Lys Glu Leu Arg Gly Ala Val Ala Met Ser Ser Ala
        115                 120                 125

Ile Phe Thr Ala Leu Gly Ile Val Met Gly Gln Val Val Gly Leu Ser
    130                 135                 140
```

```
Thr Ser Arg Cys Thr Trp Ser Arg Thr Ser Ser Trp Pro Ser Ala Ala
145                 150                 155                 160


Pro Ala Ser Arg Ala Arg Ser Ala Ala Cys Thr Ala Ser Ala Arg Ser
                165                 170                 175


Ala Ala Arg Arg Thr Ala Pro Thr Ala Ser Cys Cys Ala Ala Cys Trp
            180                 185                 190


Pro Ser Ala Cys Ala Ser Ala Arg Thr Gly Ser Thr Ser Thr Ile Thr
        195                 200                 205


Thr
```

<210> 5576
<211> 209
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1215; "

<220>
<221> source
<223> /note="Gene Symbol:; "

<220>
<221> source
<223> /note="Gene Name:
AP000350.10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000487472"

<400> 5576

```
Asn Ala Pro Thr Leu His Ile Gln Glu Phe Thr Asn Glu Thr Trp Gln
1               5                   10                  15


Ala Arg Thr Gly Glu Pro Leu Pro Asp His Leu Val Leu Leu Met Trp
            20                  25                  30


Ser Leu Ile Val Ser Leu Tyr Pro Leu Gly Gly Leu Phe Gly Ala Leu
        35                  40                  45
```

```
Leu Ala Gly Pro Leu Ala Ile Thr Leu Gly Arg Lys Lys Ser Leu Leu
    50                  55                  60

Val Asn Asn Ile Phe Val Val Ser Ala Ala Ile Leu Phe Gly Phe Ser
65                  70                  75                  80

Arg Lys Ala Gly Ser Phe Glu Met Ile Met Leu Gly Arg Leu Leu Val
                85                  90                  95

Gly Val Asn Ala Gly Val Ser Met Asn Ile Gln Pro Met Tyr Leu Gly
            100                 105                 110

Glu Ser Ala Pro Lys Glu Leu Arg Gly Ala Val Ala Met Ser Ser Ala
        115                 120                 125

Ile Phe Thr Ala Leu Gly Ile Val Met Gly Gln Val Val Gly Leu Ser
    130                 135                 140

Thr Ser Arg Cys Thr Trp Ser Arg Thr Ser Ser Trp Pro Ser Ala Ala
145                 150                 155                 160

Pro Ala Ser Arg Ala Arg Ser Ala Ala Cys Thr Ala Ser Ala Arg Ser
                165                 170                 175

Ala Ala Arg Arg Thr Ala Pro Thr Ala Ser Cys Cys Ala Ala Cys Trp
            180                 185                 190

Pro Ser Ala Cys Ala Ser Ala Arg Thr Gly Ser Thr Ser Thr Ile Thr
        195                 200                 205

Thr
```

<210> 5577
<211> 36
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1216; "

<220>
<221> source
<223> /note="Gene Symbol:; "

<220>
<221> source
<223> /note="Gene Name:
AP000351.1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000483993"

<400> 5577
Gln Val Ala Phe Gly Gln Asp Tyr Cys Thr Thr Val Pro Ser Pro Glu
1 5 10 15

Tyr Tyr Ser Lys Thr Gln Ser Glu His Ser Ile Pro Ala Asn Ser Leu
20 25 30

Lys Pro Ser Thr
35

<210> 5578
<211> 124
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1217; "

<220>
<221> source
<223> /note="Gene Symbol:; "

<220>
<221> source
<223> /note="Gene Name:
AP000687.1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000485343"

<400> 5578
Met Thr Leu Asn Glu His Ala Ala Phe Lys His Leu Phe Asn Lys Ala
1 5 10 15

His Leu Ala Pro Pro Leu Ile His Leu Thr Leu Ser Gly His Ser Thr
20 25 30

Cys Phe Arg Glu His Arg Val Gly Gly Lys Val Thr Asp Gln Gln Asp
35 40 45

```
Pro Lys Ala Glu Glu Phe Phe Leu Val Gln Asn Lys Ile Lys Ser Leu
    50                  55                  60

Pro Cys Leu Leu Leu Ser Thr Gln Thr Gln Gln Pro Ser Asp Phe Ser
65                  70                  75                  80

Ile Phe Ser Pro Pro Phe Pro Ser Phe Asp Ser Thr Lys Pro Pro Leu
                85                  90                  95

Ser Ser Trp Pro Val Leu Asn Glu Leu Leu Gly Thr Pro Pro Arg Arg
            100                 105                 110

Gly Gly Gly Arg Ala Glu Gly Leu Leu Thr Ser Gln
        115                 120


<210> 5579
<211> 164
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1218; "

<220>
<221> source
<223> /note="Gene Symbol:; "

<220>
<221> source
<223> /note="Gene Name:
      AP000721.4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000475957"

<400> 5579
Met Ser Val Leu Thr Pro Leu Leu Leu Arg Gly Leu Thr Gly Ser Ala
1               5                   10                  15

Arg Arg Leu Pro Val Pro Arg Ala Lys Ile His Ser Leu Pro Pro Glu
            20                  25                  30

Gly Lys Leu Gly Ile Met Gly Lys Glu Asn Gly Ile Gly Ser Arg Arg
        35                  40                  45

Ile Cys Asn His His Arg Glu Leu Trp Glu Ala Gly Lys Met Glu Pro
    50                  55                  60
```

```
Asn Gln Cys Val Gly Trp Arg Cys Gly Ser Gly Ala Ala Gly Leu Ser
65                  70                  75                  80

Tyr Arg Ser Gln Val Arg Arg Pro Gly Val Pro Ala Pro Ala Thr Gly
                85                  90                  95

Leu Glu Ala His Ser Leu Thr Thr Pro Lys Gly Ile Pro Leu Leu Gly
            100                 105                 110

Leu Leu Pro Arg Arg Gly Asn Glu Glu Gly Leu Ala Ser Gly Arg Thr
        115                 120                 125

Ala Ile Gly Asn Pro Glu Ala Val Gly Ser Ala Ala Leu Phe Lys Asp
    130                 135                 140

Gly Gly Gly Gly Thr Ser Ala Ala Glu Ala Gly Ala Ala Gly Gln Arg
145                 150                 155                 160

Leu Arg Arg Cys
```

<210> 5580
<211> 67
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1219; "

<220>
<221> source
<223> /note="Gene Symbol:; "

<220>
<221> source
<223> /note="Gene Name:
AP000866.1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000485115"

```
<400> 5580
Met Ile Gly Tyr Tyr Leu Ile Leu Phe Leu Met Trp Gly Ser Ser Thr
1               5                   10                  15
```

Val Phe Cys Val Leu Leu Ile Phe Thr Ile Ala Glu Ala Ser Phe Ser
            20   25   30

Val Glu Asn Glu Cys Leu Val Asp Leu Cys Leu Leu Cys Ile Cys Tyr
        35   40   45

Lys Leu Ser Gly Val Pro Asn Gln Cys Arg Val Pro Leu Pro Ser Asp
    50   55   60

Cys Ser Lys
65

<210> 5581
<211> 14
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1220; "

<220>
<221> source
<223> /note="Gene Symbol:; "

<220>
<221> source
<223> /note="Gene Name:
      AP001888.1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000487309"

<400> 5581
Leu Ser Ile Arg Gln Trp Lys Ser Leu Asp Thr Pro Pro Gly
1   5   10

<210> 5582
<211> 140
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1221; "

<220>
<221> source
<223> /note="Gene Symbol:; "

<220>

<221> source
<223> /note="Gene Name:
AP002884.2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000456434"

<400> 5582
Met Ala Val Leu Trp Arg Leu Ser Ala Val Cys Gly Ala Leu Gly Gly
1 5 10 15

Arg Ala Leu Leu Leu Arg Thr Pro Val Val Arg Pro Ala His Ile Ser
20 25 30

Ala Phe Leu Gln Asp Arg Pro Ile Pro Glu Trp Cys Gly Val Gln His
35 40 45

Ile His Leu Ser Pro Ser His His Ser Gly Ser Lys Ala Ala Ser Leu
50 55 60

His Trp Thr Ser Glu Arg Val Val Ser Val Leu Leu Leu Gly Leu Leu
65 70 75 80

Pro Ala Ala Tyr Leu Asn Pro Cys Ser Ala Met Asp Tyr Ser Leu Ala
85 90 95

Ala Ala Leu Thr Leu His Gly His Cys Leu Gln Cys Gln Ile Val His
100 105 110

Ser Cys Pro Leu Leu Glu Asn Gln Ile His Leu Ser Leu Lys Phe Pro
115 120 125

Asp Tyr Phe Ile Lys Met Lys Pro Trp Arg Lys Ile
130 135 140

<210> 5583
<211> 140
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1221; "

<220>
<221> source
<223> /note="Gene Symbol:; "

<220>
<221> source
<223> /note="Gene Name:
AP002884.2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000456957"

<400> 5583
Met Ala Val Leu Trp Arg Leu Ser Ala Val Cys Gly Ala Leu Gly Gly
1 5 10 15

Arg Ala Leu Leu Leu Arg Thr Pro Val Val Arg Pro Ala His Ile Ser
20 25 30

Ala Phe Leu Gln Asp Arg Pro Ile Pro Glu Trp Cys Gly Val Gln His
35 40 45

Ile His Leu Ser Pro Ser His His Ser Gly Ser Lys Ala Ala Ser Leu
50 55 60

His Trp Thr Ser Glu Arg Val Val Ser Val Leu Leu Leu Gly Leu Leu
65 70 75 80

Pro Ala Ala Tyr Leu Asn Pro Cys Ser Ala Met Asp Tyr Ser Leu Ala
85 90 95

Ala Ala Leu Thr Leu His Gly His Cys Leu Gln Cys Gln Ile Val His
100 105 110

Ser Cys Pro Leu Leu Glu Asn Gln Ile His Leu Ser Leu Lys Phe Pro
115 120 125

Asp Tyr Phe Ile Lys Met Lys Pro Trp Arg Lys Ile
130 135 140

<210> 5584
<211> 313
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1222; "

<220>

<221> source
<223> /note="Gene Symbol:; "

<220>
<221> source
<223> /note="Gene Name:
AP002962.1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000485529"

<400> 5584

```
Met Gln Glu Ala Asp Ala Ser Ile Lys Thr Ala Glu Thr Lys Gly Arg
1               5                  10                  15

Thr Trp Lys Tyr Gln Asn Ile Glu Pro Gly Gly Gly Pro Gln Thr Ser
            20                  25                  30

Gly Lys Gly Gly Phe Gly Ser Leu Val Leu Val Phe Leu Gly Gln Arg
        35                  40                  45

Val Gly Cys Asn Glu Thr Gly Ser Met Asn Leu Glu Lys Leu Gln Thr
    50                  55                  60

Arg Pro Asn Met Thr Ile Phe Thr Arg Asn Asn Ile Ala Thr Asn Phe
65                  70                  75                  80

Ser Ser Ser Ser Ser Ser Ser Tyr Phe Ser Pro Pro Pro Pro Pro Val
                85                  90                  95

Leu Leu Pro Leu Leu Leu Leu Leu Pro Gln Leu Phe Ser Ser Ser Ser
            100                 105                 110

Ser Ser Phe Phe Phe Ser Phe Ser Pro Ser Thr Ser Pro Leu Val Ser
        115                 120                 125

Pro Cys Phe Phe Ser Ser Ser Ser Ser Phe Cys Phe Ser Val Ser Leu
    130                 135                 140

Leu Pro Ser Ser Ser Pro Thr Ser Met Thr Lys Phe Pro Lys Ala Val
145                 150                 155                 160

Thr Thr Lys Ile Lys Thr Asp Lys Arg Asp Leu Ile Lys Leu Lys Gly
                165                 170                 175
```

```
Phe Cys Thr Ala Lys Glu Thr Ile Asn Arg Thr Asn Arg Gln Pro Ile
            180                 185                 190

Glu Trp Glu Lys Ile Phe Thr Asn Tyr Ala Ser Asn Lys Gly Leu Ile
        195                 200                 205

Ser Arg Ile Tyr Lys Glu Leu Gly Gln Ser Asp Lys Gln Arg Pro Asn
    210                 215                 220

Asn Pro Ile Lys Lys Trp Ala Lys Asp Met Asn Arg His Phe Ser Lys
225                 230                 235                 240

Glu Asp Ile Gln Val Ala Asn Lys His Glu Lys Met Leu Ser Thr Ser
                245                 250                 255

Leu Ile Ile Gly Lys Met Gln Ile Lys Thr Thr Val Arg Tyr His Leu
            260                 265                 270

Met Pro Ala Arg Lys Ala Thr Ile Lys Lys Ser Glu Asn Asn Arg Cys
        275                 280                 285

Trp Gln Gly Cys Arg Gly Lys Gly Thr Phe Thr His Cys Trp Ser Lys
    290                 295                 300

Cys Lys Leu Lys Cys Lys Cys Lys Met
305                 310


<210> 5585
<211> 80
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1223; "

<220>
<221> source
<223> /note="Gene Symbol:; "

<220>
<221> source
<223> /note="Gene Name:
      AP003419.11; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000480527"
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<400> 5585
Met Asp Leu Arg Ala Gly Glu Glu Pro Gln Pro Arg Asp Glu Glu Glu
1   5   10   15

Ala Glu Leu Glu Leu Leu Arg Gln Phe Asp Leu Ala Trp Gln Tyr Gly
            20   25   30

Pro Cys Thr Gly Ile Thr Arg Leu Gln Arg Trp Cys Arg Ala Lys Gln
        35   40   45

Met Gly Leu Glu Pro Pro Pro Glu Val Trp Gln Val Leu Lys Thr His
    50   55   60

Pro Gly Asp Pro Arg Phe Gln Cys Ser Leu Trp His Leu Tyr Pro Leu
65   70   75   80

<210> 5586
<211> 62
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1224; "

<220>
<221> source
<223> /note="Gene Symbol:; "

<220>
<221> source
<223> /note="Gene Name:
      AP005242.1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000485358"

<400> 5586
Met Leu Lys Ile Ala Val Met Glu Val Pro Gln Ser Ala Trp Lys Thr
1   5   10   15

Val Trp Met Glu Val Ala Trp Pro His Cys His Val Pro Leu Ser Leu
            20   25   30

Lys Lys Arg His Ile Cys Leu Trp Ala Arg Gln Tyr Ile His Leu Val
        35   40   45

```
Tyr Val Tyr Thr Leu Val Tyr Ala Phe Cys Tyr Leu Thr Phe
    50                  55                  60


<210> 5587
<211> 198
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1225; "

<220>
<221> source
<223> /note="Gene Symbol:; "

<220>
<221> source
<223> /note="Gene Name:
      AP006285.1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000483175"

<400> 5587
Met Gly Leu Gln Gln Gln Thr Gly Thr Gln Gln Leu Glu Pro His Pro
1               5                   10                  15


Pro Gln Pro Glu Pro Gln Pro Pro Leu Asp Pro Pro Gln Glu Pro Gln
            20                  25                  30


Pro Pro Leu Glu Pro Pro Gln Glu Pro Gln Pro Pro Leu Asp Pro Pro
        35                  40                  45


Gln Glu His Ser Pro Pro Cys Ser Leu His Arg Ser His Ser Pro Pro
    50                  55                  60


Trp Ser Pro Gln Lys Ser His Ser Pro Leu Cys His Ser Trp Ser Arg
65                  70                  75                  80


Asn Arg Leu Ala His Gly Ser Thr Arg Ala Cys Ser Ser Arg Arg Ala
                85                  90                  95


His Ser Ser Trp Ser Gln Asn Leu His Ser Gln Ser His Ser Pro His
            100                 105                 110


Ser Arg Ser His Ser Pro His Ser Arg Ser His Ser Pro His Ser Trp
        115                 120                 125
```

```
Ser His Ser Leu Arg Ser Ser Arg Asn Ser Pro Trp Phe Trp Trp Ile
    130                 135                 140

Glu Gly Gly Ala Gly Arg Gly Ala Gly Glu Arg Glu Val Gln Val Trp
145                 150                 155                 160

Ser Ser Leu Ser Leu Asp Pro Leu Tyr Pro Cys Pro Gly Ser Cys Val
                165                 170                 175

Arg Leu Gly Thr His Phe Leu Val Pro Val Cys Ala Ile Phe Arg Ala
            180                 185                 190

Pro Phe Ser Cys Phe Leu
        195


<210> 5588
<211> 198
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1226; "

<220>
<221> source
<223> /note="Gene Symbol:; "

<220>
<221> source
<223> /note="Gene Name:
      AP006285.2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000485085"

<400> 5588
Met Gly Leu Gln Gln Gln Thr Gly Thr Gln Gln Leu Glu Pro His Pro
1               5                   10                  15

Pro Gln Pro Glu Pro Gln Pro Pro Leu Asp Pro Pro Gln Glu Pro Gln
            20                  25                  30

Pro Pro Leu Glu Pro Pro Gln Glu Pro Gln Pro Pro Leu Asp Pro Pro
        35                  40                  45
```

```
Gln Glu His Ser Pro Pro Cys Ser Leu His Arg Ser His Ser Pro Pro
    50                  55                  60

Trp Ser Pro Gln Lys Ser His Ser Pro Leu Cys His Ser Trp Ser Arg
65                  70                  75                  80

Asn Arg Leu Ala His Gly Ser Thr Arg Ala Cys Ser Ser Arg Arg Ala
                85                  90                  95

His Ser Ser Trp Ser Gln Asn Leu His Ser Gln Ser His Ser Pro His
            100                 105                 110

Ser Arg Ser His Ser Pro His Ser Arg Ser His Ser Pro His Ser Trp
        115                 120                 125

Ser His Ser Leu Arg Ser Ser Arg Asn Ser Pro Trp Phe Trp Trp Ile
    130                 135                 140

Glu Gly Gly Ala Gly Arg Gly Ala Gly Glu Arg Glu Val Gln Val Trp
145                 150                 155                 160

Ser Ser Leu Ser Leu Asp Pro Leu Tyr Pro Cys Pro Gly Ser Cys Val
                165                 170                 175

Arg Leu Gly Thr His Phe Leu Val Pro Val Cys Ala Ile Phe Arg Ala
            180                 185                 190

Pro Phe Ser Cys Phe Leu
        195


<210> 5589
<211> 863
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1227; "

<220>
<221> source
<223> /note="Gene Symbol: AAK1; "

<220>
<221> source
<223> /note="Gene Name:
      AP2 associated kinase 1; "
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<220>
<221> source
<223> /note="Uniprot ID: Q2M2I8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000385181"

<400> 5589
Met Lys Lys Phe Phe Asp Ser Arg Arg Glu Gln Gly Gly Ser Gly Leu
1   5   10   15

Gly Ser Gly Ser Ser Gly Gly Gly Gly Ser Thr Ser Gly Leu Gly Ser
            20   25   30

Gly Tyr Ile Gly Arg Val Phe Gly Ile Gly Arg Gln Gln Val Thr Val
        35   40   45

Asp Glu Val Leu Ala Glu Gly Gly Phe Ala Ile Val Phe Leu Val Arg
    50   55   60

Thr Ser Asn Gly Met Lys Cys Ala Leu Lys Arg Met Phe Val Asn Asn
65   70   75   80

Glu His Asp Leu Gln Val Cys Lys Arg Glu Ile Gln Ile Met Arg Asp
                85   90   95

Leu Ser Gly His Lys Asn Ile Val Gly Tyr Ile Asp Ser Ser Ile Asn
            100   105   110

Asn Val Ser Ser Gly Asp Val Trp Glu Val Leu Ile Leu Met Asp Phe
        115   120   125

Cys Arg Gly Gly Gln Val Val Asn Leu Met Asn Gln Arg Leu Gln Thr
    130   135   140

Gly Phe Thr Glu Asn Glu Val Leu Gln Ile Phe Cys Asp Thr Cys Glu
145   150   155   160

Ala Val Ala Arg Leu His Gln Cys Lys Thr Pro Ile Ile His Arg Asp
                165   170   175

Leu Lys Val Glu Asn Ile Leu Leu His Asp Arg Gly His Tyr Val Leu
            180   185   190

```
Cys Asp Phe Gly Ser Ala Thr Asn Lys Phe Gln Asn Pro Gln Thr Glu
        195                 200                 205

Gly Val Asn Ala Val Glu Asp Glu Ile Lys Lys Tyr Thr Thr Leu Ser
    210                 215                 220

Tyr Arg Ala Pro Glu Met Val Asn Leu Tyr Ser Gly Lys Ile Ile Thr
225                 230                 235                 240

Thr Lys Ala Asp Ile Trp Ala Leu Gly Cys Leu Leu Tyr Lys Leu Cys
                245                 250                 255

Tyr Phe Thr Leu Pro Phe Gly Glu Ser Gln Val Ala Ile Cys Asp Gly
            260                 265                 270

Asn Phe Thr Ile Pro Asp Asn Ser Arg Tyr Ser Gln Asp Met His Cys
        275                 280                 285

Leu Ile Arg Tyr Met Leu Glu Pro Asp Pro Asp Lys Arg Pro Asp Ile
    290                 295                 300

Tyr Gln Val Ser Tyr Phe Ser Phe Lys Leu Leu Lys Lys Glu Cys Pro
305                 310                 315                 320

Ile Pro Asn Val Gln Asn Ser Pro Ile Pro Ala Lys Leu Pro Glu Pro
                325                 330                 335

Val Lys Ala Ser Glu Ala Ala Ala Lys Lys Thr Gln Pro Lys Ala Arg
            340                 345                 350

Leu Thr Asp Pro Ile Pro Thr Thr Glu Thr Ser Ile Ala Pro Arg Gln
        355                 360                 365

Arg Pro Lys Ala Gly Gln Thr Gln Pro Asn Pro Gly Ile Leu Pro Ile
    370                 375                 380

Gln Pro Ala Leu Thr Pro Arg Lys Arg Ala Thr Val Gln Pro Pro Pro
385                 390                 395                 400

Gln Ala Ala Gly Ser Ser Asn Gln Pro Gly Leu Leu Ala Ser Val Pro
                405                 410                 415
```

```
Gln Pro Lys Pro Gln Ala Pro Pro Ser Gln Pro Leu Pro Gln Thr Gln
            420                 425                 430

Ala Lys Gln Pro Gln Ala Pro Pro Thr Pro Gln Gln Thr Pro Ser Thr
        435                 440                 445

Gln Ala Gln Gly Leu Pro Ala Gln Ala Gln Ala Thr Pro Gln His Gln
    450                 455                 460

Gln Gln Leu Phe Leu Lys Gln Gln Gln Gln Gln Gln Gln Pro Pro Pro
465                 470                 475                 480

Ala Gln Gln Gln Pro Ala Gly Thr Phe Tyr Gln Gln Gln Gln Ala Gln
                485                 490                 495

Thr Gln Gln Phe Gln Ala Val His Pro Ala Thr Gln Lys Pro Ala Ile
            500                 505                 510

Ala Gln Phe Pro Val Val Ser Gln Gly Gly Ser Gln Gln Gln Leu Met
        515                 520                 525

Gln Asn Phe Tyr Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln
    530                 535                 540

Gln Gln Leu Ala Thr Ala Leu His Gln Gln Gln Leu Met Thr Gln Gln
545                 550                 555                 560

Ala Ala Leu Gln Gln Lys Pro Thr Met Ala Ala Gly Gln Gln Pro Gln
                565                 570                 575

Pro Gln Pro Ala Ala Ala Pro Gln Pro Ala Pro Ala Gln Glu Pro Ala
            580                 585                 590

Ile Gln Ala Pro Val Arg Gln Gln Pro Lys Val Gln Thr Thr Pro Pro
        595                 600                 605

Pro Ala Val Gln Gly Gln Lys Val Gly Ser Leu Thr Pro Pro Ser Ser
    610                 615                 620

Pro Lys Thr Gln Arg Ala Gly His Arg Arg Ile Leu Ser Asp Val Thr
625                 630                 635                 640

His Ser Ala Val Phe Gly Val Pro Ala Ser Lys Ser Thr Gln Leu Leu
```

645 650 655

Gln Ala Ala Ala Ala Glu Ala Ser Leu Asn Lys Ser Lys Ser Ala Thr
660 665 670

Thr Thr Pro Ser Gly Ser Pro Arg Thr Ser Gln Gln Asn Val Tyr Asn
675 680 685

Pro Ser Glu Gly Ser Thr Trp Asn Pro Phe Asp Asp Asp Asn Phe Ser
690 695 700

Lys Leu Thr Ala Glu Glu Leu Leu Asn Lys Asp Phe Ala Lys Leu Gly
705 710 715 720

Glu Gly Lys His Pro Glu Lys Leu Gly Gly Ser Ala Glu Ser Leu Ile
725 730 735

Pro Gly Phe Gln Ser Thr Gln Gly Asp Ala Phe Ala Thr Thr Ser Phe
740 745 750

Ser Ala Gly Thr Ala Glu Lys Arg Lys Gly Gly Gln Thr Val Asp Ser
755 760 765

Gly Leu Pro Leu Leu Ser Val Ser Asp Pro Phe Ile Pro Leu Gln Val
770 775 780

Pro Asp Ala Pro Glu Lys Leu Ile Glu Gly Leu Lys Ser Pro Asp Thr
785 790 795 800

Ser Leu Leu Leu Pro Asp Leu Leu Pro Met Thr Asp Pro Phe Gly Ser
805 810 815

Thr Ser Asp Ala Val Ile Gly Lys Val Ile Ile Ser Val Ser Ser Val
820 825 830

Met His Asp Met Cys Ala Cys Phe Lys Asn Asp Lys Tyr Leu Val Asn
835 840 845

Gln Ser Leu Gly Asn Ser Pro Ala Thr Pro Glu Ala Lys Ala Ile
850 855 860

<210> 5590
<211> 674

<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
AP2 associated kinase 1; "

<220>
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<400> 5590
Met Lys Lys Phe Phe Asp Ser Arg Arg Glu Gln Gly Gly Ser Gly Leu
1 5 10 15

Gly Ser Gly Ser Ser Gly Gly Gly Gly Ser Thr Ser Gly Leu Gly Ser
20 25 30

Gly Tyr Ile Gly Arg Val Phe Gly Ile Gly Arg Gln Gln Val Thr Val
35 40 45

Asp Glu Val Leu Ala Glu Gly Gly Phe Ala Ile Val Phe Leu Val Arg
50 55 60

Thr Ser Asn Gly Met Lys Cys Ala Leu Lys Arg Met Phe Val Asn Asn
65 70 75 80

Glu His Asp Leu Gln Val Cys Lys Arg Glu Ile Gln Ile Met Arg Asp
85 90 95

Leu Ser Gly His Lys Asn Ile Val Gly Tyr Ile Asp Ser Ser Ile Asn
100 105 110

Asn Val Ser Ser Gly Asp Val Trp Glu Val Leu Ile Leu Met Asp Phe
115 120 125

Cys Arg Gly Gly Gln Val Val Asn Leu Met Asn Gln Arg Leu Gln Thr
130 135 140

```
Gly Phe Thr Glu Asn Glu Val Leu Gln Ile Phe Cys Asp Thr Cys Glu
145                 150                 155                 160

Ala Val Ala Arg Leu His Gln Cys Lys Thr Pro Ile Ile His Arg Asp
                165                 170                 175

Leu Lys Val Glu Asn Ile Leu Leu His Asp Arg Gly His Tyr Val Leu
            180                 185                 190

Cys Asp Phe Gly Ser Ala Thr Asn Lys Phe Gln Asn Pro Gln Thr Glu
        195                 200                 205

Gly Val Asn Ala Val Glu Asp Glu Ile Lys Lys Tyr Thr Thr Leu Ser
    210                 215                 220

Tyr Arg Ala Pro Glu Met Val Asn Leu Tyr Ser Gly Lys Ile Ile Thr
225                 230                 235                 240

Thr Lys Ala Asp Ile Trp Ala Leu Gly Cys Leu Leu Tyr Lys Leu Cys
                245                 250                 255

Tyr Phe Thr Leu Pro Phe Gly Glu Ser Gln Val Ala Ile Cys Asp Gly
            260                 265                 270

Asn Phe Thr Ile Pro Asp Asn Ser Arg Tyr Ser Gln Asp Met His Cys
        275                 280                 285

Leu Ile Arg Tyr Met Leu Glu Pro Asp Pro Asp Lys Arg Pro Asp Ile
    290                 295                 300

Tyr Gln Val Ser Tyr Phe Ser Phe Lys Leu Leu Lys Lys Glu Cys Pro
305                 310                 315                 320

Ile Pro Asn Val Gln Asn Ser Pro Ile Pro Ala Lys Leu Pro Glu Pro
                325                 330                 335

Val Lys Ala Ser Glu Ala Ala Ala Lys Lys Thr Gln Pro Lys Ala Arg
            340                 345                 350

Leu Thr Asp Pro Ile Pro Thr Thr Glu Thr Ser Ile Ala Pro Arg Gln
        355                 360                 365

Arg Pro Lys Ala Gly Gln Thr Gln Pro Asn Pro Gly Ile Leu Pro Ile
```

```
    370                 375                 380

Gln Pro Ala Leu Thr Pro Arg Lys Arg Ala Thr Val Gln Pro Pro Pro
385                 390                 395                 400

Gln Ala Ala Gly Ser Ser Asn Gln Pro Gly Leu Leu Ala Ser Val Pro
                405                 410                 415

Gln Pro Lys Pro Gln Ala Pro Pro Ser Gln Pro Leu Pro Gln Thr Gln
            420                 425                 430

Ala Lys Gln Pro Gln Ala Pro Pro Thr Pro Gln Gln Thr Pro Ser Thr
        435                 440                 445

Gln Ala Gln Gly Leu Pro Ala Gln Ala Gln Ala Thr Pro Gln His Gln
    450                 455                 460

Gln Gln Leu Phe Leu Lys Gln Gln Gln Gln Gln Gln Gln Pro Pro Pro
465                 470                 475                 480

Ala Gln Gln Gln Pro Ala Gly Thr Phe Tyr Gln Gln Gln Gln Ala Gln
                485                 490                 495

Thr Gln Gln Phe Gln Ala Val His Pro Ala Thr Gln Lys Pro Ala Ile
            500                 505                 510

Ala Gln Phe Pro Val Val Ser Gln Gly Gly Ser Gln Gln Gln Leu Met
        515                 520                 525

Gln Asn Phe Tyr Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln
    530                 535                 540

Gln Gln Leu Ala Thr Ala Leu His Gln Gln Gln Leu Met Thr Gln Gln
545                 550                 555                 560

Ala Ala Leu Gln Gln Lys Pro Thr Met Ala Ala Gly Gln Gln Pro Gln
                565                 570                 575

Pro Gln Pro Ala Ala Ala Pro Gln Pro Ala Pro Ala Gln Glu Pro Ala
            580                 585                 590

Ile Gln Ala Pro Val Arg Gln Gln Pro Lys Val Gln Thr Thr Pro Pro
        595                 600                 605
```

```
Pro Ala Val Gln Gly Gln Lys Val Gly Ser Leu Thr Pro Pro Ser Ser
    610                 615                 620

Pro Lys Thr Gln Arg Ala Gly His Arg Arg Ile Leu Ser Asp Val Thr
625                 630                 635                 640

His Ser Ala Val Phe Gly Val Pro Ala Ser Lys Ser Thr Gln Leu Leu
                645                 650                 655

Gln Ala Ala Ala Ala Glu Ala Glu Leu Leu Asp Pro Gly Arg Gln Thr
            660                 665                 670

Leu Gln
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<210> 5591
<211> 961
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1227; "

<220>
<221> source
<223> /note="Gene Symbol: AAK1; "

<220>
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<223> /note="Gene Name:
AP2 associated kinase 1; "

<220>
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<223> /note="Uniprot ID: Q2M2I8; "

<220>
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<400> 5591

```
Met Lys Lys Phe Phe Asp Ser Arg Arg Glu Gln Gly Gly Ser Gly Leu
1               5                   10                  15

Gly Ser Gly Ser Ser Gly Gly Gly Gly Ser Thr Ser Gly Leu Gly Ser
            20                  25                  30
```

```
Gly Tyr Ile Gly Arg Val Phe Gly Ile Gly Arg Gln Gln Val Thr Val
        35                  40                  45

Asp Glu Val Leu Ala Glu Gly Gly Phe Ala Ile Val Phe Leu Val Arg
    50                  55                  60

Thr Ser Asn Gly Met Lys Cys Ala Leu Lys Arg Met Phe Val Asn Asn
65                  70                  75                  80

Glu His Asp Leu Gln Val Cys Lys Arg Glu Ile Gln Ile Met Arg Asp
                85                  90                  95

Leu Ser Gly His Lys Asn Ile Val Gly Tyr Ile Asp Ser Ser Ile Asn
            100                 105                 110

Asn Val Ser Ser Gly Asp Val Trp Glu Val Leu Ile Leu Met Asp Phe
        115                 120                 125

Cys Arg Gly Gly Gln Val Val Asn Leu Met Asn Gln Arg Leu Gln Thr
    130                 135                 140

Gly Phe Thr Glu Asn Glu Val Leu Gln Ile Phe Cys Asp Thr Cys Glu
145                 150                 155                 160

Ala Val Ala Arg Leu His Gln Cys Lys Thr Pro Ile Ile His Arg Asp
                165                 170                 175

Leu Lys Val Glu Asn Ile Leu Leu His Asp Arg Gly His Tyr Val Leu
            180                 185                 190

Cys Asp Phe Gly Ser Ala Thr Asn Lys Phe Gln Asn Pro Gln Thr Glu
        195                 200                 205

Gly Val Asn Ala Val Glu Asp Glu Ile Lys Lys Tyr Thr Thr Leu Ser
    210                 215                 220

Tyr Arg Ala Pro Glu Met Val Asn Leu Tyr Ser Gly Lys Ile Ile Thr
225                 230                 235                 240

Thr Lys Ala Asp Ile Trp Ala Leu Gly Cys Leu Leu Tyr Lys Leu Cys
                245                 250                 255

Tyr Phe Thr Leu Pro Phe Gly Glu Ser Gln Val Ala Ile Cys Asp Gly
```

```
            260                 265                 270

Asn Phe Thr Ile Pro Asp Asn Ser Arg Tyr Ser Gln Asp Met His Cys
        275                 280                 285

Leu Ile Arg Tyr Met Leu Glu Pro Asp Pro Asp Lys Arg Pro Asp Ile
    290                 295                 300

Tyr Gln Val Ser Tyr Phe Ser Phe Lys Leu Leu Lys Lys Glu Cys Pro
305                 310                 315                 320

Ile Pro Asn Val Gln Asn Ser Pro Ile Pro Ala Lys Leu Pro Glu Pro
                325                 330                 335

Val Lys Ala Ser Glu Ala Ala Ala Lys Lys Thr Gln Pro Lys Ala Arg
            340                 345                 350

Leu Thr Asp Pro Ile Pro Thr Thr Glu Thr Ser Ile Ala Pro Arg Gln
        355                 360                 365

Arg Pro Lys Ala Gly Gln Thr Gln Pro Asn Pro Gly Ile Leu Pro Ile
    370                 375                 380

Gln Pro Ala Leu Thr Pro Arg Lys Arg Ala Thr Val Gln Pro Pro Pro
385                 390                 395                 400

Gln Ala Ala Gly Ser Ser Asn Gln Pro Gly Leu Leu Ala Ser Val Pro
                405                 410                 415

Gln Pro Lys Pro Gln Ala Pro Pro Ser Gln Pro Leu Pro Gln Thr Gln
            420                 425                 430

Ala Lys Gln Pro Gln Ala Pro Pro Thr Pro Gln Gln Thr Pro Ser Thr
        435                 440                 445

Gln Ala Gln Gly Leu Pro Ala Gln Ala Gln Ala Thr Pro Gln His Gln
    450                 455                 460

Gln Gln Leu Phe Leu Lys Gln Gln Gln Gln Gln Gln Gln Pro Pro Pro
465                 470                 475                 480

Ala Gln Gln Gln Pro Ala Gly Thr Phe Tyr Gln Gln Gln Gln Ala Gln
                485                 490                 495
```

```
Thr Gln Gln Phe Gln Ala Val His Pro Ala Thr Gln Lys Pro Ala Ile
            500                 505                 510

Ala Gln Phe Pro Val Val Ser Gln Gly Gly Ser Gln Gln Gln Leu Met
        515                 520                 525

Gln Asn Phe Tyr Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln
    530                 535                 540

Gln Gln Leu Ala Thr Ala Leu His Gln Gln Gln Leu Met Thr Gln Gln
545                 550                 555                 560

Ala Ala Leu Gln Gln Lys Pro Thr Met Ala Ala Gly Gln Gln Pro Gln
                565                 570                 575

Pro Gln Pro Ala Ala Ala Pro Gln Pro Ala Pro Ala Gln Glu Pro Ala
            580                 585                 590

Ile Gln Ala Pro Val Arg Gln Gln Pro Lys Val Gln Thr Thr Pro Pro
        595                 600                 605

Pro Ala Val Gln Gly Gln Lys Val Gly Ser Leu Thr Pro Pro Ser Ser
    610                 615                 620

Pro Lys Thr Gln Arg Ala Gly His Arg Arg Ile Leu Ser Asp Val Thr
625                 630                 635                 640

His Ser Ala Val Phe Gly Val Pro Ala Ser Lys Ser Thr Gln Leu Leu
                645                 650                 655

Gln Ala Ala Ala Ala Glu Ala Ser Leu Asn Lys Ser Lys Ser Ala Thr
            660                 665                 670

Thr Thr Pro Ser Gly Ser Pro Arg Thr Ser Gln Gln Asn Val Tyr Asn
        675                 680                 685

Pro Ser Glu Gly Ser Thr Trp Asn Pro Phe Asp Asp Asp Asn Phe Ser
    690                 695                 700

Lys Leu Thr Ala Glu Glu Leu Leu Asn Lys Asp Phe Ala Lys Leu Gly
705                 710                 715                 720
```

```
Glu Gly Lys His Pro Glu Lys Leu Gly Gly Ser Ala Glu Ser Leu Ile
                725                 730                 735

Pro Gly Phe Gln Ser Thr Gln Gly Asp Ala Phe Ala Thr Thr Ser Phe
            740                 745                 750

Ser Ala Gly Thr Ala Glu Lys Arg Lys Gly Gly Gln Thr Val Asp Ser
        755                 760                 765

Gly Leu Pro Leu Leu Ser Val Ser Asp Pro Phe Ile Pro Leu Gln Val
    770                 775                 780

Pro Asp Ala Pro Glu Lys Leu Ile Glu Gly Leu Lys Ser Pro Asp Thr
785                 790                 795                 800

Ser Leu Leu Leu Pro Asp Leu Leu Pro Met Thr Asp Pro Phe Gly Ser
                805                 810                 815

Thr Ser Asp Ala Val Ile Glu Lys Ala Asp Val Ala Val Glu Ser Leu
            820                 825                 830

Ile Pro Gly Leu Glu Pro Pro Val Pro Gln Arg Leu Pro Ser Gln Thr
        835                 840                 845

Glu Ser Val Thr Ser Asn Arg Thr Asp Ser Leu Thr Gly Glu Asp Ser
    850                 855                 860

Leu Leu Asp Cys Ser Leu Leu Ser Asn Pro Thr Thr Asp Leu Leu Glu
865                 870                 875                 880

Glu Phe Ala Pro Thr Ala Ile Ser Ala Pro Val His Lys Ala Ala Glu
                885                 890                 895

Asp Ser Asn Leu Ile Ser Gly Phe Asp Val Pro Glu Gly Ser Asp Lys
            900                 905                 910

Val Ala Glu Asp Glu Phe Asp Pro Ile Pro Val Leu Ile Thr Lys Asn
        915                 920                 925

Pro Gln Gly Gly His Ser Arg Asn Ser Ser Gly Ser Ser Glu Ser Ser
    930                 935                 940
```

```
Leu Pro Asn Leu Ala Arg Ser Leu Leu Leu Val Asp Gln Leu Ile Asp
945                 950                 955                 960


Leu
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<210> 5592
<211> 339
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1227; "

<220>
<221> source
<223> /note="Gene Symbol: AAK1; "

<220>
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<223> /note="Gene Name:
AP2 associated kinase 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000485296"

<400> 5592

```
Thr Gln Leu Leu Gln Ala Ala Ala Ala Glu Ala Ser Leu Asn Lys Ser
1               5                   10                  15


Lys Ser Ala Thr Thr Thr Pro Ser Gly Ser Pro Arg Thr Ser Gln Gln
            20                  25                  30


Asn Val Tyr Asn Pro Ser Glu Gly Ser Thr Trp Asn Pro Phe Asp Asp
        35                  40                  45


Asp Asn Phe Ser Lys Leu Thr Ala Glu Glu Leu Leu Asn Lys Asp Phe
    50                  55                  60


Ala Lys Leu Gly Glu Gly Lys His Pro Glu Lys Leu Gly Gly Ser Ala
65                  70                  75                  80


Glu Ser Leu Ile Pro Gly Phe Gln Ser Thr Gln Gly Asp Ala Phe Ala
                85                  90                  95


Thr Thr Ser Phe Ser Ala Gly Thr Asp Leu Gln Arg Glu Ser Asn Pro
            100                 105                 110
```

```
Cys Pro Val Ile Thr Val Glu His Phe Lys Glu Ser Leu Gly Val Lys
        115                 120                 125

Gly Leu Pro Leu Tyr Pro Asp Pro Ser Arg Val Pro Gly Thr Lys Thr
    130                 135                 140

Gln Asn Asn Leu Glu Ser Asp Tyr Leu Ala Arg Asp Gly Pro Ser Ser
145                 150                 155                 160

Asn Ser Ser Phe His Ser Ser Glu Glu Glu Gly Thr Asp Leu Glu Gly
                165                 170                 175

Asp Met Leu Asp Cys Ser Gly Ser Arg Pro Leu Leu Met Glu Ser Glu
            180                 185                 190

Glu Glu Asp Glu Ser Cys Arg Pro Pro Pro Gly Lys Leu Gly Gly Ala
        195                 200                 205

Val Pro Phe Ala Pro Pro Glu Val Ser Pro Glu Gln Ala Lys Thr Val
    210                 215                 220

Gln Gly Gly Arg Lys Asn Gln Phe Gln Ala Phe Thr Gln Pro Ala Thr
225                 230                 235                 240

Asp Gly Leu Ser Glu Pro Asp Val Phe Ala Ile Ala Pro Phe Arg Ser
                245                 250                 255

Ser Arg Val Pro Asn Asp Asp Met Asp Ile Phe Ser Lys Ala Pro Phe
            260                 265                 270

Val Ser Lys Ser Ser Met Ala Pro Ser Gln Pro Glu Glu Ser Asp Val
        275                 280                 285

Phe Leu Arg Ala Pro Phe Thr Lys Lys Lys Ser Met Glu Glu Leu Thr
    290                 295                 300

Val Ile Gln Cys Thr Ser Gln Glu Leu Pro Ala Gln Thr Gly Leu Leu
305                 310                 315                 320

Ser Gln Thr Gly Asp Val Pro Leu Pro Ala Gly Arg Glu Arg Ala Val
                325                 330                 335
```

Tyr Thr Ser

<210> 5593
<211> 511
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: AAK1; "

<220>
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<223> /note="Gene Name:
AP2 associated kinase 1; "

<220>
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<223> /note="ENSP ID: ENSP00000485350"

<400> 5593
Thr Gln Leu Leu Gln Ala Ala Ala Ala Glu Ala Ser Leu Asn Lys Ser
1 5 10 15

Lys Ser Ala Thr Thr Thr Pro Ser Gly Ser Pro Arg Thr Ser Gln Gln
20 25 30

Asn Val Tyr Asn Pro Ser Glu Gly Ser Thr Trp Asn Pro Phe Asp Asp
35 40 45

Asp Asn Phe Ser Lys Leu Thr Ala Glu Glu Leu Leu Asn Lys Asp Phe
50 55 60

Ala Lys Leu Gly Glu Gly Lys His Pro Glu Lys Leu Gly Gly Ser Ala
65 70 75 80

Glu Ser Leu Ile Pro Gly Phe Gln Ser Thr Gln Gly Asp Ala Phe Ala
85 90 95

Thr Thr Ser Phe Ser Ala Gly Thr Ala Glu Lys Arg Lys Gly Gly Gln
100 105 110

Thr Val Asp Ser Gly Leu Pro Leu Leu Ser Val Ser Asp Pro Phe Ile

```
        115                 120                 125

Pro Leu Gln Val Pro Asp Ala Pro Asp Leu Gln Arg Glu Ser Asn Pro
    130                 135                 140

Cys Pro Val Ile Thr Val Glu His Phe Lys Glu Ser Leu Gly Val Lys
145                 150                 155                 160

Gly Leu Pro Leu Tyr Pro Asp Pro Ser Arg Val Pro Gly Thr Lys Thr
                165                 170                 175

Gln Asn Asn Leu Glu Ser Asp Tyr Leu Ala Arg Asp Gly Pro Ser Ser
            180                 185                 190

Asn Ser Ser Phe His Ser Ser Glu Glu Glu Gly Thr Asp Leu Glu Gly
        195                 200                 205

Asp Met Leu Asp Cys Ser Gly Ser Arg Pro Leu Leu Met Glu Ser Glu
    210                 215                 220

Glu Glu Asp Glu Ser Cys Arg Pro Pro Pro Gly Lys Leu Gly Gly Ala
225                 230                 235                 240

Val Pro Phe Ala Pro Pro Glu Val Ser Pro Glu Gln Ala Lys Thr Val
                245                 250                 255

Gln Gly Gly Arg Lys Asn Gln Phe Gln Ala Phe Thr Gln Pro Ala Thr
            260                 265                 270

Asp Gly Leu Ser Glu Pro Asp Val Phe Ala Ile Ala Pro Phe Arg Ser
        275                 280                 285

Ser Arg Val Pro Asn Asp Asp Met Asp Ile Phe Ser Lys Ala Pro Phe
    290                 295                 300

Val Ser Lys Ser Ser Met Ala Pro Ser Gln Pro Glu Glu Ser Asp Val
305                 310                 315                 320

Phe Leu Arg Ala Pro Phe Thr Lys Lys Lys Ser Met Glu Glu Leu Thr
                325                 330                 335

Val Ile Gln Cys Thr Ser Gln Glu Leu Pro Ala Gln Thr Gly Leu Leu
            340                 345                 350
```

```
Ser Gln Thr Gly Asp Val Pro Leu Pro Ala Gly Arg Glu Arg Ala Val
        355                 360                 365

Tyr Thr Ser Val Gln Ala Gln Tyr Ser Thr Ala Gly Phe Val Gln Gln
    370                 375                 380

Ser Asn Leu Leu Ser His Ser Val Gln Ala Ala Asp His Leu Asp Ser
385                 390                 395                 400

Ile Ser Pro Arg Gly Ser Cys Leu Glu Ser Gly Gly His Ser Asn Asp
                405                 410                 415

Arg Asn Lys Gly Pro Gln Leu Gln Lys Glu Ala Val Ser Gly Pro Met
            420                 425                 430

Ala Gly Lys Pro Phe Arg Pro Gln Ser Leu Ser Lys Tyr Ser Arg His
        435                 440                 445

Tyr Ser Pro Glu Asp Glu Pro Ser Pro Glu Ala Gln Pro Ile Ala Ala
    450                 455                 460

Tyr Lys Ile Val Ser Gln Thr Asn Lys Gln Ser Ile Ala Gly Ser Val
465                 470                 475                 480

Ser Ile Thr Ser Leu Ser Ser Arg Thr Thr Glu Leu Pro Ala Ala Asp
                485                 490                 495

Pro Phe Ala Leu Ala Pro Phe Pro Ser Lys Ser Gly Lys Lys Pro
            500                 505                 510


<210> 5594
<211> 99
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: AAK1; "

<220>
<221> source
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<223> /note="Gene Name:
AP2 associated kinase 1; "

<220>
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<223> /note="ENSP ID: ENSP00000485409"

<400> 5594
Ala Ala Ala Glu Ala Ser Leu Asn Lys Ser Lys Ser Ala Thr Thr Thr
1 5 10 15

Pro Ser Gly Ser Pro Arg Thr Ser Gln Gln Asn Val Tyr Asn Pro Ser
20 25 30

Glu Gly Ser Thr Trp Asn Pro Phe Asp Asp Asp Asn Phe Ser Lys Leu
35 40 45

Thr Ala Glu Glu Leu Leu Asn Lys Asp Phe Ala Lys Leu Gly Glu Gly
50 55 60

Lys His Pro Glu Lys Leu Gly Gly Ser Ala Glu Ser Leu Ile Pro Gly
65 70 75 80

Phe Gln Ser Thr Gln Gly Asp Ala Phe Ala Thr Thr Ser Phe Ser Ala
85 90 95

Gly Thr Val

<210> 5595
<211> 242
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: APIP; "

<220>
<221> source
<223> /note="Gene Name:
APAF1 interacting prt; "

<220>
<221> source
<223> /note="Uniprot ID: Q96GX9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000379133"

<400> 5595
Met Ser Gly Cys Asp Ala Arg Glu Gly Asp Cys Cys Ser Arg Arg Cys
1   5   10   15

Gly Ala Gln Asp Lys Glu His Pro Arg Tyr Leu Ile Pro Glu Leu Cys
            20   25   30

Lys Gln Phe Tyr His Leu Gly Trp Val Thr Gly Thr Gly Gly Gly Ile
        35   40   45

Ser Leu Lys His Gly Asp Glu Ile Tyr Ile Ala Pro Ser Gly Val Gln
    50   55   60

Lys Glu Arg Ile Gln Pro Glu Asp Met Phe Val Cys Asp Ile Asn Glu
65   70   75   80

Lys Asp Ile Ser Gly Pro Ser Pro Ser Lys Lys Leu Lys Lys Ser Gln
                85   90   95

Cys Thr Pro Leu Phe Met Asn Ala Tyr Thr Met Arg Gly Ala Gly Ala
            100   105   110

Val Ile His Thr His Ser Lys Ala Ala Val Met Ala Thr Leu Leu Phe
        115   120   125

Pro Gly Arg Glu Phe Lys Ile Thr His Gln Glu Met Ile Lys Gly Ile
    130   135   140

Lys Lys Cys Thr Ser Gly Gly Tyr Tyr Arg Tyr Asp Asp Met Leu Val
145   150   155   160

Val Pro Ile Ile Glu Asn Thr Pro Glu Glu Lys Asp Leu Lys Asp Arg
                165   170   175

Met Ala His Ala Met Asn Glu Tyr Pro Asp Ser Cys Ala Val Leu Val
            180   185   190

Arg Arg His Gly Val Tyr Val Trp Gly Glu Thr Trp Glu Lys Ala Lys
        195   200   205

```
Thr Met Cys Glu Cys Tyr Asp Tyr Leu Phe Asp Ile Ala Val Ser Met
    210                 215                 220

Lys Lys Val Gly Leu Asp Pro Ser Gln Leu Pro Val Gly Glu Asn Gly
225                 230                 235                 240

Ile Val
```

<210> 5596
<211> 195
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1228; "

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<223> /note="Gene Symbol: APIP; "

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<223> /note="Gene Name:
APAF1 interacting prt; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000474191"

<400> 5596

```
Met Phe Cys Val Ala Ser Asp Glu Ile Tyr Ile Ala Pro Ser Gly Val
1               5                   10                  15

Gln Lys Glu Arg Ile Gln Pro Glu Asp Met Phe Val Cys Asp Ile Asn
            20                  25                  30

Glu Lys Asp Ile Ser Gly Pro Ser Pro Ser Lys Lys Leu Lys Lys Ser
        35                  40                  45

Gln Cys Thr Pro Leu Phe Met Asn Ala Tyr Thr Met Arg Gly Ala Gly
    50                  55                  60

Ala Val Ile His Thr His Ser Lys Ala Ala Val Met Ala Thr Leu Leu
65                  70                  75                  80

Phe Pro Gly Arg Glu Phe Lys Ile Thr His Gln Glu Met Ile Lys Gly
```

```
                85                  90                  95

Ile Lys Lys Cys Thr Ser Gly Gly Tyr Tyr Arg Tyr Asp Asp Met Leu
            100                 105                 110

Val Val Pro Ile Ile Glu Asn Thr Pro Glu Glu Lys Asp Leu Lys Asp
        115                 120                 125

Arg Met Ala His Ala Met Asn Glu Tyr Pro Asp Ser Cys Ala Val Leu
    130                 135                 140

Val Arg Arg His Gly Val Tyr Val Trp Gly Glu Thr Trp Glu Lys Ala
145                 150                 155                 160

Lys Thr Met Cys Glu Cys Tyr Asp Tyr Leu Phe Asp Ile Ala Val Ser
                165                 170                 175

Met Lys Lys Val Gly Leu Asp Pro Ser Gln Leu Pro Val Gly Glu Asn
            180                 185                 190

Gly Ile Val
        195


<210> 5597
<211> 1135
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1229; "

<220>
<221> source
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<220>
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<223> /note="Gene Name:
      APC membrane recruitment prt 1; "

<220>
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<223> /note="Uniprot ID:  Q5JTC6; "

<220>
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<400> 5597
Met Glu Thr Gln Lys Asp Glu Ala Ala Gln Ala Lys Gly Ala Ala Ala
1 5 10 15

Ser Gly Ser Thr Arg Glu Gln Thr Ala Glu Lys Gly Ala Lys Asn Lys
20 25 30

Ala Ala Glu Ala Thr Glu Gly Pro Thr Ser Glu Pro Ser Ser Ser Gly
35 40 45

Pro Gly Arg Leu Lys Lys Thr Ala Met Lys Leu Phe Gly Gly Lys Lys
50 55 60

Gly Ile Cys Thr Leu Pro Ser Phe Phe Gly Gly Gly Arg Ser Lys Gly
65 70 75 80

Ser Gly Lys Gly Ser Ser Lys Lys Gly Leu Ser Lys Ser Lys Thr His
85 90 95

Asp Gly Leu Ser Glu Ala Ala His Gly Pro Glu Asp Val Val Ser Glu
100 105 110

Gly Thr Gly Phe Ser Leu Pro Leu Pro Glu Leu Pro Cys Gln Phe Pro
115 120 125

Ser Ser Gln Ser Ala His Gly Ala Leu Glu Thr Gly Ser Arg Cys Lys
130 135 140

Thr Ser Val Ala Gly Ala Thr Glu Lys Ala Val Ala Glu Lys Phe Pro
145 150 155 160

Ser Met Pro Lys Pro Lys Lys Gly Leu Lys Gly Phe Phe Ser Ser Ile
165 170 175

Arg Arg His Arg Lys Ser Lys Val Thr Gly Ala Glu Gln Ser Glu Pro
180 185 190

Gly Ala Lys Gly Pro Glu Arg Val Arg Ala Arg Pro His Glu His Val
195 200 205

Ser Ser Ala Pro Gln Val Pro Cys Phe Glu Glu Thr Phe Gln Ala Pro
210 215 220

```
Arg Lys Glu Asn Ala Asn Pro Gln Asp Ala Pro Gly Pro Lys Val Ser
225                 230                 235                 240

Pro Thr Pro Glu Pro Ser Pro Pro Ala Thr Glu Lys Met Ala Cys Lys
                245                 250                 255

Asp Pro Glu Lys Pro Met Glu Ala Cys Ala Ser Ala His Val Gln Pro
            260                 265                 270

Lys Pro Ala Pro Glu Ala Ser Ser Leu Glu Glu Pro His Ser Pro Glu
        275                 280                 285

Thr Gly Glu Lys Val Val Ala Gly Glu Val Asn Pro Pro Asn Gly Pro
    290                 295                 300

Val Gly Asp Pro Leu Ser Leu Leu Phe Gly Asp Val Thr Ser Leu Lys
305                 310                 315                 320

Ser Phe Asp Ser Leu Thr Gly Cys Gly Asp Ile Ile Ala Glu Gln Asp
                325                 330                 335

Met Asp Ser Met Thr Asp Ser Met Ala Ser Gly Gly Gln Arg Ala Asn
            340                 345                 350

Arg Asp Gly Thr Lys Arg Ser Ser Cys Leu Val Thr Tyr Gln Gly Gly
        355                 360                 365

Gly Glu Glu Met Ala Leu Pro Asp Asp Asp Asp Glu Glu Glu Glu Glu
    370                 375                 380

Glu Glu Glu Val Glu Leu Glu Glu Glu Glu Glu Glu Val Lys Glu Glu
385                 390                 395                 400

Glu Glu Asp Asp Asp Leu Glu Tyr Leu Trp Glu Thr Ala Gln Met Tyr
                405                 410                 415

Pro Arg Pro Asn Met Asn Leu Gly Tyr His Pro Thr Thr Ser Pro Gly
            420                 425                 430

His His Gly Tyr Met Leu Leu Asp Pro Val Arg Ser Tyr Pro Gly Leu
        435                 440                 445

Ala Pro Gly Glu Leu Leu Thr Pro Gln Ser Asp Gln Gln Glu Ser Ala
```

```
    450                 455                 460

Pro Asn Ser Asp Glu Gly Tyr Tyr Asp Ser Thr Thr Pro Gly Phe Glu
465                 470                 475                 480

Asp Asp Ser Gly Glu Ala Leu Gly Leu Val Arg Arg Asp Cys Leu Pro
                485                 490                 495

Arg Asp Ser Tyr Ser Gly Asp Ala Leu Tyr Glu Phe Tyr Glu Pro Asp
            500                 505                 510

Asp Ser Leu Glu Asn Ser Pro Pro Gly Asp Asp Cys Leu Tyr Asp Leu
        515                 520                 525

His Gly Arg Ser Ser Glu Met Phe Asp Pro Phe Leu Asn Phe Glu Pro
    530                 535                 540

Phe Leu Ser Ser Arg Pro Pro Gly Ala Met Glu Thr Glu Glu Glu Arg
545                 550                 555                 560

Leu Val Thr Ile Gln Lys Gln Leu Leu Tyr Trp Glu Leu Arg Arg Glu
                565                 570                 575

Gln Leu Glu Ala Gln Glu Ala Arg Ala Arg Glu Ala His Ala Arg Glu
            580                 585                 590

Ala His Ala Arg Glu Ala Tyr Thr Arg Glu Ala Tyr Gly Arg Glu Ala
        595                 600                 605

Tyr Ala Arg Glu Ala His Thr Trp Glu Ala His Gly Arg Glu Ala Arg
    610                 615                 620

Thr Arg Glu Ala Gln Ala Arg Glu Val Arg Cys Arg Glu Thr Gln Val
625                 630                 635                 640

Arg Glu Thr Gln Ala Arg Gln Glu Lys Pro Val Leu Glu Tyr Gln Met
                645                 650                 655

Arg Pro Leu Gly Pro Ser Val Met Gly Leu Ala Ala Gly Val Ser Gly
            660                 665                 670

Thr Ser Gln Ile Ser His Arg Gly Ile Thr Ser Ala Phe Pro Thr Thr
        675                 680                 685
```

```
Ala Ser Ser Glu Pro Asp Trp Arg Asp Phe Arg Pro Leu Glu Lys Arg
    690                 695                 700

Tyr Glu Gly Thr Cys Ser Lys Lys Asp Gln Ser Thr Cys Leu Met Gln
705                 710                 715                 720

Leu Phe Gln Ser Asp Ala Met Phe Glu Pro Asp Met Gln Glu Ala Asn
                725                 730                 735

Phe Gly Gly Ser Pro Arg Arg Ala Tyr Pro Thr Tyr Ser Pro Pro Glu
            740                 745                 750

Asp Pro Glu Glu Glu Glu Val Glu Lys Glu Gly Asn Ala Thr Val Ser
        755                 760                 765

Phe Ser Gln Ala Leu Val Glu Phe Thr Ser Asn Gly Asn Leu Phe Ser
    770                 775                 780

Ser Met Ser Cys Ser Ser Asp Ser Asp Ser Ser Phe Thr Gln Asn Leu
785                 790                 795                 800

Pro Glu Leu Pro Pro Met Val Thr Phe Asp Ile Ala Asp Val Glu Arg
                805                 810                 815

Asp Gly Glu Gly Lys Cys Glu Glu Asn Pro Glu Phe His Asn Asp Glu
            820                 825                 830

Asp Leu Ala Ala Ser Leu Glu Ala Phe Glu Leu Gly Tyr Tyr His Lys
        835                 840                 845

His Ala Phe Asn Asn Tyr His Ser Arg Phe Tyr Gln Gly Leu Pro Trp
    850                 855                 860

Gly Val Ser Ser Leu Pro Arg Tyr Leu Gly Leu Pro Gly Leu His Pro
865                 870                 875                 880

Arg Pro Pro Pro Ala Ala Met Ala Leu Asn Arg Arg Ser Arg Ser Leu
                885                 890                 895

Asp Thr Ala Glu Thr Leu Glu Met Glu Leu Ser Asn Ser His Leu Val
            900                 905                 910
```

```
Gln Gly Tyr Leu Glu Ser Asp Glu Leu Gln Ala Gln Gln Glu Asp Ser
        915                 920                 925

Asp Glu Glu Asp Glu Glu Glu Glu Glu Gly Glu Trp Ser Arg Asp Ser
    930                 935                 940

Pro Leu Ser Leu Tyr Thr Glu Pro Pro Gly Ala Tyr Asp Trp Pro Ala
945                 950                 955                 960

Trp Ala Pro Cys Pro Leu Pro Val Gly Pro Gly Pro Ala Trp Ile Ser
                965                 970                 975

Pro Asn Gln Leu Asp Arg Pro Ser Ser Gln Ser Pro Tyr Arg Gln Ala
            980                 985                 990

Thr Cys Cys Ile Pro Pro Met Thr  Met Ser Ile Ser Leu  Ser Val
Pro
        995                 1000                1005

Glu Ser  Arg Ala Pro Gly Glu  Ser Gly Pro Gln Leu  Ala Arg Pro
    1010                1015                1020

Ser His  Leu His Leu Pro Met  Gly Pro Cys Tyr Asn  Leu Gln Pro
    1025                1030                1035

Gln Ala  Ser Gln Ser Met Arg  Ala Arg Pro Arg Asp  Val Leu Leu
    1040                1045                1050

Pro Val  Asp Glu Pro Ser Cys  Ser Ser Ser Ser Gly  Gly Phe Ser
    1055                1060                1065

Pro Ser  Pro Leu Pro Gln Ala  Lys Pro Val Gly Ile  Thr His Gly
    1070                1075                1080

Ile Pro  Gln Leu Pro Arg Val  Arg Pro Glu His Pro  Gln Pro Gln
    1085                1090                1095

Pro Thr  His Tyr Gly Pro Ser  Ser Leu Asp Leu Ser  Lys Glu Arg
    1100                1105                1110

Ala Glu  Gln Gly Ala Ser Leu  Ala Thr Ser Tyr Ser  Ser Thr Ala
    1115                1120                1125
```

Met Asn Gly Asn Leu Ala Lys
    1130   1135

<210> 5598
<211> 804
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1229; "

<220>
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<223> /note="Gene Symbol: AMER1; "

<220>
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<223> /note="Gene Name:
      APC membrane recruitment prt 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q5JTC6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000364003"

<400> 5598
Met Glu Thr Gln Lys Asp Glu Ala Ala Gln Ala Lys Gly Ala Ala Ala
1   5   10   15

Ser Gly Ser Thr Arg Glu Gln Thr Ala Glu Lys Gly Ala Lys Asn Lys
            20   25   30

Ala Ala Glu Ala Thr Glu Gly Pro Thr Ser Glu Pro Ser Ser Ser Gly
        35   40   45

Pro Gly Arg Leu Lys Lys Thr Ala Met Lys Leu Phe Gly Gly Lys Lys
    50   55   60

Gly Ile Cys Thr Leu Pro Ser Phe Phe Gly Gly Gly Arg Ser Lys Gly
65   70   75   80

Ser Gly Lys Gly Ser Ser Lys Lys Gly Leu Ser Lys Ser Lys Thr His
                85   90   95

Asp Gly Leu Ser Glu Ala Ala His Gly Pro Glu Asp Val Val Ser Glu

```
            100                 105                 110

Gly Thr Gly Phe Ser Leu Pro Leu Pro Glu Leu Pro Cys Gln Phe Pro
        115                 120                 125

Ser Ser Gln Ser Ala His Gly Ala Leu Glu Thr Gly Ser Arg Cys Lys
    130                 135                 140

Thr Ser Val Ala Gly Ala Thr Glu Lys Ala Val Ala Glu Lys Phe Pro
145                 150                 155                 160

Ser Met Pro Lys Pro Lys Lys Gly Leu Lys Gly Phe Phe Ser Ser Ile
                165                 170                 175

Arg Arg His Arg Lys Ser Lys Val Thr Gly Ala Glu Gln Ser Glu Pro
            180                 185                 190

Gly Ala Lys Gly Pro Glu Arg Val Arg Ala Arg Pro His Glu His Val
        195                 200                 205

Ser Ser Ala Pro Gln Val Pro Cys Phe Glu Glu Thr Phe Gln Ala Pro
    210                 215                 220

Arg Lys Glu Asn Ala Asn Pro Gln Asp Ala Pro Gly Pro Lys Val Ser
225                 230                 235                 240

Pro Thr Pro Glu Pro Ser Pro Pro Ala Thr Glu Lys Met Ala Cys Lys
                245                 250                 255

Asp Pro Glu Lys Pro Met Glu Ala Cys Ala Ser Ala His Val Gln Pro
            260                 265                 270

Lys Pro Ala Pro Glu Ala Ser Ser Leu Glu Glu Pro His Ser Pro Glu
        275                 280                 285

Thr Gly Glu Lys Val Val Ala Gly Glu Val Asn Pro Pro Asn Gly Pro
    290                 295                 300

Val Gly Asp Pro Leu Ser Leu Leu Phe Gly Asp Val Thr Ser Leu Lys
305                 310                 315                 320

Ser Phe Asp Ser Leu Thr Gly Cys Gly Asp Ile Ile Ala Glu Gln Asp
                325                 330                 335
```

```
Met Asp Ser Met Thr Asp Ser Met Ala Ser Gly Gly Gln Arg Ala Asn
            340                 345                 350

Arg Asp Gly Thr Lys Arg Ser Ser Cys Leu Val Thr Tyr Gln Gly Gly
        355                 360                 365

Gly Glu Glu Met Ala Leu Pro Asp Asp Asp Asp Glu Glu Glu Glu Glu
    370                 375                 380

Glu Glu Glu Val Glu Leu Glu Glu Glu Glu Glu Glu Val Lys Glu Glu
385                 390                 395                 400

Glu Glu Asp Asp Asp Leu Glu Tyr Leu Trp Glu Thr Ala Gln Met Tyr
                405                 410                 415

Pro Arg Pro Asn Met Asn Leu Gly Tyr His Pro Thr Thr Ser Pro Gly
            420                 425                 430

His His Gly Tyr Met Leu Leu Asp Pro Val Arg Ser Tyr Pro Gly Leu
        435                 440                 445

Ala Pro Gly Glu Leu Leu Thr Pro Gln Ser Asp Gln Gln Glu Ser Ala
    450                 455                 460

Pro Asn Ser Asp Glu Gly Tyr Tyr Asp Ser Thr Thr Pro Gly Phe Glu
465                 470                 475                 480

Asp Asp Ser Gly Glu Ala Leu Gly Leu Val Arg Arg Asp Cys Leu Pro
                485                 490                 495

Arg Asp Ser Tyr Ser Gly Asp Ala Leu Tyr Glu Phe Tyr Glu Pro Asp
            500                 505                 510

Asp Ser Leu Glu Asn Ser Pro Pro Gly Asp Asp Cys Leu Tyr Asp Leu
        515                 520                 525

His Gly Arg Ser Ser Glu Met Phe Asp Pro Phe Leu Asn Phe Glu Pro
    530                 535                 540

Phe Leu Ser Ser Arg Pro Pro Gly Ala Met Glu Thr Glu Glu Glu Arg
545                 550                 555                 560
```

```
Leu Val Thr Ile Gln Lys Gln Leu Leu Tyr Trp Glu Leu Arg Arg Glu
                565                 570                 575

Gln Leu Glu Ala Gln Glu Ala Arg Ala Arg Glu Ala His Ala Arg Glu
            580                 585                 590

Ala His Ala Arg Glu Ala Tyr Thr Arg Glu Ala Tyr Gly Arg Glu Ala
        595                 600                 605

Tyr Ala Arg Glu Ala His Thr Trp Glu Ala His Gly Arg Glu Ala Arg
    610                 615                 620

Thr Arg Glu Ala Gln Ala Arg Glu Val Arg Cys Arg Glu Thr Gln Val
625                 630                 635                 640

Arg Glu Thr Gln Ala Arg Gln Glu Lys Pro Val Leu Glu Tyr Gln Met
                645                 650                 655

Arg Pro Leu Gly Pro Ser Val Met Gly Leu Ala Ala Gly Val Ser Gly
            660                 665                 670

Thr Ser Gln Ile Ser His Arg Gly Ile Thr Ser Ala Phe Pro Thr Thr
        675                 680                 685

Ala Ser Ser Glu Pro Asp Trp Arg Asp Phe Arg Pro Leu Glu Lys Arg
    690                 695                 700

Tyr Glu Gly Thr Cys Ser Lys Lys Asp Gln Ser Thr Cys Leu Met Gln
705                 710                 715                 720

Leu Phe Gln Ser Asp Ala Met Phe Glu Pro Asp Met Gln Glu Ala Asn
                725                 730                 735

Phe Gly Gly Ser Pro Arg Arg Ala Tyr Pro Thr Tyr Ser Pro Pro Glu
            740                 745                 750

Asp Pro Glu Glu Glu Glu Val Glu Lys Glu Gly Asn Ala Thr Val Ser
        755                 760                 765

Phe Ser Gln Ala Leu Val Glu Phe Thr Ser Asn Gly Asn Leu Phe Ser
    770                 775                 780
```

Ser Ile Arg Cys Pro Gly Thr Glu Asp Lys Arg Gln Val Thr Gln Ala
785 790 795 800

Cys Gly Thr Trp

<210> 5599
<211> 552
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1230; "

<220>
<221> source
<223> /note="Gene Symbol: AMER2; "

<220>
<221> source
<223> /note="Gene Name:
APC membrane recruitment prt 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q8N7J2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000350469"

<400> 5599
Met Glu Thr Ser Arg Ser Arg Gly Gly Gly Gly Ala Val Ser Glu Arg
1 5 10 15

Gly Gly Ala Gly Ala Ser Val Gly Val Cys Arg Arg Lys Ala Glu Ala
20 25 30

Gly Ala Gly Thr Gly Thr Leu Ala Ala Asp Met Asp Leu His Cys Asp
35 40 45

Cys Ala Ala Glu Thr Pro Ala Ala Glu Pro Pro Ser Gly Lys Ile Asn
50 55 60

Lys Ala Ala Phe Lys Leu Phe Lys Lys Arg Lys Ser Gly Gly Thr Met
65 70 75 80

Pro Ser Ile Phe Gly Val Lys Asn Lys Gly Asp Gly Lys Ser Ser Gly
85 90 95

```
Pro Thr Gly Leu Val Arg Ser Arg Thr His Asp Gly Leu Ala Glu Val
            100                 105                 110

Leu Val Leu Glu Ser Gly Arg Lys Glu Glu Pro Arg Gly Gly Gly Asp
        115                 120                 125

Ser Gly Gly Gly Gly Gly Gly Arg Pro Asn Pro Gly Pro Pro Arg Ala
    130                 135                 140

Ala Gly Pro Gly Gly Gly Ser Leu Ala Ser Ser Ser Val Ala Lys Ser
145                 150                 155                 160

His Ser Phe Phe Ser Leu Leu Lys Lys Asn Gly Arg Ser Glu Asn Gly
                165                 170                 175

Lys Gly Glu Pro Val Asp Ala Ser Lys Ala Gly Gly Lys Gln Lys Arg
            180                 185                 190

Gly Leu Arg Gly Leu Phe Ser Gly Met Arg Trp His Arg Lys Asp Lys
        195                 200                 205

Arg Ala Lys Ala Glu Ala Ala Glu Gly Arg Ala Pro Gly Gly Gly Leu
    210                 215                 220

Ile Leu Pro Gly Ser Leu Thr Ala Ser Leu Glu Cys Val Lys Glu Glu
225                 230                 235                 240

Thr Pro Arg Ala Ala Arg Glu Pro Glu Glu Pro Ser Gln Asp Ala Pro
                245                 250                 255

Arg Asp Pro Ala Gly Cys Gly Asp Ile Ile Ala Asp Gln Glu Glu Glu
            260                 265                 270

Ala Gly Pro Ser Cys Asp Lys His Val Pro Gly Pro Gly Lys Pro Ala
        275                 280                 285

Leu Ser Lys Lys Asn Pro Gly Val Val Ala Tyr Gln Gly Gly Gly Glu
    290                 295                 300

Glu Met Ala Ser Pro Asp Glu Val Asp Asp Thr Tyr Leu Gln Glu Phe
305                 310                 315                 320
```

```
Trp Asp Met Leu Ser Gln Thr Glu Glu Gln Gly Pro Glu Pro Gln Glu
                325                 330                 335

Gly Ala Ala Lys Val Ala Ala Ala Leu Glu Thr Lys Val Val Pro Glu
            340                 345                 350

Thr Pro Lys Asp Thr Arg Cys Val Glu Ala Ala Lys Asp Ala Ser Ser
        355                 360                 365

Val Lys Arg Arg Arg Leu Asn Arg Ile Pro Ile Glu Pro His Pro Lys
    370                 375                 380

Glu Glu Pro Lys His Pro Glu Lys Glu Gln Gln Glu Gly Val Pro Asn
385                 390                 395                 400

Ser Asp Glu Gly Tyr Trp Asp Ser Thr Thr Pro Gly Pro Glu Glu Asp
                405                 410                 415

Ser Ser Ser Ser Gly Lys Lys Ala Gly Ile Pro Arg Asp Ser Tyr Ser
            420                 425                 430

Gly Asp Ala Leu Tyr Asp Leu Tyr Ala Asp Pro Asp Gly Ser Pro Ala
        435                 440                 445

Thr Leu Pro Gly Gly Lys Asp Asn Glu Glu Thr Ser Ser Leu Ser Arg
    450                 455                 460

Leu Lys Pro Val Ser Pro Gly Thr Ile Thr Cys Pro Leu Arg Thr Pro
465                 470                 475                 480

Gly Ser Leu Leu Lys Asp Ser Lys Ile Pro Ile Ser Ile Lys His Leu
                485                 490                 495

Thr Asn Leu Pro Ser Ser His Pro Val Val His Gln Gln Pro Ser Arg
            500                 505                 510

Ser Glu Met Pro Arg Thr Lys Ile Pro Val Ser Lys Val Leu Val Arg
        515                 520                 525

Arg Val Ser Asn Arg Gly Leu Ala Gly Thr Thr Ile Arg Ala Thr Ala
    530                 535                 540
```

Cys His Asp Ser Ala Lys Lys Leu
545 550

<210> 5600
<211> 671
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1230; "

<220>
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<220>
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<223> /note="Gene Name:
APC membrane recruitment prt 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q8N7J2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000426528"

<400> 5600
Met Glu Thr Ser Arg Ser Arg Gly Gly Gly Gly Ala Val Ser Glu Arg
1 5 10 15

Gly Gly Ala Gly Ala Ser Val Gly Val Cys Arg Arg Lys Ala Glu Ala
20 25 30

Gly Ala Gly Thr Gly Thr Leu Ala Ala Asp Met Asp Leu His Cys Asp
35 40 45

Cys Ala Ala Glu Thr Pro Ala Ala Glu Pro Pro Ser Gly Lys Ile Asn
50 55 60

Lys Ala Ala Phe Lys Leu Phe Lys Lys Arg Lys Ser Gly Gly Thr Met
65 70 75 80

Pro Ser Ile Phe Gly Val Lys Asn Lys Gly Asp Gly Lys Ser Ser Gly
85 90 95

Pro Thr Gly Leu Val Arg Ser Arg Thr His Asp Gly Leu Ala Glu Val
100 105 110

```
Leu Val Leu Glu Ser Gly Arg Lys Glu Glu Pro Arg Gly Gly Gly Asp
        115                 120                 125

Ser Gly Gly Gly Gly Gly Gly Arg Pro Asn Pro Gly Pro Pro Arg Ala
    130                 135                 140

Ala Gly Pro Gly Gly Gly Ser Leu Ala Ser Ser Ser Val Ala Lys Ser
145                 150                 155                 160

His Ser Phe Phe Ser Leu Leu Lys Lys Asn Gly Arg Ser Glu Asn Gly
                165                 170                 175

Lys Gly Glu Pro Val Asp Ala Ser Lys Ala Gly Gly Lys Gln Lys Arg
            180                 185                 190

Gly Leu Arg Gly Leu Phe Ser Gly Met Arg Trp His Arg Lys Asp Lys
        195                 200                 205

Arg Ala Lys Ala Glu Ala Ala Glu Gly Arg Ala Pro Gly Gly Gly Leu
    210                 215                 220

Ile Leu Pro Gly Ser Leu Thr Ala Ser Leu Glu Cys Val Lys Glu Glu
225                 230                 235                 240

Thr Pro Arg Ala Ala Arg Glu Pro Glu Glu Pro Ser Gln Asp Ala Pro
                245                 250                 255

Arg Asp Pro Ala Gly Glu Pro Ala Gly Gly Glu Glu Val Pro Ala Pro
            260                 265                 270

Ala Asp Arg Ala Pro Ala Arg Ser Cys Arg Glu Ala Glu Gly Leu Ala
        275                 280                 285

His Pro Gly Asp Thr Gly Ala Arg Gly Glu Asp Ala Ala Gly His Arg
    290                 295                 300

Arg Ala Glu Pro Gly Pro Gly Glu Val Arg Thr Ala Glu Asp Ala Ser
305                 310                 315                 320

Arg Thr Gly Ala Val Pro Val Lys Thr Val Pro Leu Val Asp Ser Glu
                325                 330                 335
```

```
Gly Gly Ser Gly Arg Ala Pro Ala Ala Pro Asp Pro Ala Ser Val Asp
            340                 345                 350

Pro Pro Ser Asp Pro Ser Ala Asp Arg Ile Cys Leu Met Phe Ser Asp
        355                 360                 365

Val Thr Ser Leu Lys Ser Phe Asp Ser Leu Thr Gly Cys Gly Asp Ile
    370                 375                 380

Ile Ala Asp Gln Glu Glu Glu Ala Gly Pro Ser Cys Asp Lys His Val
385                 390                 395                 400

Pro Gly Pro Gly Lys Pro Ala Leu Ser Lys Lys Asn Pro Gly Val Val
                405                 410                 415

Ala Tyr Gln Gly Gly Gly Glu Glu Met Ala Ser Pro Asp Glu Val Asp
            420                 425                 430

Asp Thr Tyr Leu Gln Glu Phe Trp Asp Met Leu Ser Gln Thr Glu Glu
        435                 440                 445

Gln Gly Pro Glu Pro Gln Glu Gly Ala Ala Lys Val Ala Ala Ala Leu
    450                 455                 460

Glu Thr Lys Val Val Pro Glu Thr Pro Lys Asp Thr Arg Cys Val Glu
465                 470                 475                 480

Ala Ala Lys Asp Ala Ser Ser Val Lys Arg Arg Arg Leu Asn Arg Ile
                485                 490                 495

Pro Ile Glu Pro His Pro Lys Glu Glu Pro Lys His Pro Glu Lys Glu
            500                 505                 510

Gln Gln Glu Gly Val Pro Asn Ser Asp Glu Gly Tyr Trp Asp Ser Thr
        515                 520                 525

Thr Pro Gly Pro Glu Glu Asp Ser Ser Ser Ser Gly Lys Lys Ala Gly
    530                 535                 540

Ile Pro Arg Asp Ser Tyr Ser Gly Asp Ala Leu Tyr Asp Leu Tyr Ala
545                 550                 555                 560
```

```
Asp Pro Asp Gly Ser Pro Ala Thr Leu Pro Gly Gly Lys Asp Asn Glu
                565                 570                 575

Glu Thr Ser Ser Leu Ser Arg Leu Lys Pro Val Ser Pro Gly Thr Ile
            580                 585                 590

Thr Cys Pro Leu Arg Thr Pro Gly Ser Leu Leu Lys Asp Ser Lys Ile
        595                 600                 605

Pro Ile Ser Ile Lys His Leu Thr Asn Leu Pro Ser Ser His Pro Val
    610                 615                 620

Val His Gln Gln Pro Ser Arg Ser Glu Met Pro Arg Thr Lys Ile Pro
625                 630                 635                 640

Val Ser Lys Val Leu Val Arg Arg Val Ser Asn Arg Gly Leu Ala Gly
                645                 650                 655

Thr Thr Ile Arg Ala Thr Ala Cys His Asp Ser Ala Lys Lys Leu
            660                 665                 670


<210> 5601
<211> 861
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1231; "

<220>
<221> source
<223> /note="Gene Symbol: AMER3; "

<220>
<221> source
<223> /note="Gene Name:
      APC membrane recruitment prt 3; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8N944; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000314914"

<400> 5601
Met Glu Leu Lys Arg Gly Lys Thr Phe Ile Lys Ser Ser Leu Gln Val
1               5                   10                  15
```

```
Ser His Glu Lys Pro Pro Asp Pro Ala Ala Val Ala Ala Ala Arg Glu
            20                  25                  30

Gly Thr Gly Pro Trp Ser Val Leu Pro Gly Gly Gln Gln Arg Pro His
        35                  40                  45

Ser Glu Lys Gly Pro Gln Ala Ser Pro Ser Ala Gln Glu Tyr Asp Arg
    50                  55                  60

Cys Pro Asn Lys Gly Ala Gln Leu Asp Pro Lys Gly Gly Pro Ala Ala
65                  70                  75                  80

Leu Cys Gly Ala Thr Phe Lys Pro Val Arg Lys Cys Lys Thr His Asp
                85                  90                  95

Ser Met Ser Gly Ala Gly Arg Ala Thr Ala Ala Thr Gly Gln Leu Val
            100                 105                 110

Gly Ser Ala Ser Phe Pro Gly Ser Pro Gly Ser Arg Arg Met Ile Asp
        115                 120                 125

Tyr Arg His Phe Val Pro Gln Met Pro Phe Val Pro Ala Val Ala Lys
    130                 135                 140

Ser Ile Pro Arg Lys Arg Ile Ser Leu Lys Arg Pro Lys Lys Cys Phe
145                 150                 155                 160

Arg Asn Leu Phe His Ile Arg Arg Asn Lys Thr Glu Asp Leu Ala Ser
                165                 170                 175

Leu Ala Ala Glu Gly Lys Ser Leu Pro Ser Pro Gly Asp Pro Ser Asp
            180                 185                 190

Pro Gly Gly Arg Arg Ser Lys Ala Phe Leu Pro Pro Gly Glu Gly Pro
        195                 200                 205

Gly Leu Asp Gly Leu Cys Gln Asp Leu Leu Asp Ser Glu Leu Leu Ala
    210                 215                 220

Asp Ala Ser Phe Gly Leu Cys Arg Ala Leu Cys Glu Asp Val Ala Ser
225                 230                 235                 240
```

```
Leu Gln Ser Phe Asp Ser Leu Thr Gly Cys Gly Glu Val Phe Ala Asp
                245                 250                 255

Glu Ser Ser Val Pro Ser Leu Glu Leu Asn Glu Gly Pro Glu Ser Pro
            260                 265                 270

Thr Gln Ala Ala Gln Gly Leu Glu Ser Lys Val Pro Arg Gly Pro Leu
        275                 280                 285

Gln Gly Ser Val Glu Gln Leu Ala Ser Pro Ala Gln Asn Glu Ala Ser
    290                 295                 300

Asp Phe Thr Arg Phe Trp Asp Ser Val Asn Arg Ser Val Arg Gln Gln
305                 310                 315                 320

Gln Arg Ala Leu Leu Gly Pro Trp Leu Ser Gly Pro Gln Gly Thr Asp
                325                 330                 335

Arg Asp Gln Ser Arg Leu Asp Thr Ala Gly Leu Ala Glu Leu Pro Leu
            340                 345                 350

Cys Pro Cys Arg Asp Pro Arg Ser Gly Ser Lys Ala Ser Ser Ile Asp
        355                 360                 365

Thr Gly Thr Pro Lys Ser Glu Gln Pro Glu Ser Val Ser Thr Ser Asp
    370                 375                 380

Glu Gly Tyr Tyr Asp Ser Phe Ser Pro Gly Leu Glu Glu Asp Lys Lys
385                 390                 395                 400

Glu Ala Glu Ser Pro Gly Thr Pro Ala Ala Thr Phe Pro Arg Asp Ser
                405                 410                 415

Tyr Ser Gly Asp Ala Leu Tyr Glu Leu Phe His Asp Pro Ser Glu Gly
            420                 425                 430

Pro Leu Gly Pro Ser Pro Asp Asp Asp Leu Cys Val Ser Glu Ser Leu
        435                 440                 445

Ser Gly Pro Ala Leu Gly Thr Pro Leu Ser Ile Cys Ser Phe Arg Val
    450                 455                 460
```

```
Gly Ala Glu Glu Asn Leu Ala Pro Ala Pro Gly Pro Asp Leu Leu Ser
465                 470                 475                 480

Gln Gly Phe Leu Gln Ser Ser Trp Lys Gly Lys Glu Cys Leu Leu Lys
                485                 490                 495

Leu Cys Asp Thr Glu Leu Ala Ile Thr Met Gly Ile Val Ser Trp Leu
            500                 505                 510

Arg Arg Gly Pro Thr Pro Arg Ala Pro Pro Thr Pro Gly Gln Pro Ala
        515                 520                 525

Ala Pro Pro Gly Ser Gln Gly Ala Pro Arg Ala Pro Thr Glu Lys Leu
    530                 535                 540

Gly Gly Arg Glu Gly Leu Ala Ser Asp Ala Gly Gly Ala Thr Val Cys
545                 550                 555                 560

Ser Ala Pro Ser Arg Gln Glu Leu Trp Ala His Pro Gly Thr Thr Gly
                565                 570                 575

Leu Leu Ala Gly Glu Ser Lys Ala Leu Gly Gly Ala Thr Gln Gly Thr
            580                 585                 590

Gly Thr Leu Ser Arg Asp Ala Ser Arg Glu Glu Glu Thr Arg Gly His
        595                 600                 605

Ser Glu Gly Leu Phe Ser Ser Met Glu Ser Ala Ala Thr Ser Thr Thr
    610                 615                 620

Asp Thr Ser Gly Lys Asn Lys Ala Pro Val Pro Ser Thr Trp Pro Cys
625                 630                 635                 640

Ser Gln Lys Glu Pro Gly Pro Pro Gly Val Leu Gly Cys Phe Arg Gly
                645                 650                 655

Pro Trp Arg Pro Gly His Gly Gly Asp Thr Leu Asp Ala Glu Pro Met
            660                 665                 670

Leu Ala Gly Cys Val Ala Arg Val Ala Ala Leu Lys Ile Ser Ser Asn
        675                 680                 685

Glu Gln Pro Pro Ala Ala Trp Pro Pro Arg Gln Asp Met Gly Ser Gly
```

```
    690                 695                 700

Leu Phe Gly Gln Arg Trp Ala Arg Gly Pro Asp Met Leu Glu Gln Lys
705                 710                 715                 720

Gln Ser Ser Ser Ser Pro Ser Met Thr Thr Ile His Gly Leu Pro Tyr
                725                 730                 735

Ser Ala Ser Thr Gln Asp Gln Arg Cys Arg Asp Arg Val Gln Asp Leu
            740                 745                 750

Ser Trp Leu Arg Val Glu Pro Thr Gly Leu Gly Val Gln Ala Trp Ala
        755                 760                 765

Ser Val Glu Asp Gln Pro Leu Gln Leu Ser Thr Glu Ala Val Glu Gln
    770                 775                 780

Val Ala His Gly Ser Gln Leu Asp Ser Glu Pro Arg Ser Ala Pro Ala
785                 790                 795                 800

Ala Arg Trp Ser Ser Gln Gly His His Pro Glu Ser Leu Gly Leu Thr
                805                 810                 815

Leu Asn Ser Gln Gln Glu Gly Gly Val Ser Ala Ser Ala Pro Glu Cys
            820                 825                 830

Arg Cys Ser Leu Leu Ala Arg Glu Gly Leu Leu Cys Gly Gln Pro Glu
        835                 840                 845

Val Gly Ala Ser Gly Pro Ala Met Ala Glu Pro His Leu
    850                 855                 860


<210> 5602
<211> 180
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: AMER3; "

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<221> source
<223> /note="Gene Name:
APC membrane recruitment prt 3; "

<220>
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<223> /note="ENSP ID: ENSP00000389242"

<400> 5602

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Met Glu Leu Lys Arg Gly Lys Thr Phe Ile Lys Ser Ser Leu Gln Val
1               5                  10                  15

Ser His Glu Lys Pro Pro Asp Pro Ala Ala Val Ala Ala Ala Arg Glu
            20                  25                  30

Gly Thr Gly Pro Trp Ser Val Leu Pro Gly Gly Gln Gln Arg Pro His
        35                  40                  45

Ser Glu Lys Gly Pro Gln Ala Ser Pro Ser Ala Gln Glu Tyr Asp Arg
    50                  55                  60

Cys Pro Asn Lys Gly Ala Gln Leu Asp Pro Lys Gly Gly Pro Ala Ala
65                  70                  75                  80

Leu Cys Gly Ala Thr Phe Lys Pro Val Arg Lys Cys Lys Thr His Asp
                85                  90                  95

Ser Met Ser Gly Ala Gly Arg Ala Thr Ala Ala Thr Gly Gln Leu Val
            100                 105                 110

Gly Ser Ala Ser Phe Pro Gly Ser Pro Gly Ser Arg Arg Met Ile Asp
        115                 120                 125

Tyr Arg His Phe Val Pro Gln Met Pro Phe Val Pro Ala Val Ala Lys
    130                 135                 140

Ser Ile Pro Arg Lys Arg Ile Ser Leu Lys Arg Pro Lys Lys Cys Phe
145                 150                 155                 160

Arg Asn Leu Phe His Ile Arg Arg Asn Lys Thr Glu Asp Leu Ala Ser
                165                 170                 175

Leu Ala Ala Glu
            180
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<210> 5603
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<220>
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<223> /note="Gene Name:
APC membrane recruitment prt 3; "

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<220>
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<223> /note="ENSP ID: ENSP00000392700"

<400> 5603
Met Glu Leu Lys Arg Gly Lys Thr Phe Ile Lys Ser Ser Leu Gln Val
1   5   10   15

Ser His Glu Lys Pro Pro Asp Pro Ala Ala Val Ala Ala Ala Arg Glu
            20   25   30

Gly Thr Gly Pro Trp Ser Val Leu Pro Gly Gly Gln Gln Arg Pro His
        35   40   45

Ser Glu Lys Gly Pro Gln Ala Ser Pro Ser Ala Gln Glu Tyr Asp Arg
    50   55   60

Cys Pro Asn Lys Gly Ala Gln Leu Asp Pro Lys Gly Gly Pro Ala Ala
65   70   75   80

Leu Cys Gly Ala Thr Phe Lys Pro Val Arg Lys Cys Lys Thr His Asp
                85   90   95

Ser Met Ser Gly Ala Gly Arg Ala Thr Ala Ala Thr Gly Gln Leu Val
            100   105   110

Gly Ser Ala Ser Phe Pro Gly Ser Pro Gly Ser Arg Arg Met Ile Asp
        115   120   125

```
Tyr Arg His Phe Val Pro Gln Met Pro Phe Val Pro Ala Val Ala Lys
    130                 135                 140

Ser Ile Pro Arg Lys Arg Ile Ser Leu Lys Arg Pro Lys Lys Cys Phe
145                 150                 155                 160

Arg Asn Leu Phe His Ile Arg Arg Asn Lys Thr Glu Asp Leu Ala Ser
                165                 170                 175

Leu Ala Ala Glu Gly Lys Ser Leu Pro Ser Pro Gly Asp Pro Ser Asp
            180                 185                 190

Pro Gly Gly Arg Arg Ser Lys Ala Phe Leu Pro Pro Gly Glu Gly Pro
        195                 200                 205

Gly Leu Asp Gly Leu Cys Gln Asp Leu Leu Asp Ser Glu Leu Leu Ala
    210                 215                 220

Asp Ala Ser Phe Gly Leu Cys Arg Ala Leu Cys Glu Asp Val Ala Ser
225                 230                 235                 240

Leu Gln Ser Phe Asp Ser Leu Thr Gly Cys Gly Glu Val Phe Ala Asp
                245                 250                 255

Glu Ser Ser Val Pro Ser Leu Glu Leu Asn Glu Gly Pro Glu Ser Pro
            260                 265                 270

Thr Gln Ala Ala Gln Gly Leu Glu Ser Lys Val Pro Arg Gly Pro Leu
        275                 280                 285

Gln Gly Ser Val Glu Gln Leu Ala Ser Pro Ala Gln Asn Glu Ala Ser
    290                 295                 300

Asp Phe Thr Arg Phe Trp Asp Ser Val Asn Arg Ser Val Arg Gln Gln
305                 310                 315                 320

Gln Arg Ala Leu Leu Gly Pro Trp Leu Ser Gly Pro Gln Gly Thr Asp
                325                 330                 335

Arg Asp Gln Ser Arg Leu Asp Thr Ala Gly Leu Ala Glu Leu Pro Leu
            340                 345                 350
```

```
Cys Pro Cys Arg Asp Pro Arg Ser Gly Ser Lys Ala Ser Ser Ile Asp
        355                 360                 365

Thr Gly Thr Pro Lys Ser Glu Gln Pro Glu Ser Val Ser Thr Ser Asp
    370                 375                 380

Glu Gly Tyr Tyr Asp Ser Phe Ser Pro Gly Leu Glu Glu Asp Lys Lys
385                 390                 395                 400

Glu Ala Glu Ser Pro Gly Thr Pro Ala Ala Thr Phe Pro Arg Asp Ser
                405                 410                 415

Tyr Ser Gly Asp Ala Leu Tyr Glu Leu Phe His Asp Pro Ser Glu Gly
            420                 425                 430

Pro Leu Gly Pro Ser Pro Asp Asp Asp Leu Cys Val Ser Glu Ser Leu
        435                 440                 445

Ser Gly Pro Ala Leu Gly Thr Pro Leu Ser Ile Cys Ser Phe Arg Val
    450                 455                 460

Gly Ala Glu Glu Asn Leu Ala Pro Ala Pro Gly Pro Asp Leu Leu Ser
465                 470                 475                 480

Gln Gly Phe Leu Gln Ser Ser Trp Lys Gly Lys Glu Cys Leu Leu Lys
                485                 490                 495

Leu Cys Asp Thr Glu Leu Ala Ile Thr Met Gly Ile Val Ser Trp Leu
            500                 505                 510

Arg Arg Gly Pro Thr Pro Arg Ala Pro Pro Thr Pro Gly Gln Pro Ala
        515                 520                 525

Ala Pro Pro Gly Ser Gln Gly Ala Pro Arg Ala Pro Thr Glu Lys Leu
    530                 535                 540

Gly Gly Arg Glu Gly Leu Ala Ser Asp Ala Gly Gly Ala Thr Val Cys
545                 550                 555                 560

Ser Ala Pro Ser Arg Gln Glu Leu Trp Ala His Pro Gly Thr Thr Gly
                565                 570                 575
```

```
Leu Leu Ala Gly Glu Ser Lys Ala Leu Gly Gly Ala Thr Gln Gly Thr
            580                 585                 590

Gly Thr Leu Ser Arg Asp Ala Ser Arg Glu Glu Glu Thr Arg Gly His
        595                 600                 605

Ser Glu Gly Leu Phe Ser Ser Met Glu Ser Ala Ala Thr Ser Thr Thr
    610                 615                 620

Asp Thr Ser Gly Lys Asn Lys Ala Pro Val Pro Ser Thr Trp Pro Cys
625                 630                 635                 640

Ser Gln Lys Glu Pro Gly Pro Pro Gly Val Leu Gly Cys Phe Arg Gly
                645                 650                 655

Pro Trp Arg Pro Gly His Gly Gly Asp Thr Leu Asp Ala Glu Pro Met
            660                 665                 670

Leu Ala Gly Cys Val Ala Arg Val Ala Ala Leu Lys Ile Ser Ser Asn
        675                 680                 685

Glu Gln Pro Pro Ala Ala Trp Pro Pro Arg Gln Asp Met Gly Ser Gly
    690                 695                 700

Leu Phe Gly Gln Arg Trp Ala Arg Gly Pro Asp Met Leu Glu Gln Lys
705                 710                 715                 720

Gln Ser Ser Ser Ser Pro Ser Met Thr Thr Ile His Gly Leu Pro Tyr
                725                 730                 735

Ser Ala Ser Thr Gln Asp Gln Arg Cys Arg Asp Arg Val Gln Asp Leu
            740                 745                 750

Ser Trp Leu Arg Val Glu Pro Thr Gly Leu Gly Val Gln Ala Trp Ala
        755                 760                 765

Ser Val Glu Asp Gln Pro Leu Gln Leu Ser Thr Glu Ala Val Glu Gln
    770                 775                 780

Val Ala His Gly Ser Gln Leu Asp Ser Glu Pro Arg Ser Ala Pro Ala
785                 790                 795                 800

Ala Arg Trp Ser Ser Gln Gly His His Pro Glu Ser Leu Gly Leu Thr
```

805 810 815

Leu Asn Ser Gln Gln Glu Gly Gly Val Ser Ala Ser Ala Pro Glu Cys
820 825 830

Arg Cys Ser Leu Leu Ala Arg Glu Gly Leu Leu Cys Gly Gln Pro Glu
835 840 845

Val Gly Ala Ser Gly Pro Ala Met Ala Glu Pro His Leu
850 855 860

<210> 5604
<211> 141
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: AMER3; "

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<223> /note="Gene Name:
APC membrane recruitment prt 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000410421"

<400> 5604
Met Glu Leu Lys Arg Gly Lys Thr Phe Ile Lys Ser Ser Leu Gln Val
1 5 10 15

Ser His Glu Lys Pro Pro Asp Pro Ala Ala Val Ala Ala Ala Arg Glu
20 25 30

Gly Thr Gly Pro Trp Ser Val Leu Pro Gly Gly Gln Gln Arg Pro His
35 40 45

Ser Glu Lys Gly Pro Gln Ala Ser Pro Ser Ala Gln Glu Tyr Asp Arg
50 55 60

Cys Pro Asn Lys Gly Ala Gln Leu Asp Pro Lys Gly Gly Pro Ala Ala
65 70 75 80

```
Leu Cys Gly Ala Thr Phe Lys Pro Val Arg Lys Cys Lys Thr His Asp
                85                  90                  95

Ser Met Ser Gly Ala Gly Arg Ala Thr Ala Ala Thr Gly Gln Leu Val
            100                 105                 110

Gly Ser Ala Ser Phe Pro Gly Ser Pro Gly Ser Arg Arg Met Ile Asp
        115                 120                 125

Tyr Arg His Phe Val Pro Gln Met Pro Phe Val Pro Ala
    130                 135                 140


<210> 5605
<211> 77
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1232; "

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<223> /note="Gene Symbol: APLN; "

<220>
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<223> /note="Gene Name:
      apelin; "

<220>
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<223> /note="Uniprot ID:  Q9ULZ1; "

<220>
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<223> /note="ENSP ID: ENSP00000391800"

<400> 5605
Met Asn Leu Arg Leu Cys Val Gln Ala Leu Leu Leu Leu Trp Leu Ser
1               5                  10                  15

Leu Thr Ala Val Cys Gly Gly Ser Leu Met Pro Leu Pro Asp Gly Asn
            20                  25                  30

Gly Leu Glu Asp Gly Asn Val Arg His Leu Val Gln Pro Arg Gly Ser
        35                  40                  45

Arg Asn Gly Pro Gly Pro Trp Gln Gly Gly Arg Arg Lys Phe Arg Arg
```

```
    50                  55                  60

Gln Arg Pro Arg Leu Ser His Lys Gly Pro Met Pro Phe
65                  70                  75


<210> 5606
<211> 380
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1233; "

<220>
<221> source
<223> /note="Gene Symbol: APLNR; "

<220>
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<223> /note="Gene Name:
      apelin receptor; "

<220>
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<223> /note="Uniprot ID:  P35414; "

<220>
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<223> /note="ENSP ID: ENSP00000257254"

<400> 5606
Met Glu Glu Gly Gly Asp Phe Asp Asn Tyr Tyr Gly Ala Asp Asn Gln
1               5                  10                  15


Ser Glu Cys Glu Tyr Thr Asp Trp Lys Ser Ser Gly Ala Leu Ile Pro
            20                  25                  30


Ala Ile Tyr Met Leu Val Phe Leu Leu Gly Thr Thr Gly Asn Gly Leu
        35                  40                  45


Val Leu Trp Thr Val Phe Arg Ser Ser Arg Glu Lys Arg Arg Ser Ala
    50                  55                  60


Asp Ile Phe Ile Ala Ser Leu Ala Val Ala Asp Leu Thr Phe Val Val
65                  70                  75                  80


Thr Leu Pro Leu Trp Ala Thr Tyr Thr Tyr Arg Asp Tyr Asp Trp Pro
                85                  90                  95
```

```
Phe Gly Thr Phe Phe Cys Lys Leu Ser Ser Tyr Leu Ile Phe Val Asn
            100                 105                 110

Met Tyr Ala Ser Val Phe Cys Leu Thr Gly Leu Ser Phe Asp Arg Tyr
        115                 120                 125

Leu Ala Ile Val Arg Pro Val Ala Asn Ala Arg Leu Arg Leu Arg Val
    130                 135                 140

Ser Gly Ala Val Ala Thr Ala Val Leu Trp Val Leu Ala Ala Leu Leu
145                 150                 155                 160

Ala Met Pro Val Met Val Leu Arg Thr Thr Gly Asp Leu Glu Asn Thr
                165                 170                 175

Thr Lys Val Gln Cys Tyr Met Asp Tyr Ser Met Val Ala Thr Val Ser
            180                 185                 190

Ser Glu Trp Ala Trp Glu Val Gly Leu Gly Val Ser Ser Thr Thr Val
        195                 200                 205

Gly Phe Val Val Pro Phe Thr Ile Met Leu Thr Cys Tyr Phe Phe Ile
    210                 215                 220

Ala Gln Thr Ile Ala Gly His Phe Arg Lys Glu Arg Ile Glu Gly Leu
225                 230                 235                 240

Arg Lys Arg Arg Arg Leu Leu Ser Ile Ile Val Val Leu Val Val Thr
                245                 250                 255

Phe Ala Leu Cys Trp Met Pro Tyr His Leu Val Lys Thr Leu Tyr Met
            260                 265                 270

Leu Gly Ser Leu Leu His Trp Pro Cys Asp Phe Asp Leu Phe Leu Met
        275                 280                 285

Asn Ile Phe Pro Tyr Cys Thr Cys Ile Ser Tyr Val Asn Ser Cys Leu
    290                 295                 300

Asn Pro Phe Leu Tyr Ala Phe Phe Asp Pro Arg Phe Arg Gln Ala Cys
305                 310                 315                 320
```

```
Thr Ser Met Leu Cys Cys Gly Gln Ser Arg Cys Ala Gly Thr Ser His
                325                 330                 335

Ser Ser Ser Gly Glu Lys Ser Ala Ser Tyr Ser Ser Gly His Ser Gln
            340                 345                 350

Gly Pro Gly Pro Asn Met Gly Lys Gly Gly Glu Gln Met His Glu Lys
        355                 360                 365

Ser Ile Pro Tyr Ser Gln Glu Thr Leu Val Val Asp
    370                 375                 380


<210> 5607
<211> 380
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: APLNR; "

<220>
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<223> /note="Gene Name:
      apelin receptor; "

<220>
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<223> /note="Uniprot ID:  P35414; "

<220>
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<223> /note="ENSP ID: ENSP00000475344"

<400> 5607
Met Glu Glu Gly Gly Asp Phe Asp Asn Tyr Tyr Gly Ala Asp Asn Gln
1               5                   10                  15

Ser Glu Cys Glu Tyr Thr Asp Trp Lys Ser Ser Gly Ala Leu Ile Pro
            20                  25                  30

Ala Ile Tyr Met Leu Val Phe Leu Leu Gly Thr Thr Gly Asn Gly Leu
        35                  40                  45

Val Leu Trp Thr Val Phe Arg Ser Ser Arg Glu Lys Arg Arg Ser Ala
    50                  55                  60
```

```
Asp Ile Phe Ile Ala Ser Leu Ala Val Ala Asp Leu Thr Phe Val Val
65                  70                  75                  80

Thr Leu Pro Leu Trp Ala Thr Tyr Thr Tyr Arg Asp Tyr Asp Trp Pro
                85                  90                  95

Phe Gly Thr Phe Phe Cys Lys Leu Ser Ser Tyr Leu Ile Phe Val Asn
            100                 105                 110

Met Tyr Ala Ser Val Phe Cys Leu Thr Gly Leu Ser Phe Asp Arg Tyr
        115                 120                 125

Leu Ala Ile Val Arg Pro Val Ala Asn Ala Arg Leu Arg Leu Arg Val
    130                 135                 140

Ser Gly Ala Val Ala Thr Ala Val Leu Trp Val Leu Ala Ala Leu Leu
145                 150                 155                 160

Ala Met Pro Val Met Val Leu Arg Thr Thr Gly Asp Leu Glu Asn Thr
                165                 170                 175

Thr Lys Val Gln Cys Tyr Met Asp Tyr Ser Met Val Ala Thr Val Ser
            180                 185                 190

Ser Glu Trp Ala Trp Glu Val Gly Leu Gly Val Ser Ser Thr Thr Val
        195                 200                 205

Gly Phe Val Val Pro Phe Thr Ile Met Leu Thr Cys Tyr Phe Phe Ile
    210                 215                 220

Ala Gln Thr Ile Ala Gly His Phe Arg Lys Glu Arg Ile Glu Gly Leu
225                 230                 235                 240

Arg Lys Arg Arg Arg Leu Leu Ser Ile Ile Val Val Leu Val Val Thr
                245                 250                 255

Phe Ala Leu Cys Trp Met Pro Tyr His Leu Val Lys Thr Leu Tyr Met
            260                 265                 270

Leu Gly Ser Leu Leu His Trp Pro Cys Asp Phe Asp Leu Phe Leu Met
        275                 280                 285
```

```
Asn Ile Phe Pro Tyr Cys Thr Cys Ile Ser Tyr Val Asn Ser Cys Leu
    290                 295                 300

Asn Pro Phe Leu Tyr Ala Phe Phe Asp Pro Arg Phe Arg Gln Ala Cys
305                 310                 315                 320

Thr Ser Met Leu Cys Cys Gly Gln Ser Arg Cys Ala Gly Thr Ser His
                325                 330                 335

Ser Ser Ser Gly Glu Lys Ser Ala Ser Tyr Ser Ser Gly His Ser Gln
            340                 345                 350

Gly Pro Gly Pro Asn Met Gly Lys Gly Gly Glu Gln Met His Glu Lys
        355                 360                 365

Ser Ile Pro Tyr Ser Gln Glu Thr Leu Val Val Asp
    370                 375                 380


<210> 5608
<211> 380
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: APLNR; "

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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID:  P35414; "

<220>
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<400> 5608
Met Glu Glu Gly Gly Asp Phe Asp Asn Tyr Tyr Gly Ala Asp Asn Gln
1               5                   10                  15

Ser Glu Cys Glu Tyr Thr Asp Trp Lys Ser Ser Gly Ala Leu Ile Pro
```

```
            20                  25                  30

Ala Ile Tyr Met Leu Val Phe Leu Leu Gly Thr Thr Gly Asn Gly Leu
        35                  40                  45

Val Leu Trp Thr Val Phe Arg Ser Ser Arg Glu Lys Arg Arg Ser Ala
    50                  55                  60

Asp Ile Phe Ile Ala Ser Leu Ala Val Ala Asp Leu Thr Phe Val Val
65                  70                  75                  80

Thr Leu Pro Leu Trp Ala Thr Tyr Thr Tyr Arg Asp Tyr Asp Trp Pro
                85                  90                  95

Phe Gly Thr Phe Phe Cys Lys Leu Ser Ser Tyr Leu Ile Phe Val Asn
            100                 105                 110

Met Tyr Ala Ser Val Phe Cys Leu Thr Gly Leu Ser Phe Asp Arg Tyr
        115                 120                 125

Leu Ala Ile Val Arg Pro Val Ala Asn Ala Arg Leu Arg Leu Arg Val
    130                 135                 140

Ser Gly Ala Val Ala Thr Ala Val Leu Trp Val Leu Ala Ala Leu Leu
145                 150                 155                 160

Ala Met Pro Val Met Val Leu Arg Thr Thr Gly Asp Leu Glu Asn Thr
                165                 170                 175

Thr Lys Val Gln Cys Tyr Met Asp Tyr Ser Met Val Ala Thr Val Ser
            180                 185                 190

Ser Glu Trp Ala Trp Glu Val Gly Leu Gly Val Ser Ser Thr Thr Val
        195                 200                 205

Gly Phe Val Val Pro Phe Thr Ile Met Leu Thr Cys Tyr Phe Phe Ile
    210                 215                 220

Ala Gln Thr Ile Ala Gly His Phe Arg Lys Glu Arg Ile Glu Gly Leu
225                 230                 235                 240

Arg Lys Arg Arg Arg Leu Leu Ser Ile Ile Val Val Leu Val Val Thr
                245                 250                 255
```

```
Phe Ala Leu Cys Trp Met Pro Tyr His Leu Val Lys Thr Leu Tyr Met
            260                 265                 270

Leu Gly Ser Leu Leu His Trp Pro Cys Asp Phe Asp Leu Phe Leu Met
        275                 280                 285

Asn Ile Phe Pro Tyr Cys Thr Cys Ile Ser Tyr Val Asn Ser Cys Leu
    290                 295                 300

Asn Pro Phe Leu Tyr Ala Phe Phe Asp Pro Arg Phe Arg Gln Ala Cys
305                 310                 315                 320

Thr Ser Met Leu Cys Cys Gly Gln Ser Arg Cys Ala Gly Thr Ser His
                325                 330                 335

Ser Ser Ser Gly Glu Lys Ser Ala Ser Tyr Ser Ser Gly His Ser Gln
            340                 345                 350

Gly Pro Gly Pro Asn Met Gly Lys Gly Gly Glu Gln Met His Glu Lys
        355                 360                 365

Ser Ile Pro Tyr Ser Gln Glu Thr Leu Val Val Asp
    370                 375                 380


<210> 5609
<211> 54
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1234; "

<220>
<221> source
<223> /note="Gene Symbol: APELA; "

<220>
<221> source
<223> /note="Gene Name:
      apelin receptor early endogenous ligand; "

<220>
<221> source
<223> /note="Uniprot ID:  P0DMC3; "

<220>
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<221> source
<223> /note="ENSP ID: ENSP00000478306"

<400> 5609
Met Arg Phe Gln Gln Phe Leu Phe Ala Phe Phe Ile Phe Ile Met Ser
1   5   10   15

Leu Leu Leu Ile Ser Gly Gln Arg Pro Val Asn Leu Thr Met Arg Arg
            20   25   30

Lys Leu Arg Lys His Asn Cys Leu Gln Arg Arg Cys Met Pro Leu His
        35   40   45

Ser Arg Val Pro Phe Pro
    50

<210> 5610
<211> 54
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1234; "

<220>
<221> source
<223> /note="Gene Symbol: APELA; "

<220>
<221> source
<223> /note="Gene Name:
      apelin receptor early endogenous ligand; "

<220>
<221> source
<223> /note="Uniprot ID: P0DMC3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000480045"

<400> 5610
Met Arg Phe Gln Gln Phe Leu Phe Ala Phe Phe Ile Phe Ile Met Ser
1   5   10   15

Leu Leu Leu Ile Ser Gly Gln Arg Pro Val Asn Leu Thr Met Arg Arg
            20   25   30

Lys Leu Arg Lys His Asn Cys Leu Gln Arg Arg Cys Met Pro Leu His
        35   40   45

Ser Arg Val Pro Phe Pro
    50

<210> 5611
<211> 54
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1234; "

<220>
<221> source
<223> /note="Gene Symbol: APELA; "

<220>
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<223> /note="Gene Name:
      apelin receptor early endogenous ligand; "

<220>
<221> source
<223> /note="Uniprot ID: P0DMC3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000484618"

<400> 5611
Met Arg Phe Gln Gln Phe Leu Phe Ala Phe Phe Ile Phe Ile Met Ser
1   5   10   15

Leu Leu Leu Ile Ser Gly Gln Arg Pro Val Asn Leu Thr Met Arg Arg
            20   25   30

Lys Leu Arg Lys His Asn Cys Leu Gln Arg Arg Cys Met Pro Leu His
        35   40   45

Ser Arg Val Pro Phe Pro
    50

<210> 5612
<211> 518
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1235; "

<220>
<221> source
<223> /note="Gene Symbol: APEX2; "

<220>
<221> source
<223> /note="Gene Name:
APEX nuclease (apurinic/apyrimidinic endonuclease) 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q9UBZ4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000364126"

<400> 5612
Met Leu Arg Val Val Ser Trp Asn Ile Asn Gly Ile Arg Arg Pro Leu
1 5 10 15

Gln Gly Val Ala Asn Gln Glu Pro Ser Asn Cys Ala Ala Val Ala Val
20 25 30

Gly Arg Ile Leu Asp Glu Leu Asp Ala Asp Ile Val Cys Leu Gln Glu
35 40 45

Thr Lys Val Thr Arg Asp Ala Leu Thr Glu Pro Leu Ala Ile Val Glu
50 55 60

Gly Tyr Asn Ser Tyr Phe Ser Phe Ser Arg Asn Arg Ser Gly Tyr Ser
65 70 75 80

Gly Val Ala Thr Phe Cys Lys Asp Asn Ala Thr Pro Val Ala Ala Glu
85 90 95

Glu Gly Leu Ser Gly Leu Phe Ala Thr Gln Asn Gly Asp Val Gly Cys
100 105 110

Tyr Gly Asn Met Asp Glu Phe Thr Gln Glu Glu Leu Arg Ala Leu Asp
115 120 125

Ser Glu Gly Arg Ala Leu Leu Thr Gln His Lys Ile Arg Thr Trp Glu
130 135 140

Gly Lys Glu Lys Thr Leu Thr Leu Ile Asn Val Tyr Cys Pro His Ala
145 150 155 160

```
Asp Pro Gly Arg Pro Glu Arg Leu Val Phe Lys Met Arg Phe Tyr Arg
                165                 170                 175

Leu Leu Gln Ile Arg Ala Glu Ala Leu Leu Ala Ala Gly Ser His Val
            180                 185                 190

Ile Ile Leu Gly Asp Leu Asn Thr Ala His Arg Pro Ile Asp His Trp
        195                 200                 205

Asp Ala Val Asn Leu Glu Cys Phe Glu Glu Asp Pro Gly Arg Lys Trp
    210                 215                 220

Met Asp Ser Leu Leu Ser Asn Leu Gly Cys Gln Ser Ala Ser His Val
225                 230                 235                 240

Gly Pro Phe Ile Asp Ser Tyr Arg Cys Phe Gln Pro Lys Gln Glu Gly
                245                 250                 255

Ala Phe Thr Cys Trp Ser Ala Val Thr Gly Ala Arg His Leu Asn Tyr
            260                 265                 270

Gly Ser Arg Leu Asp Tyr Val Leu Gly Asp Arg Thr Leu Val Ile Asp
        275                 280                 285

Thr Phe Gln Ala Ser Phe Leu Leu Pro Glu Val Met Gly Ser Asp His
    290                 295                 300

Cys Pro Val Gly Ala Val Leu Ser Val Ser Ser Val Pro Ala Lys Gln
305                 310                 315                 320

Cys Pro Pro Leu Cys Thr Arg Phe Leu Pro Glu Phe Ala Gly Thr Gln
                325                 330                 335

Leu Lys Ile Leu Arg Phe Leu Val Pro Leu Glu Gln Ser Pro Val Leu
            340                 345                 350

Glu Gln Ser Thr Leu Gln His Asn Asn Gln Thr Arg Val Gln Thr Cys
        355                 360                 365

Gln Asn Lys Ala Gln Val Arg Ser Thr Arg Pro Gln Pro Ser Gln Val
    370                 375                 380
```

```
Gly Ser Ser Arg Gly Gln Lys Asn Leu Lys Ser Tyr Phe Gln Pro Ser
385                 390                 395                 400

Pro Ser Cys Pro Gln Ala Ser Pro Asp Ile Glu Leu Pro Ser Leu Pro
                405                 410                 415

Leu Met Ser Ala Leu Met Thr Pro Lys Thr Pro Glu Glu Lys Ala Val
            420                 425                 430

Ala Lys Val Val Lys Gly Gln Ala Lys Thr Ser Glu Ala Lys Asp Glu
        435                 440                 445

Lys Glu Leu Arg Thr Ser Phe Trp Lys Ser Val Leu Ala Gly Pro Leu
    450                 455                 460

Arg Thr Pro Leu Cys Gly Gly His Arg Glu Pro Cys Val Met Arg Thr
465                 470                 475                 480

Val Lys Lys Pro Gly Pro Asn Leu Gly Arg Arg Phe Tyr Met Cys Ala
                485                 490                 495

Arg Pro Arg Gly Pro Pro Thr Asp Pro Ser Ser Arg Cys Asn Phe Phe
            500                 505                 510

Leu Trp Ser Arg Pro Ser
        515


<210> 5613
<211> 318
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1236; "

<220>
<221> source
<223> /note="Gene Symbol: APEX1; "

<220>
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<223> /note="Gene Name:
      APEX nuclease (multifunctional DNA repair enzyme) 1; "

<220>
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<223> /note="Uniprot ID: P27695; "

<220>
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<400> 5613

```
Met Pro Lys Arg Gly Lys Lys Gly Ala Val Ala Glu Asp Gly Asp Glu
1               5                  10                  15

Leu Arg Thr Glu Pro Glu Ala Lys Lys Ser Lys Thr Ala Ala Lys Lys
            20                  25                  30

Asn Asp Lys Glu Ala Ala Gly Glu Gly Pro Ala Leu Tyr Glu Asp Pro
        35                  40                  45

Pro Asp Gln Lys Thr Ser Pro Ser Gly Lys Pro Ala Thr Leu Lys Ile
    50                  55                  60

Cys Ser Trp Asn Val Asp Gly Leu Arg Ala Trp Ile Lys Lys Lys Gly
65                  70                  75                  80

Leu Asp Trp Val Lys Glu Glu Ala Pro Asp Ile Leu Cys Leu Gln Glu
                85                  90                  95

Thr Lys Cys Ser Glu Asn Lys Leu Pro Ala Glu Leu Gln Glu Leu Pro
            100                 105                 110

Gly Leu Ser His Gln Tyr Trp Ser Ala Pro Ser Asp Lys Glu Gly Tyr
        115                 120                 125

Ser Gly Val Gly Leu Leu Ser Arg Gln Cys Pro Leu Lys Val Ser Tyr
    130                 135                 140

Gly Ile Gly Asp Glu Glu His Asp Gln Glu Gly Arg Val Ile Val Ala
145                 150                 155                 160

Glu Phe Asp Ser Phe Val Leu Val Thr Ala Tyr Val Pro Asn Ala Gly
                165                 170                 175

Arg Gly Leu Val Arg Leu Glu Tyr Arg Gln Arg Trp Asp Glu Ala Phe
            180                 185                 190

Arg Lys Phe Leu Lys Gly Leu Ala Ser Arg Lys Pro Leu Val Leu Cys
        195                 200                 205
```

```
Gly Asp Leu Asn Val Ala His Glu Glu Ile Asp Leu Arg Asn Pro Lys
    210                 215                 220

Gly Asn Lys Lys Asn Ala Gly Phe Thr Pro Gln Glu Arg Gln Gly Phe
225                 230                 235                 240

Gly Glu Leu Leu Gln Ala Val Pro Leu Ala Asp Ser Phe Arg His Leu
                245                 250                 255

Tyr Pro Asn Thr Pro Tyr Ala Tyr Thr Phe Trp Thr Tyr Met Met Asn
            260                 265                 270

Ala Arg Ser Lys Asn Val Gly Trp Arg Leu Asp Tyr Phe Leu Leu Ser
        275                 280                 285

His Ser Leu Leu Pro Ala Leu Cys Asp Ser Lys Ile Arg Ser Lys Ala
    290                 295                 300

Leu Gly Ser Asp His Cys Pro Ile Thr Leu Tyr Leu Ala Leu
305                 310                 315


<210> 5614
<211> 318
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000381111"

<400> 5614
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```
Met Pro Lys Arg Gly Lys Lys Gly Ala Val Ala Glu Asp Gly Asp Glu
1               5                  10                  15

Leu Arg Thr Glu Pro Glu Ala Lys Lys Ser Lys Thr Ala Ala Lys Lys
            20                  25                  30

Asn Asp Lys Glu Ala Ala Gly Glu Gly Pro Ala Leu Tyr Glu Asp Pro
        35                  40                  45

Pro Asp Gln Lys Thr Ser Pro Ser Gly Lys Pro Ala Thr Leu Lys Ile
    50                  55                  60

Cys Ser Trp Asn Val Asp Gly Leu Arg Ala Trp Ile Lys Lys Lys Gly
65                  70                  75                  80

Leu Asp Trp Val Lys Glu Glu Ala Pro Asp Ile Leu Cys Leu Gln Glu
                85                  90                  95

Thr Lys Cys Ser Glu Asn Lys Leu Pro Ala Glu Leu Gln Glu Leu Pro
            100                 105                 110

Gly Leu Ser His Gln Tyr Trp Ser Ala Pro Ser Asp Lys Glu Gly Tyr
        115                 120                 125

Ser Gly Val Gly Leu Leu Ser Arg Gln Cys Pro Leu Lys Val Ser Tyr
    130                 135                 140

Gly Ile Gly Asp Glu Glu His Asp Gln Glu Gly Arg Val Ile Val Ala
145                 150                 155                 160

Glu Phe Asp Ser Phe Val Leu Val Thr Ala Tyr Val Pro Asn Ala Gly
                165                 170                 175

Arg Gly Leu Val Arg Leu Glu Tyr Arg Gln Arg Trp Asp Glu Ala Phe
            180                 185                 190

Arg Lys Phe Leu Lys Gly Leu Ala Ser Arg Lys Pro Leu Val Leu Cys
        195                 200                 205

Gly Asp Leu Asn Val Ala His Glu Glu Ile Asp Leu Arg Asn Pro Lys
    210                 215                 220

Gly Asn Lys Lys Asn Ala Gly Phe Thr Pro Gln Glu Arg Gln Gly Phe
```

225 230 235 240

Gly Glu Leu Leu Gln Ala Val Pro Leu Ala Asp Ser Phe Arg His Leu
245 250 255

Tyr Pro Asn Thr Pro Tyr Ala Tyr Thr Phe Trp Thr Tyr Met Met Asn
260 265 270

Ala Arg Ser Lys Asn Val Gly Trp Arg Leu Asp Tyr Phe Leu Leu Ser
275 280 285

His Ser Leu Leu Pro Ala Leu Cys Asp Ser Lys Ile Arg Ser Lys Ala
290 295 300

Leu Gly Ser Asp His Cys Pro Ile Thr Leu Tyr Leu Ala Leu
305 310 315

<210> 5615
<211> 150
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<220>
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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 5615
Xaa Lys Thr Ser Pro Ser Gly Lys Pro Ala Thr Leu Lys Ile Cys Ser
1 5 10 15

Trp Asn Val Asp Gly Leu Arg Ala Trp Ile Lys Lys Lys Gly Leu Asp

```
            20                  25                  30

Trp Val Lys Glu Glu Ala Pro Asp Ile Leu Cys Leu Gln Glu Thr Lys
        35                  40                  45

Cys Ser Glu Asn Lys Leu Pro Ala Glu Leu Gln Glu Leu Pro Gly Leu
    50                  55                  60

Ser His Gln Tyr Trp Ser Ala Pro Ser Asp Lys Glu Gly Tyr Ser Gly
65                  70                  75                  80

Val Gly Leu Leu Ser Arg Gln Cys Pro Leu Lys Val Ser Tyr Gly Ile
                85                  90                  95

Ala Tyr Val Pro Asn Ala Gly Arg Gly Leu Val Arg Leu Glu Tyr Arg
            100                 105                 110

Gln Arg Trp Asp Glu Ala Phe Arg Lys Phe Leu Lys Gly Leu Ala Ser
        115                 120                 125

Arg Lys Pro Leu Val Leu Cys Gly Asp Leu Asn Val Ala His Glu Glu
    130                 135                 140

Ile Asp Leu Arg Asn Pro
145                 150


<210> 5616
<211> 49
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: APEX1; "

<220>
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<223> /note="Gene Name:
      APEX nuclease (multifunctional DNA repair enzyme) 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000450604"
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<400> 5616
Met Pro Lys Arg Gly Lys Lys Gly Ala Val Ala Glu Asp Gly Asp Glu
1   5   10   15

Leu Arg Thr Gly Lys Gly Met Lys Ser Ala Leu Leu Pro Arg Ser Cys
            20   25   30

Gly Gly Gly Val Cys His Ser Leu Asp Val Arg Ala Arg Gly Gln Glu
        35   40   45

Glu

<210> 5617
<211> 172
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<223> /note="Gene Symbol: APEX1; "

<220>
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<223> /note="Gene Name:
      APEX nuclease (multifunctional DNA repair enzyme) 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000451060"

<400> 5617
Met Tyr Glu Pro Glu Ala Lys Lys Ser Lys Thr Ala Ala Lys Lys Asn
1   5   10   15

Asp Lys Glu Ala Ala Gly Glu Gly Pro Ala Leu Tyr Glu Asp Pro Pro
            20   25   30

Asp Gln Lys Thr Ser Pro Ser Gly Lys Pro Ala Thr Leu Lys Ile Cys
        35   40   45

Ser Trp Asn Val Asp Gly Leu Arg Ala Trp Ile Lys Lys Lys Gly Leu
    50   55   60

Asp Trp Val Lys Glu Glu Ala Pro Asp Ile Leu Cys Leu Gln Glu Thr

65 70 75 80

Lys Cys Ser Glu Asn Lys Leu Pro Ala Glu Leu Gln Glu Leu Pro Gly
85 90 95

Leu Ser His Gln Tyr Trp Ser Ala Pro Ser Asp Lys Glu Gly Tyr Ser
100 105 110

Gly Val Gly Leu Leu Ser Arg Gln Cys Pro Leu Lys Val Ser Tyr Gly
115 120 125

Ile Gly Asp Glu Glu His Asp Gln Glu Gly Arg Val Ile Val Ala Glu
130 135 140

Phe Asp Ser Phe Val Leu Val Thr Ala Tyr Val Pro Asn Ala Gly Arg
145 150 155 160

Gly Leu Val Arg Leu Glu Tyr Arg Gln Arg Trp Asp
165 170

<210> 5618
<211> 174
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
APEX nuclease (multifunctional DNA repair enzyme) 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000451170"

<400> 5618
Met Pro Lys Arg Gly Lys Lys Gly Ala Val Ala Glu Asp Gly Asp Glu
1 5 10 15

Leu Arg Thr Glu Pro Glu Ala Lys Lys Ser Lys Thr Ala Ala Lys Lys
20 25 30

```
Asn Asp Lys Glu Ala Ala Gly Glu Gly Pro Ala Leu Tyr Glu Asp Pro
        35                  40                  45

Pro Asp Gln Lys Thr Ser Pro Ser Gly Lys Pro Ala Thr Leu Lys Ile
    50                  55                  60

Cys Ser Trp Asn Val Asp Gly Leu Arg Ala Trp Ile Lys Lys Lys Gly
65                  70                  75                  80

Leu Asp Trp Val Lys Glu Glu Ala Pro Asp Ile Leu Cys Leu Gln Glu
                85                  90                  95

Thr Lys Cys Ser Glu Asn Lys Leu Pro Ala Glu Leu Gln Glu Leu Pro
            100                 105                 110

Gly Leu Ser His Gln Tyr Trp Ser Ala Pro Ser Asp Lys Glu Gly Tyr
        115                 120                 125

Ser Gly Val Gly Leu Leu Ser Arg Gln Cys Pro Leu Lys Val Ser Tyr
    130                 135                 140

Gly Ile Gly Asp Glu Glu His Asp Gln Glu Gly Arg Val Ile Val Ala
145                 150                 155                 160

Glu Phe Asp Ser Phe Val Leu Val Thr Ala Tyr Val Pro Asn
                165                 170
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<210> 5619
<211> 263
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
APEX nuclease (multifunctional DNA repair enzyme) 1; "

<220>
<221> source

<223> /note="ENSP ID: ENSP00000451327"

<400> 5619

```
Met Pro Lys Arg Gly Lys Lys Gly Ala Val Ala Glu Asp Gly Asp Glu
1               5                  10                  15

Leu Arg Thr Glu Pro Glu Ala Lys Lys Ser Lys Thr Ala Ala Lys Lys
            20                  25                  30

Asn Asp Lys Glu Ala Ala Gly Glu Gly Pro Ala Leu Tyr Glu Asp Pro
        35                  40                  45

Pro Asp Gln Lys Thr Ser Pro Ser Gly Lys Pro Ala Thr Leu Lys Ile
    50                  55                  60

Cys Ser Trp Asn Val Asp Gly Leu Arg Ala Trp Ile Lys Lys Lys Gly
65                  70                  75                  80

Leu Asp Trp Val Lys Glu Glu Ala Pro Asp Ile Leu Cys Leu Gln Glu
                85                  90                  95

Thr Lys Cys Ser Glu Asn Lys Leu Pro Ala Glu Leu Gln Glu Leu Pro
            100                 105                 110

Gly Leu Ser His Gln Tyr Trp Ser Ala Pro Ser Asp Lys Glu Gly Tyr
        115                 120                 125

Ser Gly Val Gly Leu Leu Ser Arg Gln Cys Pro Leu Lys Val Ser Tyr
    130                 135                 140

Gly Ile Gly Asp Glu Glu His Asp Gln Glu Gly Arg Val Ile Val Ala
145                 150                 155                 160

Glu Phe Asp Ser Phe Val Leu Val Thr Ala Tyr Val Pro Asn Ala Gly
                165                 170                 175

Arg Gly Leu Val Arg Leu Glu Tyr Arg Gln Arg Trp Asp Glu Ala Phe
            180                 185                 190

Arg Lys Phe Leu Lys Gly Leu Ala Ser Arg Lys Pro Leu Val Leu Cys
        195                 200                 205

Gly Asp Leu Asn Val Ala His Glu Glu Ile Asp Leu Arg Asn Pro Lys
    210                 215                 220
```

Gly Asn Lys Lys Asn Ala Gly Phe Thr Pro Gln Glu Arg Gln Gly Phe
225 230 235 240

Gly Glu Leu Leu Gln Ala Val Pro Leu Ala Asp Ser Phe Arg His Leu
245 250 255

Tyr Pro Asn Thr Pro Tyr Ala
260

<210> 5620
<211> 41
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<223> /note="Gene Symbol: APEX1; "

<220>
<221> source
<223> /note="Gene Name:
APEX nuclease (multifunctional DNA repair enzyme) 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000451491"

<400> 5620
Met Tyr Glu Pro Glu Ala Lys Lys Ser Lys Thr Ala Ala Lys Lys Asn
1 5 10 15

Asp Lys Glu Ala Ala Gly Glu Gly Pro Ala Leu Tyr Glu Asp Pro Pro
20 25 30

Asp Gln Lys Thr Ser Pro Ser Gly Lys
35 40

<210> 5621
<211> 318
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1236; "

<220>
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<220>
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<223> /note="Gene Name:
APEX nuclease (multifunctional DNA repair enzyme) 1; "

<220>
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<223> /note="Uniprot ID: P27695; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000451979"

<400> 5621

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Met Pro Lys Arg Gly Lys Lys Gly Ala Val Ala Glu Asp Gly Asp Glu
1               5                  10                  15

Leu Arg Thr Glu Pro Glu Ala Lys Lys Ser Lys Thr Ala Ala Lys Lys
            20                  25                  30

Asn Asp Lys Glu Ala Ala Gly Glu Gly Pro Ala Leu Tyr Glu Asp Pro
        35                  40                  45

Pro Asp Gln Lys Thr Ser Pro Ser Gly Lys Pro Ala Thr Leu Lys Ile
    50                  55                  60

Cys Ser Trp Asn Val Asp Gly Leu Arg Ala Trp Ile Lys Lys Lys Gly
65                  70                  75                  80

Leu Asp Trp Val Lys Glu Glu Ala Pro Asp Ile Leu Cys Leu Gln Glu
                85                  90                  95

Thr Lys Cys Ser Glu Asn Lys Leu Pro Ala Glu Leu Gln Glu Leu Pro
            100                 105                 110

Gly Leu Ser His Gln Tyr Trp Ser Ala Pro Ser Asp Lys Glu Gly Tyr
        115                 120                 125

Ser Gly Val Gly Leu Leu Ser Arg Gln Cys Pro Leu Lys Val Ser Tyr
    130                 135                 140

Gly Ile Gly Asp Glu Glu His Asp Gln Glu Gly Arg Val Ile Val Ala
145                 150                 155                 160
```

```
Glu Phe Asp Ser Phe Val Leu Val Thr Ala Tyr Val Pro Asn Ala Gly
                165                 170                 175

Arg Gly Leu Val Arg Leu Glu Tyr Arg Gln Arg Trp Asp Glu Ala Phe
            180                 185                 190

Arg Lys Phe Leu Lys Gly Leu Ala Ser Arg Lys Pro Leu Val Leu Cys
        195                 200                 205

Gly Asp Leu Asn Val Ala His Glu Glu Ile Asp Leu Arg Asn Pro Lys
    210                 215                 220

Gly Asn Lys Lys Asn Ala Gly Phe Thr Pro Gln Glu Arg Gln Gly Phe
225                 230                 235                 240

Gly Glu Leu Leu Gln Ala Val Pro Leu Ala Asp Ser Phe Arg His Leu
                245                 250                 255

Tyr Pro Asn Thr Pro Tyr Ala Tyr Thr Phe Trp Thr Tyr Met Met Asn
            260                 265                 270

Ala Arg Ser Lys Asn Val Gly Trp Arg Leu Asp Tyr Phe Leu Leu Ser
        275                 280                 285

His Ser Leu Leu Pro Ala Leu Cys Asp Ser Lys Ile Arg Ser Lys Ala
    290                 295                 300

Leu Gly Ser Asp His Cys Pro Ile Thr Leu Tyr Leu Ala Leu
305                 310                 315


<210> 5622
<211> 146
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1236; "

<220>
<221> source
<223> /note="Gene Symbol: APEX1; "

<220>
<221> source
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<223> /note="Gene Name:
APEX nuclease (multifunctional DNA repair enzyme) 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000452137"

<400> 5622

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Met Pro Lys Arg Gly Lys Lys Gly Ala Val Ala Glu Asp Gly Asp Glu
1               5                  10                  15


Leu Arg Thr Glu Pro Glu Ala Lys Lys Ser Lys Thr Ala Ala Lys Lys
            20                  25                  30


Asn Asp Lys Glu Ala Ala Gly Glu Gly Pro Ala Leu Tyr Glu Asp Pro
        35                  40                  45


Pro Asp Gln Lys Thr Ser Pro Ser Gly Lys Pro Ala Thr Leu Lys Ile
    50                  55                  60


Cys Ser Trp Asn Val Asp Gly Leu Arg Ala Trp Ile Lys Lys Lys Gly
65                  70                  75                  80


Leu Asp Trp Val Lys Glu Glu Ala Pro Asp Ile Leu Cys Leu Gln Glu
                85                  90                  95


Thr Lys Cys Ser Glu Asn Lys Leu Pro Ala Glu Leu Gln Glu Leu Pro
            100                 105                 110


Gly Leu Ser His Gln Tyr Trp Ser Ala Pro Ser Asp Lys Glu Gly Tyr
        115                 120                 125


Ser Gly Val Gly Leu Leu Ser Arg Gln Cys Pro Leu Lys Val Ser Tyr
    130                 135                 140


Gly Ile
145
```

<210> 5623
<211> 14
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1236; "

<220>
<221> source
<223> /note="Gene Symbol: APEX1; "

<220>
<221> source
<223> /note="Gene Name:
APEX nuclease (multifunctional DNA repair enzyme) 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000452212"

<400> 5623
Met Pro Lys Arg Gly Lys Lys Gly Ala Pro Phe Ala Ser Ser
1 5 10

<210> 5624
<211> 107
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1236; "

<220>
<221> source
<223> /note="Gene Symbol: APEX1; "

<220>
<221> source
<223> /note="Gene Name:
APEX nuclease (multifunctional DNA repair enzyme) 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000452304"

<400> 5624
Met Pro Lys Arg Gly Lys Lys Gly Ala Val Ala Glu Asp Gly Asp Glu
1 5 10 15

Leu Arg Thr Glu Pro Glu Ala Lys Lys Ser Lys Thr Ala Ala Lys Lys
20 25 30

Asn Asp Lys Glu Ala Ala Gly Glu Gly Pro Ala Leu Tyr Glu Asp Pro
35 40 45

Pro Asp Gln Lys Thr Ser Pro Ser Gly Lys Pro Ala Thr Leu Lys Ile
50 55 60

```
Cys Ser Trp Asn Val Asp Gly Leu Arg Ala Trp Ile Lys Lys Lys Gly
65                  70                  75                  80


Leu Asp Trp Val Lys Glu Glu Ala Pro Asp Ile Leu Cys Leu Gln Glu
                85                  90                  95


Thr Lys Cys Ser Glu Asn Lys Leu Pro Ala Glu
            100                 105


<210> 5625
<211> 162
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: APEX1; "

<220>
<221> source
<223> /note="Gene Name:
      APEX nuclease (multifunctional DNA repair enzyme) 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000452418"

<400> 5625
Met Tyr Glu Pro Glu Ala Lys Lys Ser Lys Thr Ala Ala Lys Lys Asn
1               5                   10                  15


Asp Lys Glu Ala Ala Gly Glu Gly Pro Ala Leu Tyr Glu Asp Pro Pro
            20                  25                  30


Asp Gln Lys Thr Ser Pro Ser Gly Lys Pro Ala Thr Leu Lys Ile Cys
        35                  40                  45


Ser Trp Asn Val Asp Gly Leu Arg Ala Trp Ile Lys Lys Lys Gly Leu
    50                  55                  60


Asp Trp Val Lys Glu Glu Ala Pro Asp Ile Leu Cys Leu Gln Glu Thr
65                  70                  75                  80


Lys Cys Ser Glu Asn Lys Leu Pro Ala Glu Leu Gln Glu Leu Pro Gly
                85                  90                  95
```

```
Leu Ser His Gln Tyr Trp Ser Ala Pro Ser Asp Lys Glu Gly Tyr Ser
            100                 105                 110

Gly Val Gly Leu Leu Ser Arg Gln Cys Pro Leu Lys Val Ser Tyr Gly
        115                 120                 125

Ile Gly Asp Glu Glu His Asp Gln Glu Gly Arg Val Ile Val Ala Glu
    130                 135                 140

Phe Asp Ser Phe Val Leu Val Thr Ala Tyr Val Pro Asn Ala Gly Arg
145                 150                 155                 160

Gly Leu
```

<210> 5626
<211> 242
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1236; "

<220>
<221> source
<223> /note="Gene Symbol: APEX1; "

<220>
<221> source
<223> /note="Gene Name:
APEX nuclease (multifunctional DNA repair enzyme) 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000452460"

<400> 5626

```
Met Pro Lys Arg Gly Lys Lys Gly Ala Val Ala Glu Asp Gly Asp Glu
1               5                   10                  15

Leu Arg Thr Glu Pro Glu Ala Lys Lys Ser Lys Thr Ala Ala Lys Lys
            20                  25                  30

Asn Asp Lys Glu Ala Ala Gly Glu Gly Pro Ala Leu Tyr Glu Asp Pro
        35                  40                  45
```

```
Pro Asp Gln Lys Thr Ser Pro Ser Gly Lys Pro Ala Thr Leu Lys Ile
    50                  55                  60

Cys Ser Trp Asn Val Asp Gly Leu Arg Ala Trp Ile Lys Lys Lys Gly
65                  70                  75                  80

Leu Asp Trp Val Lys Glu Glu Ala Pro Asp Ile Leu Cys Leu Gln Glu
                85                  90                  95

Thr Lys Cys Ser Glu Asn Lys Leu Pro Ala Glu Leu Gln Glu Leu Pro
            100                 105                 110

Gly Leu Ser His Gln Tyr Trp Ser Ala Pro Ser Asp Lys Glu Gly Tyr
        115                 120                 125

Ser Gly Val Gly Leu Leu Ser Arg Gln Cys Pro Leu Lys Val Ser Tyr
    130                 135                 140

Gly Ile Gly Arg Gly Leu Val Arg Leu Glu Tyr Arg Gln Arg Trp Asp
145                 150                 155                 160

Glu Ala Phe Arg Lys Phe Leu Lys Gly Leu Ala Ser Arg Lys Pro Leu
                165                 170                 175

Val Leu Cys Gly Asp Leu Asn Val Ala His Glu Glu Ile Asp Leu Arg
            180                 185                 190

Asn Pro Lys Gly Asn Lys Lys Asn Ala Gly Phe Thr Pro Gln Glu Arg
        195                 200                 205

Gln Gly Phe Gly Glu Leu Leu Gln Ala Val Pro Leu Ala Asp Ser Phe
    210                 215                 220

Arg His Leu Tyr Pro Asn Thr Pro Tyr Ala Tyr Thr Phe Trp Thr Tyr
225                 230                 235                 240

Met Met
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<210> 5627
<211> 150
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1237; "

<220>
<221> source
<223> /note="Gene Symbol: APH1A; "

<220>
<221> source
<223> /note="Gene Name:
APH1A gamma secretase
subunit; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000236017"

<400> 5627
Met Gly Ala Ala Val Phe Phe Gly Cys Thr Phe Val Ala Phe Gly Pro
1 5 10 15

Ala Phe Ala Leu Phe Leu Ile Thr Val Ala Gly Asp Pro Leu Arg Val
20 25 30

Ile Ile Leu Val Ala Gly Lys Ala Asp Glu Gly Leu Ala Ser Leu Ser
35 40 45

Glu Asp Gly Arg Ser Pro Ile Ser Ile Arg Gln Met Ala Tyr Val Ser
50 55 60

Gly Leu Ser Phe Gly Ile Ile Ser Gly Val Phe Ser Val Ile Asn Ile
65 70 75 80

Leu Ala Asp Ala Leu Gly Pro Gly Val Val Gly Ile His Gly Asp Ser
85 90 95

Pro Tyr Tyr Phe Leu Thr Ser Ala Phe Leu Thr Ala Ala Ile Ile Leu
100 105 110

Leu His Thr Phe Trp Gly Val Val Phe Phe Asp Ala Cys Glu Arg Arg
115 120 125

Arg Tyr Trp Ala Leu Gly Leu Val Val Gly Ser His Leu Leu Thr Ser
130 135 140

Gly Leu Thr Phe Leu Asn
145 150

<210> 5628
<211> 247
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1237; "

<220>
<221> source
<223> /note="Gene Symbol: APH1A; "

<220>
<221> source
<223> /note="Gene Name:
APH1A gamma secretase
subunit; "

<220>
<221> source
<223> /note="Uniprot ID: Q96BI3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000353380"

<400> 5628
Met Gly Ala Ala Val Phe Phe Gly Cys Thr Phe Val Ala Phe Gly Pro
1   5   10   15

Ala Phe Ala Leu Phe Leu Ile Thr Val Ala Gly Asp Pro Leu Arg Val
            20   25   30

Ile Ile Leu Val Ala Gly Ala Phe Phe Trp Leu Val Ser Leu Leu Leu
        35   40   45

Ala Ser Val Val Trp Phe Ile Leu Val His Val Thr Asp Arg Ser Asp
    50   55   60

Ala Arg Leu Gln Tyr Gly Leu Leu Ile Phe Gly Ala Ala Val Ser Val
65   70   75   80

Leu Leu Gln Glu Val Phe Arg Phe Ala Tyr Tyr Lys Leu Leu Lys Lys
                85   90   95

Ala Asp Glu Gly Leu Ala Ser Leu Ser Glu Asp Gly Arg Ser Pro Ile
            100   105   110

```
Ser Ile Arg Gln Met Ala Tyr Val Ser Gly Leu Ser Phe Gly Ile Ile
        115                 120                 125

Ser Gly Val Phe Ser Val Ile Asn Ile Leu Ala Asp Ala Leu Gly Pro
    130                 135                 140

Gly Val Val Gly Ile His Gly Asp Ser Pro Tyr Tyr Phe Leu Thr Ser
145                 150                 155                 160

Ala Phe Leu Thr Ala Ala Ile Ile Leu Leu His Thr Phe Trp Gly Val
                165                 170                 175

Val Phe Phe Asp Ala Cys Glu Arg Arg Arg Tyr Trp Ala Leu Gly Leu
            180                 185                 190

Val Val Gly Ser His Leu Leu Thr Ser Gly Leu Thr Phe Leu Asn Pro
        195                 200                 205

Trp Tyr Glu Ala Ser Leu Leu Pro Ile Tyr Ala Val Thr Val Ser Met
    210                 215                 220

Gly Leu Trp Ala Phe Ile Thr Ala Gly Gly Ser Leu Arg Ser Ile Gln
225                 230                 235                 240

Arg Ser Leu Leu Cys Lys Asp
                245


<210> 5629
<211> 265
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: APH1A; "

<220>
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<223> /note="Gene Name:
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<221> source
<223> /note="Uniprot ID: Q96BI3; "

<220>
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<400> 5629
Met Gly Ala Ala Val Phe Phe Gly Cys Thr Phe Val Ala Phe Gly Pro
1   5   10   15

Ala Phe Ala Leu Phe Leu Ile Thr Val Ala Gly Asp Pro Leu Arg Val
            20   25   30

Ile Ile Leu Val Ala Gly Ala Phe Phe Trp Leu Val Ser Leu Leu Leu
        35   40   45

Ala Ser Val Val Trp Phe Ile Leu Val His Val Thr Asp Arg Ser Asp
    50   55   60

Ala Arg Leu Gln Tyr Gly Leu Leu Ile Phe Gly Ala Ala Val Ser Val
65   70   75   80

Leu Leu Gln Glu Val Phe Arg Phe Ala Tyr Tyr Lys Leu Leu Lys Lys
                85   90   95

Ala Asp Glu Gly Leu Ala Ser Leu Ser Glu Asp Gly Arg Ser Pro Ile
            100   105   110

Ser Ile Arg Gln Met Ala Tyr Val Ser Gly Leu Ser Phe Gly Ile Ile
        115   120   125

Ser Gly Val Phe Ser Val Ile Asn Ile Leu Ala Asp Ala Leu Gly Pro
    130   135   140

Gly Val Val Gly Ile His Gly Asp Ser Pro Tyr Tyr Phe Leu Thr Ser
145   150   155   160

Ala Phe Leu Thr Ala Ala Ile Ile Leu Leu His Thr Phe Trp Gly Val
                165   170   175

Val Phe Phe Asp Ala Cys Glu Arg Arg Arg Tyr Trp Ala Leu Gly Leu
            180   185   190

Val Val Gly Ser His Leu Leu Thr Ser Gly Leu Thr Phe Leu Asn Pro

```
        195                 200                 205

Trp Tyr Glu Ala Ser Leu Leu Pro Ile Tyr Ala Val Thr Val Ser Met
    210                 215                 220

Gly Leu Trp Ala Phe Ile Thr Ala Gly Gly Ser Leu Arg Ser Ile Gln
225                 230                 235                 240

Arg Ser Leu Leu Cys Arg Arg Gln Glu Asp Ser Arg Val Met Val Tyr
                245                 250                 255

Ser Ala Leu Arg Ile Pro Pro Glu Asp
            260                 265


<210> 5630
<211> 195
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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      subunit; "

<220>
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<220>
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<400> 5630
Met Gly Ala Ala Val Phe Phe Gly Cys Thr Phe Val Ala Phe Gly Pro
1               5                   10                  15

Ala Phe Ala Leu Phe Leu Ile Thr Val Ala Gly Asp Pro Leu Arg Val
            20                  25                  30

Ile Ile Leu Val Ala Gly Arg Cys Ser Ala Leu Pro Thr Thr Ser Cys
        35                  40                  45
```

```
Leu Ile Ser Gly Leu Ser Phe Gly Ile Ile Ser Gly Val Phe Ser Val
    50                  55                  60

Ile Asn Ile Leu Ala Asp Ala Leu Gly Pro Gly Val Val Gly Ile His
65                  70                  75                  80

Gly Asp Ser Pro Tyr Tyr Phe Leu Thr Ser Ala Phe Leu Thr Ala Ala
                85                  90                  95

Ile Ile Leu Leu His Thr Phe Trp Gly Val Val Phe Phe Asp Ala Cys
            100                 105                 110

Glu Arg Arg Arg Tyr Trp Ala Leu Gly Leu Val Val Gly Ser His Leu
        115                 120                 125

Leu Thr Ser Gly Leu Thr Phe Leu Asn Pro Trp Tyr Glu Ala Ser Leu
    130                 135                 140

Leu Pro Ile Tyr Ala Val Thr Val Ser Met Gly Leu Trp Ala Phe Ile
145                 150                 155                 160

Thr Ala Gly Gly Ser Leu Arg Ser Ile Gln Arg Ser Leu Leu Cys Arg
                165                 170                 175

Arg Gln Glu Asp Ser Arg Val Met Val Tyr Ser Ala Leu Arg Ile Pro
            180                 185                 190

Pro Glu Asp
        195


<210> 5631
<211> 257
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1238; "

<220>
<221> source
<223> /note="Gene Symbol: APH1B; "

<220>
<221> source
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID: Q8WW43; "

<220>
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<400> 5631

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Met Thr Ala Ala Val Phe Phe Gly Cys Ala Phe Ile Ala Phe Gly Pro
1               5                  10                  15

Ala Leu Ala Leu Tyr Val Phe Thr Ile Ala Thr Glu Pro Leu Arg Ile
            20                  25                  30

Ile Phe Leu Ile Ala Gly Ala Phe Phe Trp Leu Val Ser Leu Leu Ile
        35                  40                  45

Ser Ser Leu Val Trp Phe Met Ala Arg Val Ile Ile Asp Asn Lys Asp
    50                  55                  60

Gly Pro Thr Gln Lys Tyr Leu Leu Ile Phe Gly Ala Phe Val Ser Val
65                  70                  75                  80

Tyr Ile Gln Glu Met Phe Arg Phe Ala Tyr Tyr Lys Leu Leu Lys Lys
                85                  90                  95

Ala Ser Glu Gly Leu Lys Ser Ile Asn Pro Gly Glu Thr Ala Pro Ser
            100                 105                 110

Met Arg Leu Leu Ala Tyr Val Ser Gly Leu Gly Phe Gly Ile Met Ser
        115                 120                 125

Gly Val Phe Ser Phe Val Asn Thr Leu Ser Asp Ser Leu Gly Pro Gly
    130                 135                 140

Thr Val Gly Ile His Gly Asp Ser Pro Gln Phe Phe Leu Tyr Ser Ala
145                 150                 155                 160

Phe Met Thr Leu Val Ile Ile Leu Leu His Val Phe Trp Gly Ile Val
                165                 170                 175
```

```
Phe Phe Asp Gly Cys Glu Lys Lys Lys Trp Gly Ile Leu Leu Ile Val
            180                 185                 190

Leu Leu Thr His Leu Leu Val Ser Ala Gln Thr Phe Ile Ser Ser Tyr
        195                 200                 205

Tyr Gly Ile Asn Leu Ala Ser Ala Phe Ile Ile Leu Val Leu Met Gly
    210                 215                 220

Thr Trp Ala Phe Leu Ala Ala Gly Gly Ser Cys Arg Ser Leu Lys Leu
225                 230                 235                 240

Cys Leu Leu Cys Gln Asp Lys Asn Phe Leu Leu Tyr Asn Gln Arg Ser
                245                 250                 255

Arg
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<210> 5632
<211> 81
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1238; "

<220>
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<220>
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<223> /note="Gene Name:
APH1B gamma secretase
subunit; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000369697"

<400> 5632

```
Met Thr Ala Ala Val Phe Phe Gly Cys Ala Phe Ile Ala Phe Gly Pro
1               5                   10                  15

Ala Leu Ala Leu Tyr Val Phe Thr Ile Ala Thr Glu Pro Leu Arg Ile
            20                  25                  30

Ile Phe Leu Ile Ala Gly Arg Arg Val Glu Thr Cys Lys Asn Thr Glu
```

```
        35                  40                  45

Ala Pro Asp Cys Ala Ser Pro Ser Gly Ser Leu Ser Phe Leu Leu Val
    50                  55                  60

Gly Val Ser Thr Asp Phe Val Pro Cys Leu Val His Gly Lys Ser His
65                  70                  75                  80

Tyr
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<210> 5633
<211> 216
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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subunit; "

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<221> source
<223> /note="Uniprot ID: Q8WW43; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000369700"

<400> 5633

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Met Thr Ala Ala Val Phe Phe Gly Cys Ala Phe Ile Ala Phe Gly Pro
1               5                  10                  15

Ala Leu Ala Leu Tyr Val Phe Thr Ile Ala Thr Glu Pro Leu Arg Ile
            20                  25                  30

Ile Phe Leu Ile Ala Gly Ala Phe Phe Trp Leu Val Ser Leu Leu Ile
        35                  40                  45

Ser Ser Leu Val Trp Phe Met Ala Arg Val Ile Ile Asp Asn Lys Asp
    50                  55                  60
```

```
Gly Pro Thr Gln Lys Tyr Leu Leu Ile Phe Gly Ala Phe Val Ser Val
65                  70                  75                  80

Tyr Ile Gln Glu Met Phe Arg Phe Ala Tyr Tyr Lys Leu Leu Lys Lys
                85                  90                  95

Ala Ser Glu Gly Leu Lys Ser Ile Asn Pro Gly Glu Thr Ala Pro Ser
            100                 105                 110

Met Arg Leu Leu Ala Tyr Ala Phe Met Thr Leu Val Ile Ile Leu Leu
        115                 120                 125

His Val Phe Trp Gly Ile Val Phe Phe Asp Gly Cys Glu Lys Lys Lys
    130                 135                 140

Trp Gly Ile Leu Leu Ile Val Leu Leu Thr His Leu Leu Val Ser Ala
145                 150                 155                 160

Gln Thr Phe Ile Ser Ser Tyr Tyr Gly Ile Asn Leu Ala Ser Ala Phe
                165                 170                 175

Ile Ile Leu Val Leu Met Gly Thr Trp Ala Phe Leu Ala Ala Gly Gly
            180                 185                 190

Ser Cys Arg Ser Leu Lys Leu Cys Leu Leu Cys Gln Asp Lys Asn Phe
        195                 200                 205

Leu Leu Tyr Asn Gln Arg Ser Arg
    210                 215


<210> 5634
<211> 188
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
APH1B gamma secretase
subunit; "

<220>
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<223> /note="ENSP ID: ENSP00000453002"

<400> 5634

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Met Ala Arg Val Ile Ile Asp Asn Lys Asp Gly Pro Thr Gln Lys Tyr
1               5                  10                  15

Leu Leu Ile Phe Gly Ala Phe Val Ser Val Tyr Ile Gln Glu Met Phe
            20                  25                  30

Arg Phe Ala Tyr Tyr Lys Leu Leu Lys Lys Ala Ser Glu Gly Leu Lys
        35                  40                  45

Ser Ile Asn Pro Gly Glu Thr Ala Pro Ser Met Arg Leu Leu Ala Tyr
    50                  55                  60

Val Ser Gly Leu Gly Phe Gly Ile Met Ser Gly Val Phe Ser Phe Val
65                  70                  75                  80

Asn Thr Leu Ser Asp Ser Leu Gly Pro Gly Thr Val Gly Ile His Gly
                85                  90                  95

Asp Ser Pro Gln Phe Phe Leu Tyr Ser Ala Phe Met Thr Leu Val Ile
            100                 105                 110

Ile Leu Leu His Val Phe Trp Gly Ile Val Phe Phe Asp Gly Cys Glu
        115                 120                 125

Lys Lys Lys Trp Gly Ile Leu Leu Ile Val Leu Leu Thr His Leu Leu
    130                 135                 140

Val Ser Ala Gln Thr Phe Ile Ser Ser Tyr Tyr Gly Ile Asn Leu Ala
145                 150                 155                 160

Ser Ala Phe Ile Ile Leu Val Leu Met Gly Thr Trp Ala Phe Leu Ala
                165                 170                 175

Ala Gly Gly Ser Cys Arg Ser Leu Lys Leu Cys Leu
            180                 185
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<210> 5635
<211> 222
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: APH1B; "

<220>
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<223> /note="Gene Name:
APH1B gamma secretase
subunit; "

<220>
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<223> /note="ENSP ID: ENSP00000453327"

<400> 5635
Met Thr Ala Ala Val Phe Phe Gly Cys Ala Phe Ile Ala Phe Gly Pro
1 5 10 15

Ala Leu Ala Leu Tyr Val Phe Thr Ile Ala Thr Glu Pro Leu Arg Ile
20 25 30

Ile Phe Leu Ile Ala Gly Ala Phe Phe Trp Leu Val Ser Leu Leu Ile
35 40 45

Ser Ser Leu Val Trp Phe Met Ala Arg Val Ile Ile Asp Asn Lys Asp
50 55 60

Gly Pro Thr Gln Lys Tyr Leu Leu Ile Phe Gly Ala Phe Val Ser Val
65 70 75 80

Tyr Ile Gln Glu Met Phe Arg Phe Ala Tyr Tyr Lys Leu Leu Lys Lys
85 90 95

Ala Ser Glu Gly Leu Lys Ser Ile Asn Pro Gly Glu Thr Ala Pro Ser
100 105 110

Met Arg Leu Leu Ala Tyr Val Ser Gly Leu Gly Phe Gly Ile Met Ser
115 120 125

Gly Val Phe Ser Phe Val Asn Thr Leu Ser Asp Ser Leu Gly Pro Gly

```
    130                 135                 140

Thr Val Gly Ile His Gly Asp Ser Pro Gln Phe Phe Leu Tyr Ser Asp
145                 150                 155                 160

Leu His Lys Phe Leu Leu Trp Asn Lys Pro Gly Val Ser Ile Tyr Asn
                165                 170                 175

Pro Gly Ala His Gly His Leu Gly Ile Leu Ser Cys Gly Arg Gln Leu
            180                 185                 190

Pro Lys Pro Glu Thr Leu Pro Ala Leu Pro Arg Gln Glu Leu Ser Ser
        195                 200                 205

Leu Gln Pro Ala Leu Gln Ile Thr Ser Gly Asn Gln His Phe
    210                 215                 220


<210> 5636
<211> 19
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
      APH1B gamma secretase
      subunit; "

<220>
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<400> 5636
Leu Tyr Val Phe Thr Ile Ala Thr Glu Pro Leu Arg Ile Ile Phe Leu
1               5                   10                  15

Ile Ala Gly



<210> 5637
<211> 164
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<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1239; "

<220>
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<223> /note="Gene Symbol: APITD1-CORT; "

<220>
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<223> /note="Gene Name:
APITD1-CORT readthrough; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000383692"

<400> 5637
Met Glu Glu Glu Ala Glu Thr Glu Glu Gln Gln Arg Phe Ser Tyr Gln
1 5 10 15

Gln Arg Leu Lys Ala Ala Val His Tyr Thr Val Gly Cys Leu Cys Glu
20 25 30

Glu Val Ala Leu Asp Lys Glu Met Gln Phe Ser Lys Gln Thr Ile Ala
35 40 45

Ala Ile Ser Glu Leu Thr Phe Arg Gln Cys Glu Asn Phe Ala Lys Asp
50 55 60

Leu Glu Met Phe Ala Arg His Ala Lys Arg Thr Thr Ile Asn Thr Glu
65 70 75 80

Asp Val Lys Leu Leu Ala Arg Arg Ser Asn Ser Leu His Met Gln Glu
85 90 95

Ala Ala Gly Ile Arg Lys Ser Ser Leu Leu Thr Phe Leu Ala Trp Trp
100 105 110

Phe Glu Trp Thr Ser Gln Ala Ser Ala Gly Pro Leu Ile Gly Glu Glu
115 120 125

Ala Arg Glu Val Ala Arg Arg Gln Glu Gly Ala Pro Pro Gln Gln Ser
130 135 140

Ala Arg Arg Asp Arg Met Pro Cys Arg Asn Phe Phe Trp Lys Thr Phe
145 150 155 160

Ser Ser Cys Lys

<210> 5638
<211> 77
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: APITD1-CORT; "

<220>
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<223> /note="Gene Name:
APITD1-CORT readthrough; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000433615"

<400> 5638
Met Glu Glu Glu Ala Glu Thr Glu Glu Gln Gln Arg Phe Ser Tyr Gln
1 5 10 15

Gln Arg Leu Lys Ala Ala Val His Tyr Thr Val Gly Cys Leu Cys Glu
20 25 30

Glu Val Ala Leu Asp Lys Glu Met Gln Phe Ser Lys Gln Thr Ile Ala
35 40 45

Ala Ile Ser Glu Leu Thr Phe Arg Gln Cys Glu Asn Phe Ala Lys Asp
50 55 60

Leu Glu Met Phe Ala Ser Ile Cys Arg Lys Arg Gln Glu
65 70 75

<210> 5639
<211> 143
<212> PRT
<213> Homo sapiens

<220>

<221> source
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000473401"

<400> 5639
Met Ser Ser Arg Arg Gly Ser Phe Leu Ser Thr Lys Leu His Cys Ser
1 5 10 15

Ser Cys Leu Pro Cys Pro Leu Ser Phe Glu Lys Phe Lys Pro Ser Glu
20 25 30

Lys Leu Gln Glu His Glu Asn Phe Ala Lys Asp Leu Glu Met Phe Ala
35 40 45

Arg His Ala Lys Arg Thr Thr Ile Asn Thr Glu Asp Val Lys Leu Leu
50 55 60

Ala Arg Arg Ser Asn Ser Leu His Met Gln Glu Ala Ala Gly Ile Arg
65 70 75 80

Lys Ser Ser Leu Leu Thr Phe Leu Ala Trp Trp Phe Glu Trp Thr Ser
85 90 95

Gln Ala Ser Ala Gly Pro Leu Ile Gly Glu Glu Ala Arg Glu Val Ala
100 105 110

Arg Arg Gln Glu Gly Ala Pro Pro Gln Gln Ser Ala Arg Arg Asp Arg
115 120 125

Met Pro Cys Arg Asn Phe Phe Trp Lys Thr Phe Ser Ser Cys Lys
130 135 140

<210> 5640
<211> 138
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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APITD1-CORT readthrough; "

<220>
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<223> /note="ENSP ID: ENSP00000473509"

<400> 5640
Met Glu Glu Glu Ala Glu Thr Glu Glu Gln Gln Arg Phe Ser Tyr Gln
1 5 10 15

Gln Arg Leu Lys Ala Ala Val His Tyr Thr Val Gly Cys Leu Cys Glu
20 25 30

Glu Val Ala Leu Asp Lys Glu Met Gln Phe Ser Lys Gln Thr Ile Ala
35 40 45

Ala Ile Ser Glu Leu Thr Phe Arg Gln Cys Glu Asn Phe Ala Lys Asp
50 55 60

Leu Glu Met Phe Ala Arg His Ala Lys Arg Thr Thr Ile Asn Thr Glu
65 70 75 80

Asp Val Lys Leu Leu Ala Arg Arg Ser Asn Ser Leu Leu Lys Tyr Ile
85 90 95

Thr Asp Lys Ser Glu Glu Ile Ala Gln Ile Asn Leu Glu Arg Lys Ala
100 105 110

Gln Lys Lys Lys Lys Ser Glu Asp Gly Ser Lys Asn Ser Arg Gln Pro
115 120 125

Ala Glu Ala Gly Val Val Glu Ser Glu Asn
130 135

<210> 5641
<211> 49

<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
APITD1-CORT readthrough; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000489060"

<400> 5641
Met Ser Ser Arg Arg Gly Ser Phe Leu Ser Thr Lys Leu His Cys Ser
1 5 10 15

Ser Cys Leu Pro Cys Pro Leu Ser Phe Glu Lys Phe Lys Pro Ser Glu
20 25 30

Lys Leu Gln Glu His Asp Met Arg Lys Glu Pro Gln Leu Thr Leu Lys
35 40 45

Met

<210> 5642
<211> 586
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1240; "

<220>
<221> source
<223> /note="Gene Symbol: A1CF; "

<220>
<221> source
<223> /note="Gene Name:
APOBEC1 complementation
factor; "

<220>

<221> source
<223> /note="Uniprot ID: Q9NQ94; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000282641"

<400> 5642
Met Glu Ser Asn His Lys Ser Gly Asp Gly Leu Ser Gly Thr Gln Lys
1   5   10   15

Glu Ala Ala Leu Arg Ala Leu Val Gln Arg Thr Gly Tyr Ser Leu Val
            20   25   30

Gln Glu Asn Gly Gln Arg Lys Tyr Gly Gly Pro Pro Pro Gly Trp Asp
        35   40   45

Ala Ala Pro Pro Glu Arg Gly Cys Glu Ile Phe Ile Gly Lys Leu Pro
    50   55   60

Arg Asp Leu Phe Glu Asp Glu Leu Ile Pro Leu Cys Glu Lys Ile Gly
65   70   75   80

Lys Ile Tyr Glu Met Arg Met Met Met Asp Phe Asn Gly Asn Asn Arg
                85   90   95

Gly Tyr Ala Phe Val Thr Phe Ser Asn Lys Val Glu Ala Lys Asn Ala
            100   105   110

Ile Lys Gln Leu Asn Asn Tyr Glu Ile Arg Asn Gly Arg Leu Leu Gly
        115   120   125

Val Cys Ala Ser Val Asp Asn Cys Arg Leu Phe Val Gly Gly Ile Pro
    130   135   140

Lys Thr Lys Lys Arg Glu Glu Ile Leu Ser Glu Met Lys Lys Val Thr
145   150   155   160

Glu Gly Val Val Asp Val Ile Val Tyr Pro Ser Ala Ala Asp Lys Thr
                165   170   175

Lys Asn Arg Gly Phe Ala Phe Val Glu Tyr Glu Ser His Arg Ala Ala
            180   185   190

Ala Met Ala Arg Arg Lys Leu Leu Pro Gly Arg Ile Gln Leu Trp Gly

```
        195                 200                 205

His Gly Ile Ala Val Asp Trp Ala Glu Pro Glu Val Glu Val Asp Glu
    210                 215                 220

Asp Thr Met Ser Ser Val Lys Ile Leu Tyr Val Arg Asn Leu Met Leu
225                 230                 235                 240

Ser Thr Ser Glu Glu Met Ile Glu Lys Glu Phe Asn Asn Ile Lys Pro
                245                 250                 255

Gly Ala Val Glu Arg Val Lys Lys Ile Arg Asp Tyr Ala Phe Val His
            260                 265                 270

Phe Ser Asn Arg Glu Asp Ala Val Glu Ala Met Lys Ala Leu Asn Gly
        275                 280                 285

Lys Val Leu Asp Gly Ser Pro Ile Glu Val Thr Leu Ala Lys Pro Val
    290                 295                 300

Asp Lys Asp Ser Tyr Val Arg Tyr Thr Arg Gly Thr Gly Gly Arg Gly
305                 310                 315                 320

Thr Met Leu Gln Gly Glu Tyr Thr Tyr Ser Leu Gly Gln Val Tyr Asp
                325                 330                 335

Pro Thr Thr Thr Tyr Leu Gly Ala Pro Val Phe Tyr Ala Pro Gln Thr
            340                 345                 350

Tyr Ala Ala Ile Pro Ser Leu His Phe Pro Ala Thr Lys Gly His Leu
        355                 360                 365

Ser Asn Arg Ala Ile Ile Arg Ala Pro Ser Val Arg Gly Ala Ala Gly
    370                 375                 380

Val Arg Gly Leu Gly Gly Arg Gly Tyr Leu Ala Tyr Thr Gly Leu Gly
385                 390                 395                 400

Arg Gly Tyr Gln Val Lys Gly Asp Lys Arg Glu Asp Lys Leu Tyr Asp
                405                 410                 415

Ile Leu Pro Gly Met Glu Leu Thr Pro Met Asn Pro Val Thr Leu Lys
            420                 425                 430
```

```
Pro Gln Gly Ile Lys Leu Ala Pro Gln Ile Leu Glu Glu Ile Cys Gln
        435                 440                 445

Lys Asn Asn Trp Gly Gln Pro Val Tyr Gln Leu His Ser Ala Ile Gly
    450                 455                 460

Gln Asp Gln Arg Gln Leu Phe Leu Tyr Lys Ile Thr Ile Pro Ala Leu
465                 470                 475                 480

Ala Ser Gln Asn Pro Ala Ile His Pro Phe Thr Pro Pro Lys Leu Ser
                485                 490                 495

Ala Phe Val Asp Glu Ala Lys Thr Tyr Ala Ala Glu Tyr Thr Leu Gln
            500                 505                 510

Thr Leu Gly Ile Pro Thr Asp Gly Gly Asp Gly Thr Met Ala Thr Ala
        515                 520                 525

Ala Ala Ala Ala Thr Ala Phe Pro Gly Tyr Ala Val Pro Asn Ala Thr
    530                 535                 540

Ala Pro Val Ser Ala Ala Gln Leu Lys Gln Ala Val Thr Leu Gly Gln
545                 550                 555                 560

Asp Leu Ala Ala Tyr Thr Thr Tyr Glu Val Tyr Pro Thr Phe Ala Val
                565                 570                 575

Thr Ala Arg Gly Asp Gly Tyr Gly Thr Phe
            580                 585


<210> 5643
<211> 594
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<223> /note="Gene Symbol: A1CF; "

<220>
<221> source
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<223> /note="Gene Name:
APOBEC1 complementation
factor; "

<220>
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<223> /note="Uniprot ID: Q9NQ94; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000363105"

<400> 5643

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Met Glu Ser Asn His Lys Ser Gly Asp Gly Leu Ser Gly Thr Gln Lys
1               5                  10                  15

Glu Ala Ala Leu Arg Ala Leu Val Gln Arg Thr Gly Tyr Ser Leu Val
            20                  25                  30

Gln Glu Asn Gly Gln Arg Lys Tyr Gly Gly Pro Pro Pro Gly Trp Asp
        35                  40                  45

Ala Ala Pro Pro Glu Arg Gly Cys Glu Ile Phe Ile Gly Lys Leu Pro
    50                  55                  60

Arg Asp Leu Phe Glu Asp Glu Leu Ile Pro Leu Cys Glu Lys Ile Gly
65                  70                  75                  80

Lys Ile Tyr Glu Met Arg Met Met Met Asp Phe Asn Gly Asn Asn Arg
                85                  90                  95

Gly Tyr Ala Phe Val Thr Phe Ser Asn Lys Val Glu Ala Lys Asn Ala
            100                 105                 110

Ile Lys Gln Leu Asn Asn Tyr Glu Ile Arg Asn Gly Arg Leu Leu Gly
        115                 120                 125

Val Cys Ala Ser Val Asp Asn Cys Arg Leu Phe Val Gly Gly Ile Pro
    130                 135                 140

Lys Thr Lys Lys Arg Glu Glu Ile Leu Ser Glu Met Lys Lys Val Thr
145                 150                 155                 160

Glu Gly Val Val Asp Val Ile Val Tyr Pro Ser Ala Ala Asp Lys Thr
                165                 170                 175
```

```
Lys Asn Arg Gly Phe Ala Phe Val Glu Tyr Glu Ser His Arg Ala Ala
            180                 185                 190

Ala Met Ala Arg Arg Lys Leu Leu Pro Gly Arg Ile Gln Leu Trp Gly
        195                 200                 205

His Gly Ile Ala Val Asp Trp Ala Glu Pro Glu Val Glu Val Asp Glu
    210                 215                 220

Asp Thr Met Ser Ser Val Lys Ile Leu Tyr Val Arg Asn Leu Met Leu
225                 230                 235                 240

Ser Thr Ser Glu Glu Met Ile Glu Lys Glu Phe Asn Asn Ile Lys Pro
                245                 250                 255

Gly Ala Val Glu Arg Val Lys Lys Ile Arg Asp Tyr Ala Phe Val His
            260                 265                 270

Phe Ser Asn Arg Glu Asp Ala Val Glu Ala Met Lys Ala Leu Asn Gly
        275                 280                 285

Lys Val Leu Asp Gly Ser Pro Ile Glu Val Thr Leu Ala Lys Pro Val
    290                 295                 300

Asp Lys Asp Ser Tyr Val Arg Tyr Thr Arg Gly Thr Gly Gly Arg Gly
305                 310                 315                 320

Thr Met Leu Gln Gly Glu Tyr Thr Tyr Ser Leu Gly Gln Val Tyr Asp
                325                 330                 335

Pro Thr Thr Thr Tyr Leu Gly Ala Pro Val Phe Tyr Ala Pro Gln Thr
            340                 345                 350

Tyr Ala Ala Ile Pro Ser Leu His Phe Pro Ala Thr Lys Gly His Leu
        355                 360                 365

Ser Asn Arg Ala Ile Ile Arg Ala Pro Ser Val Arg Glu Ile Tyr Met
    370                 375                 380

Asn Val Pro Val Gly Ala Ala Gly Val Arg Gly Leu Gly Gly Arg Gly
385                 390                 395                 400

Tyr Leu Ala Tyr Thr Gly Leu Gly Arg Gly Tyr Gln Val Lys Gly Asp
```

405 410 415

Lys Arg Glu Asp Lys Leu Tyr Asp Ile Leu Pro Gly Met Glu Leu Thr
420 425 430

Pro Met Asn Pro Val Thr Leu Lys Pro Gln Gly Ile Lys Leu Ala Pro
435 440 445

Gln Ile Leu Glu Glu Ile Cys Gln Lys Asn Asn Trp Gly Gln Pro Val
450 455 460

Tyr Gln Leu His Ser Ala Ile Gly Gln Asp Gln Arg Gln Leu Phe Leu
465 470 475 480

Tyr Lys Ile Thr Ile Pro Ala Leu Ala Ser Gln Asn Pro Ala Ile His
485 490 495

Pro Phe Thr Pro Pro Lys Leu Ser Ala Phe Val Asp Glu Ala Lys Thr
500 505 510

Tyr Ala Ala Glu Tyr Thr Leu Gln Thr Leu Gly Ile Pro Thr Asp Gly
515 520 525

Gly Asp Gly Thr Met Ala Thr Ala Ala Ala Ala Ala Thr Ala Phe Pro
530 535 540

Gly Tyr Ala Val Pro Asn Ala Thr Ala Pro Val Ser Ala Ala Gln Leu
545 550 555 560

Lys Gln Ala Val Thr Leu Gly Gln Asp Leu Ala Ala Tyr Thr Thr Tyr
565 570 575

Glu Val Tyr Pro Thr Phe Ala Val Thr Ala Arg Gly Asp Gly Tyr Gly
580 585 590

Thr Phe

<210> 5644
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Met Glu Ala Val Cys Leu Gly Thr Cys Pro Glu Pro Glu Ala Ser Met
1               5                  10                  15

Ser Thr Ala Ile Pro Gly Leu Lys Lys Gly Asn Asn Ala Leu Gln Ser
            20                  25                  30

Ile Ile Leu Gln Thr Leu Leu Glu Lys Glu Asn Gly Gln Arg Lys Tyr
        35                  40                  45

Gly Gly Pro Pro Pro Gly Trp Asp Ala Ala Pro Pro Glu Arg Gly Cys
    50                  55                  60

Glu Ile Phe Ile Gly Lys Leu Pro Arg Asp Leu Phe Glu Asp Glu Leu
65                  70                  75                  80

Ile Pro Leu Cys Glu Lys Ile Gly Lys Ile Tyr Glu Met Arg Met Met
                85                  90                  95

Met Asp Phe Asn Gly Asn Asn Arg Gly Tyr Ala Phe Val Thr Phe Ser
            100                 105                 110

Asn Lys Val Glu Ala Lys Asn Ala Ile Lys Gln Leu Asn Asn Tyr Glu
        115                 120                 125

Ile Arg Asn Gly Arg Leu Leu Gly Val Cys Ala Ser Val Asp Asn Cys
    130                 135                 140
```

```
Arg Leu Phe Val Gly Gly Ile Pro Lys Thr Lys Lys Arg Glu Glu Ile
145                 150                 155                 160

Leu Ser Glu Met Lys Lys Val Thr Glu Gly Val Val Asp Val Ile Val
                165                 170                 175

Tyr Pro Ser Ala Ala Asp Lys Thr Lys Asn Arg Gly Phe Ala Phe Val
            180                 185                 190

Glu Tyr Glu Ser His Arg Ala Ala Ala Met Ala Arg Arg Lys Leu Leu
        195                 200                 205

Pro Gly Arg Ile Gln Leu Trp Gly His Gly Ile Ala Val Asp Trp Ala
    210                 215                 220

Glu Pro Glu Val Glu Val Asp Glu Asp Thr Met Ser Ser Val Lys Ile
225                 230                 235                 240

Leu Tyr Val Arg Asn Leu Met Leu Ser Thr Ser Glu Glu Met Ile Glu
                245                 250                 255

Lys Glu Phe Asn Asn Ile Lys Pro Gly Ala Val Glu Arg Val Lys Lys
            260                 265                 270

Ile Arg Asp Tyr Ala Phe Val His Phe Ser Asn Arg Glu Asp Ala Val
        275                 280                 285

Glu Ala Met Lys Ala Leu Asn Gly Lys Val Leu Asp Gly Ser Pro Ile
    290                 295                 300

Glu Val Thr Leu Ala Lys Pro Val Asp Lys Asp Ser Tyr Val Arg Tyr
305                 310                 315                 320

Thr Arg Gly Thr Gly Gly Arg Gly Thr Met Leu Gln Gly Glu Tyr Thr
                325                 330                 335

Tyr Ser Leu Gly Gln Val Tyr Asp Pro Thr Thr Thr Tyr Leu Gly Ala
            340                 345                 350

Pro Val Phe Tyr Ala Pro Gln Thr Tyr Ala Ala Ile Pro Ser Leu His
        355                 360                 365
```

```
Phe Pro Ala Thr Lys Gly His Leu Ser Asn Arg Ala Ile Ile Arg Ala
    370                 375                 380

Pro Ser Val Arg Gly Ala Ala Gly Val Arg Gly Leu Gly Gly Arg Gly
385                 390                 395                 400

Tyr Leu Ala Tyr Thr Gly Leu Gly Arg Gly Tyr Gln Val Lys Gly Asp
                405                 410                 415

Lys Arg Glu Asp Lys Leu Tyr Asp Ile Leu Pro Gly Met Glu Leu Thr
            420                 425                 430

Pro Met Asn Pro Val Thr Leu Lys Pro Gln Gly Ile Lys Leu Ala Pro
        435                 440                 445

Gln Ile Leu Glu Glu Ile Cys Gln Lys Asn Asn Trp Gly Gln Pro Val
    450                 455                 460

Tyr Gln Leu His Ser Ala Ile Gly Gln Asp Gln Arg Gln Leu Phe Leu
465                 470                 475                 480

Tyr Lys Ile Thr Ile Pro Ala Leu Ala Ser Gln Asn Pro Ala Ile His
                485                 490                 495

Pro Phe Thr Pro Pro Lys Leu Ser Ala Phe Val Asp Glu Ala Lys Thr
            500                 505                 510

Tyr Ala Ala Glu Tyr Thr Leu Gln Thr Leu Gly Ile Pro Thr Asp Gly
        515                 520                 525

Gly Asp Gly Thr Met Ala Thr Ala Ala Ala Ala Ala Thr Ala Phe Pro
    530                 535                 540

Gly Tyr Ala Val Pro Asn Ala Thr Ala Pro Val Ser Ala Ala Gln Leu
545                 550                 555                 560

Lys Gln Ala Val Thr Leu Gly Gln Asp Leu Ala Ala Tyr Thr Thr Tyr
                565                 570                 575

Glu Val Tyr Pro Thr Phe Ala Val Thr Ala Arg Gly Asp Gly Tyr Gly
            580                 585                 590

Thr Phe
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Met Glu Ser Asn His Lys Ser Gly Asp Gly Leu Ser Gly Thr Gln Lys
1   5   10   15

Glu Ala Ala Leu Arg Ala Leu Val Gln Arg Thr Gly Tyr Ser Leu Val
            20   25   30

Gln Glu Asn Gly Gln Arg Lys Tyr Gly Gly Pro Pro Pro Gly Trp Asp
        35   40   45

Ala Ala Pro Pro Glu Arg Gly Cys Glu Ile Phe Ile Gly Lys Leu Pro
    50   55   60

Arg Asp Leu Phe Glu Asp Glu Leu Ile Pro Leu Cys Glu Lys Ile Gly
65   70   75   80

Lys Ile Tyr Glu Met Arg Met Met Met Asp Phe Asn Gly Asn Asn Arg
                85   90   95

Gly Tyr Ala Phe Val Thr Phe Ser Asn Lys Val Glu Ala Lys Asn Ala
            100   105   110

```
Ile Lys Gln Leu Asn Asn Tyr Glu Ile Arg Asn Gly Arg Leu Leu Gly
        115                 120                 125

Val Cys Ala Ser Val Asp Asn Cys Arg Leu Phe Val Gly Gly Ile Pro
    130                 135                 140

Lys Thr Lys Lys Arg Glu Glu Ile Leu Ser Glu Met Lys Lys Val Thr
145                 150                 155                 160

Glu Gly Val Val Asp Val Ile Val Tyr Pro Ser Ala Ala Asp Lys Thr
                165                 170                 175

Lys Asn Arg Gly Phe Ala Phe Val Glu Tyr Glu Ser His Arg Ala Ala
            180                 185                 190

Ala Met Ala Arg Arg Lys Leu Leu Pro Gly Arg Ile Gln Leu Trp Gly
        195                 200                 205

His Gly Ile Ala Val Asp Trp Ala Glu Pro Glu Val Glu Val Asp Glu
    210                 215                 220

Asp Thr Met Ser Ser Val Lys Ile Leu Tyr Val Arg Asn Leu Met Leu
225                 230                 235                 240

Ser Thr Ser Glu Glu Met Ile Glu Lys Glu Phe Asn Asn Ile Lys Pro
                245                 250                 255

Gly Ala Val Glu Arg Val Lys Lys Ile Arg Asp Tyr Ala Phe Val His
            260                 265                 270

Phe Ser Asn Arg Glu Asp Ala Val Glu Ala Met Lys Ala Leu Asn Gly
        275                 280                 285

Lys Val Leu Asp Gly Ser Pro Ile Glu Val Thr Leu Ala Lys Pro Val
    290                 295                 300

Asp Lys Asp Ser Tyr Val Arg Tyr Thr Arg Gly Thr Gly Gly Arg Gly
305                 310                 315                 320

Thr Met Leu Gln Gly Glu Tyr Thr Tyr Ser Leu Gly Gln Val Tyr Asp
                325                 330                 335
```

```
Pro Thr Thr Thr Tyr Leu Gly Ala Pro Val Phe Tyr Ala Pro Gln Thr
            340                 345                 350

Tyr Ala Ala Ile Pro Ser Leu His Phe Pro Ala Thr Lys Gly His Leu
        355                 360                 365

Ser Asn Arg Ala Ile Ile Arg Ala Pro Ser Val Arg Gly Ala Ala Gly
    370                 375                 380

Val Arg Gly Leu Gly Gly Arg Gly Tyr Leu Ala Tyr Thr Gly Leu Gly
385                 390                 395                 400

Arg Gly Tyr Gln Val Lys Gly Asp Lys Arg Glu Asp Lys Leu Tyr Asp
                405                 410                 415

Ile Leu Pro Gly Met Glu Leu Thr Pro Met Asn Pro Val Thr Leu Lys
            420                 425                 430

Pro Gln Gly Ile Lys Leu Ala Pro Gln Ile Leu Glu Glu Ile Cys Gln
        435                 440                 445

Lys Asn Asn Trp Gly Gln Pro Val Tyr Gln Leu His Ser Ala Ile Gly
    450                 455                 460

Gln Asp Gln Arg Gln Leu Phe Leu Tyr Lys Ile Thr Ile Pro Ala Leu
465                 470                 475                 480

Ala Ser Gln Asn Pro Ala Ile His Pro Phe Thr Pro Pro Lys Leu Ser
                485                 490                 495

Ala Phe Val Asp Glu Ala Lys Thr Tyr Ala Ala Glu Tyr Thr Leu Gln
            500                 505                 510

Thr Leu Gly Ile Pro Thr Asp Gly Gly Asp Gly Thr Met Ala Thr Ala
        515                 520                 525

Ala Ala Ala Ala Thr Ala Phe Pro Gly Tyr Ala Val Pro Asn Ala Thr
    530                 535                 540

Ala Pro Val Ser Ala Ala Gln Leu Lys Gln Ala Val Thr Leu Gly Gln
545                 550                 555                 560
```

```
Asp Leu Ala Ala Tyr Thr Thr Tyr Glu Val Tyr Pro Thr Phe Ala Val
                565                 570                 575


Thr Ala Arg Gly Asp Gly Tyr Gly Thr Phe
            580                 585


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Met Glu Ser Asn His Lys Ser Gly Asp Gly Leu Ser Gly Thr Gln Lys
1               5                   10                  15


Glu Ala Ala Leu Arg Ala Leu Val Gln Arg Thr Gly Tyr Ser Leu Val
            20                  25                  30


Gln Glu Asn Gly Gln Arg Lys Tyr Gly Gly Pro Pro Pro Gly Trp Asp
        35                  40                  45


Ala Ala Pro Pro Glu Arg Gly Cys Glu Ile Phe Ile Gly Lys Leu Pro
    50                  55                  60


Arg Asp Leu Phe Glu Asp Glu Leu Ile Pro Leu Cys Glu Lys Ile Gly
65                  70                  75                  80


Lys Ile Tyr Glu Met Arg Met Met Met Asp Phe Asn Gly Asn Asn Arg
```

```
                85                  90                  95

Gly Tyr Ala Phe Val Thr Phe Ser Asn Lys Val Glu Ala Lys Asn Ala
            100                 105                 110

Ile Lys Gln Leu Asn Asn Tyr Glu Ile Arg Asn Gly Arg Leu Leu Gly
        115                 120                 125

Val Cys Ala Ser Val Asp Asn Cys Arg Leu Phe Val Gly Gly Ile Pro
    130                 135                 140

Lys Thr Lys Lys Arg Glu Glu Ile Leu Ser Glu Met Lys Lys Val Thr
145                 150                 155                 160

Glu Gly Val Val Asp Val Ile Val Tyr Pro Ser Ala Ala Asp Lys Thr
                165                 170                 175

Lys Asn Arg Gly Phe Ala Phe Val Glu Tyr Glu Ser His Arg Ala Ala
            180                 185                 190

Ala Met Ala Arg Arg Lys Leu Leu Pro Gly Arg Ile Gln Leu Trp Gly
        195                 200                 205

His Gly Ile Ala Val Asp Trp Ala Glu Pro Glu Val Glu Val Asp Glu
    210                 215                 220

Asp Thr Met Ser Ser Val Lys Ile Leu Tyr Val Arg Asn Leu Met Leu
225                 230                 235                 240

Ser Thr Ser Glu Glu Met Ile Glu Lys Glu Phe Asn Asn Ile Lys Pro
                245                 250                 255

Gly Ala Val Glu Arg Val Lys Lys Ile Arg Asp Tyr Ala Phe Val His
            260                 265                 270

Phe Ser Asn Arg Glu Asp Ala Val Glu Ala Met Lys Ala Leu Asn Gly
        275                 280                 285

Lys Val Leu Asp Gly Ser Pro Ile Glu Val Thr Leu Ala Lys Pro Val
    290                 295                 300

Asp Lys Asp Ser Tyr Val Arg Tyr Thr Arg Gly Thr Gly Gly Arg Gly
305                 310                 315                 320
```

```
Thr Met Leu Gln Gly Glu Tyr Thr Tyr Ser Leu Gly Gln Val Tyr Asp
                325                 330                 335

Pro Thr Thr Thr Tyr Leu Gly Ala Pro Val Phe Tyr Ala Pro Gln Thr
            340                 345                 350

Tyr Ala Ala Ile Pro Ser Leu His Phe Pro Ala Thr Lys Gly His Leu
        355                 360                 365

Ser Asn Arg Ala Ile Ile Arg Ala Pro Ser Val Arg Gly Ala Ala Gly
    370                 375                 380

Val Arg Gly Leu Gly Gly Arg Gly Tyr Leu Ala Tyr Thr Gly Leu Gly
385                 390                 395                 400

Arg Gly Tyr Gln Val Lys Gly Asp Lys Arg Glu Asp Lys Leu Tyr Asp
                405                 410                 415

Ile Leu Pro Gly Met Glu Leu Thr Pro Met Asn Pro Val Thr Leu Lys
            420                 425                 430

Pro Gln Gly Ile Lys Leu Ala Pro Gln Ile Leu Glu Glu Ile Cys Gln
        435                 440                 445

Lys Asn Asn Trp Gly Gln Pro Val Tyr Gln Leu His Ser Ala Ile Gly
    450                 455                 460

Gln Asp Gln Arg Gln Leu Phe Leu Tyr Lys Ile Thr Ile Pro Ala Leu
465                 470                 475                 480

Ala Ser Gln Asn Pro Ala Ile His Pro Phe Thr Pro Pro Lys Leu Ser
                485                 490                 495

Ala Phe Val Asp Glu Ala Lys Thr Tyr Ala Ala Glu Tyr Thr Leu Gln
            500                 505                 510

Thr Leu Gly Ile Pro Thr Asp Gly Gly Asp Gly Thr Met Ala Thr Ala
        515                 520                 525

Ala Ala Ala Ala Thr Ala Phe Pro Gly Tyr Ala Val Pro Asn Ala Thr
    530                 535                 540
```

```
Ala Pro Val Ser Ala Ala Gln Leu Lys Gln Ala Val Thr Leu Gly Gln
545                 550                 555                 560


Asp Leu Ala Ala Tyr Thr Thr Tyr Glu Val Tyr Pro Thr Phe Ala Val
                565                 570                 575


Thr Ala Arg Gly Asp Gly Tyr Gly Thr Phe
            580                 585


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Met Glu Ala Val Cys Leu Gly Thr Cys Pro Glu Pro Glu Ala Ser Met
1               5                   10                  15


Ser Thr Ala Ile Pro Gly Leu Lys Lys Gly Asn Asn Ala Leu Gln Ser
            20                  25                  30


Ile Ile Leu Gln Thr Leu Leu Glu Lys Glu Asn Gly Gln Arg Lys Tyr
        35                  40                  45


Gly Gly Pro Pro Pro Gly Trp Asp Ala Ala Pro Pro Glu Arg Gly Cys
    50                  55                  60


Glu Ile Phe Ile Gly Lys Leu Pro Arg Asp Leu Phe Glu Asp Glu Leu
65                  70                  75                  80
```

Ile Pro Leu Cys Glu Lys Ile Gly Lys Ile Tyr Glu Met Arg Met Met
85 90 95

Met Asp Phe Asn Gly Asn Asn Arg Gly Tyr Ala Phe Val Thr Phe Ser
100 105 110

Asn Lys Val Glu Ala Lys Asn Ala Ile Lys Gln Leu Asn Asn Tyr Glu
115 120 125

Ile Arg Asn Gly Arg Leu Leu Gly Val Cys Ala Ser Val Asp Asn Cys
130 135 140

Arg Leu Phe Val Gly Gly Ile Pro Lys Thr Lys Lys Arg Glu Glu Ile
145 150 155 160

Leu Ser Glu Met Lys Lys Val Thr Glu Gly Val Val Asp Val Ile Val
165 170 175

Tyr Pro Ser Ala Ala Asp Lys Thr Lys Asn Arg Gly Phe Ala Phe Val
180 185 190

Glu Tyr Glu Ser His Arg Ala Ala Ala Met Ala Arg Arg Lys Leu Leu
195 200 205

Pro Gly Arg Ile Gln Leu Trp Gly His Gly Ile Ala Val Asp Trp Ala
210 215 220

Glu Pro Glu Val Glu Val Asp Glu Asp Thr Met Ser Ser Val Lys Ile
225 230 235 240

Leu Tyr Val Arg Asn Leu Met Leu Ser Thr Ser Glu Glu Met Ile Glu
245 250 255

Lys Glu Phe Asn Asn Ile Lys Pro Gly Ala Val Glu Arg Val Lys Lys
260 265 270

Ile Arg Asp Tyr Ala Phe Val His Phe Ser Asn Arg Glu Asp Ala Val
275 280 285

Glu Ala Met Lys Ala Leu Asn Gly Lys Val Leu Asp Gly Ser Pro Ile
290 295 300

Glu Val Thr Leu Ala Lys Pro Val Asp Lys Asp Ser Tyr Val Arg Tyr

```
305                 310                 315                 320

Thr Arg Gly Thr Gly Gly Arg Gly Thr Met Leu Gln Gly Glu Tyr Thr
                325                 330                 335

Tyr Ser Leu Gly Gln Val Tyr Asp Pro Thr Thr Thr Tyr Leu Gly Ala
            340                 345                 350

Pro Val Phe Tyr Ala Pro Gln Thr Tyr Ala Ala Ile Pro Ser Leu His
        355                 360                 365

Phe Pro Ala Thr Lys Gly His Leu Ser Asn Arg Ala Ile Ile Arg Ala
    370                 375                 380

Pro Ser Val Arg Glu Ile Tyr Met Asn Val Pro Val Gly Ala Ala Gly
385                 390                 395                 400

Val Arg Gly Leu Gly Gly Arg Gly Tyr Leu Ala Tyr Thr Gly Leu Gly
                405                 410                 415

Arg Gly Tyr Gln Val Lys Gly Asp Lys Arg Glu Asp Lys Leu Tyr Asp
            420                 425                 430

Ile Leu Pro Gly Met Glu Leu Thr Pro Met Asn Pro Val Thr Leu Lys
        435                 440                 445

Pro Gln Gly Ile Lys Leu Ala Pro Gln Ile Leu Glu Glu Ile Cys Gln
    450                 455                 460

Lys Asn Asn Trp Gly Gln Pro Val Tyr Gln Leu His Ser Ala Ile Gly
465                 470                 475                 480

Gln Asp Gln Arg Gln Leu Phe Leu Tyr Lys Ile Thr Ile Pro Ala Leu
                485                 490                 495

Ala Ser Gln Asn Pro Ala Ile His Pro Phe Thr Pro Pro Lys Leu Ser
            500                 505                 510

Ala Phe Val Asp Glu Ala Lys Thr Tyr Ala Ala Glu Tyr Thr Leu Gln
        515                 520                 525

Thr Leu Gly Ile Pro Thr Asp Gly Gly Asp Gly Thr Met Ala Thr Ala
    530                 535                 540
```

```
Ala Ala Ala Ala Thr Ala Phe Pro Gly Tyr Ala Val Pro Asn Ala Thr
545                 550                 555                 560


Ala Pro Val Ser Ala Ala Gln Leu Lys Gln Ala Val Thr Leu Gly Gln
                565                 570                 575


Asp Leu Ala Ala Tyr Thr Thr Tyr Glu Val Tyr Pro Thr Phe Ala Val
            580                 585                 590


Thr Ala Arg Gly Asp Gly Tyr Gly Thr Phe
        595                 600


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Met Glu Ala Val Cys Leu Gly Thr Cys Pro Glu Pro Glu Ala Ser Met
1               5                   10                  15


Ser Thr Ala Ile Pro Gly Leu Lys Lys Gly Asn Asn Ala Leu Gln Ser
            20                  25                  30


Ile Ile Leu Gln Thr Leu Leu Glu Lys Glu Asn Gly Gln Arg Lys Tyr
        35                  40                  45
```

```
Gly Gly Pro Pro Pro Gly Trp Asp Ala Ala Pro Pro Glu Arg Gly Cys
    50                  55                  60

Glu Ile Phe Ile Gly Lys Leu Pro Arg Asp Leu Phe Glu Asp Glu Leu
65                  70                  75                  80

Ile Pro Leu Cys Glu Lys Ile Gly Lys Ile Tyr Glu Met Arg Met Met
                85                  90                  95

Met Asp Phe Asn Gly Asn Asn Arg Gly Tyr Ala Phe Val Thr Phe Ser
            100                 105                 110

Asn Lys Val Glu Ala Lys Asn Ala Ile Lys Gln Leu Asn Asn Tyr Glu
        115                 120                 125

Ile Arg Asn Gly Arg Leu Leu Gly Val Cys Ala Ser Val Asp Asn Cys
    130                 135                 140

Arg Leu Phe Val Gly Gly Ile Pro Lys Thr Lys Lys Arg Glu Glu Ile
145                 150                 155                 160

Leu Ser Glu Met Lys Lys Val Thr Glu Gly Val Val Asp Val Ile Val
                165                 170                 175

Tyr Pro Ser Ala Ala Asp Lys Thr Lys Asn Arg Gly Phe Ala Phe Val
            180                 185                 190

Glu Tyr Glu Ser His Arg Ala Ala Ala Met Ala Arg Arg Lys Leu Leu
        195                 200                 205

Pro Gly Arg Ile Gln Leu Trp Gly His Gly Ile Ala Val Asp Trp Ala
    210                 215                 220

Glu Pro Glu Val Glu Val Asp Glu Asp Thr Met Ser Ser Val Lys Ile
225                 230                 235                 240

Leu Tyr Val Arg Asn Leu Met Leu Ser Thr Ser Glu Glu Met Ile Glu
                245                 250                 255

Lys Glu Phe Asn Asn Ile Lys Pro Gly Ala Val Glu Arg Val Lys Lys
            260                 265                 270
```

```
Ile Arg Asp Tyr Ala Phe Val His Phe Ser Asn Arg Glu Asp Ala Val
        275                 280                 285

Glu Ala Met Lys Ala Leu Asn Gly Lys Val Leu Asp Gly Ser Pro Ile
    290                 295                 300

Glu Val Thr Leu Ala Lys Pro Val Asp Lys Asp Ser Tyr Val Arg Tyr
305                 310                 315                 320

Thr Arg Gly Thr Gly Gly Arg Gly Thr Met Leu Gln Gly Glu Tyr Thr
                325                 330                 335

Tyr Ser Leu Gly Gln Val Tyr Asp Pro Thr Thr Thr Tyr Leu Gly Ala
            340                 345                 350

Pro Val Phe Tyr Ala Pro Gln Thr Tyr Ala Ala Ile Pro Ser Leu His
        355                 360                 365

Phe Pro Ala Thr Lys Gly His Leu Ser Asn Arg Ala Ile Ile Arg Ala
    370                 375                 380

Pro Ser Val Arg Gly Ala Ala Gly Val Arg Gly Leu Gly Gly Arg Gly
385                 390                 395                 400

Tyr Leu Ala Tyr Thr Gly Leu Gly Arg Gly Tyr Gln Val Lys Gly Asp
                405                 410                 415

Lys Arg Glu Asp Lys Leu Tyr Asp Ile Leu Pro Gly Met Glu Leu Thr
            420                 425                 430

Pro Met Asn Pro Val Thr Leu Lys Pro Gln Gly Ile Lys Leu Ala Pro
        435                 440                 445

Gln Ile Leu Glu Glu Ile Cys Gln Lys Asn Asn Trp Gly Gln Pro Val
    450                 455                 460

Tyr Gln Leu His Ser Ala Ile Gly Gln Asp Gln Arg Gln Leu Phe Leu
465                 470                 475                 480

Tyr Lys Ile Thr Ile Pro Ala Leu Ala Ser Gln Asn Pro Ala Ile His
                485                 490                 495

Pro Phe Thr Pro Pro Lys Leu Ser Ala Phe Val Asp Glu Ala Lys Thr
```

```
            500                 505                 510

Tyr Ala Ala Glu Tyr Thr Leu Gln Thr Leu Gly Ile Pro Thr Asp Gly
        515                 520                 525

Gly Asp Gly Thr Met Ala Thr Ala Ala Ala Ala Ala Thr Ala Phe Pro
    530                 535                 540

Gly Tyr Ala Val Pro Asn Ala Thr Ala Pro Val Ser Ala Ala Gln Leu
545                 550                 555                 560

Lys Gln Ala Val Thr Leu Gly Gln Asp Leu Ala Ala Tyr Thr Thr Tyr
                565                 570                 575

Glu Val Tyr Pro Thr Phe Ala Val Thr Ala Arg Gly Asp Gly Tyr Gly
            580                 585                 590

Thr Phe
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<400> 5649

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Met Glu Ser Asn His Lys Ser Gly Asp Gly Leu Ser Gly Thr Gln Lys
1               5                   10                  15

Glu Ala Ala Leu Arg Ala Leu Val Gln Arg Thr Gly Tyr Ser Leu Val
            20                  25                  30
```

```
Gln Glu Asn Gly Gln Arg Lys Tyr Gly Gly Pro Pro Pro Gly Trp Asp
        35                  40                  45

Ala Ala Pro Pro Glu Arg Gly Cys Glu Ile Phe Ile Gly Lys Leu Pro
    50                  55                  60

Arg Asp Leu Phe Glu Asp Glu Leu Ile Pro Leu Cys Glu Lys Ile Gly
65                  70                  75                  80

Lys Ile Tyr Glu Met Arg Met Met Met Asp Phe Asn Gly Asn Asn Arg
                85                  90                  95

Gly Tyr Ala Phe Val Thr Phe Ser Asn Lys Val Glu Ala Lys Asn Ala
            100                 105                 110

Ile Lys Gln Leu Asn Asn Tyr Glu Ile Arg Asn Gly Arg Leu Leu Gly
        115                 120                 125

Val Cys Ala Ser Val Asp Asn Cys Arg Leu Phe Val Gly Gly Ile Pro
    130                 135                 140

Lys Thr Lys Lys Arg Glu Glu Ile Leu Ser Glu Met Lys Lys Val Thr
145                 150                 155                 160

Glu Gly Val Val Asp Val Ile Val Tyr Pro Ser Ala Ala Asp Lys Thr
                165                 170                 175

Lys Asn Arg Gly Phe Ala Phe Val Glu Tyr Glu Ser His Arg Ala Ala
            180                 185                 190

Ala Met Ala Arg Arg Lys Leu Leu Pro
        195                 200


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<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1241; "

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<223> /note="Gene Symbol: APOC4-APOC2; "

<220>
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<223> /note="Gene Name:
APOC4-APOC2 readthrough (NMD candidate); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000252490"

<400> 5650
Met Gly Thr Arg Leu Leu Pro Ala Leu Phe Leu Val Leu Leu Val Leu
1 5 10 15

Gly Phe Glu Val Gln Gly Thr Gln Gln Pro Gln Gln Asp Glu Met Pro
20 25 30

Ser Pro Thr Phe Leu Thr Gln Val Lys Glu Ser Leu Ser Ser Tyr Trp
35 40 45

Glu Ser Ala Lys Thr Ala Ala Gln Asn Leu Tyr Glu Lys Thr Tyr Leu
50 55 60

Pro Ala Val Asp Glu Lys Leu Arg Asp Leu Tyr Ser Lys Ser Thr Ala
65 70 75 80

Ala Met Ser Thr Tyr Thr Gly Ile Phe Thr Asp Gln Val Leu Ser Val
85 90 95

Leu Lys Gly Glu Glu
100

<210> 5651
<211> 127
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1241; "

<220>
<221> source
<223> /note="Gene Symbol: APOC4-APOC2; "

<220>
<221> source
<223> /note="Gene Name:
APOC4-APOC2 readthrough (NMD candidate); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467185"

<400> 5651
Met Ser Leu Leu Arg Asn Arg Leu Gln Ala Leu Pro Ala Leu Cys Leu
1   5   10   15

Cys Val Leu Val Leu Ala Cys Ile Gly Ala Cys Gln Pro Glu Ala Gln
            20   25   30

Glu Gly Thr Leu Ser Pro Pro Pro Lys Leu Lys Met Ser Arg Trp Ser
        35   40   45

Leu Val Arg Gly Arg Met Lys Glu Leu Leu Glu Thr Val Val Asn Arg
    50   55   60

Thr Arg Asp Gly Trp Gln Trp Phe Trp Ser Pro Ser Thr Phe Arg Gly
65   70   75   80

Phe Met Gln Thr Tyr Tyr Asp Asp His Leu Arg Asp Leu Gly Pro Leu
                85   90   95

Thr Lys Ala Trp Phe Leu Glu Ser Lys Asp Ser Leu Leu Lys Lys Thr
            100   105   110

His Ser Leu Cys Pro Arg Leu Val Cys Gly Asp Lys Asp Gln Gly
        115   120   125

<210> 5652
<211> 178
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1241; "

<220>
<221> source
<223> /note="Gene Symbol: APOC4-APOC2; "

<220>
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<223> /note="Gene Name:
      APOC4-APOC2 readthrough (NMD candidate); "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000468139"

<400> 5652
Met Ser Leu Leu Arg Asn Arg Leu Gln Ala Leu Pro Ala Leu Cys Leu
1 5 10 15

Cys Val Leu Val Leu Ala Cys Ile Gly Ala Cys Gln Pro Glu Ala Gln
20 25 30

Glu Gly Thr Leu Ser Pro Pro Pro Lys Leu Lys Met Ser Arg Trp Ser
35 40 45

Leu Val Arg Gly Arg Met Lys Glu Leu Leu Glu Thr Val Val Asn Arg
50 55 60

Thr Arg Asp Gly Trp Gln Trp Phe Trp Ser Leu Asp Thr Met Gly Thr
65 70 75 80

Arg Leu Leu Pro Ala Leu Phe Leu Val Leu Leu Val Leu Gly Phe Glu
85 90 95

Val Gln Gly Thr Gln Gln Pro Gln Gln Asp Glu Met Pro Ser Pro Thr
100 105 110

Phe Leu Thr Gln Val Lys Glu Ser Leu Ser Ser Tyr Trp Glu Ser Ala
115 120 125

Lys Thr Ala Ala Gln Asn Leu Tyr Glu Lys Thr Tyr Leu Pro Ala Val
130 135 140

Asp Glu Lys Leu Arg Asp Leu Tyr Ser Lys Ser Thr Ala Ala Met Ser
145 150 155 160

Thr Tyr Thr Gly Ile Phe Thr Asp Gln Val Leu Ser Val Leu Lys Gly
165 170 175

Glu Glu

<210> 5653
<211> 267
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1242; "

<220>
<221> source
<223> /note="Gene Symbol: APOA1; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt A-I; "

<220>
<221> source
<223> /note="Uniprot ID: P02647; "

<220>
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<223> /note="ENSP ID: ENSP00000236850"

<400> 5653

```
Met Lys Ala Ala Val Leu Thr Leu Ala Val Leu Phe Leu Thr Gly Ser
1               5                   10                  15

Gln Ala Arg His Phe Trp Gln Gln Asp Glu Pro Pro Gln Ser Pro Trp
            20                  25                  30

Asp Arg Val Lys Asp Leu Ala Thr Val Tyr Val Asp Val Leu Lys Asp
        35                  40                  45

Ser Gly Arg Asp Tyr Val Ser Gln Phe Glu Gly Ser Ala Leu Gly Lys
    50                  55                  60

Gln Leu Asn Leu Lys Leu Leu Asp Asn Trp Asp Ser Val Thr Ser Thr
65                  70                  75                  80

Phe Ser Lys Leu Arg Glu Gln Leu Gly Pro Val Thr Gln Glu Phe Trp
                85                  90                  95

Asp Asn Leu Glu Lys Glu Thr Glu Gly Leu Arg Gln Glu Met Ser Lys
            100                 105                 110

Asp Leu Glu Glu Val Lys Ala Lys Val Gln Pro Tyr Leu Asp Asp Phe
        115                 120                 125

Gln Lys Lys Trp Gln Glu Glu Met Glu Leu Tyr Arg Gln Lys Val Glu
    130                 135                 140
```

```
Pro Leu Arg Ala Glu Leu Gln Glu Gly Ala Arg Gln Lys Leu His Glu
145                 150                 155                 160

Leu Gln Glu Lys Leu Ser Pro Leu Gly Glu Glu Met Arg Asp Arg Ala
                165                 170                 175

Arg Ala His Val Asp Ala Leu Arg Thr His Leu Ala Pro Tyr Ser Asp
            180                 185                 190

Glu Leu Arg Gln Arg Leu Ala Ala Arg Leu Glu Ala Leu Lys Glu Asn
        195                 200                 205

Gly Gly Ala Arg Leu Ala Glu Tyr His Ala Lys Ala Thr Glu His Leu
    210                 215                 220

Ser Thr Leu Ser Glu Lys Ala Lys Pro Ala Leu Glu Asp Leu Arg Gln
225                 230                 235                 240

Gly Leu Leu Pro Val Leu Glu Ser Phe Lys Val Ser Phe Leu Ser Ala
                245                 250                 255

Leu Glu Glu Tyr Thr Lys Lys Leu Asn Thr Gln
            260                 265


<210> 5654
<211> 267
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1242; "

<220>
<221> source
<223> /note="Gene Symbol: APOA1; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt A-I; "

<220>
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<223> /note="Uniprot ID:  P02647; "

<220>
<221> source
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<223> /note="ENSP ID: ENSP00000352471"

<400> 5654

```
Met Lys Ala Ala Val Leu Thr Leu Ala Val Leu Phe Leu Thr Gly Ser
1               5                  10                  15

Gln Ala Arg His Phe Trp Gln Gln Asp Glu Pro Pro Gln Ser Pro Trp
            20                  25                  30

Asp Arg Val Lys Asp Leu Ala Thr Val Tyr Val Asp Val Leu Lys Asp
        35                  40                  45

Ser Gly Arg Asp Tyr Val Ser Gln Phe Glu Gly Ser Ala Leu Gly Lys
    50                  55                  60

Gln Leu Asn Leu Lys Leu Leu Asp Asn Trp Asp Ser Val Thr Ser Thr
65                  70                  75                  80

Phe Ser Lys Leu Arg Glu Gln Leu Gly Pro Val Thr Gln Glu Phe Trp
                85                  90                  95

Asp Asn Leu Glu Lys Glu Thr Glu Gly Leu Arg Gln Glu Met Ser Lys
            100                 105                 110

Asp Leu Glu Glu Val Lys Ala Lys Val Gln Pro Tyr Leu Asp Asp Phe
        115                 120                 125

Gln Lys Lys Trp Gln Glu Glu Met Glu Leu Tyr Arg Gln Lys Val Glu
    130                 135                 140

Pro Leu Arg Ala Glu Leu Gln Glu Gly Ala Arg Gln Lys Leu His Glu
145                 150                 155                 160

Leu Gln Glu Lys Leu Ser Pro Leu Gly Glu Glu Met Arg Asp Arg Ala
                165                 170                 175

Arg Ala His Val Asp Ala Leu Arg Thr His Leu Ala Pro Tyr Ser Asp
            180                 185                 190

Glu Leu Arg Gln Arg Leu Ala Ala Arg Leu Glu Ala Leu Lys Glu Asn
        195                 200                 205

Gly Gly Ala Arg Leu Ala Glu Tyr His Ala Lys Ala Thr Glu His Leu
    210                 215                 220
```

```
Ser Thr Leu Ser Glu Lys Ala Lys Pro Ala Leu Glu Asp Leu Arg Gln
225                 230                 235                 240


Gly Leu Leu Pro Val Leu Glu Ser Phe Lys Val Ser Phe Leu Ser Ala
                245                 250                 255


Leu Glu Glu Tyr Thr Lys Lys Leu Asn Thr Gln
            260                 265


<210> 5655
<211> 267
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1242; "

<220>
<221> source
<223> /note="Gene Symbol: APOA1; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt A-I; "

<220>
<221> source
<223> /note="Uniprot ID:  P02647; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000364469"

<400> 5655
Met Lys Ala Ala Val Leu Thr Leu Ala Val Leu Phe Leu Thr Gly Ser
1               5                   10                  15


Gln Ala Arg His Phe Trp Gln Gln Asp Glu Pro Pro Gln Ser Pro Trp
            20                  25                  30


Asp Arg Val Lys Asp Leu Ala Thr Val Tyr Val Asp Val Leu Lys Asp
        35                  40                  45


Ser Gly Arg Asp Tyr Val Ser Gln Phe Glu Gly Ser Ala Leu Gly Lys
    50                  55                  60
```

```
Gln Leu Asn Leu Lys Leu Leu Asp Asn Trp Asp Ser Val Thr Ser Thr
65                  70                  75                  80

Phe Ser Lys Leu Arg Glu Gln Leu Gly Pro Val Thr Gln Glu Phe Trp
                85                  90                  95

Asp Asn Leu Glu Lys Glu Thr Glu Gly Leu Arg Gln Glu Met Ser Lys
            100                 105                 110

Asp Leu Glu Glu Val Lys Ala Lys Val Gln Pro Tyr Leu Asp Asp Phe
        115                 120                 125

Gln Lys Lys Trp Gln Glu Glu Met Glu Leu Tyr Arg Gln Lys Val Glu
    130                 135                 140

Pro Leu Arg Ala Glu Leu Gln Glu Gly Ala Arg Gln Lys Leu His Glu
145                 150                 155                 160

Leu Gln Glu Lys Leu Ser Pro Leu Gly Glu Glu Met Arg Asp Arg Ala
                165                 170                 175

Arg Ala His Val Asp Ala Leu Arg Thr His Leu Ala Pro Tyr Ser Asp
            180                 185                 190

Glu Leu Arg Gln Arg Leu Ala Ala Arg Leu Glu Ala Leu Lys Glu Asn
        195                 200                 205

Gly Gly Ala Arg Leu Ala Glu Tyr His Ala Lys Ala Thr Glu His Leu
    210                 215                 220

Ser Thr Leu Ser Glu Lys Ala Lys Pro Ala Leu Glu Asp Leu Arg Gln
225                 230                 235                 240

Gly Leu Leu Pro Val Leu Glu Ser Phe Lys Val Ser Phe Leu Ser Ala
                245                 250                 255

Leu Glu Glu Tyr Thr Lys Lys Leu Asn Thr Gln
            260                 265
```

<210> 5656
<211> 267
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1242; "

<220>
<221> source
<223> /note="Gene Symbol: APOA1; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt A-I; "

<220>
<221> source
<223> /note="Uniprot ID: P02647; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000364472"

<400> 5656

```
Met Lys Ala Ala Val Leu Thr Leu Ala Val Leu Phe Leu Thr Gly Ser
1               5                   10                  15

Gln Ala Arg His Phe Trp Gln Gln Asp Glu Pro Pro Gln Ser Pro Trp
            20                  25                  30

Asp Arg Val Lys Asp Leu Ala Thr Val Tyr Val Asp Val Leu Lys Asp
        35                  40                  45

Ser Gly Arg Asp Tyr Val Ser Gln Phe Glu Gly Ser Ala Leu Gly Lys
    50                  55                  60

Gln Leu Asn Leu Lys Leu Leu Asp Asn Trp Asp Ser Val Thr Ser Thr
65                  70                  75                  80

Phe Ser Lys Leu Arg Glu Gln Leu Gly Pro Val Thr Gln Glu Phe Trp
                85                  90                  95

Asp Asn Leu Glu Lys Glu Thr Glu Gly Leu Arg Gln Glu Met Ser Lys
            100                 105                 110

Asp Leu Glu Glu Val Lys Ala Lys Val Gln Pro Tyr Leu Asp Asp Phe
        115                 120                 125

Gln Lys Lys Trp Gln Glu Glu Met Glu Leu Tyr Arg Gln Lys Val Glu
    130                 135                 140
```

```
Pro Leu Arg Ala Glu Leu Gln Glu Gly Ala Arg Gln Lys Leu His Glu
145                 150                 155                 160

Leu Gln Glu Lys Leu Ser Pro Leu Gly Glu Glu Met Arg Asp Arg Ala
                165                 170                 175

Arg Ala His Val Asp Ala Leu Arg Thr His Leu Ala Pro Tyr Ser Asp
            180                 185                 190

Glu Leu Arg Gln Arg Leu Ala Ala Arg Leu Glu Ala Leu Lys Glu Asn
        195                 200                 205

Gly Gly Ala Arg Leu Ala Glu Tyr His Ala Lys Ala Thr Glu His Leu
    210                 215                 220

Ser Thr Leu Ser Glu Lys Ala Lys Pro Ala Leu Glu Asp Leu Arg Gln
225                 230                 235                 240

Gly Leu Leu Pro Val Leu Glu Ser Phe Lys Val Ser Phe Leu Ser Ala
                245                 250                 255

Leu Glu Glu Tyr Thr Lys Lys Leu Asn Thr Gln
            260                 265


<210> 5657
<211> 245
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1242; "

<220>
<221> source
<223> /note="Gene Symbol: APOA1; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt A-I; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000364478"

<400> 5657
Met Ser Gly Gly Ala Arg Gly Phe Cys Met Leu Lys Ala Pro His Ser
```

```
1               5                   10                  15

Ala Arg Pro Phe Phe Ser Ser Arg Ser Pro Thr Ala Leu Gln Asp Glu
            20                  25                  30

Ser Cys Gly Ala Asp Leu Gly Arg Ala Leu Pro Asp Gly Leu Lys Leu
        35                  40                  45

Leu Asp Asn Trp Asp Ser Val Thr Ser Thr Phe Ser Lys Leu Arg Glu
    50                  55                  60

Gln Leu Gly Pro Val Thr Gln Glu Phe Trp Asp Asn Leu Glu Lys Glu
65                  70                  75                  80

Thr Glu Gly Leu Arg Gln Glu Met Ser Lys Asp Leu Glu Glu Val Lys
                85                  90                  95

Ala Lys Val Gln Pro Tyr Leu Asp Asp Phe Gln Lys Lys Trp Gln Glu
            100                 105                 110

Glu Met Glu Leu Tyr Arg Gln Lys Val Glu Pro Leu Arg Ala Glu Leu
        115                 120                 125

Gln Glu Gly Ala Arg Gln Lys Leu His Glu Leu Gln Glu Lys Leu Ser
    130                 135                 140

Pro Leu Gly Glu Glu Met Arg Asp Arg Ala Arg Ala His Val Asp Ala
145                 150                 155                 160

Leu Arg Thr His Leu Ala Pro Tyr Ser Asp Glu Leu Arg Gln Arg Leu
                165                 170                 175

Ala Ala Arg Leu Glu Ala Leu Lys Glu Asn Gly Gly Ala Arg Leu Ala
            180                 185                 190

Glu Tyr His Ala Lys Ala Thr Glu His Leu Ser Thr Leu Ser Glu Lys
        195                 200                 205

Ala Lys Pro Ala Leu Glu Asp Leu Arg Gln Gly Leu Leu Pro Val Leu
    210                 215                 220

Glu Ser Phe Lys Val Ser Phe Leu Ser Ala Leu Glu Glu Tyr Thr Lys
225                 230                 235                 240
```

```
Lys Leu Asn Thr Gln
                245


<210> 5658
<211> 245
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1243; "

<220>
<221> source
<223> /note="Gene Symbol: APOA1BP; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt A-I binding prt; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000357216"

<400> 5658
Met Ser Arg Leu Arg Ala Leu Leu Gly Leu Gly Leu Leu Val Ala Gly
1               5                  10                  15


Ser Arg Val Pro Arg Ile Lys Ser Gln Thr Ile Ala Cys Arg Ser Gly
            20                  25                  30


Pro Thr Trp Trp Gly Pro Gln Arg Leu Asn Ser Gly Gly Arg Trp Asp
        35                  40                  45


Ser Glu Val Met Ala Ser Thr Val Val Lys Tyr Leu Ser Gln Glu Glu
    50                  55                  60


Ala Gln Ala Val Asp Gln Glu Leu Phe Asn Glu Tyr Gln Phe Ser Val
65                  70                  75                  80


Asp Gln Leu Met Glu Leu Ala Gly Leu Ser Cys Ala Thr Ala Ile Ala
                85                  90                  95


Lys Ala Tyr Pro Pro Thr Ser Met Ser Arg Ser Pro Pro Thr Val Leu
            100                 105                 110
```

```
Val Ile Cys Gly Pro Gly Asn Asn Gly Gly Asp Gly Leu Val Cys Ala
        115                 120                 125

Arg His Leu Lys Leu Phe Gly Tyr Glu Pro Thr Ile Tyr Tyr Pro Lys
    130                 135                 140

Arg Pro Asn Lys Pro Leu Phe Thr Ala Leu Val Thr Gln Cys Gln Lys
145                 150                 155                 160

Met Asp Ile Pro Phe Leu Gly Glu Met Pro Ala Glu Pro Met Thr Ile
                165                 170                 175

Asp Glu Leu Tyr Glu Leu Val Val Asp Ala Ile Phe Gly Phe Ser Phe
            180                 185                 190

Lys Gly Asp Val Arg Glu Pro Phe His Ser Ile Leu Ser Val Leu Lys
        195                 200                 205

Gly Leu Thr Val Pro Ile Ala Ser Ile Asp Ile Pro Ser Gly Ala Gly
    210                 215                 220

Ile Gln Lys Val Gly Trp Gly Arg Leu Gly Pro Tyr Pro Pro Asp Ser
225                 230                 235                 240

Cys Pro His Gln Val
                245


<210> 5659
<211> 260
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1243; "

<220>
<221> source
<223> /note="Gene Symbol: APOA1BP; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt A-I binding prt; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000357217"
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<400> 5659
Met Ser Arg Leu Arg Ala Leu Leu Gly Leu Gly Leu Leu Val Ala Gly
1 5 10 15

Ser Arg Val Pro Arg Ile Lys Ser Gln Thr Ile Ala Cys Arg Ser Gly
20 25 30

Pro Thr Trp Trp Gly Pro Gln Arg Leu Asn Ser Gly Gly Arg Trp Asp
35 40 45

Ser Glu Val Met Ala Ser Thr Val Val Lys Tyr Leu Ser Gln Glu Glu
50 55 60

Ala Gln Ala Val Asp Gln Glu Leu Phe Asn Glu Tyr Gln Phe Ser Val
65 70 75 80

Asp Gln Leu Met Glu Leu Ala Gly Leu Ser Cys Ala Thr Ala Ile Ala
85 90 95

Lys Ala Tyr Pro Pro Thr Ser Met Ser Arg Ser Pro Pro Thr Val Leu
100 105 110

Val Ile Cys Gly Pro Gly Asn Asn Gly Gly Asp Gly Leu Val Cys Ala
115 120 125

Arg His Leu Lys Leu Phe Gly Tyr Glu Pro Thr Ile Tyr Tyr Pro Lys
130 135 140

Arg Pro Asn Lys Pro Leu Phe Thr Ala Leu Val Thr Gln Cys Gln Lys
145 150 155 160

Met Asp Ile Pro Phe Leu Gly Glu Met Pro Ala Glu Leu Gln Gly Arg
165 170 175

Cys Ser Gly Thr Val Pro Gln His Pro Glu Cys Pro Glu Gly Thr His
180 185 190

Cys Ala His Cys Gln His Arg His Ser Leu Arg Met Gly Arg Gly Glu
195 200 205

Gly Lys Cys Trp Arg Asp Pro Ala Arg Leu Ala His Ile Pro His Ser
210 215 220

```
Pro Gln Lys Ile Cys Asn Pro Val Tyr Arg Ser Leu Pro Leu Pro Gly
225                 230                 235                 240


Gly Ser Phe Cys Ala Thr Cys Ser Gly Glu Glu Val Pro Ala Glu Pro
                245                 250                 255


Ala Thr Leu Pro
            260


<210> 5660
<211> 288
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1243; "

<220>
<221> source
<223> /note="Gene Symbol: APOA1BP; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt A-I binding prt; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8NCW5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000357218"

<400> 5660
Met Ser Arg Leu Arg Ala Leu Leu Gly Leu Gly Leu Leu Val Ala Gly
1               5                   10                  15


Ser Arg Val Pro Arg Ile Lys Ser Gln Thr Ile Ala Cys Arg Ser Gly
            20                  25                  30


Pro Thr Trp Trp Gly Pro Gln Arg Leu Asn Ser Gly Gly Arg Trp Asp
        35                  40                  45


Ser Glu Val Met Ala Ser Thr Val Val Lys Tyr Leu Ser Gln Glu Glu
    50                  55                  60


Ala Gln Ala Val Asp Gln Glu Leu Phe Asn Glu Tyr Gln Phe Ser Val
```

65 70 75 80

Asp Gln Leu Met Glu Leu Ala Gly Leu Ser Cys Ala Thr Ala Ile Ala
85 90 95

Lys Ala Tyr Pro Pro Thr Ser Met Ser Arg Ser Pro Pro Thr Val Leu
100 105 110

Val Ile Cys Gly Pro Gly Asn Asn Gly Gly Asp Gly Leu Val Cys Ala
115 120 125

Arg His Leu Lys Leu Phe Gly Tyr Glu Pro Thr Ile Tyr Tyr Pro Lys
130 135 140

Arg Pro Asn Lys Pro Leu Phe Thr Ala Leu Val Thr Gln Cys Gln Lys
145 150 155 160

Met Asp Ile Pro Phe Leu Gly Glu Met Pro Ala Glu Pro Met Thr Ile
165 170 175

Asp Glu Leu Tyr Glu Leu Val Val Asp Ala Ile Phe Gly Phe Ser Phe
180 185 190

Lys Gly Asp Val Arg Glu Pro Phe His Ser Ile Leu Ser Val Leu Lys
195 200 205

Gly Leu Thr Val Pro Ile Ala Ser Ile Asp Ile Pro Ser Gly Trp Asp
210 215 220

Val Glu Lys Gly Asn Ala Gly Gly Ile Gln Pro Asp Leu Leu Ile Ser
225 230 235 240

Leu Thr Ala Pro Lys Lys Ser Ala Thr Gln Phe Thr Gly Arg Tyr His
245 250 255

Tyr Leu Gly Gly Arg Phe Val Pro Pro Ala Leu Glu Lys Lys Tyr Gln
260 265 270

Leu Asn Leu Pro Pro Tyr Pro Asp Thr Glu Cys Val Tyr Arg Leu Gln
275 280 285

<210> 5661
<211> 100

<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1244; "

<220>
<221> source
<223> /note="Gene Symbol: APOA2; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt A-II; "

<220>
<221> source
<223> /note="Uniprot ID: P02652; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000356969"

<400> 5661
Met Lys Leu Leu Ala Ala Thr Val Leu Leu Leu Thr Ile Cys Ser Leu
1   5   10   15

Glu Gly Ala Leu Val Arg Arg Gln Ala Lys Glu Pro Cys Val Glu Ser
            20   25   30

Leu Val Ser Gln Tyr Phe Gln Thr Val Thr Asp Tyr Gly Lys Asp Leu
        35   40   45

Met Glu Lys Val Lys Ser Pro Glu Leu Gln Ala Glu Ala Lys Ser Tyr
    50   55   60

Phe Glu Lys Ser Lys Glu Gln Leu Thr Pro Leu Ile Lys Lys Ala Gly
65   70   75   80

Thr Glu Leu Val Asn Phe Leu Ser Tyr Phe Val Glu Leu Gly Thr Gln
                85   90   95

Pro Ala Thr Gln
            100

<210> 5662
<211> 66
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1244; "

<220>
<221> source
<223> /note="Gene Symbol: APOA2; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt A-II; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000476605"

<400> 5662
Met Lys Leu Leu Ala Ala Thr Val Leu Leu Leu Thr Ile Cys Ser Leu
1 5 10 15

Glu Gly Ala Leu Val Arg Arg Gln Ala Lys Glu Pro Cys Val Glu Ser
20 25 30

Leu Val Ser Gln Tyr Phe Gln Thr Val Thr Asp Tyr Gly Lys Asp Leu
35 40 45

Met Glu Lys Val Lys Ser Pro Glu Leu Gln Ala Glu Ala Lys Ser Tyr
50 55 60

Phe Glu
65

<210> 5663
<211> 52
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1244; "

<220>
<221> source
<223> /note="Gene Symbol: APOA2; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt A-II; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000476662"

<400> 5663
Met Glu Lys Val Lys Ser Pro Glu Leu Gln Ala Glu Ala Lys Ser Tyr
1   5   10   15

Phe Glu Lys Ser Lys Glu Gln Leu Thr Pro Leu Ile Lys Lys Ala Gly
            20   25   30

Thr Glu Leu Val Asn Phe Leu Ser Tyr Phe Val Glu Leu Gly Thr Gln
        35   40   45

Pro Ala Thr Gln
    50

<210> 5664
<211> 95
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1244; "

<220>
<221> source
<223> /note="Gene Symbol: APOA2; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt A-II; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000476740"

<400> 5664
Met Lys Leu Leu Ala Ala Thr Val Leu Leu Leu Thr Ile Cys Ser Leu
1   5   10   15

Glu Gly Ala Leu Val Arg Arg Gln Ala Lys Glu Pro Cys Val Glu Ser
            20   25   30

Leu Val Ser Gln Tyr Phe Gln Thr Val Thr Asp Tyr Gly Lys Asp Leu
        35   40   45

Met Glu Lys Val Lys Ser Pro Glu Leu Gln Ala Glu Ala Lys Ser Tyr

```
    50                  55                  60

Phe Glu Lys Ser Lys Glu Gln Leu Thr Pro Leu Ile Lys Lys Ala Gly
65                  70                  75                  80

Thr Glu Leu Val Asn Phe Leu Ser Tyr Phe Val Glu Leu Gly Thr
                85                  90                  95


<210> 5665
<211> 52
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1244; "

<220>
<221> source
<223> /note="Gene Symbol: APOA2; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt A-II; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000476890"

<400> 5665
Met Glu Lys Val Lys Ser Pro Glu Leu Gln Ala Glu Ala Lys Ser Tyr
1               5                  10                  15

Phe Glu Lys Ser Lys Glu Gln Leu Thr Pro Leu Ile Lys Lys Ala Gly
            20                  25                  30

Thr Glu Leu Val Asn Phe Leu Ser Tyr Phe Val Glu Leu Gly Thr Gln
        35                  40                  45

Pro Ala Thr Gln
    50


<210> 5666
<211> 133
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1244; "

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<223> /note="Gene Symbol: APOA2; "

<220>
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<223> /note="Gene Name:
apolipoprt A-II; "

<220>
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<400> 5666
Met Cys Glu Gln His Pro Lys Arg Pro Gly Leu Gln Leu Trp Arg Gly
1 5 10 15

Arg Glu Pro Gly Trp Asn Gly Gln Gln Ala Ala Leu Pro Thr Val Thr
20 25 30

Asn Met Lys Leu Leu Ala Ala Thr Val Leu Leu Leu Thr Ile Cys Ser
35 40 45

Leu Glu Gly Ala Leu Val Arg Arg Gln Ala Lys Glu Pro Cys Val Glu
50 55 60

Ser Leu Val Ser Gln Tyr Phe Gln Thr Val Thr Asp Tyr Gly Lys Asp
65 70 75 80

Leu Met Glu Lys Val Lys Ser Pro Glu Leu Gln Ala Glu Ala Lys Ser
85 90 95

Tyr Phe Glu Lys Ser Lys Glu Gln Leu Thr Pro Leu Ile Lys Lys Ala
100 105 110

Gly Thr Glu Leu Val Asn Phe Leu Ser Tyr Phe Val Glu Leu Gly Thr
115 120 125

Gln Pro Ala Thr Gln
130

<210> 5667
<211> 82
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000477031"

<400> 5667
Met Lys Leu Leu Ala Ala Thr Val Leu Leu Leu Thr Ile Cys Ser Leu
1 5 10 15

Glu Gly Ala Leu Val Arg Arg Gln Ala Lys Glu Pro Cys Val Glu Ser
20 25 30

Leu Val Ser Gln Tyr Phe Gln Thr Val Thr Asp Tyr Gly Lys Asp Leu
35 40 45

Met Glu Lys Val Lys Ser Pro Glu Leu Gln Ala Glu Ala Lys Ser Tyr
50 55 60

Phe Glu Asn Phe Leu Ser Tyr Phe Val Glu Leu Gly Thr Gln Pro Ala
65 70 75 80

Thr Gln

<210> 5668
<211> 72
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
apolipoprt A-II; "

<220>
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<223> /note="ENSP ID: ENSP00000477054"

<400> 5668
Met Lys Leu Leu Ala Ala Thr Val Leu Leu Leu Thr Ile Cys Ser Leu
1 5 10 15

Glu Gly Leu Ala Thr Lys Gly Leu Lys Arg Lys Ile Ile Pro Ser Leu
20 25 30

Lys Pro Arg Lys Pro Ile Gln Arg Ser Gly Trp Ile Pro Phe Trp Gly
35 40 45

Gly Gly Arg Glu Leu Gly Trp Val Leu Ala Glu Val Trp Gln Glu Ala
50 55 60

Arg Ile His Cys Cys Gly Pro Ser
65 70

<210> 5669
<211> 27
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: APOA2; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000477353"

<400> 5669
Met Lys Leu Leu Ala Ala Thr Val Leu Leu Leu Thr Ile Cys Ser Leu
1 5 10 15

Glu Gly Leu Thr Leu Lys Ser Gln Arg Ser Ser
20 25

<210> 5670
<211> 396
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1245; "

<220>
<221> source
<223> /note="Gene Symbol: APOA4; "

<220>
<221> source
<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID: P06727; "

<220>
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<223> /note="ENSP ID: ENSP00000350425"

<400> 5670
Met Phe Leu Lys Ala Val Val Leu Thr Leu Ala Leu Val Ala Val Ala
1   5   10   15

Gly Ala Arg Ala Glu Val Ser Ala Asp Gln Val Ala Thr Val Met Trp
            20   25   30

Asp Tyr Phe Ser Gln Leu Ser Asn Asn Ala Lys Glu Ala Val Glu His
        35   40   45

Leu Gln Lys Ser Glu Leu Thr Gln Gln Leu Asn Ala Leu Phe Gln Asp
    50   55   60

Lys Leu Gly Glu Val Asn Thr Tyr Ala Gly Asp Leu Gln Lys Lys Leu
65   70   75   80

Val Pro Phe Ala Thr Glu Leu His Glu Arg Leu Ala Lys Asp Ser Glu
                85   90   95

Lys Leu Lys Glu Glu Ile Gly Lys Glu Leu Glu Glu Leu Arg Ala Arg
            100   105   110

```
Leu Leu Pro His Ala Asn Glu Val Ser Gln Lys Ile Gly Asp Asn Leu
        115                 120                 125

Arg Glu Leu Gln Gln Arg Leu Glu Pro Tyr Ala Asp Gln Leu Arg Thr
    130                 135                 140

Gln Val Ser Thr Gln Ala Glu Gln Leu Arg Arg Gln Leu Thr Pro Tyr
145                 150                 155                 160

Ala Gln Arg Met Glu Arg Val Leu Arg Glu Asn Ala Asp Ser Leu Gln
                165                 170                 175

Ala Ser Leu Arg Pro His Ala Asp Glu Leu Lys Ala Lys Ile Asp Gln
            180                 185                 190

Asn Val Glu Glu Leu Lys Gly Arg Leu Thr Pro Tyr Ala Asp Glu Phe
        195                 200                 205

Lys Val Lys Ile Asp Gln Thr Val Glu Glu Leu Arg Arg Ser Leu Ala
    210                 215                 220

Pro Tyr Ala Gln Asp Thr Gln Glu Lys Leu Asn His Gln Leu Glu Gly
225                 230                 235                 240

Leu Thr Phe Gln Met Lys Lys Asn Ala Glu Glu Leu Lys Ala Arg Ile
                245                 250                 255

Ser Ala Ser Ala Glu Glu Leu Arg Gln Arg Leu Ala Pro Leu Ala Glu
            260                 265                 270

Asp Val Arg Gly Asn Leu Arg Gly Asn Thr Glu Gly Leu Gln Lys Ser
        275                 280                 285

Leu Ala Glu Leu Gly Gly His Leu Asp Gln Gln Val Glu Glu Phe Arg
    290                 295                 300

Arg Arg Val Glu Pro Tyr Gly Glu Asn Phe Asn Lys Ala Leu Val Gln
305                 310                 315                 320

Gln Met Glu Gln Leu Arg Gln Lys Leu Gly Pro His Ala Gly Asp Val
                325                 330                 335

Glu Gly His Leu Ser Phe Leu Glu Lys Asp Leu Arg Asp Lys Val Asn
```

```
            340                 345                 350

Ser Phe Phe Ser Thr Phe Lys Glu Lys Glu Ser Gln Asp Lys Thr Leu
        355                 360                 365

Ser Leu Pro Glu Leu Glu Gln Gln Gln Glu Gln Gln Gln Glu Gln Gln
    370                 375                 380

Gln Glu Gln Val Gln Met Leu Ala Pro Leu Glu Ser
385                 390                 395


<210> 5671
<211> 366
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1246; "

<220>
<221> source
<223> /note="Gene Symbol: APOA5; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt A-V; "

<220>
<221> source
<223> /note="Uniprot ID:  Q6Q788; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000227665"

<400> 5671
Met Ala Ser Met Ala Ala Val Leu Thr Trp Ala Leu Ala Leu Leu Ser
1               5                   10                  15

Ala Phe Ser Ala Thr Gln Ala Arg Lys Gly Phe Trp Asp Tyr Phe Ser
            20                  25                  30

Gln Thr Ser Gly Asp Lys Gly Arg Val Glu Gln Ile His Gln Gln Lys
        35                  40                  45

Met Ala Arg Glu Pro Ala Thr Leu Lys Asp Ser Leu Glu Gln Asp Leu
    50                  55                  60
```

```
Asn Asn Met Asn Lys Phe Leu Glu Lys Leu Arg Pro Leu Ser Gly Ser
65                  70                  75                  80

Glu Ala Pro Arg Leu Pro Gln Asp Pro Val Gly Met Arg Arg Gln Leu
                85                  90                  95

Gln Glu Glu Leu Glu Glu Val Lys Ala Arg Leu Gln Pro Tyr Met Ala
            100                 105                 110

Glu Ala His Glu Leu Val Gly Trp Asn Leu Glu Gly Leu Arg Gln Gln
        115                 120                 125

Leu Lys Pro Tyr Thr Met Asp Leu Met Glu Gln Val Ala Leu Arg Val
    130                 135                 140

Gln Glu Leu Gln Glu Gln Leu Arg Val Val Gly Glu Asp Thr Lys Ala
145                 150                 155                 160

Gln Leu Leu Gly Gly Val Asp Glu Ala Trp Ala Leu Leu Gln Gly Leu
                165                 170                 175

Gln Ser Arg Val Val His His Thr Gly Arg Phe Lys Glu Leu Phe His
            180                 185                 190

Pro Tyr Ala Glu Ser Leu Val Ser Gly Ile Gly Arg His Val Gln Glu
        195                 200                 205

Leu His Arg Ser Val Ala Pro His Ala Pro Ala Ser Pro Ala Arg Leu
    210                 215                 220

Ser Arg Cys Val Gln Val Leu Ser Arg Lys Leu Thr Leu Lys Ala Lys
225                 230                 235                 240

Ala Leu His Ala Arg Ile Gln Gln Asn Leu Asp Gln Leu Arg Glu Glu
                245                 250                 255

Leu Ser Arg Ala Phe Ala Gly Thr Gly Thr Glu Glu Gly Ala Gly Pro
            260                 265                 270

Asp Pro Gln Met Leu Ser Glu Glu Val Arg Gln Arg Leu Gln Ala Phe
        275                 280                 285
```

```
Arg Gln Asp Thr Tyr Leu Gln Ile Ala Ala Phe Thr Arg Ala Ile Asp
    290                 295                 300

Gln Glu Thr Glu Glu Val Gln Gln Gln Leu Ala Pro Pro Pro Pro Gly
305                 310                 315                 320

His Ser Ala Phe Ala Pro Glu Phe Gln Gln Thr Asp Ser Gly Lys Val
                325                 330                 335

Leu Ser Lys Leu Gln Ala Arg Leu Asp Asp Leu Trp Glu Asp Ile Thr
            340                 345                 350

His Ser Leu His Asp Gln Gly His Ser His Leu Gly Asp Pro
        355                 360                 365


<210> 5672
<211> 162
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1246; "

<220>
<221> source
<223> /note="Gene Symbol: APOA5; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt A-V; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000399701"

<400> 5672
Met Ala Ser Met Ala Ala Val Leu Thr Trp Ala Leu Ala Leu Leu Ser
1               5                   10                  15

Ala Phe Ser Ala Thr Gln Ala Arg Lys Gly Phe Trp Asp Tyr Phe Ser
            20                  25                  30

Gln Thr Ser Gly Asp Lys Gly Arg Val Glu Gln Ile His Gln Gln Lys
        35                  40                  45

Met Ala Arg Glu Pro Ala Thr Leu Lys Asp Ser Leu Glu Gln Asp Leu
    50                  55                  60
```

```
Asn Asn Met Asn Lys Phe Leu Glu Lys Leu Arg Pro Leu Ser Gly Ser
65                  70                  75                  80

Glu Ala Pro Arg Leu Pro Gln Asp Pro Val Gly Met Arg Arg Gln Leu
                85                  90                  95

Gln Glu Glu Leu Glu Glu Val Lys Ala Arg Leu Gln Pro Tyr Met Ala
            100                 105                 110

Glu Ala His Glu Leu Val Gly Trp Asn Leu Glu Gly Leu Arg Gln Gln
        115                 120                 125

Leu Lys Pro Tyr Thr Met Asp Leu Met Glu Gln Val Ala Leu Arg Val
    130                 135                 140

Gln Glu Leu Gln Glu Gln Leu Arg Val Val Gly Glu Asp Thr Lys Ala
145                 150                 155                 160

Gln Leu
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<210> 5673
<211> 366
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: APOA5; "

<220>
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<223> /note="Gene Name:
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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000445002"

<400> 5673

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Met Ala Ser Met Ala Ala Val Leu Thr Trp Ala Leu Ala Leu Leu Ser
1               5                  10                  15

Ala Phe Ser Ala Thr Gln Ala Arg Lys Gly Phe Trp Asp Tyr Phe Ser
            20                  25                  30

Gln Thr Ser Gly Asp Lys Gly Arg Val Glu Gln Ile His Gln Gln Lys
        35                  40                  45

Met Ala Arg Glu Pro Ala Thr Leu Lys Asp Ser Leu Glu Gln Asp Leu
    50                  55                  60

Asn Asn Met Asn Lys Phe Leu Glu Lys Leu Arg Pro Leu Ser Gly Ser
65                  70                  75                  80

Glu Ala Pro Arg Leu Pro Gln Asp Pro Val Gly Met Arg Arg Gln Leu
                85                  90                  95

Gln Glu Glu Leu Glu Glu Val Lys Ala Arg Leu Gln Pro Tyr Met Ala
            100                 105                 110

Glu Ala His Glu Leu Val Gly Trp Asn Leu Glu Gly Leu Arg Gln Gln
        115                 120                 125

Leu Lys Pro Tyr Thr Met Asp Leu Met Glu Gln Val Ala Leu Arg Val
    130                 135                 140

Gln Glu Leu Gln Glu Gln Leu Arg Val Val Gly Glu Asp Thr Lys Ala
145                 150                 155                 160

Gln Leu Leu Gly Gly Val Asp Glu Ala Trp Ala Leu Leu Gln Gly Leu
                165                 170                 175

Gln Ser Arg Val Val His His Thr Gly Arg Phe Lys Glu Leu Phe His
            180                 185                 190

Pro Tyr Ala Glu Ser Leu Val Ser Gly Ile Gly Arg His Val Gln Glu
        195                 200                 205

Leu His Arg Ser Val Ala Pro His Ala Pro Ala Ser Pro Ala Arg Leu
    210                 215                 220

Ser Arg Cys Val Gln Val Leu Ser Arg Lys Leu Thr Leu Lys Ala Lys
```

```
225                 230                 235                 240

Ala Leu His Ala Arg Ile Gln Gln Asn Leu Asp Gln Leu Arg Glu Glu
                245                 250                 255

Leu Ser Arg Ala Phe Ala Gly Thr Gly Thr Glu Glu Gly Ala Gly Pro
            260                 265                 270

Asp Pro Gln Met Leu Ser Glu Glu Val Arg Gln Arg Leu Gln Ala Phe
        275                 280                 285

Arg Gln Asp Thr Tyr Leu Gln Ile Ala Ala Phe Thr Arg Ala Ile Asp
    290                 295                 300

Gln Glu Thr Glu Glu Val Gln Gln Gln Leu Ala Pro Pro Pro Pro Gly
305                 310                 315                 320

His Ser Ala Phe Ala Pro Glu Phe Gln Gln Thr Asp Ser Gly Lys Val
                325                 330                 335

Leu Ser Lys Leu Gln Ala Arg Leu Asp Asp Leu Trp Glu Asp Ile Thr
            340                 345                 350

His Ser Leu His Asp Gln Gly His Ser His Leu Gly Asp Pro
        355                 360                 365


<210> 5674
<211> 4563
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1247; "

<220>
<221> source
<223> /note="Gene Symbol: APOB; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt B; "

<220>
<221> source
<223> /note="Uniprot ID:  P04114; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000233242"

<400> 5674
Met Asp Pro Pro Arg Pro Ala Leu Leu Ala Leu Leu Ala Leu Pro Ala
1   5   10   15

Leu Leu Leu Leu Leu Leu Ala Gly Ala Arg Ala Glu Glu Glu Met Leu
            20   25   30

Glu Asn Val Ser Leu Val Cys Pro Lys Asp Ala Thr Arg Phe Lys His
        35   40   45

Leu Arg Lys Tyr Thr Tyr Asn Tyr Glu Ala Glu Ser Ser Ser Gly Val
    50   55   60

Pro Gly Thr Ala Asp Ser Arg Ser Ala Thr Arg Ile Asn Cys Lys Val
65   70   75   80

Glu Leu Glu Val Pro Gln Leu Cys Ser Phe Ile Leu Lys Thr Ser Gln
                85   90   95

Cys Thr Leu Lys Glu Val Tyr Gly Phe Asn Pro Glu Gly Lys Ala Leu
            100   105   110

Leu Lys Lys Thr Lys Asn Ser Glu Glu Phe Ala Ala Ala Met Ser Arg
        115   120   125

Tyr Glu Leu Lys Leu Ala Ile Pro Glu Gly Lys Gln Val Phe Leu Tyr
    130   135   140

Pro Glu Lys Asp Glu Pro Thr Tyr Ile Leu Asn Ile Lys Arg Gly Ile
145   150   155   160

Ile Ser Ala Leu Leu Val Pro Pro Glu Thr Glu Glu Ala Lys Gln Val
                165   170   175

Leu Phe Leu Asp Thr Val Tyr Gly Asn Cys Ser Thr His Phe Thr Val
            180   185   190

Lys Thr Arg Lys Gly Asn Val Ala Thr Glu Ile Ser Thr Glu Arg Asp
        195   200   205

```
Leu Gly Gln Cys Asp Arg Phe Lys Pro Ile Arg Thr Gly Ile Ser Pro
    210                 215                 220

Leu Ala Leu Ile Lys Gly Met Thr Arg Pro Leu Ser Thr Leu Ile Ser
225                 230                 235                 240

Ser Ser Gln Ser Cys Gln Tyr Thr Leu Asp Ala Lys Arg Lys His Val
                245                 250                 255

Ala Glu Ala Ile Cys Lys Glu Gln His Leu Phe Leu Pro Phe Ser Tyr
            260                 265                 270

Lys Asn Lys Tyr Gly Met Val Ala Gln Val Thr Gln Thr Leu Lys Leu
        275                 280                 285

Glu Asp Thr Pro Lys Ile Asn Ser Arg Phe Phe Gly Glu Gly Thr Lys
    290                 295                 300

Lys Met Gly Leu Ala Phe Glu Ser Thr Lys Ser Thr Ser Pro Pro Lys
305                 310                 315                 320

Gln Ala Glu Ala Val Leu Lys Thr Leu Gln Glu Leu Lys Lys Leu Thr
                325                 330                 335

Ile Ser Glu Gln Asn Ile Gln Arg Ala Asn Leu Phe Asn Lys Leu Val
            340                 345                 350

Thr Glu Leu Arg Gly Leu Ser Asp Glu Ala Val Thr Ser Leu Leu Pro
        355                 360                 365

Gln Leu Ile Glu Val Ser Ser Pro Ile Thr Leu Gln Ala Leu Val Gln
    370                 375                 380

Cys Gly Gln Pro Gln Cys Ser Thr His Ile Leu Gln Trp Leu Lys Arg
385                 390                 395                 400

Val His Ala Asn Pro Leu Leu Ile Asp Val Val Thr Tyr Leu Val Ala
                405                 410                 415

Leu Ile Pro Glu Pro Ser Ala Gln Gln Leu Arg Glu Ile Phe Asn Met
            420                 425                 430

Ala Arg Asp Gln Arg Ser Arg Ala Thr Leu Tyr Ala Leu Ser His Ala
```

435 440 445

Val Asn Asn Tyr His Lys Thr Asn Pro Thr Gly Thr Gln Glu Leu Leu
450 455 460

Asp Ile Ala Asn Tyr Leu Met Glu Gln Ile Gln Asp Asp Cys Thr Gly
465 470 475 480

Asp Glu Asp Tyr Thr Tyr Leu Ile Leu Arg Val Ile Gly Asn Met Gly
485 490 495

Gln Thr Met Glu Gln Leu Thr Pro Glu Leu Lys Ser Ser Ile Leu Lys
500 505 510

Cys Val Gln Ser Thr Lys Pro Ser Leu Met Ile Gln Lys Ala Ala Ile
515 520 525

Gln Ala Leu Arg Lys Met Glu Pro Lys Asp Lys Asp Gln Glu Val Leu
530 535 540

Leu Gln Thr Phe Leu Asp Asp Ala Ser Pro Gly Asp Lys Arg Leu Ala
545 550 555 560

Ala Tyr Leu Met Leu Met Arg Ser Pro Ser Gln Ala Asp Ile Asn Lys
565 570 575

Ile Val Gln Ile Leu Pro Trp Glu Gln Asn Glu Gln Val Lys Asn Phe
580 585 590

Val Ala Ser His Ile Ala Asn Ile Leu Asn Ser Glu Glu Leu Asp Ile
595 600 605

Gln Asp Leu Lys Lys Leu Val Lys Glu Ala Leu Lys Glu Ser Gln Leu
610 615 620

Pro Thr Val Met Asp Phe Arg Lys Phe Ser Arg Asn Tyr Gln Leu Tyr
625 630 635 640

Lys Ser Val Ser Leu Pro Ser Leu Asp Pro Ala Ser Ala Lys Ile Glu
645 650 655

Gly Asn Leu Ile Phe Asp Pro Asn Asn Tyr Leu Pro Lys Glu Ser Met
660 665 670

```
Leu Lys Thr Thr Leu Thr Ala Phe Gly Phe Ala Ser Ala Asp Leu Ile
        675                 680                 685

Glu Ile Gly Leu Glu Gly Lys Gly Phe Glu Pro Thr Leu Glu Ala Leu
    690                 695                 700

Phe Gly Lys Gln Gly Phe Phe Pro Asp Ser Val Asn Lys Ala Leu Tyr
705                 710                 715                 720

Trp Val Asn Gly Gln Val Pro Asp Gly Val Ser Lys Val Leu Val Asp
                725                 730                 735

His Phe Gly Tyr Thr Lys Asp Asp Lys His Glu Gln Asp Met Val Asn
            740                 745                 750

Gly Ile Met Leu Ser Val Glu Lys Leu Ile Lys Asp Leu Lys Ser Lys
        755                 760                 765

Glu Val Pro Glu Ala Arg Ala Tyr Leu Arg Ile Leu Gly Glu Glu Leu
    770                 775                 780

Gly Phe Ala Ser Leu His Asp Leu Gln Leu Leu Gly Lys Leu Leu Leu
785                 790                 795                 800

Met Gly Ala Arg Thr Leu Gln Gly Ile Pro Gln Met Ile Gly Glu Val
                805                 810                 815

Ile Arg Lys Gly Ser Lys Asn Asp Phe Phe Leu His Tyr Ile Phe Met
            820                 825                 830

Glu Asn Ala Phe Glu Leu Pro Thr Gly Ala Gly Leu Gln Leu Gln Ile
        835                 840                 845

Ser Ser Ser Gly Val Ile Ala Pro Gly Ala Lys Ala Gly Val Lys Leu
    850                 855                 860

Glu Val Ala Asn Met Gln Ala Glu Leu Val Ala Lys Pro Ser Val Ser
865                 870                 875                 880

Val Glu Phe Val Thr Asn Met Gly Ile Ile Ile Pro Asp Phe Ala Arg
                885                 890                 895
```

```
Ser Gly Val Gln Met Asn Thr Asn Phe Phe His Glu Ser Gly Leu Glu
            900                 905                 910

Ala His Val Ala Leu Lys Ala Gly Lys Leu Lys Phe Ile Ile Pro Ser
        915                 920                 925

Pro Lys Arg Pro Val Lys Leu Leu Ser Gly Gly Asn Thr Leu His Leu
    930                 935                 940

Val Ser Thr Thr Lys Thr Glu Val Ile Pro Pro Leu Ile Glu Asn Arg
945                 950                 955                 960

Gln Ser Trp Ser Val Cys Lys Gln Val Phe Pro Gly Leu Asn Tyr Cys
                965                 970                 975

Thr Ser Gly Ala Tyr Ser Asn Ala Ser Ser Thr Asp Ser Ala Ser Tyr
            980                 985                 990

Tyr Pro Leu Thr Gly Asp Thr Arg  Leu Glu Leu Glu Leu  Arg Pro
Thr
        995                 1000                1005

Gly Glu  Ile Glu Gln Tyr Ser  Val Ser Ala Thr Tyr  Glu Leu Gln
    1010                1015                1020

Arg Glu  Asp Arg Ala Leu Val  Asp Thr Leu Lys Phe  Val Thr Gln
    1025                1030                1035

Ala Glu  Gly Ala Lys Gln Thr  Glu Ala Thr Met Thr  Phe Lys Tyr
    1040                1045                1050

Asn Arg  Gln Ser Met Thr Leu  Ser Ser Glu Val Gln  Ile Pro Asp
    1055                1060                1065

Phe Asp  Val Asp Leu Gly Thr  Ile Leu Arg Val Asn  Asp Glu Ser
    1070                1075                1080

Thr Glu  Gly Lys Thr Ser Tyr  Arg Leu Thr Leu Asp  Ile Gln Asn
    1085                1090                1095

Lys Lys  Ile Thr Glu Val Ala  Leu Met Gly His Leu  Ser Cys Asp
    1100                1105                1110
```

Thr Lys Glu Glu Arg Lys Ile Lys Gly Val Ile Ser Ile Pro Arg
1115 1120 1125

Leu Gln Ala Glu Ala Arg Ser Glu Ile Leu Ala His Trp Ser Pro
1130 1135 1140

Ala Lys Leu Leu Leu Gln Met Asp Ser Ser Ala Thr Ala Tyr Gly
1145 1150 1155

Ser Thr Val Ser Lys Arg Val Ala Trp His Tyr Asp Glu Glu Lys
1160 1165 1170

Ile Glu Phe Glu Trp Asn Thr Gly Thr Asn Val Asp Thr Lys Lys
1175 1180 1185

Met Thr Ser Asn Phe Pro Val Asp Leu Ser Asp Tyr Pro Lys Ser
1190 1195 1200

Leu His Met Tyr Ala Asn Arg Leu Leu Asp His Arg Val Pro Gln
1205 1210 1215

Thr Asp Met Thr Phe Arg His Val Gly Ser Lys Leu Ile Val Ala
1220 1225 1230

Met Ser Ser Trp Leu Gln Lys Ala Ser Gly Ser Leu Pro Tyr Thr
1235 1240 1245

Gln Thr Leu Gln Asp His Leu Asn Ser Leu Lys Glu Phe Asn Leu
1250 1255 1260

Gln Asn Met Gly Leu Pro Asp Phe His Ile Pro Glu Asn Leu Phe
1265 1270 1275

Leu Lys Ser Asp Gly Arg Val Lys Tyr Thr Leu Asn Lys Asn Ser
1280 1285 1290

Leu Lys Ile Glu Ile Pro Leu Pro Phe Gly Gly Lys Ser Ser Arg
1295 1300 1305

Asp Leu Lys Met Leu Glu Thr Val Arg Thr Pro Ala Leu His Phe
1310 1315 1320

```
Lys Ser  Val Gly Phe His Leu  Pro Ser Arg Glu Phe  Gln Val Pro
    1325                1330                1335

Thr Phe  Thr Ile Pro Lys Leu  Tyr Gln Leu Gln Val  Pro Leu Leu
    1340                1345                1350

Gly Val  Leu Asp Leu Ser Thr  Asn Val Tyr Ser Asn  Leu Tyr Asn
    1355                1360                1365

Trp Ser  Ala Ser Tyr Ser Gly  Gly Asn Thr Ser Thr  Asp His Phe
    1370                1375                1380

Ser Leu  Arg Ala Arg Tyr His  Met Lys Ala Asp Ser  Val Val Asp
    1385                1390                1395

Leu Leu  Ser Tyr Asn Val Gln  Gly Ser Gly Glu Thr  Thr Tyr Asp
    1400                1405                1410

His Lys  Asn Thr Phe Thr Leu  Ser Cys Asp Gly Ser  Leu Arg His
    1415                1420                1425

Lys Phe  Leu Asp Ser Asn Ile  Lys Phe Ser His Val  Glu Lys Leu
    1430                1435                1440

Gly Asn  Asn Pro Val Ser Lys  Gly Leu Leu Ile Phe  Asp Ala Ser
    1445                1450                1455

Ser Ser  Trp Gly Pro Gln Met  Ser Ala Ser Val His  Leu Asp Ser
    1460                1465                1470

Lys Lys  Lys Gln His Leu Phe  Val Lys Glu Val Lys  Ile Asp Gly
    1475                1480                1485

Gln Phe  Arg Val Ser Ser Phe  Tyr Ala Lys Gly Thr  Tyr Gly Leu
    1490                1495                1500

Ser Cys  Gln Arg Asp Pro Asn  Thr Gly Arg Leu Asn  Gly Glu Ser
    1505                1510                1515

Asn Leu  Arg Phe Asn Ser Ser  Tyr Leu Gln Gly Thr  Asn Gln Ile
    1520                1525                1530

Thr Gly  Arg Tyr Glu Asp Gly  Thr Leu Ser Leu Thr  Ser Thr Ser
```

1535 1540 1545

Asp Leu Gln Ser Gly Ile Ile Lys Asn Thr Ala Ser Leu Lys Tyr
1550 1555 1560

Glu Asn Tyr Glu Leu Thr Leu Lys Ser Asp Thr Asn Gly Lys Tyr
1565 1570 1575

Lys Asn Phe Ala Thr Ser Asn Lys Met Asp Met Thr Phe Ser Lys
1580 1585 1590

Gln Asn Ala Leu Leu Arg Ser Glu Tyr Gln Ala Asp Tyr Glu Ser
1595 1600 1605

Leu Arg Phe Phe Ser Leu Leu Ser Gly Ser Leu Asn Ser His Gly
1610 1615 1620

Leu Glu Leu Asn Ala Asp Ile Leu Gly Thr Asp Lys Ile Asn Ser
1625 1630 1635

Gly Ala His Lys Ala Thr Leu Arg Ile Gly Gln Asp Gly Ile Ser
1640 1645 1650

Thr Ser Ala Thr Thr Asn Leu Lys Cys Ser Leu Leu Val Leu Glu
1655 1660 1665

Asn Glu Leu Asn Ala Glu Leu Gly Leu Ser Gly Ala Ser Met Lys
1670 1675 1680

Leu Thr Thr Asn Gly Arg Phe Arg Glu His Asn Ala Lys Phe Ser
1685 1690 1695

Leu Asp Gly Lys Ala Ala Leu Thr Glu Leu Ser Leu Gly Ser Ala
1700 1705 1710

Tyr Gln Ala Met Ile Leu Gly Val Asp Ser Lys Asn Ile Phe Asn
1715 1720 1725

Phe Lys Val Ser Gln Glu Gly Leu Lys Leu Ser Asn Asp Met Met
1730 1735 1740

Gly Ser Tyr Ala Glu Met Lys Phe Asp His Thr Asn Ser Leu Asn
1745 1750 1755

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Ile Ala  Gly Leu Ser Leu Asp  Phe Ser Ser Lys Leu  Asp Asn Ile
    1760                 1765                 1770

Tyr Ser  Ser Asp Lys Phe Tyr  Lys Gln Thr Val Asn  Leu Gln Leu
    1775                 1780                 1785

Gln Pro  Tyr Ser Leu Val Thr  Thr Leu Asn Ser Asp  Leu Lys Tyr
    1790                 1795                 1800

Asn Ala  Leu Asp Leu Thr Asn  Asn Gly Lys Leu Arg  Leu Glu Pro
    1805                 1810                 1815

Leu Lys  Leu His Val Ala Gly  Asn Leu Lys Gly Ala  Tyr Gln Asn
    1820                 1825                 1830

Asn Glu  Ile Lys His Ile Tyr  Ala Ile Ser Ser Ala  Ala Leu Ser
    1835                 1840                 1845

Ala Ser  Tyr Lys Ala Asp Thr  Val Ala Lys Val Gln  Gly Val Glu
    1850                 1855                 1860

Phe Ser  His Arg Leu Asn Thr  Asp Ile Ala Gly Leu  Ala Ser Ala
    1865                 1870                 1875

Ile Asp  Met Ser Thr Asn Tyr  Asn Ser Asp Ser Leu  His Phe Ser
    1880                 1885                 1890

Asn Val  Phe Arg Ser Val Met  Ala Pro Phe Thr Met  Thr Ile Asp
    1895                 1900                 1905

Ala His  Thr Asn Gly Asn Gly  Lys Leu Ala Leu Trp  Gly Glu His
    1910                 1915                 1920

Thr Gly  Gln Leu Tyr Ser Lys  Phe Leu Leu Lys Ala  Glu Pro Leu
    1925                 1930                 1935

Ala Phe  Thr Phe Ser His Asp  Tyr Lys Gly Ser Thr  Ser His His
    1940                 1945                 1950

Leu Val  Ser Arg Lys Ser Ile  Ser Ala Ala Leu Glu  His Lys Val
    1955                 1960                 1965
```

Ser Ala Leu Leu Thr Pro Ala Glu Gln Thr Gly Thr Trp Lys Leu
1970 1975 1980

Lys Thr Gln Phe Asn Asn Asn Glu Tyr Ser Gln Asp Leu Asp Ala
1985 1990 1995

Tyr Asn Thr Lys Asp Lys Ile Gly Val Glu Leu Thr Gly Arg Thr
2000 2005 2010

Leu Ala Asp Leu Thr Leu Leu Asp Ser Pro Ile Lys Val Pro Leu
2015 2020 2025

Leu Leu Ser Glu Pro Ile Asn Ile Ile Asp Ala Leu Glu Met Arg
2030 2035 2040

Asp Ala Val Glu Lys Pro Gln Glu Phe Thr Ile Val Ala Phe Val
2045 2050 2055

Lys Tyr Asp Lys Asn Gln Asp Val His Ser Ile Asn Leu Pro Phe
2060 2065 2070

Phe Glu Thr Leu Gln Glu Tyr Phe Glu Arg Asn Arg Gln Thr Ile
2075 2080 2085

Ile Val Val Leu Glu Asn Val Gln Arg Asn Leu Lys His Ile Asn
2090 2095 2100

Ile Asp Gln Phe Val Arg Lys Tyr Arg Ala Ala Leu Gly Lys Leu
2105 2110 2115

Pro Gln Gln Ala Asn Asp Tyr Leu Asn Ser Phe Asn Trp Glu Arg
2120 2125 2130

Gln Val Ser His Ala Lys Glu Lys Leu Thr Ala Leu Thr Lys Lys
2135 2140 2145

Tyr Arg Ile Thr Glu Asn Asp Ile Gln Ile Ala Leu Asp Asp Ala
2150 2155 2160

Lys Ile Asn Phe Asn Glu Lys Leu Ser Gln Leu Gln Thr Tyr Met
2165 2170 2175

Ile Gln Phe Asp Gln Tyr Ile Lys Asp Ser Tyr Asp Leu His Asp
2180 2185 2190

Leu Lys Ile Ala Ile Ala Asn Ile Ile Asp Glu Ile Ile Glu Lys
2195 2200 2205

Leu Lys Ser Leu Asp Glu His Tyr His Ile Arg Val Asn Leu Val
2210 2215 2220

Lys Thr Ile His Asp Leu His Leu Phe Ile Glu Asn Ile Asp Phe
2225 2230 2235

Asn Lys Ser Gly Ser Ser Thr Ala Ser Trp Ile Gln Asn Val Asp
2240 2245 2250

Thr Lys Tyr Gln Ile Arg Ile Gln Ile Gln Glu Lys Leu Gln Gln
2255 2260 2265

Leu Lys Arg His Ile Gln Asn Ile Asp Ile Gln His Leu Ala Gly
2270 2275 2280

Lys Leu Lys Gln His Ile Glu Ala Ile Asp Val Arg Val Leu Leu
2285 2290 2295

Asp Gln Leu Gly Thr Thr Ile Ser Phe Glu Arg Ile Asn Asp Ile
2300 2305 2310

Leu Glu His Val Lys His Phe Val Ile Asn Leu Ile Gly Asp Phe
2315 2320 2325

Glu Val Ala Glu Lys Ile Asn Ala Phe Arg Ala Lys Val His Glu
2330 2335 2340

Leu Ile Glu Arg Tyr Glu Val Asp Gln Gln Ile Gln Val Leu Met
2345 2350 2355

Asp Lys Leu Val Glu Leu Ala His Gln Tyr Lys Leu Lys Glu Thr
2360 2365 2370

Ile Gln Lys Leu Ser Asn Val Leu Gln Gln Val Lys Ile Lys Asp
2375 2380 2385

Tyr Phe Glu Lys Leu Val Gly Phe Ile Asp Asp Ala Val Lys Lys

2390 2395 2400

Leu Asn Glu Leu Ser Phe Lys Thr Phe Ile Glu Asp Val Asn Lys
2405 2410 2415

Phe Leu Asp Met Leu Ile Lys Lys Leu Lys Ser Phe Asp Tyr His
2420 2425 2430

Gln Phe Val Asp Glu Thr Asn Asp Lys Ile Arg Glu Val Thr Gln
2435 2440 2445

Arg Leu Asn Gly Glu Ile Gln Ala Leu Glu Leu Pro Gln Lys Ala
2450 2455 2460

Glu Ala Leu Lys Leu Phe Leu Glu Glu Thr Lys Ala Thr Val Ala
2465 2470 2475

Val Tyr Leu Glu Ser Leu Gln Asp Thr Lys Ile Thr Leu Ile Ile
2480 2485 2490

Asn Trp Leu Gln Glu Ala Leu Ser Ser Ala Ser Leu Ala His Met
2495 2500 2505

Lys Ala Lys Phe Arg Glu Thr Leu Glu Asp Thr Arg Asp Arg Met
2510 2515 2520

Tyr Gln Met Asp Ile Gln Gln Glu Leu Gln Arg Tyr Leu Ser Leu
2525 2530 2535

Val Gly Gln Val Tyr Ser Thr Leu Val Thr Tyr Ile Ser Asp Trp
2540 2545 2550

Trp Thr Leu Ala Ala Lys Asn Leu Thr Asp Phe Ala Glu Gln Tyr
2555 2560 2565

Ser Ile Gln Asp Trp Ala Lys Arg Met Lys Ala Leu Val Glu Gln
2570 2575 2580

Gly Phe Thr Val Pro Glu Ile Lys Thr Ile Leu Gly Thr Met Pro
2585 2590 2595

Ala Phe Glu Val Ser Leu Gln Ala Leu Gln Lys Ala Thr Phe Gln
2600 2605 2610

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Thr Pro  Asp Phe Ile Val Pro  Leu Thr Asp Leu Arg  Ile Pro Ser
    2615                 2620                 2625

Val Gln  Ile Asn Phe Lys Asp  Leu Lys Asn Ile Lys  Ile Pro Ser
    2630                 2635                 2640

Arg Phe  Ser Thr Pro Glu Phe  Thr Ile Leu Asn Thr  Phe His Ile
    2645                 2650                 2655

Pro Ser  Phe Thr Ile Asp Phe  Val Glu Met Lys Val  Lys Ile Ile
    2660                 2665                 2670

Arg Thr  Ile Asp Gln Met Leu  Asn Ser Glu Leu Gln  Trp Pro Val
    2675                 2680                 2685

Pro Asp  Ile Tyr Leu Arg Asp  Leu Lys Val Glu Asp  Ile Pro Leu
    2690                 2695                 2700

Ala Arg  Ile Thr Leu Pro Asp  Phe Arg Leu Pro Glu  Ile Ala Ile
    2705                 2710                 2715

Pro Glu  Phe Ile Ile Pro Thr  Leu Asn Leu Asn Asp  Phe Gln Val
    2720                 2725                 2730

Pro Asp  Leu His Ile Pro Glu  Phe Gln Leu Pro His  Ile Ser His
    2735                 2740                 2745

Thr Ile  Glu Val Pro Thr Phe  Gly Lys Leu Tyr Ser  Ile Leu Lys
    2750                 2755                 2760

Ile Gln  Ser Pro Leu Phe Thr  Leu Asp Ala Asn Ala  Asp Ile Gly
    2765                 2770                 2775

Asn Gly  Thr Thr Ser Ala Asn  Glu Ala Gly Ile Ala  Ala Ser Ile
    2780                 2785                 2790

Thr Ala  Lys Gly Glu Ser Lys  Leu Glu Val Leu Asn  Phe Asp Phe
    2795                 2800                 2805

Gln Ala  Asn Ala Gln Leu Ser  Asn Pro Lys Ile Asn  Pro Leu Ala
    2810                 2815                 2820
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Leu Lys  Glu Ser Val Lys Phe  Ser Ser Lys Tyr Leu  Arg Thr Glu
    2825                2830                2835

His Gly  Ser Glu Met Leu Phe  Phe Gly Asn Ala Ile  Glu Gly Lys
    2840                2845                2850

Ser Asn  Thr Val Ala Ser Leu  His Thr Glu Lys Asn  Thr Leu Glu
    2855                2860                2865

Leu Ser  Asn Gly Val Ile Val  Lys Ile Asn Asn Gln  Leu Thr Leu
    2870                2875                2880

Asp Ser  Asn Thr Lys Tyr Phe  His Lys Leu Asn Ile  Pro Lys Leu
    2885                2890                2895

Asp Phe  Ser Ser Gln Ala Asp  Leu Arg Asn Glu Ile  Lys Thr Leu
    2900                2905                2910

Leu Lys  Ala Gly His Ile Ala  Trp Thr Ser Ser Gly  Lys Gly Ser
    2915                2920                2925

Trp Lys  Trp Ala Cys Pro Arg  Phe Ser Asp Glu Gly  Thr His Glu
    2930                2935                2940

Ser Gln  Ile Ser Phe Thr Ile  Glu Gly Pro Leu Thr  Ser Phe Gly
    2945                2950                2955

Leu Ser  Asn Lys Ile Asn Ser  Lys His Leu Arg Val  Asn Gln Asn
    2960                2965                2970

Leu Val  Tyr Glu Ser Gly Ser  Leu Asn Phe Ser Lys  Leu Glu Ile
    2975                2980                2985

Gln Ser  Gln Val Asp Ser Gln  His Val Gly His Ser  Val Leu Thr
    2990                2995                3000

Ala Lys  Gly Met Ala Leu Phe  Gly Glu Gly Lys Ala  Glu Phe Thr
    3005                3010                3015

Gly Arg  His Asp Ala His Leu  Asn Gly Lys Val Ile  Gly Thr Leu
    3020                3025                3030
```

Lys Asn Ser Leu Phe Phe Ser Ala Gln Pro Phe Glu Ile Thr Ala
3035 3040 3045

Ser Thr Asn Asn Glu Gly Asn Leu Lys Val Arg Phe Pro Leu Arg
3050 3055 3060

Leu Thr Gly Lys Ile Asp Phe Leu Asn Asn Tyr Ala Leu Phe Leu
3065 3070 3075

Ser Pro Ser Ala Gln Gln Ala Ser Trp Gln Val Ser Ala Arg Phe
3080 3085 3090

Asn Gln Tyr Lys Tyr Asn Gln Asn Phe Ser Ala Gly Asn Asn Glu
3095 3100 3105

Asn Ile Met Glu Ala His Val Gly Ile Asn Gly Glu Ala Asn Leu
3110 3115 3120

Asp Phe Leu Asn Ile Pro Leu Thr Ile Pro Glu Met Arg Leu Pro
3125 3130 3135

Tyr Thr Ile Ile Thr Thr Pro Pro Leu Lys Asp Phe Ser Leu Trp
3140 3145 3150

Glu Lys Thr Gly Leu Lys Glu Phe Leu Lys Thr Thr Lys Gln Ser
3155 3160 3165

Phe Asp Leu Ser Val Lys Ala Gln Tyr Lys Lys Asn Lys His Arg
3170 3175 3180

His Ser Ile Thr Asn Pro Leu Ala Val Leu Cys Glu Phe Ile Ser
3185 3190 3195

Gln Ser Ile Lys Ser Phe Asp Arg His Phe Glu Lys Asn Arg Asn
3200 3205 3210

Asn Ala Leu Asp Phe Val Thr Lys Ser Tyr Asn Glu Thr Lys Ile
3215 3220 3225

Lys Phe Asp Lys Tyr Lys Ala Glu Lys Ser His Asp Glu Leu Pro
3230 3235 3240

Arg Thr Phe Gln Ile Pro Gly Tyr Thr Val Pro Val Val Asn Val

3245 3250 3255

Glu Val Ser Pro Phe Thr Ile Glu Met Ser Ala Phe Gly Tyr Val
3260 3265 3270

Phe Pro Lys Ala Val Ser Met Pro Ser Phe Ser Ile Leu Gly Ser
3275 3280 3285

Asp Val Arg Val Pro Ser Tyr Thr Leu Ile Leu Pro Ser Leu Glu
3290 3295 3300

Leu Pro Val Leu His Val Pro Arg Asn Leu Lys Leu Ser Leu Pro
3305 3310 3315

Asp Phe Lys Glu Leu Cys Thr Ile Ser His Ile Phe Ile Pro Ala
3320 3325 3330

Met Gly Asn Ile Thr Tyr Asp Phe Ser Phe Lys Ser Ser Val Ile
3335 3340 3345

Thr Leu Asn Thr Asn Ala Glu Leu Phe Asn Gln Ser Asp Ile Val
3350 3355 3360

Ala His Leu Leu Ser Ser Ser Ser Ser Val Ile Asp Ala Leu Gln
3365 3370 3375

Tyr Lys Leu Glu Gly Thr Thr Arg Leu Thr Arg Lys Arg Gly Leu
3380 3385 3390

Lys Leu Ala Thr Ala Leu Ser Leu Ser Asn Lys Phe Val Glu Gly
3395 3400 3405

Ser His Asn Ser Thr Val Ser Leu Thr Thr Lys Asn Met Glu Val
3410 3415 3420

Ser Val Ala Thr Thr Thr Lys Ala Gln Ile Pro Ile Leu Arg Met
3425 3430 3435

Asn Phe Lys Gln Glu Leu Asn Gly Asn Thr Lys Ser Lys Pro Thr
3440 3445 3450

Val Ser Ser Ser Met Glu Phe Lys Tyr Asp Phe Asn Ser Ser Met
3455 3460 3465

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Leu Tyr  Ser Thr Ala Lys Gly  Ala Val Asp His Lys  Leu Ser Leu
    3470                 3475                 3480

Glu Ser  Leu Thr Ser Tyr Phe  Ser Ile Glu Ser Ser  Thr Lys Gly
    3485                 3490                 3495

Asp Val  Lys Gly Ser Val Leu  Ser Arg Glu Tyr Ser  Gly Thr Ile
    3500                 3505                 3510

Ala Ser  Glu Ala Asn Thr Tyr  Leu Asn Ser Lys Ser  Thr Arg Ser
    3515                 3520                 3525

Ser Val  Lys Leu Gln Gly Thr  Ser Lys Ile Asp Asp  Ile Trp Asn
    3530                 3535                 3540

Leu Glu  Val Lys Glu Asn Phe  Ala Gly Glu Ala Thr  Leu Gln Arg
    3545                 3550                 3555

Ile Tyr  Ser Leu Trp Glu His  Ser Thr Lys Asn His  Leu Gln Leu
    3560                 3565                 3570

Glu Gly  Leu Phe Phe Thr Asn  Gly Glu His Thr Ser  Lys Ala Thr
    3575                 3580                 3585

Leu Glu  Leu Ser Pro Trp Gln  Met Ser Ala Leu Val  Gln Val His
    3590                 3595                 3600

Ala Ser  Gln Pro Ser Ser Phe  His Asp Phe Pro Asp  Leu Gly Gln
    3605                 3610                 3615

Glu Val  Ala Leu Asn Ala Asn  Thr Lys Asn Gln Lys  Ile Arg Trp
    3620                 3625                 3630

Lys Asn  Glu Val Arg Ile His  Ser Gly Ser Phe Gln  Ser Gln Val
    3635                 3640                 3645

Glu Leu  Ser Asn Asp Gln Glu  Lys Ala His Leu Asp  Ile Ala Gly
    3650                 3655                 3660

Ser Leu  Glu Gly His Leu Arg  Phe Leu Lys Asn Ile  Ile Leu Pro
    3665                 3670                 3675
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Val Tyr  Asp Lys Ser Leu Trp  Asp Phe Leu Lys Leu  Asp Val Thr
    3680                 3685                 3690

Thr Ser  Ile Gly Arg Arg Gln  His Leu Arg Val Ser  Thr Ala Phe
    3695                 3700                 3705

Val Tyr  Thr Lys Asn Pro Asn  Gly Tyr Ser Phe Ser  Ile Pro Val
    3710                 3715                 3720

Lys Val  Leu Ala Asp Lys Phe  Ile Ile Pro Gly Leu  Lys Leu Asn
    3725                 3730                 3735

Asp Leu  Asn Ser Val Leu Val  Met Pro Thr Phe His  Val Pro Phe
    3740                 3745                 3750

Thr Asp  Leu Gln Val Pro Ser  Cys Lys Leu Asp Phe  Arg Glu Ile
    3755                 3760                 3765

Gln Ile  Tyr Lys Lys Leu Arg  Thr Ser Ser Phe Ala  Leu Asn Leu
    3770                 3775                 3780

Pro Thr  Leu Pro Glu Val Lys  Phe Pro Glu Val Asp  Val Leu Thr
    3785                 3790                 3795

Lys Tyr  Ser Gln Pro Glu Asp  Ser Leu Ile Pro Phe  Phe Glu Ile
    3800                 3805                 3810

Thr Val  Pro Glu Ser Gln Leu  Thr Val Ser Gln Phe  Thr Leu Pro
    3815                 3820                 3825

Lys Ser  Val Ser Asp Gly Ile  Ala Ala Leu Asp Leu  Asn Ala Val
    3830                 3835                 3840

Ala Asn  Lys Ile Ala Asp Phe  Glu Leu Pro Thr Ile  Ile Val Pro
    3845                 3850                 3855

Glu Gln  Thr Ile Glu Ile Pro  Ser Ile Lys Phe Ser  Val Pro Ala
    3860                 3865                 3870

Gly Ile  Val Ile Pro Ser Phe  Gln Ala Leu Thr Ala  Arg Phe Glu
    3875                 3880                 3885
```

Val Asp Ser Pro Val Tyr Asn Ala Thr Trp Ser Ala Ser Leu Lys
3890 3895 3900

Asn Lys Ala Asp Tyr Val Glu Thr Val Leu Asp Ser Thr Cys Ser
3905 3910 3915

Ser Thr Val Gln Phe Leu Glu Tyr Glu Leu Asn Val Leu Gly Thr
3920 3925 3930

His Lys Ile Glu Asp Gly Thr Leu Ala Ser Lys Thr Lys Gly Thr
3935 3940 3945

Phe Ala His Arg Asp Phe Ser Ala Glu Tyr Glu Glu Asp Gly Lys
3950 3955 3960

Tyr Glu Gly Leu Gln Glu Trp Glu Gly Lys Ala His Leu Asn Ile
3965 3970 3975

Lys Ser Pro Ala Phe Thr Asp Leu His Leu Arg Tyr Gln Lys Asp
3980 3985 3990

Lys Lys Gly Ile Ser Thr Ser Ala Ala Ser Pro Ala Val Gly Thr
3995 4000 4005

Val Gly Met Asp Met Asp Glu Asp Asp Asp Phe Ser Lys Trp Asn
4010 4015 4020

Phe Tyr Tyr Ser Pro Gln Ser Ser Pro Asp Lys Lys Leu Thr Ile
4025 4030 4035

Phe Lys Thr Glu Leu Arg Val Arg Glu Ser Asp Glu Glu Thr Gln
4040 4045 4050

Ile Lys Val Asn Trp Glu Glu Glu Ala Ala Ser Gly Leu Leu Thr
4055 4060 4065

Ser Leu Lys Asp Asn Val Pro Lys Ala Thr Gly Val Leu Tyr Asp
4070 4075 4080

Tyr Val Asn Lys Tyr His Trp Glu His Thr Gly Leu Thr Leu Arg
4085 4090 4095

Glu Val Ser Ser Lys Leu Arg Arg Asn Leu Gln Asn Asn Ala Glu

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    4100                4105                4110

Trp Val  Tyr Gln Gly Ala Ile  Arg Gln Ile Asp Asp  Ile Asp Val
    4115                4120                4125

Arg Phe  Gln Lys Ala Ala Ser  Gly Thr Thr Gly Thr  Tyr Gln Glu
    4130                4135                4140

Trp Lys  Asp Lys Ala Gln Asn  Leu Tyr Gln Glu Leu  Leu Thr Gln
    4145                4150                4155

Glu Gly  Gln Ala Ser Phe Gln  Gly Leu Lys Asp Asn  Val Phe Asp
    4160                4165                4170

Gly Leu  Val Arg Val Thr Gln  Glu Phe His Met Lys  Val Lys His
    4175                4180                4185

Leu Ile  Asp Ser Leu Ile Asp  Phe Leu Asn Phe Pro  Arg Phe Gln
    4190                4195                4200

Phe Pro  Gly Lys Pro Gly Ile  Tyr Thr Arg Glu Glu  Leu Cys Thr
    4205                4210                4215

Met Phe  Ile Arg Glu Val Gly  Thr Val Leu Ser Gln  Val Tyr Ser
    4220                4225                4230

Lys Val  His Asn Gly Ser Glu  Ile Leu Phe Ser Tyr  Phe Gln Asp
    4235                4240                4245

Leu Val  Ile Thr Leu Pro Phe  Glu Leu Arg Lys His  Lys Leu Ile
    4250                4255                4260

Asp Val  Ile Ser Met Tyr Arg  Glu Leu Leu Lys Asp  Leu Ser Lys
    4265                4270                4275

Glu Ala  Gln Glu Val Phe Lys  Ala Ile Gln Ser Leu  Lys Thr Thr
    4280                4285                4290

Glu Val  Leu Arg Asn Leu Gln  Asp Leu Leu Gln Phe  Ile Phe Gln
    4295                4300                4305

Leu Ile  Glu Asp Asn Ile Lys  Gln Leu Lys Glu Met  Lys Phe Thr
    4310                4315                4320
```

```
Tyr Leu  Ile Asn Tyr Ile Gln  Asp Glu Ile Asn Thr  Ile Phe Ser
    4325                 4330                 4335

Asp Tyr  Ile Pro Tyr Val Phe  Lys Leu Leu Lys Glu  Asn Leu Cys
    4340                 4345                 4350

Leu Asn  Leu His Lys Phe Asn  Glu Phe Ile Gln Asn  Glu Leu Gln
    4355                 4360                 4365

Glu Ala  Ser Gln Glu Leu Gln  Gln Ile His Gln Tyr  Ile Met Ala
    4370                 4375                 4380

Leu Arg  Glu Glu Tyr Phe Asp  Pro Ser Ile Val Gly  Trp Thr Val
    4385                 4390                 4395

Lys Tyr  Tyr Glu Leu Glu Glu  Lys Ile Val Ser Leu  Ile Lys Asn
    4400                 4405                 4410

Leu Leu  Val Ala Leu Lys Asp  Phe His Ser Glu Tyr  Ile Val Ser
    4415                 4420                 4425

Ala Ser  Asn Phe Thr Ser Gln  Leu Ser Ser Gln Val  Glu Gln Phe
    4430                 4435                 4440

Leu His  Arg Asn Ile Gln Glu  Tyr Leu Ser Ile Leu  Thr Asp Pro
    4445                 4450                 4455

Asp Gly  Lys Gly Lys Glu Lys  Ile Ala Glu Leu Ser  Ala Thr Ala
    4460                 4465                 4470

Gln Glu  Ile Ile Lys Ser Gln  Ala Ile Ala Thr Lys  Lys Ile Ile
    4475                 4480                 4485

Ser Asp  Tyr His Gln Gln Phe  Arg Tyr Lys Leu Gln  Asp Phe Ser
    4490                 4495                 4500

Asp Gln  Leu Ser Asp Tyr Tyr  Glu Lys Phe Ile Ala  Glu Ser Lys
    4505                 4510                 4515

Arg Leu  Ile Asp Leu Ser Ile  Gln Asn Tyr His Thr  Phe Leu Ile
    4520                 4525                 4530
```

Tyr Ile Thr Glu Leu Leu Lys Lys Leu Gln Ser Thr Thr Val Met
4535 4540 4545

Asn Pro Tyr Met Lys Leu Ala Pro Gly Glu Leu Thr Ile Ile Leu
4550 4555 4560

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Glu Asn Val Ser Leu Val Cys Pro Lys Asp Ala Thr Arg Phe Lys His
35 40 45

Leu Arg Lys Tyr Thr Tyr Asn Tyr Glu Ala Glu Ser Ser Ser Gly Val
50 55 60

Pro Gly Thr Ala Asp Ser Arg Ser Ala Thr Arg Ile Asn Cys Lys Val
65 70 75 80

Glu Leu Glu Val Pro Gln Leu Cys Ser Phe Ile Leu Lys Thr Ser Gln
85 90 95

Cys Thr Leu Lys Glu Val Tyr Gly Phe Asn Pro Glu Gly Lys Ala Leu

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            100                 105                 110

Leu Lys Lys Thr Lys Asn Ser Glu Glu Phe Ala Ala Ala Met Ser Arg
        115                 120                 125

Tyr Glu Leu Lys Leu Ala Ile Pro Glu Gly Lys Gln Val Phe Leu Tyr
    130                 135                 140

Pro Glu Lys Asp Glu Pro Thr Tyr Ile Leu Asn Ile Lys Arg Gly Ile
145                 150                 155                 160

Ile Ser Ala Leu Leu Val Pro Pro Glu Thr Glu Glu Ala Lys Gln Val
                165                 170                 175

Leu Phe Leu Asp Thr Val Tyr Gly Asn Cys Ser Thr His Phe Thr Val
            180                 185                 190

Lys Thr Arg Lys Gly Asn Val Ala Thr Glu Ile Ser Thr Glu Arg Asp
        195                 200                 205

Leu Gly Gln Cys Asp Arg Phe Lys Pro Ile Arg Thr Gly Ile Ser Pro
    210                 215                 220

Leu Ala Leu Ile Lys Gly Met Thr Arg Pro Leu Ser Thr Leu Ile Ser
225                 230                 235                 240

Ser Ser Gln Ser Cys Gln Tyr Thr Leu Asp Ala Lys Arg Lys His Val
                245                 250                 255

Ala Glu Ala Ile Cys Lys Glu Gln His Leu Phe Leu Pro Phe Ser Tyr
            260                 265                 270

Lys Asn Lys Tyr Gly Met Val Ala Gln Val Thr Gln Thr Leu Lys Leu
        275                 280                 285

Glu Asp Thr Pro Lys Ile Asn Ser Arg Phe Phe Gly Glu Gly Thr Lys
    290                 295                 300

Lys Met Gly Leu Ala Phe Glu Ser Thr Lys Ser Thr Ser Pro Pro Lys
305                 310                 315                 320

Gln Ala Glu Ala Val Leu Lys Thr Leu Gln Glu Leu Lys Lys Leu Thr
                325                 330                 335
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Ile Ser Glu Gln Asn Ile Gln Arg Ala Asn Leu Phe Asn Lys Leu Val
            340                 345                 350

Thr Glu Leu Arg Gly Leu Ser Asp Glu Ala Val Thr Ser Leu Leu Pro
        355                 360                 365

Gln Leu Ile Glu Val Ser Ser Pro Ile Thr Leu Gln Ala Leu Val Gln
    370                 375                 380

Cys Gly Gln Pro Gln Cys Ser Thr His Ile Leu Gln Trp Leu Lys Arg
385                 390                 395                 400

Val His Ala Asn Pro Leu Leu Ile Asp Val Val Thr Tyr Leu Val Ala
                405                 410                 415

Leu Ile Pro Glu Pro Ser Ala Gln Gln Leu Arg Glu Ile Phe Asn Met
            420                 425                 430

Ala Arg Asp Gln Arg Ser Arg Ala Thr Leu Tyr Ala Leu Ser His Ala
        435                 440                 445

Val Asn Asn Tyr His Lys Thr Asn Pro Thr Gly Thr Gln Glu Leu Leu
    450                 455                 460

Asp Ile Ala Asn Tyr Leu Met Glu Gln Ile Gln Asp Asp Cys Thr Gly
465                 470                 475                 480

Asp Glu Asp Tyr Thr Tyr Leu Ile Leu Arg Val Ile Gly Asn Met Gly
                485                 490                 495

Gln Thr Met Glu Gln Leu Thr Pro Glu Leu Lys Ser Ser Ile Leu Lys
            500                 505                 510

Cys Val Gln Ser Thr Lys Pro Ser Leu Met Ile Gln Lys Ala Ala Ile
        515                 520                 525

Gln Ala Leu Arg Lys Met Glu Pro Lys Asp Lys Asp Gln Glu Val Leu
    530                 535                 540

Leu Gln Thr Phe Leu Asp Asp Ala Ser Pro Gly Asp Lys Arg Leu Ala
545                 550                 555                 560
```

Ala Tyr Leu Met Leu Met Arg Ser Pro Ser Gln Ala Asp Ile Asn Lys
565 570 575

Ile Val Gln Ile Leu Pro Trp Glu Gln Asn Glu Gln Val Lys Asn Phe
580 585 590

Val Ala Ser His Ile Ala Asn Ile Leu Asn Ser Glu Glu Leu Asp Ile
595 600 605

Gln Asp Leu Lys Lys Leu Val Lys Glu Ala Leu Lys Glu Ser Gln Leu
610 615 620

Pro Thr Val Met Asp Phe Arg Lys Phe Ser Arg Asn Tyr Gln Leu Tyr
625 630 635 640

Lys Ser Val Ser Leu Pro Ser Leu Asp Pro Ala Ser Ala Lys Ile Glu
645 650 655

Gly Asn Leu Ile Phe Asp Pro Asn Asn Tyr Leu Pro Lys Glu Ser Met
660 665 670

Leu Lys Thr Thr Leu Thr Ala Phe Gly Phe Ala Ser Ala Asp Leu Ile
675 680 685

Glu Ile Gly Leu Glu Gly Lys Gly Phe Glu Pro Thr Leu Glu Ala Leu
690 695 700

Phe Gly Lys Gln Gly Phe Phe Pro Asp Ser Val Asn Lys Ala Leu Tyr
705 710 715 720

Trp Val Asn Gly Gln Val Pro Asp Gly Val Ser Lys Val Leu Val Asp
725 730 735

His Phe Gly Tyr Thr Lys Asp Asp Lys His Glu Gln Asp Met Val Asn
740 745 750

Gly Ile Met Leu Ser Val Glu Lys Leu Ile Lys Asp Leu Lys Ser Lys
755 760 765

Glu Val Pro Glu Ala Arg Ala Tyr Leu Arg Ile Leu Gly Glu Glu Leu
770 775 780

```
Gly Phe Ala Ser Leu His Asp Leu Gln Leu Leu Gly Lys Leu Leu Leu
785                 790                 795                 800

Met Asp Arg Pro Asp Ser Leu Thr Ile Pro Ala Ala Gln Ala Arg Lys
                805                 810                 815

Asp Ala Cys Thr Phe Phe Arg Asp Gly Gly Leu Pro
            820                 825


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Leu Leu Leu Leu Leu Leu Ala Gly Ala Arg Ala Glu Glu Glu Met Leu
            20                  25                  30

Glu Asn Val Ser Leu Val Cys Pro Lys Asp Ala Thr Arg Phe Lys His
        35                  40                  45

Leu Arg Lys Tyr Thr Tyr Asn Tyr Glu Ala Glu Ser Ser Ser Gly Val
    50                  55                  60

Pro Gly Thr Ala Asp Ser Arg Ser Ala Thr Arg Ile Asn Cys Lys Val
65                  70                  75                  80

Glu Leu Glu Val Pro Gln Leu Cys Ser Phe Ile Leu Lys Thr Ser Gln
                85                  90                  95
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Cys Thr Leu Lys Glu Val Tyr Gly Phe Asn Pro Glu Gly Lys Ala Leu
            100                 105                 110

Leu Lys Lys Thr Lys Asn Ser Glu Glu Phe Ala Ala Ala Met Ser Arg
        115                 120                 125

Tyr Glu Leu Lys Leu Ala Ile Pro Glu Gly Lys Gln Val Phe Leu Tyr
    130                 135                 140

Pro Glu Lys Asp Glu Pro Thr Tyr Ile Leu Asn Ile Lys Arg Gly Ile
145                 150                 155                 160

Ile Ser Ala Leu Leu Val Pro Pro Glu Thr Glu Glu Ala Lys Gln Val
                165                 170                 175

Leu Phe Leu Asp Thr Val Tyr Gly Asn Cys Ser Thr His Phe Thr Val
            180                 185                 190

Lys Thr Arg Lys Gly Asn Val Ala Thr Glu Ile Ser Thr Glu Arg Asp
        195                 200                 205

Leu Gly Gln Cys Asp Arg Phe Lys Pro Ile Arg Thr Gly Ile Ser Pro
    210                 215                 220

Leu Ala Leu Ile Lys Gly Met Thr Arg Pro Leu Ser Thr Leu Ile Ser
225                 230                 235                 240

Ser Ser Gln Ser Cys Gln Tyr Thr Leu Asp Ala Lys Arg Lys His Val
                245                 250                 255

Ala Glu Ala Ile Cys Lys Glu Gln His Leu Phe Leu Pro Phe Ser Tyr
            260                 265                 270

Lys Asn Lys Tyr Gly Met Val Ala Gln Val Thr Gln Thr Leu Lys Leu
        275                 280                 285

Glu Asp Thr Pro Lys Ile Asn Ser Arg Phe Phe Gly Glu Gly Thr Lys
    290                 295                 300

Lys Met Gly Leu Ala Phe Glu Ser Thr Lys Ser Thr Ser Pro Pro Lys
305                 310                 315                 320
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Gln Ala Glu Ala Val Leu Lys Thr Leu Gln Glu Leu Lys Lys Leu Thr
                325                 330                 335

Ile Ser Glu Gln Asn Ile Gln Arg Ala Asn Leu Phe Asn Lys Leu Val
            340                 345                 350

Thr Glu Leu Arg Gly Leu Ser Asp Glu Ala Val Thr Ser Leu Leu Pro
        355                 360                 365

Gln Leu Ile Glu Val Ser Ser Pro Ile Thr Leu Gln Ala Leu Val Gln
    370                 375                 380

Cys Gly Gln Pro Gln Cys Ser Thr His Ile Leu Gln Trp Leu Lys Arg
385                 390                 395                 400

Val His Ala Asn Pro Leu Leu Ile Asp Val Val Thr Tyr Leu Val Ala
                405                 410                 415

Leu Ile Pro Glu Pro Ser Ala Gln Gln Leu Arg Glu Ile Phe Asn Met
            420                 425                 430

Ala Arg Asp Gln Arg Ser Arg Ala Thr Leu Tyr Ala Leu Ser His Ala
        435                 440                 445

Val Asn Asn Tyr His Lys Thr Asn Pro Thr Gly Thr Gln Glu Leu Leu
    450                 455                 460

Asp Ile Ala Asn Tyr Leu Met Glu Gln Ile Gln Asp Asp Cys Thr Gly
465                 470                 475                 480

Asp Glu Asp Tyr Thr Tyr Leu Ile Leu Arg Val Ile Gly Asn Met Gly
                485                 490                 495

Gln Thr Met Glu Gln Leu Thr Pro Glu Leu Lys Ser Ser Ile Leu Lys
            500                 505                 510

Cys Val Gln Ser Thr Lys Pro Ser Leu Met Ile Gln Lys Ala Ala Ile
        515                 520                 525

Gln Ala Leu Arg Lys Met Glu Pro Lys Asp Lys Asp Gln Glu Val Leu
    530                 535                 540
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Leu Gln Thr Phe Leu Asp Asp Ala Ser Pro Gly Asp Lys Arg Leu Ala
545                 550                 555                 560

Ala Tyr Leu Met Leu Met Arg Ser Pro Ser Gln Ala Asp Ile Asn Lys
                565                 570                 575

Ile Val Gln Ile Leu Pro Trp Glu Gln Asn Glu Gln Val Lys Asn Phe
            580                 585                 590

Val Ala Ser His Ile Ala Asn Ile Leu Asn Ser Glu Glu Leu Asp Ile
        595                 600                 605

Gln Asp Leu Lys Lys Leu Val Lys Glu Ala Leu Lys Glu Ser Gln Leu
    610                 615                 620

Pro Thr Val Met Asp Phe Arg Lys Phe Ser Arg Asn Tyr Gln Leu Tyr
625                 630                 635                 640

Lys Ser Val Ser Leu Pro Ser Leu Asp Pro Ala Ser Ala Lys Ile Glu
                645                 650                 655

Gly Asn Leu Ile Phe Asp Pro Asn Asn Tyr Leu Pro Lys Glu Ser Met
            660                 665                 670

Leu Lys Thr Thr Leu Thr Ala Phe Gly Phe Ala Ser Ala Asp Leu Ile
        675                 680                 685

Glu Ile Gly Leu Glu Gly Lys Gly Phe Glu Pro Thr Leu Glu Ala Leu
    690                 695                 700

Phe Gly Lys Gln Gly Phe Phe Pro Asp Ser Val Asn Lys Ala Leu Tyr
705                 710                 715                 720

Trp Val Asn Gly Gln Val Pro Asp Gly Val Ser Lys Val Leu Val Asp
                725                 730                 735

His Phe Gly Tyr Thr Lys Asp Asp Lys His Glu Gln Asp Met Val Asn
            740                 745                 750

Gly Ile Met Leu Ser Val Glu Lys Leu Ile Lys Asp Leu Lys Ser Lys
        755                 760                 765

Glu Val Pro Glu Ala Arg Ala Tyr Leu Arg Ile Leu Gly Glu Glu Leu
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770 775 780

Gly Phe Ala Ser Leu His Asp Leu Gln Leu Leu Gly Lys Leu Leu Leu
785 790 795 800

Met Gly Ala Arg Thr Leu Gln Gly Ile Pro Gln Met Ile Gly Glu Val
805 810 815

Ile Arg Lys Gly Ser Lys Asn Asp Phe Phe Leu His Tyr Ile Phe Met
820 825 830

Glu Asn Ala Phe Glu Leu Pro Thr Gly Ala Gly Leu Gln Leu Gln Ile
835 840 845

Ser Ser Ser Gly Val Ile Ala Pro Gly Ala Lys Ala Gly Val Lys Leu
850 855 860

Glu Val Ala Asn Met Gln Ala Glu Leu Val Ala Lys Pro Ser Val Ser
865 870 875 880

Val Glu Phe Val Thr Asn Met Gly Ile Ile Ile Pro Asp Phe Ala Arg
885 890 895

Ser Gly Val Gln Met Asn Thr Asn Phe Phe His Glu Ser Gly Leu Glu
900 905 910

Ala His Val Ala Leu Lys Ala Gly Lys Leu Lys Phe Ile Ile Pro Ser
915 920 925

Pro Lys Arg Pro Val Lys Leu Leu Ser Gly Gly Asn Thr Leu His Leu
930 935 940

Val Ser Thr Thr Lys Thr Glu Val Ile Pro Pro Leu Ile Glu Asn Arg
945 950 955 960

Gln Ser Trp Ser Val Cys Lys Gln Val Phe Pro Gly Leu Asn Tyr Cys
965 970 975

Thr Ser Gly Ala Tyr Ser Asn Ala Ser Ser Thr Asp Ser Ala Ser Tyr
980 985 990

Tyr Pro Leu Thr Gly Asp Thr Arg Leu Glu Leu Glu Leu Arg Pro
Thr

995 1000 1005

Gly Glu Ile Glu Gln Tyr Ser Val Ser Ala Thr Tyr Glu Leu Gln
1010 1015 1020

Arg Glu Asp Arg Ala Leu Val Asp Thr Leu Lys Phe Val Thr Gln
1025 1030 1035

Ala Glu Gly Ala Lys Gln Thr Glu Ala Thr Met Thr Phe Lys Tyr
1040 1045 1050

Asn Arg Gln Ser Met Thr Leu Ser Ser Glu Val Gln Ile Pro Asp
1055 1060 1065

Phe Asp Val Asp Leu Gly Thr Ile Leu Arg Val Asn Asp Glu Ser
1070 1075 1080

Thr Glu Gly Lys Thr Ser Tyr Arg Leu Thr Leu Asp Ile Gln Asn
1085 1090 1095

Lys Lys Ile Thr Glu Val Ala Leu Met Gly His Leu Ser Cys Asp
1100 1105 1110

Thr Lys Glu Glu Arg Lys Ile Lys Gly Val Ile Ser Ile Pro Arg
1115 1120 1125

Leu Gln Ala Glu Ala Arg Ser Glu Ile Leu Ala His Trp Ser Pro
1130 1135 1140

Ala Lys Leu Leu Leu Gln Met Asp Ser Ser Ala Thr Ala Tyr Gly
1145 1150 1155

Ser Thr Val Ser Lys Arg Val Ala Trp His Tyr Asp Glu Glu Lys
1160 1165 1170

Ile Glu Phe Glu Trp Asn Thr Gly Thr Asn Val Asp Thr Lys Lys
1175 1180 1185

Met Thr Ser Asn Phe Pro Val Asp Leu Ser Asp Tyr Pro Lys Ser
1190 1195 1200

Leu His Met Tyr Ala Asn Arg Leu Leu Asp His Arg Val Pro Gln
1205 1210 1215

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Thr Asp  Met Thr Phe Arg His  Val Gly Ser Lys Leu  Ile Val Ala
    1220                1225                1230

Met Ser  Ser Trp Leu Gln Lys  Ala Ser Gly Ser Leu  Pro Tyr Thr
    1235                1240                1245

Gln Thr  Leu Gln Asp His Leu  Asn Ser Leu Lys Glu  Phe Asn Leu
    1250                1255                1260

Gln Asn  Met Gly Leu Pro Asp  Phe His Ile Pro Glu  Asn Leu Phe
    1265                1270                1275

Leu Lys  Ser Asp Gly Arg Val  Lys Tyr Thr Leu Asn  Lys Asn Ser
    1280                1285                1290

Leu Lys  Ile Glu Ile Pro Leu  Pro Phe Gly Gly Lys  Ser Ser Arg
    1295                1300                1305

Asp Leu  Lys Met Leu Glu Thr  Val Arg Thr Pro Ala  Leu His Phe
    1310                1315                1320

Lys Ser  Val Gly Phe His Leu  Pro Ser Arg Glu Phe  Gln Val Pro
    1325                1330                1335

Thr Phe  Thr Ile Pro Lys Leu  Tyr Gln Leu Gln Val  Pro Leu Leu
    1340                1345                1350

Gly Val  Leu Asp Leu Ser Thr  Asn Val Tyr Ser Asn  Leu Tyr Asn
    1355                1360                1365

Trp Ser  Ala Ser Tyr Ser Gly  Gly Asn Thr Ser Thr  Asp His Phe
    1370                1375                1380

Ser Leu  Arg Ala Arg Tyr His  Met Lys Ala Asp Ser  Val Val Asp
    1385                1390                1395

Leu Leu  Ser Tyr Asn Val Gln  Gly Ser Gly Glu Thr  Thr Tyr Asp
    1400                1405                1410

His Lys  Asn Thr Phe Thr Leu  Ser Cys Asp Gly Ser  Leu Arg His
    1415                1420                1425
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Lys Phe Leu Asp Ser Asn Ile Lys Phe Ser His Val Glu Lys Leu
1430 1435 1440

Gly Asn Asn Pro Val Ser Lys Gly Leu Leu Ile Phe Asp Ala Ser
1445 1450 1455

Ser Ser Trp Gly Pro Gln Met Ser Ala Ser Val His Leu Asp Ser
1460 1465 1470

Lys Lys Lys Gln His Leu Phe Val Lys Glu Val Lys Ile Asp Gly
1475 1480 1485

Gln Phe Arg Val Ser Ser Phe Tyr Ala Lys Gly Thr Tyr Gly Leu
1490 1495 1500

Ser Cys Gln Arg Asp Pro Asn Thr Gly Arg Leu Asn Gly Glu Ser
1505 1510 1515

Asn Leu Arg Phe Asn Ser Ser Tyr Leu Gln Gly Thr Asn Gln Ile
1520 1525 1530

Thr Gly Arg Tyr Glu Asp Gly Thr Leu Ser Leu Thr Ser Thr Ser
1535 1540 1545

Asp Leu Gln Ser Gly Ile Ile Lys Asn Thr Ala Ser Leu Lys Tyr
1550 1555 1560

Glu Asn Tyr Glu Leu Thr Leu Lys Ser Asp Thr Asn Gly Lys Tyr
1565 1570 1575

Lys Asn Phe Ala Thr Ser Asn Lys Met Asp Met Thr Phe Ser Lys
1580 1585 1590

Gln Asn Ala Leu Leu Arg Ser Glu Tyr Gln Ala Asp Tyr Glu Ser
1595 1600 1605

Leu Arg Phe Phe Ser Leu Leu Ser Gly Ser Leu Asn Ser His Gly
1610 1615 1620

Leu Glu Leu Asn Ala Asp Ile Leu Gly Thr Asp Lys Ile Asn Ser
1625 1630 1635

Gly Ala His Lys Ala Thr Leu Arg Ile Gly Gln Asp Gly Ile Ser
1640 1645 1650

Thr Ser Ala Thr Thr Asn Leu Lys Cys Ser Leu Leu Val Leu Glu
1655 1660 1665

Asn Glu Leu Asn Ala Glu Leu Gly Leu Ser Gly Ala Ser Met Lys
1670 1675 1680

Leu Thr Thr Asn Gly Arg Phe Arg Glu His Asn Ala Lys Phe Ser
1685 1690 1695

Leu Asp Gly Lys Ala Ala Leu Thr Glu Leu Ser Leu Gly Ser Ala
1700 1705 1710

Tyr Gln Ala Met Ile Leu Gly Val Asp Ser Lys Asn Ile Phe Asn
1715 1720 1725

Phe Lys Val Ser Gln Glu Gly Leu Lys Leu Ser Asn Asp Met Met
1730 1735 1740

Gly Ser Tyr Ala Glu Met Lys Phe Asp His Thr Asn Ser Leu Asn
1745 1750 1755

Ile Ala Gly Leu Ser Leu Asp Phe Ser Ser Lys Leu Asp Asn Ile
1760 1765 1770

Tyr Ser Ser Asp Lys Phe Tyr Lys Gln Thr Val Asn Leu Gln Leu
1775 1780 1785

Gln Pro Tyr Ser Leu Val Thr Thr Leu Asn Ser Asp Leu Lys Tyr
1790 1795 1800

Asn Ala Leu Asp Leu Thr Asn Asn Gly Lys Leu Arg Leu Glu Pro
1805 1810 1815

Leu Lys Leu His Val Ala Gly Asn Leu Lys Gly Ala Tyr Gln Asn
1820 1825 1830

Asn Glu Ile Lys His Ile Tyr Ala Ile Ser Ser Ala Ala Leu Ser
1835 1840 1845

Ala Ser Tyr Lys Ala Asp Thr Val Ala Lys Val Gln Gly Val Glu

1850 1855 1860

Phe Ser His Arg Leu Asn Thr Asp Ile Ala Gly Leu Ala Ser Ala
1865 1870 1875

Ile Asp Met Ser Thr Asn Tyr Asn Ser Asp Ser Leu His Phe Ser
1880 1885 1890

Asn Val Phe Arg Ser Val Met Ala Pro Phe Thr Met Thr Ile Asp
1895 1900 1905

Ala His Thr Asn Gly Asn Gly Lys Leu Ala Leu Trp Gly Glu His
1910 1915 1920

Thr Gly Gln Leu Tyr Ser Lys Phe Leu Leu Lys Ala Glu Pro Leu
1925 1930 1935

Ala Phe Thr Phe Ser His Asp Tyr Lys Gly Ser Thr Ser His His
1940 1945 1950

Leu Val Ser Arg Lys Ser Ile Ser Ala Ala Leu Glu His Lys Val
1955 1960 1965

Ser Ala Leu Leu Thr Pro Ala Glu Gln Thr Gly Thr Trp Lys Leu
1970 1975 1980

Lys Thr Gln Phe Asn Asn Asn Glu Tyr Ser Gln Asp Leu Asp Ala
1985 1990 1995

Tyr Asn Thr Lys Asp Lys Ile Gly Val Glu Leu Thr Gly Arg Thr
2000 2005 2010

Leu Ala Asp Leu Thr Leu Leu Asp Ser Pro Ile Lys Val Pro Leu
2015 2020 2025

Leu Leu Ser Glu Pro Ile Asn Ile Ile Asp Ala Leu Glu Met Arg
2030 2035 2040

Asp Ala Val Glu Lys Pro Gln Glu Phe Thr Ile Val Ala Phe Val
2045 2050 2055

Lys Tyr Asp Lys Asn Gln Asp Val His Ser Ile Asn Leu Pro Phe
2060 2065 2070

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Phe Glu  Thr Leu Gln Glu Tyr  Phe Glu Arg Asn Arg  Gln Thr Ile
    2075                 2080                 2085

Ile Val  Val Leu Glu Asn Val  Gln Arg Asn Leu Lys  His Ile Asn
    2090                 2095                 2100

Ile Asp  Gln Phe Val Arg Lys  Tyr Arg Ala Ala Leu  Gly Lys Leu
    2105                 2110                 2115

Pro Gln  Gln Ala Asn Asp Tyr  Leu Asn Ser Phe Asn  Trp Glu Arg
    2120                 2125                 2130

Gln Val  Ser His Ala Lys Glu  Lys Leu Thr Ala Leu  Thr Lys Lys
    2135                 2140                 2145

Tyr Arg  Ile Thr Glu Asn Asp  Ile Gln Ile Ala Leu  Asp Asp Ala
    2150                 2155                 2160

Lys Ile  Asn Phe Asn Glu Lys  Leu Ser Gln Leu Gln  Thr Tyr Met
    2165                 2170                 2175

Ile Gln  Phe Asp Gln Tyr Ile  Lys Asp Ser Tyr Asp  Leu His Asp
    2180                 2185                 2190

Leu Lys  Ile Ala Ile Ala Asn  Ile Ile Asp Glu Ile  Ile Glu Lys
    2195                 2200                 2205

Leu Lys  Ser Leu Asp Glu His  Tyr His Ile Arg Val  Asn Leu Val
    2210                 2215                 2220

Lys Thr  Ile His Asp Leu His  Leu Phe Ile Glu Asn  Ile Asp Phe
    2225                 2230                 2235

Asn Lys  Ser Gly Ser Ser Thr  Ala Ser Trp Ile Gln  Asn Val Asp
    2240                 2245                 2250

Thr Lys  Tyr Gln Ile Arg Ile  Gln Ile Gln Glu Lys  Leu Gln Gln
    2255                 2260                 2265

Leu Lys  Arg His Ile Gln Asn  Ile Asp Ile Gln His  Leu Ala Gly
    2270                 2275                 2280
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Lys Leu  Lys Gln His Ile Glu  Ala Ile Asp Val Arg  Val Leu Leu
    2285                2290                2295

Asp Gln  Leu Gly Thr Thr Ile  Ser Phe Glu Arg Ile  Asn Asp Ile
    2300                2305                2310

Leu Glu  His Val Lys His Phe  Val Ile Asn Leu Ile  Gly Asp Phe
    2315                2320                2325

Glu Val  Ala Glu Lys Ile Asn  Ala Phe Arg Ala Lys  Val His Glu
    2330                2335                2340

Leu Ile  Glu Arg Tyr Glu Val  Asp Gln Gln Ile Gln  Val Leu Met
    2345                2350                2355

Asp Lys  Leu Val Glu Leu Ala  His Gln Tyr Lys Leu  Lys Glu Thr
    2360                2365                2370

Ile Gln  Lys Leu Ser Asn Val  Leu Gln Gln Val Lys  Ile Lys Asp
    2375                2380                2385

Tyr Phe  Glu Lys Leu Val Gly  Phe Ile Asp Asp Ala  Val Lys Lys
    2390                2395                2400

Leu Asn  Glu Leu Ser Phe Lys  Thr Phe Ile Glu Asp  Val Asn Lys
    2405                2410                2415

Phe Leu  Asp Met Leu Ile Lys  Lys Leu Lys Ser Phe  Asp Tyr His
    2420                2425                2430

Gln Phe  Val Asp Glu Thr Asn  Asp Lys Ile Arg Glu  Val Thr Gln
    2435                2440                2445

Arg Leu  Asn Gly Glu Ile Gln  Ala Leu Glu Leu Pro  Gln Lys Ala
    2450                2455                2460

Glu Ala  Leu Lys Leu Phe Leu  Glu Glu Thr Lys Ala  Thr Val Ala
    2465                2470                2475

Val Tyr  Leu Glu Ser Leu Gln  Asp Thr Lys Ile Thr  Leu Ile Ile
    2480                2485                2490
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Asn Trp  Leu Gln Glu Ala Leu  Ser Ser Ala Ser Leu  Ala His Met
    2495                2500                2505

Lys Ala  Lys Phe Arg Glu Thr  Leu Glu Asp Thr Arg  Asp Arg Met
    2510                2515                2520

Tyr Gln  Met Asp Ile Gln Gln  Glu Leu Gln Arg Tyr  Leu Ser Leu
    2525                2530                2535

Val Gly  Gln Val Tyr Ser Thr  Leu Val Thr Tyr Ile  Ser Asp Trp
    2540                2545                2550

Trp Thr  Leu Ala Ala Lys Asn  Leu Thr Asp Phe Ala  Glu Gln Tyr
    2555                2560                2565

Ser Ile  Gln Asp Trp Ala Lys  Arg Met Lys Ala Leu  Val Glu Gln
    2570                2575                2580

Gly Phe  Thr Val Pro Glu Ile  Lys Thr Ile Leu Gly  Thr Met Pro
    2585                2590                2595

Ala Phe  Glu Val Ser Leu Gln  Ala Leu Gln Lys Ala  Thr Phe Gln
    2600                2605                2610

Thr Pro  Asp Phe Ile Val Pro  Leu Thr Asp Leu Arg  Ile Pro Ser
    2615                2620                2625

Val Gln  Ile Asn Phe Lys Asp  Leu Lys Asn Ile Lys  Ile Pro Ser
    2630                2635                2640

Arg Phe  Ser Thr Pro Glu Phe  Thr Ile Leu Asn Thr  Phe His Ile
    2645                2650                2655

Pro Ser  Phe Thr Ile Asp Phe  Val Glu Met Lys Val  Lys Ile Ile
    2660                2665                2670

Arg Thr  Ile Asp Gln Met Leu  Asn Ser Glu Leu Gln  Trp Pro Val
    2675                2680                2685

Pro Asp  Ile Tyr Leu Arg Asp  Leu Lys Val Glu Asp  Ile Pro Leu
    2690                2695                2700

Ala Arg  Ile Thr Leu Pro Asp  Phe Arg Leu Pro Glu  Ile Ala Ile
```

2705 2710 2715

Pro Glu Phe Ile Ile Pro Thr Leu Asn Leu Asn Asp Phe Gln Val
2720 2725 2730

Pro Asp Leu His Ile Pro Glu Phe Gln Leu Pro His Ile Ser His
2735 2740 2745

Thr Ile Glu Val Pro Thr Phe Gly Lys Leu Tyr Ser Ile Leu Lys
2750 2755 2760

Ile Gln Ser Pro Leu Phe Thr Leu Asp Ala Asn Ala Asp Ile Gly
2765 2770 2775

Asn Gly Thr Thr Ser Ala Asn Glu Ala Gly Ile Ala Ala Ser Ile
2780 2785 2790

Thr Ala Lys Gly Glu Ser Lys Leu Glu Val Leu Asn Phe Asp Phe
2795 2800 2805

Gln Ala Asn Ala Gln Leu Ser Asn Pro Lys Ile Asn Pro Leu Ala
2810 2815 2820

Leu Lys Glu Ser Val Lys Phe Ser Ser Lys Tyr Leu Arg Thr Glu
2825 2830 2835

His Gly Ser Glu Met Leu Phe Phe Gly Asn Ala Ile Glu Gly Lys
2840 2845 2850

Ser Asn Thr Val Ala Ser Leu His Thr Glu Lys Asn Thr Leu Glu
2855 2860 2865

Leu Ser Asn Gly Val Ile Val Lys Ile Asn Asn Gln Leu Thr Leu
2870 2875 2880

Asp Ser Asn Thr Lys Tyr Phe His Lys Leu Asn Ile Pro Lys Leu
2885 2890 2895

Asp Phe Ser Ser Gln Ala Asp Leu Arg Asn Glu Ile Lys Thr Leu
2900 2905 2910

Leu Lys Ala Gly His Ile Ala Trp Thr Ser Ser Gly Lys Gly Ser
2915 2920 2925

```
Trp Lys  Trp Ala Cys Pro Arg  Phe Ser Asp Glu Gly  Thr His Glu
    2930                 2935                 2940

Ser Gln  Ile Ser Phe Thr Ile  Glu Gly Pro Leu Thr  Ser Phe Gly
    2945                 2950                 2955

Leu Ser  Asn Lys Ile Asn Ser  Lys His Leu Arg Val  Asn Gln Asn
    2960                 2965                 2970

Leu Val  Tyr Glu Ser Gly Ser  Leu Asn Phe Ser Lys  Leu Glu Ile
    2975                 2980                 2985

Gln Ser  Gln Val Asp Ser Gln  His Val Gly His Ser  Val Leu Thr
    2990                 2995                 3000

Ala Lys  Gly Met Ala Leu Phe  Gly Glu Gly Lys Ala  Glu Phe Thr
    3005                 3010                 3015

Gly Arg  His Asp Ala His Leu  Asn Gly Lys Val Ile  Gly Thr Leu
    3020                 3025                 3030

Lys Asn  Ser Leu Phe Phe Ser  Ala Gln Pro Phe Glu  Ile Thr Ala
    3035                 3040                 3045

Ser Thr  Asn Asn Glu Gly Asn  Leu Lys Val Arg Phe  Pro Leu Arg
    3050                 3055                 3060

Leu Thr  Gly Lys Ile Asp Phe  Leu Asn Asn Tyr Ala  Leu Phe Leu
    3065                 3070                 3075

Ser Pro  Ser Ala Gln Gln Ala  Ser Trp Gln Val Ser  Ala Arg Phe
    3080                 3085                 3090

Asn Gln  Tyr Lys Tyr Asn Gln  Asn Phe Ser Ala Gly  Asn Asn Glu
    3095                 3100                 3105

Asn Ile  Met Glu Ala His Val  Gly Ile Asn Gly Glu  Ala Asn Leu
    3110                 3115                 3120

Asp Phe  Leu Asn Ile Pro Leu  Thr Ile Pro Glu Met  Arg Leu Pro
    3125                 3130                 3135
```

Tyr Thr Ile Ile Thr Thr Pro Pro Leu Lys Asp Phe Ser Leu Trp
3140 3145 3150

Glu Lys Thr Gly Leu Lys Glu Phe Leu Lys Thr Thr Lys Gln Ser
3155 3160 3165

Phe Asp Leu Ser Val Lys Ala Gln Tyr Lys Lys Asn Lys His Arg
3170 3175 3180

His Ser Ile Thr Asn Pro Leu Ala Val Leu Cys Glu Phe Ile Ser
3185 3190 3195

Gln Ser Ile Lys Ser Phe Asp Arg His Phe Glu Lys Asn Arg Asn
3200 3205 3210

Asn Ala Leu Asp Phe Val Thr Lys Ser Tyr Asn Glu Thr Lys Ile
3215 3220 3225

Lys Phe Asp Lys Tyr Lys Ala Glu Lys Ser His Asp Glu Leu Pro
3230 3235 3240

Arg Thr Phe Gln Ile Pro Gly Tyr Thr Val Pro Val Val Asn Val
3245 3250 3255

Glu Val Ser Pro Phe Thr Ile Glu Met Ser Ala Phe Gly Tyr Val
3260 3265 3270

Phe Pro Lys Ala Val Ser Met Pro Ser Phe Ser Ile Leu Gly Ser
3275 3280 3285

Asp Val Arg Val Pro Ser Tyr Thr Leu Ile Leu Pro Ser Leu Glu
3290 3295 3300

Leu Pro Val Leu His Val Pro Arg Asn Leu Lys Leu Ser Leu Pro
3305 3310 3315

Asp Phe Lys Glu Leu Cys Thr Ile Ser His Ile Phe Ile Pro Ala
3320 3325 3330

Met Gly Asn Ile Thr Tyr Asp Phe Ser Phe Lys Ser Ser Val Ile
3335 3340 3345

Thr Leu Asn Thr Asn Ala Glu Leu Phe Asn Gln Ser Asp Ile Val
3350 3355 3360

Ala His Leu Leu Ser Ser Ser Ser Ser Val Ile Asp Ala Leu Gln
3365 3370 3375

Tyr Lys Leu Glu Gly Thr Thr Arg Leu Thr Arg Lys Arg Gly Leu
3380 3385 3390

Lys Leu Ala Thr Ala Leu Ser Leu Ser Asn Lys Phe Val Glu Gly
3395 3400 3405

Ser His Asn Ser Thr Val Ser Leu Thr Thr Lys Asn Met Glu Val
3410 3415 3420

Ser Val Ala Thr Thr Thr Lys Ala Gln Ile Pro Ile Leu Arg Met
3425 3430 3435

Asn Phe Lys Gln Glu Leu Asn Gly Asn Thr Lys Ser Lys Pro Thr
3440 3445 3450

Val Ser Ser Ser Met Glu Phe Lys Tyr Asp Phe Asn Ser Ser Met
3455 3460 3465

Leu Tyr Ser Thr Ala Lys Gly Ala Val Asp His Lys Leu Ser Leu
3470 3475 3480

Glu Ser Leu Thr Ser Tyr Phe Ser Ile Glu Ser Ser Thr Lys Gly
3485 3490 3495

Asp Val Lys Gly Ser Val Leu Ser Arg Glu Tyr Ser Gly Thr Ile
3500 3505 3510

Ala Ser Glu Ala Asn Thr Tyr Leu Asn Ser Lys Ser Thr Arg Ser
3515 3520 3525

Ser Val Lys Leu Gln Gly Thr Ser Lys Ile Asp Asp Ile Trp Asn
3530 3535 3540

Leu Glu Val Lys Glu Asn Phe Ala Gly Glu Ala Thr Leu Gln Arg
3545 3550 3555

Ile Tyr Ser Leu Trp Glu His Ser Thr Lys Asn His Leu Gln Leu

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    3560                3565                3570

Glu Gly  Leu Phe Phe Thr Asn  Gly Glu His Thr Ser  Lys Ala Thr
    3575                3580                3585

Leu Glu  Leu Ser Pro Trp Gln  Met Ser Ala Leu Val  Gln Val His
    3590                3595                3600

Ala Ser  Gln Pro Ser Ser Phe  His Asp Phe Pro Asp  Leu Gly Gln
    3605                3610                3615

Glu Val  Ala Leu Asn Ala Asn  Thr Lys Asn Gln Lys  Ile Arg Trp
    3620                3625                3630

Lys Asn  Glu Val Arg Ile His  Ser Gly Ser Phe Gln  Ser Gln Val
    3635                3640                3645

Glu Leu  Ser Asn Asp Gln Glu  Lys Ala His Leu Asp  Ile Ala Gly
    3650                3655                3660

Ser Leu  Glu Gly His Leu Arg  Phe Leu Lys Asn Ile  Ile Leu Pro
    3665                3670                3675

Val Tyr  Asp Lys Ser Leu Trp  Asp Phe Leu Lys Leu  Asp Val Thr
    3680                3685                3690

Thr Ser  Ile Gly Arg Arg Gln  His Leu Arg Val Ser  Thr Ala Phe
    3695                3700                3705

Val Tyr  Thr Lys Asn Pro Asn  Gly Tyr Ser Phe Ser  Ile Pro Val
    3710                3715                3720

Lys Val  Leu Ala Asp Lys Phe  Ile Ile Pro Gly Leu  Lys Leu Asn
    3725                3730                3735

Asp Leu  Asn Ser Val Leu Val  Met Pro Thr Phe His  Val Pro Phe
    3740                3745                3750

Thr Asp  Leu Gln Val Pro Ser  Cys Lys Leu Asp Phe  Arg Glu Ile
    3755                3760                3765

Gln Ile  Tyr Lys Lys Leu Arg  Thr Ser Ser Phe Ala  Leu Asn Leu
    3770                3775                3780
```

```
Pro Thr  Leu Pro Glu Val Lys  Phe Pro Glu Val Asp  Val Leu Thr
    3785                 3790                 3795

Lys Tyr  Ser Gln Pro Glu Asp  Ser Leu Ile Pro Phe  Phe Glu Ile
    3800                 3805                 3810

Thr Val  Pro Glu Ser Gln Leu  Thr Val Ser Gln Phe  Thr Leu Pro
    3815                 3820                 3825

Lys Ser  Val Ser Asp Gly Ile  Ala Ala Leu Asp Leu  Asn Ala Val
    3830                 3835                 3840

Ala Asn  Lys Ile Ala Asp Phe  Glu Leu Pro Thr Ile  Ile Val Pro
    3845                 3850                 3855

Glu Gln  Thr Ile Glu Ile Pro  Ser Ile Lys Phe Ser  Val Pro Ala
    3860                 3865                 3870

Gly Ile  Val Ile Pro Ser Phe  Gln Ala Leu Thr Ala  Arg Phe Glu
    3875                 3880                 3885

Val Asp  Ser Pro Val Tyr Asn  Ala Thr Trp Ser Ala  Ser Leu Lys
    3890                 3895                 3900

Asn Lys  Ala Asp Tyr Val Glu  Thr Val Leu Asp Ser  Thr Cys Ser
    3905                 3910                 3915

Ser Thr  Val Gln Phe Leu Glu  Tyr Glu Leu Asn Val  Leu Gly Thr
    3920                 3925                 3930

His Lys  Ile Glu Asp Gly Thr  Leu Ala Ser Lys Thr  Lys Gly Thr
    3935                 3940                 3945

Phe Ala  His Arg Asp Phe Ser  Ala Glu Tyr Glu Glu  Asp Gly Lys
    3950                 3955                 3960

Tyr Glu  Gly Leu Gln Glu Trp  Glu Gly Lys Ala His  Leu Asn Ile
    3965                 3970                 3975

Lys Ser  Pro Ala Phe Thr Asp  Leu His Leu Arg Tyr  Gln Lys Asp
    3980                 3985                 3990
```

```
Lys Lys  Gly Ile Ser Thr Ser  Ala Ala Ser Pro Ala  Val Gly Thr
    3995                 4000                 4005

Val Gly  Met Asp Met Asp Glu  Asp Asp Asp Phe Ser  Lys Trp Asn
    4010                 4015                 4020

Phe Tyr  Tyr Ser Pro Gln Ser  Ser Pro Asp Lys Lys  Leu Thr Ile
    4025                 4030                 4035

Phe Lys  Thr Glu Leu Arg Val  Arg Glu Ser Asp Glu  Glu Thr Gln
    4040                 4045                 4050

Ile Lys  Val Asn Trp Glu Glu  Glu Ala Ala Ser Gly  Leu Leu Thr
    4055                 4060                 4065

Ser Leu  Lys Asp Asn Val Pro  Lys Ala Thr Gly Val  Leu Tyr Asp
    4070                 4075                 4080

Tyr Val  Asn Lys Tyr His Trp  Glu His Thr Gly Leu  Thr Leu Arg
    4085                 4090                 4095

Glu Val  Ser Ser Lys Leu Arg  Arg Asn Leu Gln Asn  Asn Ala Glu
    4100                 4105                 4110

Trp Val  Tyr Gln Gly Ala Ile  Arg Gln Ile Asp Asp  Ile Asp Val
    4115                 4120                 4125

Arg Phe  Gln Lys Ala Ala Ser  Gly Thr Thr Gly Thr  Tyr Gln Glu
    4130                 4135                 4140

Trp Lys  Asp Lys Ala Gln Asn  Leu Tyr Gln Glu Leu  Leu Thr Gln
    4145                 4150                 4155

Glu Gly  Gln Ala Ser Phe Gln  Gly Leu Lys Asp Asn  Val Phe Asp
    4160                 4165                 4170

Gly Leu  Val Arg Val Thr Gln  Glu Phe His Met Lys  Val Lys His
    4175                 4180                 4185

Leu Ile  Asp Ser Leu Ile Asp  Phe Leu Asn Phe Pro  Arg Phe Gln
    4190                 4195                 4200
```

```
Phe Pro  Gly Lys Pro Gly Ile  Tyr Thr Arg Glu Glu  Leu Cys Thr
    4205                 4210                 4215

Met Phe  Ile Arg Glu Val Gly  Thr Val Leu Ser Gln  Val Tyr Ser
    4220                 4225                 4230

Lys Val  His Asn Gly Ser Glu  Ile Leu Phe Ser Tyr  Phe Gln Asp
    4235                 4240                 4245

Leu Val  Ile Thr Leu Pro Phe  Glu Leu Arg Lys His  Lys Leu Ile
    4250                 4255                 4260

Asp Val  Ile Ser Met Tyr Arg  Glu Leu Leu Lys Asp  Leu Ser Lys
    4265                 4270                 4275

Glu Ala  Gln Glu Val Phe Lys  Ala Ile Gln Ser Leu  Lys Thr Thr
    4280                 4285                 4290

Glu Val  Leu Arg Asn Leu Gln  Asp Leu Leu Gln Phe  Ile Phe Gln
    4295                 4300                 4305

Leu Ile  Glu Asp Asn Ile Lys  Gln Leu Lys Glu Met  Lys Phe Thr
    4310                 4315                 4320

Tyr Leu  Ile Asn Tyr Ile Gln  Asp Glu Ile Asn Thr  Ile Phe Ser
    4325                 4330                 4335

Asp Tyr  Ile Pro Cys Phe
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<210> 5677
<211> 236
<212> PRT
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<220>
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<220>
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<223> /note="Gene Name:
      apolipoprt B mRNA editing enzyme, catalytic polypeptide
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1   5   10   15

Arg Ile Glu Pro Trp Glu Phe Asp Val Phe Tyr Asp Pro Arg Glu Leu
            20   25   30

Arg Lys Glu Ala Cys Leu Leu Tyr Glu Ile Lys Trp Gly Met Ser Arg
        35   40   45

Lys Ile Trp Arg Ser Ser Gly Lys Asn Thr Thr Asn His Val Glu Val
    50   55   60

Asn Phe Ile Lys Lys Phe Thr Ser Glu Arg Asp Phe His Pro Ser Met
65   70   75   80

Ser Cys Ser Ile Thr Trp Phe Leu Ser Trp Ser Pro Cys Trp Glu Cys
                85   90   95

Ser Gln Ala Ile Arg Glu Phe Leu Ser Arg His Pro Gly Val Thr Leu
            100   105   110

Val Ile Tyr Val Ala Arg Leu Phe Trp His Met Asp Gln Gln Asn Arg
        115   120   125

Gln Gly Leu Arg Asp Leu Val Asn Ser Gly Val Thr Ile Gln Ile Met
    130   135   140

Arg Ala Ser Glu Tyr Tyr His Cys Trp Arg Asn Phe Val Asn Tyr Pro
145   150   155   160

Pro Gly Asp Glu Ala His Trp Pro Gln Tyr Pro Pro Leu Trp Met Met
                165   170   175

Leu Tyr Ala Leu Glu Leu His Cys Ile Ile Leu Ser Leu Pro Pro Cys
            180   185   190

Leu Lys Ile Ser Arg Arg Trp Gln Asn His Leu Thr Phe Phe Arg Leu
195 200 205

His Leu Gln Asn Cys His Tyr Gln Thr Ile Pro Pro His Ile Leu Leu
210 215 220

Ala Thr Gly Leu Ile His Pro Ser Val Ala Trp Arg
225 230 235

<210> 5678
<211> 36
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<400> 5678
Met Thr Ser Glu Lys Gly Glu Glu Ser Asn Pro Gly Ser Leu Thr Ser
1 5 10 15

Ser Met Thr Pro Glu Asn Phe Val Lys Arg Pro Val Cys Ser Thr Lys
20 25 30

Ser Ser Gly Ala
35

<210> 5679
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polypeptide-like 2; "

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<400> 5679

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Met Ala Gln Lys Glu Glu Ala Ala Val Ala Thr Glu Ala Ala Ser Gln
1               5                  10                  15

Asn Gly Glu Asp Leu Glu Asn Leu Asp Asp Pro Glu Lys Leu Lys Glu
            20                  25                  30

Leu Ile Glu Leu Pro Pro Phe Glu Ile Val Thr Gly Glu Arg Leu Pro
        35                  40                  45

Ala Asn Phe Phe Lys Phe Gln Phe Arg Asn Val Glu Tyr Ser Ser Gly
    50                  55                  60

Arg Asn Lys Thr Phe Leu Cys Tyr Val Val Glu Ala Gln Gly Lys Gly
65                  70                  75                  80

Gly Gln Val Gln Ala Ser Arg Gly Tyr Leu Glu Asp Glu His Ala Ala
                85                  90                  95

Ala His Ala Glu Glu Ala Phe Phe Asn Thr Ile Leu Pro Ala Phe Asp
            100                 105                 110

Pro Ala Leu Arg Tyr Asn Val Thr Trp Tyr Val Ser Ser Ser Pro Cys
        115                 120                 125

Ala Ala Cys Ala Asp Arg Ile Ile Lys Thr Leu Ser Lys Thr Lys Asn
    130                 135                 140
```

```
Leu Arg Leu Leu Ile Leu Val Gly Arg Leu Phe Met Trp Glu Glu Pro
145                 150                 155                 160

Glu Ile Gln Ala Ala Leu Lys Lys Leu Lys Glu Ala Gly Cys Lys Leu
                165                 170                 175

Arg Ile Met Lys Pro Gln Asp Phe Glu Tyr Val Trp Gln Asn Phe Val
            180                 185                 190

Glu Gln Glu Glu Gly Glu Ser Lys Ala Phe Gln Pro Trp Glu Asp Ile
        195                 200                 205

Gln Glu Asn Phe Leu Tyr Tyr Glu Glu Lys Leu Ala Asp Ile Leu Lys
    210                 215                 220


<210> 5680
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<400> 5680
Met Glu Ala Ser Pro Ala Ser Gly Pro Arg His Leu Met Asp Pro His
1               5                   10                  15

Ile Phe Thr Ser Asn Phe Asn Asn Gly Ile Gly Arg His Lys Thr Tyr
            20                  25                  30

Leu Cys Tyr Glu Val Glu Arg Leu Asp Asn Gly Thr Ser Val Lys Met
```

```
        35                  40                  45

Asp Gln His Arg Gly Phe Leu His Asn Gln Ala Lys Asn Leu Leu Cys
    50                  55                  60

Gly Phe Tyr Gly Arg His Ala Glu Leu Arg Phe Leu Asp Leu Val Pro
65                  70                  75                  80

Ser Leu Gln Leu Asp Pro Ala Gln Ile Tyr Arg Val Thr Trp Phe Ile
                85                  90                  95

Ser Trp Ser Pro Cys Phe Ser Trp Gly Cys Ala Gly Glu Val Arg Ala
            100                 105                 110

Phe Leu Gln Glu Asn Thr His Val Arg Leu Arg Ile Phe Ala Ala Arg
        115                 120                 125

Ile Tyr Asp Tyr Asp Pro Leu Tyr Lys Glu Ala Leu Gln Met Leu Arg
    130                 135                 140

Asp Ala Gly Ala Gln Val Ser Ile Met Thr Tyr Asp Glu Phe Lys His
145                 150                 155                 160

Cys Trp Asp Thr Phe Val Asp His Gln Gly Cys Pro Phe Gln Pro Trp
                165                 170                 175

Asp Gly Leu Asp Glu His Ser Gln Ala Leu Ser Gly Arg Leu Arg Ala
            180                 185                 190

Ile Leu Gln Asn Gln Gly Asn
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<210> 5681
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<213> Homo sapiens

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<223> /note="Uniprot ID: P31941; "

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<400> 5681

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Met Glu Ala Ser Pro Ala Ser Gly Pro Arg His Leu Met Asp Pro His
1               5                   10                  15

Ile Phe Thr Ser Asn Phe Asn Asn Gly Ile Gly Arg His Lys Thr Tyr
            20                  25                  30

Leu Cys Tyr Glu Val Glu Arg Leu Asp Asn Gly Thr Ser Val Lys Met
        35                  40                  45

Asp Gln His Arg Gly Phe Leu His Asn Gln Ala Lys Asn Leu Leu Cys
    50                  55                  60

Gly Phe Tyr Gly Arg His Ala Glu Leu Arg Phe Leu Asp Leu Val Pro
65                  70                  75                  80

Ser Leu Gln Leu Asp Pro Ala Gln Ile Tyr Arg Val Thr Trp Phe Ile
                85                  90                  95

Ser Trp Ser Pro Cys Phe Ser Trp Gly Cys Ala Gly Glu Val Arg Ala
            100                 105                 110

Phe Leu Gln Glu Asn Thr His Val Arg Leu Arg Ile Phe Ala Ala Arg
        115                 120                 125

Ile Tyr Asp Tyr Asp Pro Leu Tyr Lys Glu Ala Leu Gln Met Leu Arg
    130                 135                 140

Asp Ala Gly Ala Gln Val Ser Ile Met Thr Tyr Asp Glu Phe Lys His
145                 150                 155                 160

Cys Trp Asp Thr Phe Val Asp His Gln Gly Cys Pro Phe Gln Pro Trp
                165                 170                 175
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```
Asp Gly Leu Asp Glu His Ser Gln Ala Leu Ser Gly Arg Leu Arg Ala
            180                 185                 190


Ile Leu Gln Asn Gln Gly Asn
        195


<210> 5682
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<400> 5682
Met Glu Ala Ser Pro Ala Ser Gly Pro Arg His Leu Met Asp Pro His
1               5                  10                  15


Ile Phe Thr Ser Asn Phe Asn Asn Gly Ile Gly Arg His Lys Thr Tyr
            20                  25                  30


Leu Cys Tyr Glu Val Glu Arg Leu Asp Asn Gly Thr Ser Val Lys Met
        35                  40                  45


Asp Gln His Arg Gly Phe Leu His Asn Gln Ala Lys Asn Leu Leu Cys
    50                  55                  60


Gly Phe Tyr Gly Arg His Ala Glu Leu Arg Phe Leu Asp Leu Val Pro
65                  70                  75                  80
```

```
Ser Leu Gln Leu Asp Pro Ala Gln Ile Tyr Arg Val Thr Trp Phe Ile
                85                  90                  95

Ser Trp Ser Pro Cys Phe Ser Trp Gly Cys Ala Gly Glu Val Arg Ala
            100                 105                 110

Phe Leu Gln Glu Asn Thr His Val Arg Leu Arg Ile Phe Ala Ala Arg
        115                 120                 125

Ile Tyr Asp Tyr Asp Pro Leu Tyr Lys Glu Ala Leu Gln Met Leu Arg
    130                 135                 140

Asp Ala Gly Ala Gln Val Ser Ile Met Thr Tyr Asp Glu Phe Lys His
145                 150                 155                 160

Cys Trp Asp Thr Phe Val Asp His Gln Gly Cys Pro Phe Gln Pro Trp
                165                 170                 175

Asp Gly Leu Asp Glu His Ser Gln Ala Leu Ser Gly Arg Leu Arg Ala
            180                 185                 190

Ile Leu Gln Asn Gln Gly Asn
        195


<210> 5683
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<213> Homo sapiens

<220>
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<220>
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<223> /note="ENSP ID: ENSP00000481904"

<400> 5683

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Met Glu Ala Ser Pro Ala Ser Gly Pro Arg His Leu Met Asp Pro His
1               5                  10                  15

Ile Phe Thr Ser Asn Phe Asn Asn Gly Ile Gly Arg His Lys Thr Tyr
            20                  25                  30

Leu Cys Tyr Glu Val Glu Arg Leu Asp Asn Gly Thr Ser Val Lys Met
        35                  40                  45

Asp Gln His Arg Gly Phe Leu His Asn Gln Ala Lys Asn Leu Leu Cys
    50                  55                  60

Gly Phe Tyr Gly Arg His Ala Glu Leu Arg Phe Leu Asp Leu Val Pro
65                  70                  75                  80

Ser Leu Gln Leu Asp Pro Ala Gln Ile Tyr Arg Val Thr Trp Phe Ile
                85                  90                  95

Ser Trp Ser Pro Cys Phe Ser Trp Gly Cys Ala Gly Glu Val Arg Ala
            100                 105                 110

Phe Leu Gln Glu Asn Thr His Val Arg Leu Arg Ile Phe Ala Ala Arg
        115                 120                 125

Ile Tyr Asp Tyr Asp Pro Leu Tyr Lys Glu Ala Leu Gln Met Leu Arg
    130                 135                 140

Asp Ala Gly Ala Gln Val Ser Ile Met Thr Tyr Asp Glu Phe Lys His
145                 150                 155                 160

Cys Trp Asp Thr Phe Val Asp His Gln Gly Cys Pro Phe Gln Pro Trp
                165                 170                 175

Asp Gly Leu Asp Glu His Ser Gln Ala Leu Ser Gly Arg Leu Arg Ala
            180                 185                 190

Ile Leu Gln Asn Gln Gly Asn
        195
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<210> 5684
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<212> PRT
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<400> 5684

Met	Glu	Ala	Ser	Pro	Ala	Ser	Gly	Pro	Arg	His	Leu	Met	Asp	Pro	His
1				5				10						15	
Ile	Phe	Thr	Ser	Asn	Phe	Asn	Asn	Gly	Ile	Gly	Arg	His	Lys	Thr	Tyr
			20					25					30		
Leu	Cys	Tyr	Glu	Val	Glu	Arg	Leu	Asp	Asn	Gly	Thr	Ser	Val	Lys	Met
		35					40					45			
Asp	Gln	His	Arg	Gly	Phe	Leu	His	Asn	Gln	Ala	Lys	Asn	Leu	Leu	Cys
	50					55					60				
Gly	Phe	Tyr	Gly	Arg	His	Ala	Glu	Leu	Arg	Phe	Leu	Asp	Leu	Val	Pro
65					70					75					80
Ser	Leu	Gln	Leu	Asp	Pro	Ala	Gln	Ile	Tyr	Arg	Val	Thr	Trp	Phe	Ile
				85					90					95	
Ser	Trp	Ser	Pro	Cys	Phe	Ser	Trp	Gly	Cys	Ala	Gly	Glu	Val	Arg	Ala
			100					105					110		
Phe	Leu	Gln	Glu	Asn	Thr	His	Val	Arg	Leu	Arg	Ile	Phe	Ala	Ala	Arg
		115					120					125			

Ile Tyr Asp Tyr Asp Pro Leu Tyr Lys Glu Ala Leu Gln Met Leu Arg
130 135 140

Asp Ala Gly Ala Gln Val Ser Ile Met Thr Tyr Asp Glu Phe Lys His
145 150 155 160

Cys Trp Asp Thr Phe Val Asp His Gln Gly Cys Pro Phe Gln Pro Trp
165 170 175

Asp Gly Leu Asp Glu His Ser Gln Ala Leu Ser Gly Arg Leu Arg Ala
180 185 190

Ile Leu Gln Asn Gln Gly Asn
195

<210> 5685
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<220>
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<223> /note="Gene Symbol: APOBEC3B; "

<220>
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apolipoprt B mRNA editing enzyme, catalytic
polypeptide-like 3B; "

<220>
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<223> /note="Uniprot ID: Q9UH17; "

<220>
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<400> 5685
Met Asn Pro Gln Ile Arg Asn Pro Met Glu Arg Met Tyr Arg Asp Thr
1 5 10 15

Phe Tyr Asp Asn Phe Glu Asn Glu Pro Ile Leu Tyr Gly Arg Ser Tyr
20 25 30

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Thr Trp Leu Cys Tyr Glu Val Lys Ile Lys Arg Gly Arg Ser Asn Leu
        35                  40                  45

Leu Trp Asp Thr Gly Val Phe Arg Gly Gln Val Tyr Phe Lys Pro Gln
    50                  55                  60

Tyr His Ala Glu Met Cys Phe Leu Ser Trp Phe Cys Gly Asn Gln Leu
65                  70                  75                  80

Pro Ala Tyr Lys Cys Phe Gln Ile Thr Trp Phe Val Ser Trp Thr Pro
                85                  90                  95

Cys Pro Asp Cys Val Ala Lys Leu Ala Glu Phe Leu Ser Glu His Pro
            100                 105                 110

Asn Val Thr Leu Thr Ile Ser Ala Ala Arg Leu Tyr Tyr Tyr Trp Glu
        115                 120                 125

Arg Asp Tyr Arg Arg Ala Leu Cys Arg Leu Ser Gln Ala Gly Ala Arg
    130                 135                 140

Val Thr Ile Met Asp Tyr Glu Glu Phe Ala Tyr Cys Trp Glu Asn Phe
145                 150                 155                 160

Val Tyr Asn Glu Gly Gln Gln Phe Met Pro Trp Tyr Lys Phe Asp Glu
                165                 170                 175

Asn Tyr Ala Phe Leu His Arg Thr Leu Lys Glu Ile Leu Arg Tyr Leu
            180                 185                 190

Met Asp Pro Asp Thr Phe Thr Phe Asn Phe Asn Asn Asp Pro Leu Val
        195                 200                 205

Leu Arg Arg Arg Gln Thr Tyr Leu Cys Tyr Glu Val Glu Arg Leu Asp
    210                 215                 220

Asn Gly Thr Trp Val Leu Met Asp Gln His Met Gly Phe Leu Cys Asn
225                 230                 235                 240

Glu Ala Lys Asn Leu Leu Cys Gly Phe Tyr Gly Arg His Ala Glu Leu
                245                 250                 255

Arg Phe Leu Asp Leu Val Pro Ser Leu Gln Leu Asp Pro Ala Gln Ile
```

```
            260                 265                 270

Tyr Arg Val Thr Trp Phe Ile Ser Trp Ser Pro Cys Phe Ser Trp Gly
        275                 280                 285

Cys Ala Gly Glu Val Arg Ala Phe Leu Gln Glu Asn Thr His Val Arg
    290                 295                 300

Leu Arg Ile Phe Ala Ala Arg Ile Tyr Asp Tyr Asp Pro Leu Tyr Lys
305                 310                 315                 320

Glu Ala Leu Gln Met Leu Arg Asp Ala Gly Ala Gln Val Ser Ile Met
                325                 330                 335

Thr Tyr Asp Glu Phe Glu Tyr Cys Trp Asp Thr Phe Val Tyr Arg Gln
            340                 345                 350

Gly Cys Pro Phe Gln Pro Trp Asp Gly Leu Glu Glu His Ser Gln Ala
        355                 360                 365

Leu Ser Gly Arg Leu Arg Ala Ile Leu Gln Asn Gln Gly Asn
    370                 375                 380


<210> 5686
<211> 251
<212> PRT
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<220>
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<220>
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<220>
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1 5 10 15

Phe Tyr Asp Asn Phe Glu Asn Glu Pro Ile Leu Tyr Gly Arg Ser Tyr
20 25 30

Thr Trp Leu Cys Tyr Glu Val Lys Ile Lys Arg Gly Arg Ser Asn Leu
35 40 45

Leu Trp Asp Thr Gly Val Phe Arg Gly Gln Val Tyr Phe Lys Pro Gln
50 55 60

Tyr His Ala Glu Met Cys Phe Leu Ser Trp Phe Cys Gly Asn Gln Leu
65 70 75 80

Pro Ala Tyr Lys Cys Phe Gln Ile Thr Trp Phe Val Ser Trp Thr Pro
85 90 95

Cys Pro Asp Cys Val Ala Lys Leu Ala Glu Phe Leu Ser Glu His Pro
100 105 110

Asn Val Thr Leu Thr Ile Ser Ala Ala Arg Leu Tyr Tyr Tyr Trp Glu
115 120 125

Arg Asp Tyr Arg Arg Ala Leu Cys Arg Leu Ser Gln Ala Gly Ala Arg
130 135 140

Val Thr Ile Met Asp Tyr Glu Glu Phe Ala Tyr Cys Trp Glu Asn Phe
145 150 155 160

Val Tyr Asn Glu Gly Gln Gln Phe Met Pro Trp Tyr Lys Phe Asp Glu
165 170 175

Asn Tyr Ala Phe Leu His Arg Thr Leu Lys Glu Ile Leu Arg Leu Arg
180 185 190

Ile Phe Ser Val Ala Phe Thr Ala Ala Met Arg Ser Cys Ala Ser Trp
195 200 205

Thr Trp Phe Leu Leu Cys Ser Trp Thr Arg Pro Arg Ser Thr Gly Ser
210 215 220

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Leu Gly Ser Ser Pro Gly Ala Pro Ala Ser Pro Gly Ala Val Pro Gly
225                 230                 235                 240


Lys Cys Val Arg Ser Phe Arg Arg Thr His Thr
                245                 250


<210> 5687
<211> 490
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000385060"

<400> 5687
Met Asn Pro Gln Ile Arg Asn Pro Met Glu Arg Met Tyr Arg Asp Thr
1               5                   10                  15


Phe Tyr Asp Asn Phe Glu Asn Glu Pro Ile Leu Tyr Gly Arg Ser Tyr
            20                  25                  30


Thr Trp Leu Cys Tyr Glu Val Lys Ile Lys Arg Gly Arg Ser Asn Leu
        35                  40                  45


Leu Trp Asp Thr Gly Val Phe Arg Gly Gln Val Tyr Phe Lys Pro Gln
    50                  55                  60


Tyr His Ala Glu Met Cys Phe Leu Ser Trp Phe Cys Gly Asn Gln Leu
65                  70                  75                  80


Pro Ala Tyr Lys Cys Phe Gln Ile Thr Trp Phe Val Ser Trp Thr Pro
                85                  90                  95
```

```
Cys Pro Asp Cys Val Ala Lys Leu Ala Glu Phe Leu Ser Glu His Pro
            100                 105                 110

Asn Val Thr Leu Thr Ile Ser Ala Ala Arg Leu Tyr Tyr Tyr Trp Glu
        115                 120                 125

Arg Asp Tyr Arg Arg Ala Leu Cys Arg Leu Ser Gln Ala Gly Ala Arg
    130                 135                 140

Val Thr Ile Met Asp Tyr Glu Glu Phe Ala Tyr Cys Trp Glu Asn Phe
145                 150                 155                 160

Val Tyr Asn Glu Gly Gln Gln Phe Met Pro Trp Tyr Lys Phe Asp Glu
                165                 170                 175

Asn Tyr Ala Phe Leu His Arg Thr Leu Lys Glu Ile Leu Arg Tyr Leu
            180                 185                 190

Met Asp Pro Asp Thr Phe Thr Phe Asn Phe Asn Asn Asp Pro Leu Val
        195                 200                 205

Leu Arg Arg Arg Gln Thr Tyr Leu Cys Tyr Glu Val Glu Arg Leu Asp
    210                 215                 220

Asn Gly Thr Trp Val Leu Met Asp Gln His Met Gly Phe Leu Cys Asn
225                 230                 235                 240

Glu Ala Lys Asn Leu Leu Cys Gly Phe Tyr Gly Arg His Ala Glu Leu
                245                 250                 255

Arg Phe Leu Asp Leu Val Pro Ser Leu Gln Leu Asp Pro Ala Gln Ile
            260                 265                 270

Tyr Arg Val Thr Trp Phe Ile Ser Trp Ser Pro Cys Phe Ser Trp Gly
        275                 280                 285

Cys Ala Gly Glu Val Arg Ala Phe Leu Gln Glu Asn Thr His Val Arg
    290                 295                 300

Leu Arg Ile Phe Ala Ala Arg Ile Tyr Asp Tyr Asp Pro Leu Tyr Lys
305                 310                 315                 320

Glu Ala Leu Gln Met Leu Arg Asp Ala Gly Ala Gln Val Ser Ile Met
```

```
                325                 330                 335

Thr Tyr Asp Glu Phe Glu Tyr Cys Trp Asp Thr Phe Val Tyr Arg Gln
            340                 345                 350

Gly Cys Pro Phe Gln Pro Trp Asp Gly Leu Glu Glu His Ser Gln Ala
        355                 360                 365

Leu Ser Gly Arg Leu Arg Ala Ile Leu Gln Val Arg Ala Ser Ser Leu
    370                 375                 380

Cys Leu Val Pro His Arg Pro Pro Pro Pro Pro Arg Ser Pro Val Pro
385                 390                 395                 400

Cys Leu Pro Leu Cys Ser Glu Pro Pro Leu Gly Ser Leu Leu Pro Thr
                405                 410                 415

Gly Arg Pro Ala Pro Ser Leu Pro Phe Leu Leu Thr Ala Ser Phe Ser
            420                 425                 430

Phe Pro Pro Pro Ala Ser Leu Pro Pro Leu Pro Ser Leu Ser Leu Ser
        435                 440                 445

Pro Gly His Leu Pro Val Pro Ser Phe His Ser Leu Thr Ser Cys Ser
    450                 455                 460

Ile Gln Pro Pro Cys Ser Ser Arg Ile Arg Glu Thr Glu Gly Trp Ala
465                 470                 475                 480

Ser Val Ser Lys Glu Gly Arg Asp Leu Gly
                485                 490


<210> 5688
<211> 357
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1251; "

<220>
<221> source
<223> /note="Gene Symbol: APOBEC3B; "

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<221> source
<223> /note="Gene Name:
apolipoprt B mRNA editing enzyme, catalytic
polypeptide-like 3B; "

<220>
<221> source
<223> /note="Uniprot ID: Q9UH17; "

<220>
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<223> /note="ENSP ID: ENSP00000385068"

<400> 5688

```
Met Asn Pro Gln Ile Arg Asn Pro Met Glu Arg Met Tyr Arg Asp Thr
1               5                  10                  15

Phe Tyr Asp Asn Phe Glu Asn Glu Pro Ile Leu Tyr Gly Arg Ser Tyr
            20                  25                  30

Thr Trp Leu Cys Tyr Glu Val Lys Ile Lys Arg Gly Arg Ser Asn Leu
        35                  40                  45

Leu Trp Asp Thr Gly Val Phe Arg Gly Gln Val Tyr Phe Lys Pro Gln
    50                  55                  60

Tyr His Ala Glu Met Cys Phe Leu Ser Trp Phe Cys Gly Asn Gln Leu
65                  70                  75                  80

Pro Ala Tyr Lys Cys Phe Gln Ile Thr Trp Phe Val Ser Trp Thr Pro
                85                  90                  95

Cys Pro Asp Cys Val Ala Lys Leu Ala Glu Phe Leu Ser Glu His Pro
            100                 105                 110

Asn Val Thr Leu Thr Ile Ser Ala Ala Arg Leu Tyr Tyr Tyr Trp Glu
        115                 120                 125

Arg Asp Tyr Arg Arg Ala Leu Cys Arg Leu Ser Gln Ala Gly Ala Arg
    130                 135                 140

Val Thr Ile Met Asp Tyr Glu Glu Phe Ala Tyr Cys Trp Glu Asn Phe
145                 150                 155                 160

Val Tyr Asn Glu Gly Gln Gln Phe Met Pro Trp Tyr Lys Phe Asp Glu
                165                 170                 175
```

```
Asn Tyr Ala Phe Leu His Arg Thr Leu Lys Glu Ile Leu Arg Tyr Leu
            180                 185                 190

Met Asp Pro Asp Thr Phe Thr Phe Asn Phe Asn Asn Asp Pro Leu Val
        195                 200                 205

Leu Arg Arg Arg Gln Thr Tyr Leu Cys Tyr Glu Val Glu Arg Leu Asp
    210                 215                 220

Asn Gly Thr Trp Val Leu Met Asp Gln His Met Gly Phe Leu Cys Asn
225                 230                 235                 240

Glu Leu Asp Pro Ala Gln Ile Tyr Arg Val Thr Trp Phe Ile Ser Trp
                245                 250                 255

Ser Pro Cys Phe Ser Trp Gly Cys Ala Gly Glu Val Arg Ala Phe Leu
            260                 265                 270

Gln Glu Asn Thr His Val Arg Leu Arg Ile Phe Ala Ala Arg Ile Tyr
        275                 280                 285

Asp Tyr Asp Pro Leu Tyr Lys Glu Ala Leu Gln Met Leu Arg Asp Ala
    290                 295                 300

Gly Ala Gln Val Ser Ile Met Thr Tyr Asp Glu Phe Glu Tyr Cys Trp
305                 310                 315                 320

Asp Thr Phe Val Tyr Arg Gln Gly Cys Pro Phe Gln Pro Trp Asp Gly
                325                 330                 335

Leu Glu Glu His Ser Gln Ala Leu Ser Gly Arg Leu Arg Ala Ile Leu
            340                 345                 350

Gln Asn Gln Gly Asn
        355


<210> 5689
<211> 190
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1252; "
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<220>
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<223> /note="Gene Symbol: APOBEC3C; "

<220>
<221> source
<223> /note="Gene Name:
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polypeptide-like 3C; "

<220>
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<223> /note="Uniprot ID: Q9NRW3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000355340"

<400> 5689

```
Met Asn Pro Gln Ile Arg Asn Pro Met Lys Ala Met Tyr Pro Gly Thr
1               5                  10                  15

Phe Tyr Phe Gln Phe Lys Asn Leu Trp Glu Ala Asn Asp Arg Asn Glu
            20                  25                  30

Thr Trp Leu Cys Phe Thr Val Glu Gly Ile Lys Arg Arg Ser Val Val
        35                  40                  45

Ser Trp Lys Thr Gly Val Phe Arg Asn Gln Val Asp Ser Glu Thr His
    50                  55                  60

Cys His Ala Glu Arg Cys Phe Leu Ser Trp Phe Cys Asp Asp Ile Leu
65                  70                  75                  80

Ser Pro Asn Thr Lys Tyr Gln Val Thr Trp Tyr Thr Ser Trp Ser Pro
                85                  90                  95

Cys Pro Asp Cys Ala Gly Glu Val Ala Glu Phe Leu Ala Arg His Ser
            100                 105                 110

Asn Val Asn Leu Thr Ile Phe Thr Ala Arg Leu Tyr Tyr Phe Gln Tyr
        115                 120                 125

Pro Cys Tyr Gln Glu Gly Leu Arg Ser Leu Ser Gln Glu Gly Val Ala
    130                 135                 140

Val Glu Ile Met Asp Tyr Glu Asp Phe Lys Tyr Cys Trp Glu Asn Phe
```

```
145                 150                 155                 160

Val Tyr Asn Asp Asn Glu Pro Phe Lys Pro Trp Lys Gly Leu Lys Thr
                165                 170                 175

Asn Phe Arg Leu Leu Lys Arg Arg Leu Arg Glu Ser Leu Gln
            180                 185                 190


<210> 5690
<211> 61
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: APOBEC3C; "

<220>
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      apolipoprt B mRNA editing enzyme, catalytic
      polypeptide-like 3C; "

<220>
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<400> 5690
Met Asn Pro Gln Ile Arg Trp Ile Leu Arg Pro Ile Val Met Gln Lys
1               5                   10                  15

Gly Ala Ser Ser Leu Gly Ser Ala Thr Thr Tyr Cys Leu Leu Thr Gln
            20                  25                  30

Ser Thr Arg Ser Pro Gly Thr His Leu Gly Ala Leu Ala Gln Thr Val
        35                  40                  45

Gln Gly Arg Trp Pro Ser Ser Trp Pro Gly Thr Ala Thr
    50                  55                  60


<210> 5691
<211> 386
<212> PRT
<213> Homo sapiens

<220>
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<221> source
<223> /note="Payload ID: 1253; "

<220>
<221> source
<223> /note="Gene Symbol: APOBEC3D; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt B mRNA editing enzyme, catalytic
polypeptide-like 3D; "

<220>
<221> source
<223> /note="Uniprot ID: Q96AK3; "

<220>
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<223> /note="ENSP ID: ENSP00000216099"

<400> 5691

```
Met Asn Pro Gln Ile Arg Asn Pro Met Glu Arg Met Tyr Arg Asp Thr
1               5                   10                  15

Phe Tyr Asp Asn Phe Glu Asn Glu Pro Ile Leu Tyr Gly Arg Ser Tyr
            20                  25                  30

Thr Trp Leu Cys Tyr Glu Val Lys Ile Lys Arg Gly Arg Ser Asn Leu
        35                  40                  45

Leu Trp Asp Thr Gly Val Phe Arg Gly Pro Val Leu Pro Lys Arg Gln
    50                  55                  60

Ser Asn His Arg Gln Glu Val Tyr Phe Arg Phe Glu Asn His Ala Glu
65                  70                  75                  80

Met Cys Phe Leu Ser Trp Phe Cys Gly Asn Arg Leu Pro Ala Asn Arg
                85                  90                  95

Arg Phe Gln Ile Thr Trp Phe Val Ser Trp Asn Pro Cys Leu Pro Cys
            100                 105                 110

Val Val Lys Val Thr Lys Phe Leu Ala Glu His Pro Asn Val Thr Leu
        115                 120                 125

Thr Ile Ser Ala Ala Arg Leu Tyr Tyr Tyr Arg Asp Arg Asp Trp Arg
    130                 135                 140
```

```
Trp Val Leu Leu Arg Leu His Lys Ala Gly Ala Arg Val Lys Ile Met
145                 150                 155                 160

Asp Tyr Glu Asp Phe Ala Tyr Cys Trp Glu Asn Phe Val Cys Asn Glu
                165                 170                 175

Gly Gln Pro Phe Met Pro Trp Tyr Lys Phe Asp Asp Asn Tyr Ala Ser
            180                 185                 190

Leu His Arg Thr Leu Lys Glu Ile Leu Arg Asn Pro Met Glu Ala Met
        195                 200                 205

Tyr Pro His Ile Phe Tyr Phe His Phe Lys Asn Leu Leu Lys Ala Cys
    210                 215                 220

Gly Arg Asn Glu Ser Trp Leu Cys Phe Thr Met Glu Val Thr Lys His
225                 230                 235                 240

His Ser Ala Val Phe Arg Lys Arg Gly Val Phe Arg Asn Gln Val Asp
                245                 250                 255

Pro Glu Thr His Cys His Ala Glu Arg Cys Phe Leu Ser Trp Phe Cys
            260                 265                 270

Asp Asp Ile Leu Ser Pro Asn Thr Asn Tyr Glu Val Thr Trp Tyr Thr
        275                 280                 285

Ser Trp Ser Pro Cys Pro Glu Cys Ala Gly Glu Val Ala Glu Phe Leu
    290                 295                 300

Ala Arg His Ser Asn Val Asn Leu Thr Ile Phe Thr Ala Arg Leu Cys
305                 310                 315                 320

Tyr Phe Trp Asp Thr Asp Tyr Gln Glu Gly Leu Cys Ser Leu Ser Gln
                325                 330                 335

Glu Gly Ala Ser Val Lys Ile Met Gly Tyr Lys Asp Phe Val Ser Cys
            340                 345                 350

Trp Lys Asn Phe Val Tyr Ser Asp Asp Glu Pro Phe Lys Pro Trp Lys
        355                 360                 365
```

```
Gly Leu Gln Thr Asn Phe Arg Leu Leu Lys Arg Arg Leu Arg Glu Ile
    370                 375                 380


Leu Gln
385


<210> 5692
<211> 386
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Uniprot ID:  Q96AK3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000370980"

<400> 5692
Met Asn Pro Gln Ile Arg Asn Pro Met Glu Arg Met Tyr Arg Asp Thr
1               5                  10                  15


Phe Tyr Asp Asn Phe Glu Asn Glu Pro Ile Leu Tyr Gly Arg Ser Tyr
            20                  25                  30


Thr Trp Leu Cys Tyr Glu Val Lys Ile Lys Arg Gly Arg Ser Asn Leu
        35                  40                  45


Leu Trp Asp Thr Gly Val Phe Arg Gly Pro Val Leu Pro Lys Arg Gln
    50                  55                  60


Ser Asn His Arg Gln Glu Val Tyr Phe Arg Phe Glu Asn His Ala Glu
65                  70                  75                  80


Met Cys Phe Leu Ser Trp Phe Cys Gly Asn Arg Leu Pro Ala Asn Arg
```

```
                85                  90                  95

Arg Phe Gln Ile Thr Trp Phe Val Ser Trp Asn Pro Cys Leu Pro Cys
            100                 105                 110

Val Val Lys Val Thr Lys Phe Leu Ala Glu His Pro Asn Val Thr Leu
        115                 120                 125

Thr Ile Ser Ala Ala Arg Leu Tyr Tyr Tyr Arg Asp Arg Asp Trp Arg
    130                 135                 140

Trp Val Leu Leu Arg Leu His Lys Ala Gly Ala Arg Val Lys Ile Met
145                 150                 155                 160

Asp Tyr Glu Asp Phe Ala Tyr Cys Trp Glu Asn Phe Val Cys Asn Glu
                165                 170                 175

Gly Gln Pro Phe Met Pro Trp Tyr Lys Phe Asp Asp Asn Tyr Ala Ser
            180                 185                 190

Leu His Arg Thr Leu Lys Glu Ile Leu Arg Asn Pro Met Glu Ala Met
        195                 200                 205

Tyr Pro His Ile Phe Tyr Phe His Phe Lys Asn Leu Leu Lys Ala Cys
    210                 215                 220

Gly Arg Asn Glu Ser Trp Leu Cys Phe Thr Met Glu Val Thr Lys His
225                 230                 235                 240

His Ser Ala Val Phe Arg Lys Arg Gly Val Phe Arg Asn Gln Val Asp
                245                 250                 255

Pro Glu Thr His Cys His Ala Glu Arg Cys Phe Leu Ser Trp Phe Cys
            260                 265                 270

Asp Asp Ile Leu Ser Pro Asn Thr Asn Tyr Glu Val Thr Trp Tyr Thr
        275                 280                 285

Ser Trp Ser Pro Cys Pro Glu Cys Ala Gly Glu Val Ala Glu Phe Leu
    290                 295                 300

Ala Arg His Ser Asn Val Asn Leu Thr Ile Phe Thr Ala Arg Leu Cys
305                 310                 315                 320
```

```
Tyr Phe Trp Asp Thr Asp Tyr Gln Glu Gly Leu Cys Ser Leu Ser Gln
                325                 330                 335

Glu Gly Ala Ser Val Lys Ile Met Gly Tyr Lys Asp Phe Val Ser Cys
            340                 345                 350

Trp Lys Asn Phe Val Tyr Ser Asp Asp Glu Pro Phe Lys Pro Trp Lys
        355                 360                 365

Gly Leu Gln Thr Asn Phe Arg Leu Leu Lys Arg Arg Leu Arg Glu Ile
    370                 375                 380

Leu Gln
385
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<210> 5693
<211> 202
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<223> /note="Gene Symbol: APOBEC3D; "

<220>
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polypeptide-like 3D; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000388017"

<400> 5693

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Met Asn Pro Gln Ile Arg Asn Pro Met Glu Arg Met Tyr Arg Asp Thr
1               5                  10                  15

Phe Tyr Asp Asn Phe Glu Asn Glu Pro Ile Leu Tyr Gly Arg Ser Tyr
            20                  25                  30

Thr Trp Leu Cys Tyr Glu Val Lys Ile Lys Arg Gly Arg Ser Asn Leu
        35                  40                  45
```

```
Leu Trp Asp Thr Gly Val Phe Arg Gly Pro Val Leu Pro Lys Arg Gln
    50                  55                  60

Ser Asn His Arg Gln Glu Val Asp Pro Glu Thr His Cys His Ala Glu
65                  70                  75                  80

Arg Cys Phe Leu Ser Trp Phe Cys Asp Asp Ile Leu Ser Pro Asn Thr
                85                  90                  95

Asn Tyr Glu Val Thr Trp Tyr Thr Ser Trp Ser Pro Cys Pro Glu Cys
            100                 105                 110

Ala Gly Glu Val Ala Glu Phe Leu Ala Arg His Ser Asn Val Asn Leu
        115                 120                 125

Thr Ile Phe Thr Ala Arg Leu Cys Tyr Phe Trp Asp Thr Asp Tyr Gln
    130                 135                 140

Glu Gly Leu Cys Ser Leu Ser Gln Glu Gly Ala Ser Val Lys Ile Met
145                 150                 155                 160

Gly Tyr Lys Asp Phe Val Ser Cys Trp Lys Asn Phe Val Tyr Ser Asp
                165                 170                 175

Asp Glu Pro Phe Lys Pro Trp Lys Gly Leu Gln Thr Asn Phe Arg Leu
            180                 185                 190

Leu Lys Arg Arg Leu Arg Glu Ile Leu Gln
        195                 200


<210> 5694
<211> 190
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
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apolipoprt B mRNA editing enzyme, catalytic
polypeptide-like 3D; "

<220>
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<400> 5694

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Met Asn Pro Gln Ile Arg Asn Pro Met Glu Ala Met Tyr Pro His Ile
1               5                  10                  15

Phe Tyr Phe His Phe Lys Asn Leu Leu Lys Ala Cys Gly Arg Asn Glu
            20                  25                  30

Ser Trp Leu Cys Phe Thr Met Glu Val Thr Lys His His Ser Ala Val
        35                  40                  45

Phe Arg Lys Arg Gly Val Phe Arg Asn Gln Val Asp Pro Glu Thr His
    50                  55                  60

Cys His Ala Glu Arg Cys Phe Leu Ser Trp Phe Cys Asp Asp Ile Leu
65                  70                  75                  80

Ser Pro Asn Thr Asn Tyr Glu Val Thr Trp Tyr Thr Ser Trp Ser Pro
                85                  90                  95

Cys Pro Glu Cys Ala Gly Glu Val Ala Glu Phe Leu Ala Arg His Ser
            100                 105                 110

Asn Val Asn Leu Thr Ile Phe Thr Ala Arg Leu Cys Tyr Phe Trp Asp
        115                 120                 125

Thr Asp Tyr Gln Glu Gly Leu Cys Ser Leu Ser Gln Glu Gly Ala Ser
    130                 135                 140

Val Lys Ile Met Gly Tyr Lys Asp Phe Val Ser Cys Trp Lys Asn Phe
145                 150                 155                 160

Val Tyr Ser Asp Asp Glu Pro Phe Lys Pro Trp Lys Gly Leu Gln Thr
                165                 170                 175

Asn Phe Arg Leu Leu Lys Arg Arg Leu Arg Glu Ile Leu Gln
            180                 185                 190
```

<210> 5695

<211> 373
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1254; "

<220>
<221> source
<223> /note="Gene Symbol: APOBEC3F; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt B mRNA editing enzyme, catalytic
polypeptide-like 3F; "

<220>
<221> source
<223> /note="Uniprot ID: Q8IUX4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000309749"

<400> 5695

```
Met Lys Pro His Phe Arg Asn Thr Val Glu Arg Met Tyr Arg Asp Thr
1               5                  10                  15

Phe Ser Tyr Asn Phe Tyr Asn Arg Pro Ile Leu Ser Arg Arg Asn Thr
            20                  25                  30

Val Trp Leu Cys Tyr Glu Val Lys Thr Lys Gly Pro Ser Arg Pro Arg
        35                  40                  45

Leu Asp Ala Lys Ile Phe Arg Gly Gln Val Tyr Ser Gln Pro Glu His
    50                  55                  60

His Ala Glu Met Cys Phe Leu Ser Trp Phe Cys Gly Asn Gln Leu Pro
65                  70                  75                  80

Ala Tyr Lys Cys Phe Gln Ile Thr Trp Phe Val Ser Trp Thr Pro Cys
                85                  90                  95

Pro Asp Cys Val Ala Lys Leu Ala Glu Phe Leu Ala Glu His Pro Asn
            100                 105                 110

Val Thr Leu Thr Ile Ser Ala Ala Arg Leu Tyr Tyr Tyr Trp Glu Arg
        115                 120                 125
```

```
Asp Tyr Arg Arg Ala Leu Cys Arg Leu Ser Gln Ala Gly Ala Arg Val
    130                 135                 140

Lys Ile Met Asp Asp Glu Glu Phe Ala Tyr Cys Trp Glu Asn Phe Val
145                 150                 155                 160

Tyr Ser Glu Gly Gln Pro Phe Met Pro Trp Tyr Lys Phe Asp Asp Asn
                165                 170                 175

Tyr Ala Phe Leu His Arg Thr Leu Lys Glu Ile Leu Arg Asn Pro Met
            180                 185                 190

Glu Ala Met Tyr Pro His Ile Phe Tyr Phe His Phe Lys Asn Leu Arg
        195                 200                 205

Lys Ala Tyr Gly Arg Asn Glu Ser Trp Leu Cys Phe Thr Met Glu Val
    210                 215                 220

Val Lys His His Ser Pro Val Ser Trp Lys Arg Gly Val Phe Arg Asn
225                 230                 235                 240

Gln Val Asp Pro Glu Thr His Cys His Ala Glu Arg Cys Phe Leu Ser
                245                 250                 255

Trp Phe Cys Asp Asp Ile Leu Ser Pro Asn Thr Asn Tyr Glu Val Thr
            260                 265                 270

Trp Tyr Thr Ser Trp Ser Pro Cys Pro Glu Cys Ala Gly Glu Val Ala
        275                 280                 285

Glu Phe Leu Ala Arg His Ser Asn Val Asn Leu Thr Ile Phe Thr Ala
    290                 295                 300

Arg Leu Tyr Tyr Phe Trp Asp Thr Asp Tyr Gln Glu Gly Leu Arg Ser
305                 310                 315                 320

Leu Ser Gln Glu Gly Ala Ser Val Glu Ile Met Gly Tyr Lys Asp Phe
                325                 330                 335

Lys Tyr Cys Trp Glu Asn Phe Val Tyr Asn Asp Asp Glu Pro Phe Lys
            340                 345                 350
```

```
Pro Trp Lys Gly Leu Lys Tyr Asn Phe Leu Phe Leu Asp Ser Lys Leu
        355                 360                 365


Gln Glu Ile Leu Glu
    370


<210> 5696
<211> 101
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1254; "

<220>
<221> source
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<220>
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      polypeptide-like 3F; "

<220>
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<223> /note="Uniprot ID:  Q8IUX4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000370977"

<400> 5696
Met Lys Pro His Phe Arg Asn Thr Val Glu Arg Met Tyr Arg Asp Thr
1               5                   10                  15


Phe Ser Tyr Asn Phe Tyr Asn Arg Pro Ile Leu Ser Arg Arg Asn Thr
            20                  25                  30


Val Trp Leu Cys Tyr Glu Val Lys Thr Lys Gly Pro Ser Arg Pro Arg
        35                  40                  45


Leu Asp Ala Lys Ile Phe Arg Gly Gln Val Pro Arg Ser Phe Ile Arg
    50                  55                  60


Ala Pro Phe Gln Val Leu Ser Ser Pro Phe Gly Gln Cys Ala Pro Pro
65                  70                  75                  80
```

```
His Gly Thr Ala Gln Val Gln Trp Pro Pro Gln Leu Thr Ala Gly Arg
                85                  90                  95


Glu Gln Gly Arg Pro
            100


<210> 5697
<211> 384
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: APOBEC3G; "

<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID:  Q9HC16; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000385057"

<400> 5697
Met Lys Pro His Phe Arg Asn Thr Val Glu Arg Met Tyr Arg Asp Thr
1               5                  10                  15


Phe Ser Tyr Asn Phe Tyr Asn Arg Pro Ile Leu Ser Arg Arg Asn Thr
            20                  25                  30


Val Trp Leu Cys Tyr Glu Val Lys Thr Lys Gly Pro Ser Arg Pro Pro
        35                  40                  45


Leu Asp Ala Lys Ile Phe Arg Gly Gln Val Tyr Ser Glu Leu Lys Tyr
    50                  55                  60


His Pro Glu Met Arg Phe Phe His Trp Phe Ser Lys Trp Arg Lys Leu
65                  70                  75                  80


His Arg Asp Gln Glu Tyr Glu Val Thr Trp Tyr Ile Ser Trp Ser Pro
```

```
                85                  90                  95

Cys Thr Lys Cys Thr Arg Asp Met Ala Thr Phe Leu Ala Glu Asp Pro
            100                 105                 110

Lys Val Thr Leu Thr Ile Phe Val Ala Arg Leu Tyr Tyr Phe Trp Asp
        115                 120                 125

Pro Asp Tyr Gln Glu Ala Leu Arg Ser Leu Cys Gln Lys Arg Asp Gly
    130                 135                 140

Pro Arg Ala Thr Met Lys Ile Met Asn Tyr Asp Glu Phe Gln His Cys
145                 150                 155                 160

Trp Ser Lys Phe Val Tyr Ser Gln Arg Glu Leu Phe Glu Pro Trp Asn
                165                 170                 175

Asn Leu Pro Lys Tyr Tyr Ile Leu Leu His Ile Met Leu Gly Glu Ile
            180                 185                 190

Leu Arg His Ser Met Asp Pro Pro Thr Phe Thr Phe Asn Phe Asn Asn
        195                 200                 205

Glu Pro Trp Val Arg Gly Arg His Glu Thr Tyr Leu Cys Tyr Glu Val
    210                 215                 220

Glu Arg Met His Asn Asp Thr Trp Val Leu Leu Asn Gln Arg Arg Gly
225                 230                 235                 240

Phe Leu Cys Asn Gln Ala Pro His Lys His Gly Phe Leu Glu Gly Arg
                245                 250                 255

His Ala Glu Leu Cys Phe Leu Asp Val Ile Pro Phe Trp Lys Leu Asp
            260                 265                 270

Leu Asp Gln Asp Tyr Arg Val Thr Cys Phe Thr Ser Trp Ser Pro Cys
        275                 280                 285

Phe Ser Cys Ala Gln Glu Met Ala Lys Phe Ile Ser Lys Asn Lys His
    290                 295                 300

Val Ser Leu Cys Ile Phe Thr Ala Arg Ile Tyr Asp Asp Gln Gly Arg
305                 310                 315                 320
```

```
Cys Gln Glu Gly Leu Arg Thr Leu Ala Glu Ala Gly Ala Lys Ile Ser
                325                 330                 335

Ile Met Thr Tyr Ser Glu Phe Lys His Cys Trp Asp Thr Phe Val Asp
            340                 345                 350

His Gln Gly Cys Pro Phe Gln Pro Trp Asp Gly Leu Asp Glu His Ser
        355                 360                 365

Gln Asp Leu Ser Gly Arg Leu Arg Ala Ile Leu Gln Asn Gln Glu Asn
    370                 375                 380
```

<210> 5698
<211> 384
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1255; "

<220>
<221> source
<223> /note="Gene Symbol: APOBEC3G; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt B mRNA editing enzyme, catalytic
polypeptide-like 3G; "

<220>
<221> source
<223> /note="Uniprot ID: Q9HC16; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000413376"

<400> 5698

```
Met Lys Pro His Phe Arg Asn Thr Val Glu Arg Met Tyr Arg Asp Thr
1               5                  10                  15

Phe Ser Tyr Asn Phe Tyr Asn Arg Pro Ile Leu Ser Arg Arg Asn Thr
            20                  25                  30

Val Trp Leu Cys Tyr Glu Val Lys Thr Lys Gly Pro Ser Arg Pro Pro
        35                  40                  45
```

```
Leu Asp Ala Lys Ile Phe Arg Gly Gln Val Tyr Ser Glu Leu Lys Tyr
    50                  55                  60

His Pro Glu Met Arg Phe Phe His Trp Phe Ser Lys Trp Arg Lys Leu
65                  70                  75                  80

His Arg Asp Gln Glu Tyr Glu Val Thr Trp Tyr Ile Ser Trp Ser Pro
                85                  90                  95

Cys Thr Lys Cys Thr Arg Asp Met Ala Thr Phe Leu Ala Glu Asp Pro
            100                 105                 110

Lys Val Thr Leu Thr Ile Phe Val Ala Arg Leu Tyr Tyr Phe Trp Asp
        115                 120                 125

Pro Asp Tyr Gln Glu Ala Leu Arg Ser Leu Cys Gln Lys Arg Asp Gly
    130                 135                 140

Pro Arg Ala Thr Met Lys Ile Met Asn Tyr Asp Glu Phe Gln His Cys
145                 150                 155                 160

Trp Ser Lys Phe Val Tyr Ser Gln Arg Glu Leu Phe Glu Pro Trp Asn
                165                 170                 175

Asn Leu Pro Lys Tyr Tyr Ile Leu Leu His Ile Met Leu Gly Glu Ile
            180                 185                 190

Leu Arg His Ser Met Asp Pro Pro Thr Phe Thr Phe Asn Phe Asn Asn
        195                 200                 205

Glu Pro Trp Val Arg Gly Arg His Glu Thr Tyr Leu Cys Tyr Glu Val
    210                 215                 220

Glu Arg Met His Asn Asp Thr Trp Val Leu Leu Asn Gln Arg Arg Gly
225                 230                 235                 240

Phe Leu Cys Asn Gln Ala Pro His Lys His Gly Phe Leu Glu Gly Arg
                245                 250                 255

His Ala Glu Leu Cys Phe Leu Asp Val Ile Pro Phe Trp Lys Leu Asp
            260                 265                 270
```

```
Leu Asp Gln Asp Tyr Arg Val Thr Cys Phe Thr Ser Trp Ser Pro Cys
        275                 280                 285

Phe Ser Cys Ala Gln Glu Met Ala Lys Phe Ile Ser Lys Asn Lys His
    290                 295                 300

Val Ser Leu Cys Ile Phe Thr Ala Arg Ile Tyr Asp Asp Gln Gly Arg
305                 310                 315                 320

Cys Gln Glu Gly Leu Arg Thr Leu Ala Glu Ala Gly Ala Lys Ile Ser
                325                 330                 335

Ile Met Thr Tyr Ser Glu Phe Lys His Cys Trp Asp Thr Phe Val Asp
            340                 345                 350

His Gln Gly Cys Pro Phe Gln Pro Trp Asp Gly Leu Asp Glu His Ser
        355                 360                 365

Gln Asp Leu Ser Gly Arg Leu Arg Ala Ile Leu Gln Asn Gln Glu Asn
    370                 375                 380


<210> 5699
<211> 182
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: APOBEC3H; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt B mRNA editing enzyme, catalytic
      polypeptide-like 3H; "

<220>
<221> source
<223> /note="Uniprot ID:  Q6NTF7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000216123"

<400> 5699
Met Ala Leu Leu Thr Ala Glu Thr Phe Arg Leu Gln Phe Asn Asn Lys
```

```
1               5                   10                  15

Arg Arg Leu Arg Arg Pro Tyr Tyr Pro Arg Lys Ala Leu Leu Cys Tyr
            20                  25                  30

Gln Leu Thr Pro Gln Asn Gly Ser Thr Pro Thr Arg Gly Tyr Phe Glu
        35                  40                  45

Asn Lys Lys Lys Cys His Ala Glu Ile Cys Phe Ile Asn Glu Ile Lys
    50                  55                  60

Ser Met Gly Leu Asp Glu Thr Gln Cys Tyr Gln Val Thr Cys Tyr Leu
65                  70                  75                  80

Thr Trp Ser Pro Cys Ser Ser Cys Ala Trp Glu Leu Val Asp Phe Ile
                85                  90                  95

Lys Ala His Asp His Leu Asn Leu Gly Ile Phe Ala Ser Arg Leu Tyr
            100                 105                 110

Tyr His Trp Cys Lys Pro Gln Gln Lys Gly Leu Arg Leu Leu Cys Gly
        115                 120                 125

Ser Gln Val Pro Val Glu Val Met Gly Phe Pro Glu Phe Ala Asp Cys
    130                 135                 140

Trp Glu Asn Phe Val Asp His Glu Lys Pro Leu Ser Phe Asn Pro Tyr
145                 150                 155                 160

Lys Met Leu Glu Glu Leu Asp Lys Asn Ser Arg Ala Ile Lys Arg Arg
                165                 170                 175

Leu Glu Arg Ile Lys Ser
            180


<210> 5700
<211> 200
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1256; "

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<221> source
<223> /note="Gene Symbol: APOBEC3H; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt B mRNA editing enzyme, catalytic
polypeptide-like 3H; "

<220>
<221> source
<223> /note="Uniprot ID: Q6NTF7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000385741"

<400> 5700

```
Met Ala Leu Leu Thr Ala Glu Thr Phe Arg Leu Gln Phe Asn Asn Lys
1               5                  10                  15

Arg Arg Leu Arg Arg Pro Tyr Tyr Pro Arg Lys Ala Leu Leu Cys Tyr
            20                  25                  30

Gln Leu Thr Pro Gln Asn Gly Ser Thr Pro Thr Arg Gly Tyr Phe Glu
        35                  40                  45

Asn Lys Lys Lys Cys His Ala Glu Ile Cys Phe Ile Asn Glu Ile Lys
    50                  55                  60

Ser Met Gly Leu Asp Glu Thr Gln Cys Tyr Gln Val Thr Cys Tyr Leu
65                  70                  75                  80

Thr Trp Ser Pro Cys Ser Ser Cys Ala Trp Glu Leu Val Asp Phe Ile
                85                  90                  95

Lys Ala His Asp His Leu Asn Leu Gly Ile Phe Ala Ser Arg Leu Tyr
            100                 105                 110

Tyr His Trp Cys Lys Pro Gln Gln Lys Gly Leu Arg Leu Leu Cys Gly
        115                 120                 125

Ser Gln Val Pro Val Glu Val Met Gly Phe Pro Glu Phe Ala Asp Cys
    130                 135                 140

Trp Glu Asn Phe Val Asp His Glu Lys Pro Leu Ser Phe Asn Pro Tyr
145                 150                 155                 160
```

```
Lys Met Leu Glu Glu Leu Asp Lys Asn Ser Arg Ala Ile Lys Arg Arg
                165                 170                 175

Leu Glu Arg Ile Lys Ile Pro Gly Val Arg Ala Gln Gly Arg Tyr Met
            180                 185                 190

Asp Ile Leu Cys Asp Ala Glu Val
        195                 200


<210> 5701
<211> 154
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1256; "

<220>
<221> source
<223> /note="Gene Symbol: APOBEC3H; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt B mRNA editing enzyme, catalytic
      polypeptide-like 3H; "

<220>
<221> source
<223> /note="Uniprot ID:  Q6NTF7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000393520"

<400> 5701
Met Ala Leu Leu Thr Ala Glu Thr Phe Arg Leu Gln Phe Asn Asn Lys
1               5                   10                  15

Arg Arg Leu Arg Arg Pro Tyr Tyr Pro Arg Lys Ala Leu Leu Cys Tyr
            20                  25                  30

Gln Leu Thr Pro Gln Asn Gly Ser Thr Pro Thr Arg Gly Tyr Phe Glu
        35                  40                  45

Asn Lys Lys Lys Cys His Ala Glu Ile Cys Phe Ile Asn Glu Ile Lys
    50                  55                  60
```

```
Ser Met Gly Leu Asp Glu Thr Gln Cys Tyr Gln Val Thr Cys Tyr Leu
65                  70                  75                  80

Thr Trp Ser Pro Cys Ser Ser Cys Ala Trp Glu Leu Val Asp Phe Ile
                85                  90                  95

Lys Ala His Asp His Leu Asn Leu Gly Ile Phe Ala Ser Arg Leu Tyr
            100                 105                 110

Tyr His Trp Cys Lys Pro Gln Gln Lys Gly Leu Arg Leu Leu Cys Gly
        115                 120                 125

Ser Gln Val Pro Val Glu Val Met Gly Phe Pro Asp Ser Arg Gly Thr
    130                 135                 140

Cys Ala Gly Ser Leu His Gly Tyr Ile Val
145                 150


<210> 5702
<211> 183
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1256; "

<220>
<221> source
<223> /note="Gene Symbol: APOBEC3H; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt B mRNA editing enzyme, catalytic
      polypeptide-like 3H; "

<220>
<221> source
<223> /note="Uniprot ID:  Q6NTF7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000411754"

<400> 5702
Met Ala Leu Leu Thr Ala Glu Thr Phe Arg Leu Gln Phe Asn Asn Lys
1               5                   10                  15

Arg Arg Leu Arg Arg Pro Tyr Tyr Pro Arg Lys Ala Leu Leu Cys Tyr
```

```
            20                  25                  30

Gln Leu Thr Pro Gln Asn Gly Ser Thr Pro Thr Arg Gly Tyr Phe Glu
        35                  40                  45

Asn Lys Lys Lys Cys His Ala Glu Ile Cys Phe Ile Asn Glu Ile Lys
    50                  55                  60

Ser Met Gly Leu Asp Glu Thr Gln Cys Tyr Gln Val Thr Cys Tyr Leu
65                  70                  75                  80

Thr Trp Ser Pro Cys Ser Ser Cys Ala Trp Glu Leu Val Asp Phe Ile
                85                  90                  95

Lys Ala His Asp His Leu Asn Leu Gly Ile Phe Ala Ser Arg Leu Tyr
            100                 105                 110

Tyr His Trp Cys Lys Pro Gln Gln Lys Gly Leu Arg Leu Leu Cys Gly
        115                 120                 125

Ser Gln Val Pro Val Glu Val Met Gly Phe Pro Glu Phe Ala Asp Cys
    130                 135                 140

Trp Glu Asn Phe Val Asp His Glu Lys Pro Leu Ser Phe Asn Pro Tyr
145                 150                 155                 160

Lys Met Leu Glu Glu Leu Asp Lys Asn Ser Arg Ala Ile Lys Arg Arg
                165                 170                 175

Leu Glu Arg Ile Lys Gln Ser
            180


<210> 5703
<211> 154
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1256; "

<220>
<221> source
<223> /note="Gene Symbol: APOBEC3H; "

<220>
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<221> source
<223> /note="Gene Name:
apolipoprt B mRNA editing enzyme, catalytic
polypeptide-like 3H; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000482682"

<400> 5703
Met Ala Leu Leu Thr Ala Glu Thr Phe Arg Leu Gln Phe Asn Asn Lys
1 5 10 15

Arg Arg Leu Arg Arg Pro Tyr Tyr Pro Arg Lys Ala Leu Leu Cys Tyr
20 25 30

Gln Leu Thr Pro Gln Asn Gly Ser Thr Pro Thr Arg Gly Tyr Phe Glu
35 40 45

Asn Lys Lys Lys Cys His Ala Glu Ile Cys Phe Ile Asn Glu Ile Lys
50 55 60

Ser Met Gly Leu Asp Glu Thr Gln Cys Tyr Gln Val Thr Cys Tyr Leu
65 70 75 80

Thr Trp Ser Pro Cys Ser Ser Cys Ala Trp Glu Leu Val Asp Phe Ile
85 90 95

Lys Ala His Asp His Leu Asn Leu Gly Ile Phe Ala Ser Arg Leu Tyr
100 105 110

Tyr His Trp Cys Lys Pro Gln Gln Lys Gly Leu Arg Leu Leu Cys Gly
115 120 125

Ser Gln Val Pro Val Glu Val Met Gly Phe Pro Asp Ser Arg Gly Thr
130 135 140

Cys Ala Gly Ser Leu His Gly Tyr Ile Val
145 150

<210> 5704
<211> 200
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1256; "

<220>
<221> source
<223> /note="Gene Symbol: APOBEC3H; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt B mRNA editing enzyme, catalytic
polypeptide-like 3H; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000483689"

<400> 5704

```
Met Ala Leu Leu Thr Ala Glu Thr Phe Arg Leu Gln Phe Asn Asn Lys
1               5                  10                  15

Arg Arg Leu Arg Arg Pro Tyr Tyr Pro Arg Lys Ala Leu Leu Cys Tyr
            20                  25                  30

Gln Leu Thr Pro Gln Asn Gly Ser Thr Pro Thr Arg Gly Tyr Phe Glu
        35                  40                  45

Asn Lys Lys Lys Cys His Ala Glu Ile Cys Phe Ile Asn Glu Ile Lys
    50                  55                  60

Ser Met Gly Leu Asp Glu Thr Gln Cys Tyr Gln Val Thr Cys Tyr Leu
65                  70                  75                  80

Thr Trp Ser Pro Cys Ser Ser Cys Ala Trp Glu Leu Val Asp Phe Ile
                85                  90                  95

Lys Ala His Asp His Leu Asn Leu Gly Ile Phe Ala Ser Arg Leu Tyr
            100                 105                 110

Tyr His Trp Cys Lys Pro Gln Gln Lys Gly Leu Arg Leu Leu Cys Gly
        115                 120                 125

Ser Gln Val Pro Val Glu Val Met Gly Phe Pro Glu Phe Ala Asp Cys
    130                 135                 140

Trp Glu Asn Phe Val Asp His Glu Lys Pro Leu Ser Phe Asn Pro Tyr
145                 150                 155                 160
```

```
Lys Met Leu Glu Glu Leu Asp Lys Asn Ser Arg Ala Ile Lys Arg Arg
                165                 170                 175


Leu Glu Arg Ile Lys Ile Pro Gly Val Arg Ala Gln Gly Arg Tyr Met
            180                 185                 190


Asp Ile Leu Cys Asp Ala Glu Val
        195                 200


<210> 5705
<211> 367
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1257; "

<220>
<221> source
<223> /note="Gene Symbol: APOBEC4; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt B mRNA editing enzyme, catalytic
      polypeptide-like 4
      (putative); "

<220>
<221> source
<223> /note="Uniprot ID:  Q8WW27; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000310622"

<400> 5705
Met Glu Pro Ile Tyr Glu Glu Tyr Leu Ala Asn His Gly Thr Ile Val
1               5                   10                  15


Lys Pro Tyr Tyr Trp Leu Ser Phe Ser Leu Asp Cys Ser Asn Cys Pro
            20                  25                  30


Tyr His Ile Arg Thr Gly Glu Glu Ala Arg Val Ser Leu Thr Glu Phe
        35                  40                  45


Cys Gln Ile Phe Gly Phe Pro Tyr Gly Thr Thr Phe Pro Gln Thr Lys
    50                  55                  60
```

```
His Leu Thr Phe Tyr Glu Leu Lys Thr Ser Ser Gly Ser Leu Val Gln
65                  70                  75                  80

Lys Gly His Ala Ser Ser Cys Thr Gly Asn Tyr Ile His Pro Glu Ser
                85                  90                  95

Met Leu Phe Glu Met Asn Gly Tyr Leu Asp Ser Ala Ile Tyr Asn Asn
            100                 105                 110

Asp Ser Ile Arg His Ile Ile Leu Tyr Ser Asn Asn Ser Pro Cys Asn
        115                 120                 125

Glu Ala Asn His Cys Cys Ile Ser Lys Met Tyr Asn Phe Leu Ile Thr
    130                 135                 140

Tyr Pro Gly Ile Thr Leu Ser Ile Tyr Phe Ser Gln Leu Tyr His Thr
145                 150                 155                 160

Glu Met Asp Phe Pro Ala Ser Ala Trp Asn Arg Glu Ala Leu Arg Ser
                165                 170                 175

Leu Ala Ser Leu Trp Pro Arg Val Val Leu Ser Pro Ile Ser Gly Gly
            180                 185                 190

Ile Trp His Ser Val Leu His Ser Phe Ile Ser Gly Val Ser Gly Ser
        195                 200                 205

His Val Phe Gln Pro Ile Leu Thr Gly Arg Ala Leu Ala Asp Arg His
    210                 215                 220

Asn Ala Tyr Glu Ile Asn Ala Ile Thr Gly Val Lys Pro Tyr Phe Thr
225                 230                 235                 240

Asp Val Leu Leu Gln Thr Lys Arg Asn Pro Asn Thr Lys Ala Gln Glu
                245                 250                 255

Ala Leu Glu Ser Tyr Pro Leu Asn Asn Ala Phe Pro Gly Gln Phe Phe
            260                 265                 270

Gln Met Pro Ser Gly Gln Leu Gln Pro Asn Leu Pro Pro Asp Leu Arg
        275                 280                 285

Ala Pro Val Val Phe Val Leu Val Pro Leu Arg Asp Leu Pro Pro Met
```

290 295 300

His Met Gly Gln Asn Pro Asn Lys Pro Arg Asn Ile Val Arg His Leu
305 310 315 320

Asn Met Pro Gln Met Ser Phe Gln Glu Thr Lys Asp Leu Gly Arg Leu
325 330 335

Pro Thr Gly Arg Ser Val Glu Ile Val Glu Ile Thr Glu Gln Phe Ala
340 345 350

Ser Ser Lys Glu Ala Asp Glu Lys Lys Lys Lys Lys Gly Lys Lys
355 360 365

<210> 5706
<211> 1088
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1258; "

<220>
<221> source
<223> /note="Gene Symbol: APOBR; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt B receptor; "

<220>
<221> source
<223> /note="Uniprot ID: Q0VD83; "

<220>
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<223> /note="ENSP ID: ENSP00000416094"

<400> 5706
Met Asp Phe Leu Arg Leu Tyr Leu Pro Gly Leu His Gln Ala Leu Arg
1 5 10 15

Gly Ala Leu Asp Ser Leu Gly Thr Phe Val Ser Tyr Leu Leu Gly Asp
20 25 30

Ala Val Pro Thr Val Glu Arg Glu Ala Gln Ala Ala Glu Glu Leu Gly
35 40 45

```
Val Val Ala Val Gly Lys Thr Gly Lys Ile Val Glu Glu Glu Ala Gln
    50                  55                  60

Glu Asp Leu Glu Gly Leu Arg Gly Ser Gln Asn Glu Gly Ala Gly Arg
65                  70                  75                  80

Leu Arg Gly Pro Gly Asp Asp Arg Arg His Glu Val Gly Ser Ser Ala
                85                  90                  95

Val Glu Gln Thr Trp Gly Trp Gly Asp Gly Ser Ser His Gly Ser Gln
            100                 105                 110

Ala Glu Arg Gln Asp Ser Gly Ala Gly Glu Thr Ala Lys Ala Ala Arg
        115                 120                 125

Cys Gln Glu Pro Ser Ala His Leu Glu Ala Arg Lys Lys Ser Lys Ala
    130                 135                 140

Gly Ser Gly Ala Cys Gln Asp Arg Ser Gly Gln Ala Gln Glu Arg Gln
145                 150                 155                 160

Glu Ser His Glu Gln Glu Val Asn Arg Glu Glu Arg Leu Arg Ser Trp
                165                 170                 175

Glu Gln Glu Glu Glu Glu Glu Glu Val Arg Ala Arg Glu Pro Gly Met
            180                 185                 190

Ala Arg Gly Ala Glu Ser Glu Trp Thr Trp His Gly Glu Thr Glu Gly
        195                 200                 205

Lys Ala Gly Ala Val Gly Pro Lys Ala Ala Gly Asp Asn Arg Glu Met
    210                 215                 220

Glu Gln Gly Val Arg Glu Ala Asp Ala Gly Glu Thr Glu Glu Pro Gly
225                 230                 235                 240

Ala Glu Gly Ala Gly Lys Gly Glu Glu Val Val Val Val Glu Lys Ala
                245                 250                 255

Cys Glu Ser Thr Arg Ala Trp Gly Thr Trp Gly Pro Gly Ala Glu Pro
            260                 265                 270
```

```
Glu Asp Trp Gly Ile Leu Gly Arg Glu Glu Ala Arg Thr Thr Pro Gly
        275                 280                 285

Arg Glu Glu Ala Arg Ala Ile Leu Asp Gly Glu Glu Ala Arg Thr Ile
    290                 295                 300

Ser Gly Gly Glu Glu Ala Glu Thr Ala Ser Gly Gly Glu Glu Ala Glu
305                 310                 315                 320

Thr Ala Ser Gly Gly Glu Glu Ala Gly Thr Ala Ser Gly Gly Glu Glu
                325                 330                 335

Ala Gly Ile Ala Ser Gly Gly Glu Ala Gly Thr Ala Ser Gly Gly Glu
            340                 345                 350

Glu Ala Gly Thr Ala Ser Gly Gly Asp Glu Ala Trp Thr Thr Ser Gly
        355                 360                 365

Lys Glu Glu Ala Asp Leu Leu Gly Val Arg Gln Thr Glu Tyr Gly Ala
    370                 375                 380

Val Pro Gly Glu Arg Leu Leu Glu Ala Thr Gly Lys Val Trp Val Leu
385                 390                 395                 400

Glu Glu Glu Gly Asp Glu Glu Arg Glu Ala Glu Val Ser Pro Phe Pro
                405                 410                 415

Lys Gln Pro Gln Val Leu Gly Thr Glu Arg Thr Glu Glu Ala Ala Glu
            420                 425                 430

Ser Gln Thr Ala Gly Arg Glu Ala Val Gly Gly Gln Glu Ala Gly Glu
        435                 440                 445

Ser Phe Glu Gly Gln Val Asp Leu Arg Gly Lys Glu Ala Glu Met Arg
    450                 455                 460

Gln Asp Leu Gly Ile Arg Ala Asp Arg Ala Arg Met Glu Glu Leu Val
465                 470                 475                 480

Gln Ala Glu Glu Ala Gln Glu Glu Arg Gly Ser Ser Arg Asp Pro Val
                485                 490                 495

Ala Glu Leu Pro Ser Asp Gly Glu Ala Glu Gly Thr Ala Asp Leu Glu
```

```
            500                 505                 510

Ala Thr Pro Glu Ala Arg Pro Glu Glu Glu Leu Thr Gly Glu Glu Ser
        515                 520                 525

Glu Ala Ala Gln Thr Ser Cys Gly Leu Leu Gly Val Glu Trp Gly Gly
    530                 535                 540

Leu Thr His Ser Val Thr Lys Gly Gln Gly Pro Glu Leu Met Gly Gly
545                 550                 555                 560

Ala Gln Thr Pro Thr Lys Gln Pro Glu Glu Arg Glu Ala Gly Glu Val
                565                 570                 575

Glu Leu Met Gly Val Leu Ala Leu Ser Lys Glu Glu Gln Glu Arg Ser
            580                 585                 590

Leu Glu Ala Gly Pro Arg His Ala Gly Ser Val Lys Pro Glu Ala Ser
        595                 600                 605

Glu Ala Phe Pro Gly Ala Trp Glu Asn Arg Thr Arg Lys Asp Met Glu
    610                 615                 620

Arg Gly Asn Thr Gln Glu Asp Ala Ala Asp Gly Glu Gln Arg Glu Glu
625                 630                 635                 640

Glu Glu Thr Ala Gly Gly Gln Thr Leu Ala Ala Glu Ala Glu Gly Asp
                645                 650                 655

Arg Glu Ser Glu Leu Ser Glu Val Pro Glu Ala Gly Gly Glu Gly Leu
            660                 665                 670

Thr Thr Gln Asp Ala Gly Cys Gly Thr Glu Glu Gly Glu Ala Ser Val
        675                 680                 685

Ser Glu Asn Gln Glu Leu Asp Gly Ser Thr Gly Ala Asp Ala Gly Pro
    690                 695                 700

Cys Pro Ser Leu Gly Glu Ala Tyr Ala Arg Glu Thr Glu Asp Glu Glu
705                 710                 715                 720

Ala Glu Ala Asp Arg Thr Ser Arg Arg Gly Trp Arg Leu Gln Ala Val
                725                 730                 735
```

```
Ala Val Gly Leu Pro Asp Arg Glu Asp Ala Gln Thr Gly Ser Val Ala
            740                 745                 750

Ala Gly Ile Met Gly Gly Asp Val Val Pro His Ile Ser Ala Ala Gly
        755                 760                 765

Ala Gly Glu Ala Leu Glu Gly Val Leu Gly Gln Gly Trp Asp Ser Lys
    770                 775                 780

Glu Lys Glu Glu Ala Ala Ala Gly Glu His Ala Gly Gly Gln Glu Phe
785                 790                 795                 800

Gly Leu Glu Gly Ser Ala Glu Glu Glu Val Thr Gly Arg Gly Ser Gln
                805                 810                 815

Val Glu Ala Phe Glu Ser Arg Glu Gly Gly Pro Trp Gly Gly Arg Val
            820                 825                 830

Glu Ala Glu Glu Ser Ala Gly Ala Glu Asp Ser Cys Gly Leu Asp Pro
        835                 840                 845

Ala Gly Ser Gln Thr Ala Arg Ala Glu Gly Met Gly Ala Met Val Glu
    850                 855                 860

Ala Gly Gly Leu Leu Glu Lys Trp Thr Leu Leu Glu Glu Glu Ala Val
865                 870                 875                 880

Gly Trp Gln Glu Arg Glu Gln Arg Glu Asp Ser Glu Gly Arg Cys Gly
                885                 890                 895

Asp Tyr His Pro Glu Gly Glu Ala Pro Arg Leu Leu Asp Ala Glu Gly
            900                 905                 910

Leu Met Val Thr Gly Gly Arg Arg Ala Glu Ala Lys Glu Thr Glu Pro
        915                 920                 925

Glu Ser Leu Glu His Val Arg Gly Gln Glu Glu Gln Pro Thr His Gln
    930                 935                 940

Ala Pro Ala Glu Ala Ala Pro Glu Ser Val Gly Glu Ala Glu Thr Ala
945                 950                 955                 960
```

```
Glu Ala Met Gly Ser Ala Arg Gly Gly Ala Ala Asn Ser Trp Ser Glu
                965                 970                 975

Ala Pro Leu Pro Gly Ser Leu Leu Asp Val Ser Val Pro Arg Ser Arg
            980                 985                 990

Val His Leu Ser Arg Ser Ser Ser  Gln Arg Arg Ser Arg  Pro Ser
Phe
        995                 1000                1005

Arg Arg  Thr Pro Ala Trp Glu  Gln Gln Glu Glu Pro  Pro Ala Pro
    1010                1015                1020

Asn Pro  Pro Glu Glu Glu Leu  Ser Ala Pro Glu Gln  Arg Pro Leu
    1025                1030                1035

Gln Leu  Glu Glu Pro Leu Glu  Pro Ser Pro Leu Arg  His Asp Gly
    1040                1045                1050

Thr Pro  Val Pro Ala Arg Arg  Arg Pro Leu Gly His  Gly Phe Gly
    1055                1060                1065

Leu Ala  His Pro Gly Met Met  Gln Glu Leu Gln Ala  Arg Leu Gly
    1070                1075                1080

Arg Pro  Lys Pro Gln
    1085
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<210> 5707
<211> 1097
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1258; "

<220>
<221> source
<223> /note="Gene Symbol: APOBR; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt B receptor; "

<220>

<221> source
<223> /note="Uniprot ID: Q0VD83; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000457539"

<400> 5707
Met Asp Phe Leu Arg Leu Tyr Leu Pro Gly Leu His Gln Ala Leu Arg
1   5   10   15

Gly Ala Leu Asp Ser Leu Gly Thr Phe Val Ser Tyr Leu Leu Gly Asp
            20   25   30

Ala Val Pro Thr Val Glu Arg Glu Ala Gln Ala Ala Glu Glu Leu Gly
        35   40   45

Val Val Ala Val Gly Lys Thr Gly Lys Ile Val Glu Glu Glu Ala Gln
    50   55   60

Glu Asp Leu Glu Gly Leu Arg Gly Ser Gln Asn Glu Gly Ala Gly Arg
65   70   75   80

Leu Arg Gly Pro Gly Asp Asp Arg Arg His Glu Val Gly Ser Ser Ala
                85   90   95

Val Glu Gln Thr Trp Gly Trp Gly Asp Gly Ser Ser His Gly Ser Gln
            100   105   110

Ala Glu Arg Gln Asp Ser Gly Ala Gly Glu Thr Ala Lys Ala Ala Arg
        115   120   125

Cys Gln Glu Pro Ser Ala His Leu Glu Ala Arg Lys Lys Ser Lys Ala
    130   135   140

Gly Ser Gly Ala Cys Gln Asp Arg Ser Gly Gln Ala Gln Glu Arg Gln
145   150   155   160

Glu Ser His Glu Gln Glu Val Asn Arg Glu Glu Arg Leu Arg Ser Trp
                165   170   175

Glu Gln Glu Glu Glu Glu Glu Glu Val Arg Ala Arg Glu Pro Gly Met
            180   185   190

Ala Arg Gly Ala Glu Ser Glu Trp Thr Trp His Gly Glu Thr Glu Gly

```
        195                 200                 205

Lys Ala Gly Ala Val Gly Pro Lys Ala Ala Gly Asp Asn Arg Glu Met
    210                 215                 220

Glu Gln Gly Val Arg Glu Ala Asp Ala Gly Glu Thr Glu Glu Pro Gly
225                 230                 235                 240

Ala Glu Gly Ala Gly Lys Gly Glu Glu Val Val Val Val Glu Lys Ala
                245                 250                 255

Cys Glu Ser Thr Arg Ala Trp Gly Thr Trp Gly Pro Gly Ala Glu Pro
            260                 265                 270

Glu Asp Trp Gly Ile Leu Gly Arg Glu Glu Ala Arg Thr Thr Pro Gly
        275                 280                 285

Arg Glu Glu Ala Arg Ala Ile Leu Asp Gly Glu Glu Ala Arg Thr Ile
    290                 295                 300

Ser Gly Gly Glu Glu Ala Glu Thr Ala Ser Gly Gly Glu Glu Ala Glu
305                 310                 315                 320

Thr Ala Ser Gly Gly Glu Glu Ala Gly Thr Ala Ser Gly Gly Glu Glu
                325                 330                 335

Ala Gly Ile Ala Ser Gly Gly Glu Ala Gly Thr Ala Ser Gly Gly Glu
            340                 345                 350

Glu Ala Gly Thr Ala Ser Gly Gly Glu Glu Ala Gly Thr Ala Ser Gly
        355                 360                 365

Gly Asp Glu Ala Trp Thr Thr Ser Gly Lys Glu Glu Ala Asp Leu Leu
    370                 375                 380

Gly Val Arg Gln Thr Glu Tyr Gly Ala Val Pro Gly Glu Arg Leu Leu
385                 390                 395                 400

Glu Ala Thr Gly Lys Val Trp Val Leu Glu Glu Glu Gly Asp Glu Glu
                405                 410                 415

Arg Glu Ala Glu Val Ser Pro Phe Pro Lys Gln Pro Gln Val Leu Gly
            420                 425                 430
```

```
Thr Glu Arg Thr Glu Glu Ala Ala Glu Ser Gln Thr Ala Gly Arg Glu
        435                 440                 445

Ala Val Gly Gly Gln Glu Ala Gly Glu Ser Phe Glu Gly Gln Val Asp
    450                 455                 460

Leu Arg Gly Lys Glu Ala Glu Met Arg Gln Asp Leu Gly Ile Arg Ala
465                 470                 475                 480

Asp Arg Ala Arg Met Glu Glu Leu Val Gln Ala Glu Glu Ala Gln Glu
                485                 490                 495

Glu Arg Gly Ser Ser Arg Asp Pro Val Ala Glu Leu Pro Ser Asp Gly
            500                 505                 510

Glu Ala Glu Gly Thr Ala Asp Leu Glu Ala Thr Pro Glu Ala Arg Pro
        515                 520                 525

Glu Glu Glu Leu Thr Gly Glu Glu Ser Glu Ala Ala Gln Thr Ser Cys
    530                 535                 540

Gly Leu Leu Gly Val Glu Trp Gly Gly Leu Thr His Ser Val Thr Lys
545                 550                 555                 560

Gly Gln Gly Pro Glu Leu Met Gly Gly Ala Gln Thr Pro Thr Lys Gln
                565                 570                 575

Pro Glu Glu Arg Glu Ala Gly Glu Val Glu Leu Met Gly Val Leu Ala
            580                 585                 590

Leu Ser Lys Glu Glu Gln Glu Arg Ser Leu Glu Ala Gly Pro Arg His
        595                 600                 605

Ala Gly Ser Val Lys Pro Glu Ala Ser Glu Ala Phe Pro Gly Ala Trp
    610                 615                 620

Glu Asn Arg Thr Arg Lys Asp Met Glu Arg Gly Asn Thr Gln Glu Asp
625                 630                 635                 640

Ala Ala Asp Gly Glu Gln Arg Glu Glu Glu Glu Thr Ala Gly Gly Gln
                645                 650                 655
```

```
Thr Leu Ala Ala Glu Ala Glu Gly Asp Arg Glu Ser Glu Leu Ser Glu
            660                 665                 670

Val Pro Glu Ala Gly Gly Glu Gly Leu Thr Thr Gln Asp Ala Gly Cys
        675                 680                 685

Gly Thr Glu Glu Gly Glu Ala Ser Val Ser Glu Asn Gln Glu Leu Asp
    690                 695                 700

Gly Ser Thr Gly Ala Asp Ala Gly Pro Cys Pro Ser Leu Gly Glu Ala
705                 710                 715                 720

Tyr Ala Arg Glu Thr Glu Asp Glu Glu Ala Glu Ala Asp Arg Thr Ser
                725                 730                 735

Arg Arg Gly Trp Arg Leu Gln Ala Val Ala Val Gly Leu Pro Asp Arg
            740                 745                 750

Glu Asp Ala Gln Thr Gly Ser Val Ala Ala Gly Ile Met Gly Gly Asp
        755                 760                 765

Val Val Pro His Ile Ser Ala Ala Gly Ala Gly Glu Ala Leu Glu Gly
    770                 775                 780

Val Leu Gly Gln Gly Trp Asp Ser Lys Glu Lys Glu Glu Ala Ala Ala
785                 790                 795                 800

Gly Glu His Ala Gly Gly Gln Glu Phe Gly Leu Glu Gly Ser Ala Glu
                805                 810                 815

Glu Glu Val Thr Gly Arg Gly Ser Gln Val Glu Ala Phe Glu Ser Arg
            820                 825                 830

Glu Gly Gly Pro Trp Gly Gly Arg Val Glu Ala Glu Glu Ser Ala Gly
        835                 840                 845

Ala Glu Asp Ser Cys Gly Leu Asp Pro Ala Gly Ser Gln Thr Ala Arg
    850                 855                 860

Ala Glu Gly Met Gly Ala Met Val Glu Ala Gly Gly Leu Leu Glu Lys
865                 870                 875                 880
```

```
Trp Thr Leu Leu Glu Glu Glu Ala Val Gly Trp Gln Glu Arg Glu Gln
                885                 890                 895

Arg Glu Asp Ser Glu Gly Arg Cys Gly Asp Tyr His Pro Glu Gly Glu
            900                 905                 910

Ala Pro Arg Leu Leu Asp Ala Glu Gly Leu Met Val Thr Gly Gly Arg
        915                 920                 925

Arg Ala Glu Ala Lys Glu Thr Glu Pro Glu Ser Leu Glu His Val Arg
    930                 935                 940

Gly Gln Glu Glu Gln Pro Thr His Gln Ala Pro Ala Glu Ala Ala Pro
945                 950                 955                 960

Glu Ser Val Gly Glu Ala Glu Thr Ala Glu Ala Met Gly Ser Ala Arg
                965                 970                 975

Gly Gly Ala Ala Asn Ser Trp Ser Glu Ala Pro Leu Pro Gly Ser Leu
            980                 985                 990

Leu Asp Val Ser Val Pro Arg Ser  Arg Val His Leu Ser  Arg Ser
Ser
        995                 1000                1005

Ser Gln  Arg Arg Ser Arg Pro  Ser Phe Arg Arg Thr  Pro Ala Trp
    1010                1015                1020

Glu Gln  Gln Glu Glu Pro Pro  Ala Pro Asn Pro Pro  Glu Glu Glu
    1025                1030                1035

Leu Ser  Ala Pro Glu Gln Arg  Pro Leu Gln Leu Glu  Glu Pro Leu
    1040                1045                1050

Glu Pro  Ser Pro Leu Arg His  Asp Gly Thr Pro Val  Pro Ala Arg
    1055                1060                1065

Arg Arg  Pro Leu Gly His Gly  Phe Gly Leu Ala His  Pro Gly Met
    1070                1075                1080

Met Gln  Glu Leu Gln Ala Arg  Leu Gly Arg Pro Lys  Pro Gln
    1085                1090                1095
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<210> 5708
<211> 83
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<400> 5708
Met Arg Leu Phe Leu Ser Leu Pro Val Leu Val Val Val Leu Ser Ile
1 5 10 15

Val Leu Glu Gly Pro Ala Pro Ala Gln Gly Thr Pro Asp Val Ser Ser
20 25 30

Ala Leu Asp Lys Leu Lys Glu Phe Gly Asn Thr Leu Glu Asp Lys Ala
35 40 45

Arg Glu Leu Ile Ser Arg Ile Lys Gln Ser Glu Leu Ser Ala Lys Met
50 55 60

Arg Glu Asp Asp Ile Ser Pro Cys Cys Pro Gly Trp Ser Arg Thr Pro
65 70 75 80

Asp Leu Lys

<210> 5709
<211> 83
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<400> 5709
Met Arg Leu Phe Leu Ser Leu Pro Val Leu Val Val Val Leu Ser Ile
1 5 10 15

Val Leu Glu Gly Pro Ala Pro Ala Gln Gly Thr Pro Asp Val Ser Ser
20 25 30

Ala Leu Asp Lys Leu Lys Glu Phe Gly Asn Thr Leu Glu Asp Lys Ala
35 40 45

Arg Glu Leu Ile Ser Arg Ile Lys Gln Ser Glu Leu Ser Ala Lys Met
50 55 60

Arg Glu Trp Phe Ser Glu Thr Phe Gln Lys Val Lys Glu Lys Leu Lys
65 70 75 80

Ile Asp Ser

<210> 5710
<211> 53
<212> PRT
<213> Homo sapiens

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<220>
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000465710"

<400> 5710
Met Arg Leu Phe Leu Ser Leu Pro Val Leu Val Val Val Leu Ser Ile
1 5 10 15

Val Leu Glu Gly Pro Ala Pro Ala Gln Gly Thr Pro Asp Val Ser Ser
20 25 30

Ala Leu Asp Lys Leu Lys Glu Phe Gly Asn Thr Leu Glu Asp Lys Ala
35 40 45

Arg Glu Leu Ile Ser
50

<210> 5711
<211> 92
<212> PRT
<213> Homo sapiens

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<220>
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<220>
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<223> /note="Gene Name:
apolipoprt C-I; "

<220>
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<400> 5711
Met Arg Leu Phe Leu Ser Leu Pro Val Leu Val Val Val Leu Ser Ile
1 5 10 15

Val Leu Glu Gly Pro Ala Pro Ala Gln Gly Thr Pro Asp Val Ser Ser
20 25 30

Ala Leu Asp Lys Leu Lys Glu Phe Gly Asn Thr Leu Glu Asp Lys Ala
35 40 45

```
Arg Glu Leu Ile Ser Arg Ile Lys Gln Ser Glu Leu Ser Ala Lys Met
    50                  55                  60

Arg Leu Glu Pro Phe Pro Gly His Gly Arg Ala Gly Gly Val Val Phe
65                  70                  75                  80

Arg Asp Ile Ser Glu Ser Glu Gly Glu Thr Gln Asp
                85                  90


<210> 5712
<211> 39
<212> PRT
<213> Homo sapiens

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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000466227"

<400> 5712
Met Arg Leu Phe Leu Ser Leu Pro Val Leu Val Val Val Leu Ser Ile
1               5                   10                  15

Val Leu Glu Gly Ser Pro Arg Leu Ser Pro Ala Gly Ala Lys Ser Ala
            20                  25                  30

Gln Glu Ser Thr Ser Asn Arg
        35


<210> 5713
<211> 129
<212> PRT
<213> Homo sapiens

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<400> 5713
Met Arg Leu Phe Leu Ser Leu Pro Val Leu Val Val Val Leu Ser Ile
1 5 10 15

Val Leu Glu Gly Pro Ala Pro Ala Gln Gly Thr Pro Asp Val Ser Ser
20 25 30

Ala Leu Asp Lys Leu Lys Glu Phe Gly Asn Thr Leu Glu Asp Lys Ala
35 40 45

Arg Glu Leu Ile Ser Arg Ile Lys Gln Ser Glu Leu Ser Ala Lys Met
50 55 60

Arg Leu Glu Pro Phe Pro Gly His Gly Arg Ala Gly Val Cys Phe Trp
65 70 75 80

Val Glu Pro Trp Gln Met Val Gln Asp Glu Gln Ile Glu Lys Lys Thr
85 90 95

Ser Pro Gly Glu Ala Asp Asn Ile Pro Leu Val Thr Gln Leu Asp Leu
100 105 110

Lys Gly Val Val Phe Arg Asp Ile Ser Glu Ser Glu Gly Glu Thr Gln
115 120 125

Asp

<210> 5714
<211> 29
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1259; "

<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000467504"

<400> 5714
Met Arg Leu Phe Leu Ser Leu Pro Val Leu Val Val Val Leu Ser Ile
1 5 10 15

Val Leu Glu Gly Ser Gly Phe Gln Arg His Phe Arg Lys
20 25

<210> 5715
<211> 83
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000468029"

<400> 5715
Met Arg Leu Phe Leu Ser Leu Pro Val Leu Val Val Val Leu Ser Ile
1 5 10 15

Val Leu Glu Gly Pro Ala Pro Ala Gln Gly Thr Pro Asp Val Ser Ser
20 25 30

```
Ala Leu Asp Lys Leu Lys Glu Phe Gly Asn Thr Leu Glu Asp Lys Ala
        35                  40                  45

Arg Glu Leu Ile Ser Arg Ile Lys Gln Ser Glu Leu Ser Ala Lys Met
    50                  55                  60

Arg Glu Trp Phe Ser Glu Thr Phe Gln Lys Val Lys Glu Lys Leu Lys
65                  70                  75                  80

Ile Asp Ser
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<210> 5716
<211> 77
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: APOC1; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000468276"

<400> 5716

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Met Arg Leu Phe Leu Ser Leu Pro Val Leu Val Val Val Leu Ser Ile
1               5                  10                  15

Val Leu Glu Gly Pro Ala Pro Ala Gln Gly Thr Pro Asp Val Ser Ser
            20                  25                  30

Ala Leu Asp Lys Leu Lys Glu Phe Gly Asn Thr Leu Glu Asp Lys Ala
        35                  40                  45

Arg Glu Leu Ile Ser Arg Ile Lys Gln Ser Glu Leu Ser Ala Lys Met
    50                  55                  60
```

Arg Glu Trp Phe Ser Glu Thr Phe Gln Lys Val Lys Glu
65 70 75

<210> 5717
<211> 72
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: APOC2; "

<220>
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<223> /note="Gene Name:
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<220>
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<400> 5717
Met Gly Thr Arg Leu Leu Pro Ala Leu Phe Leu Val Leu Leu Val Leu
1 5 10 15

Gly Phe Glu Val Gln Gly Thr Gln Gln Pro Gln Gln Asp Glu Met Pro
20 25 30

Ser Pro Thr Phe Leu Thr Gln Val Lys Glu Ser Leu Ser Ser Tyr Trp
35 40 45

Glu Ser Ala Lys Thr Ala Ala Gln Asn Leu Tyr Glu Lys Thr Tyr Leu
50 55 60

Pro Ala Val Asp Glu Lys Leu Arg
65 70

<210> 5718
<211> 101
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Uniprot ID: P02655; "

<220>
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<400> 5718
Met Gly Thr Arg Leu Leu Pro Ala Leu Phe Leu Val Leu Leu Val Leu
1   5   10   15

Gly Phe Glu Val Gln Gly Thr Gln Gln Pro Gln Gln Asp Glu Met Pro
            20   25   30

Ser Pro Thr Phe Leu Thr Gln Val Lys Glu Ser Leu Ser Ser Tyr Trp
        35   40   45

Glu Ser Ala Lys Thr Ala Ala Gln Asn Leu Tyr Glu Lys Thr Tyr Leu
    50   55   60

Pro Ala Val Asp Glu Lys Leu Arg Asp Leu Tyr Ser Lys Ser Thr Ala
65   70   75   80

Ala Met Ser Thr Tyr Thr Gly Ile Phe Thr Asp Gln Val Leu Ser Val
                85   90   95

Leu Lys Gly Glu Glu
            100

<210> 5719
<211> 87
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: APOC2; "

<220>
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<223> /note="Gene Name:
apolipoprt C-II; "

<220>
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<223> /note="ENSP ID: ENSP00000476835"

<400> 5719
Met Gly Thr Arg Leu Leu Pro Ala Leu Phe Leu Val Leu Leu Val Leu
1 5 10 15

Gly Phe Glu Val Gln Gly Thr Gln Gln Pro Gln Gln Asp Glu Met Pro
20 25 30

Ser Pro Thr Phe Leu Thr Gln Val Lys Glu Ser Leu Ser Ser Tyr Trp
35 40 45

Glu Ser Ala Lys Thr Ala Ala Gln Asn Leu Asp Leu Tyr Ser Lys Ser
50 55 60

Thr Ala Ala Met Ser Thr Tyr Thr Gly Ile Phe Thr Asp Gln Val Leu
65 70 75 80

Ser Val Leu Lys Gly Glu Glu
85

<210> 5720
<211> 47
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
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<400> 5720
Met Gly Thr Arg Leu Leu Pro Ala Leu Phe Leu Val Leu Leu Val Leu
1   5   10   15

Gly Phe Gly Glu Gly Ile Ser Leu Gln Leu Leu Gly Val Ser Lys Asp
            20   25   30

Ser Arg Pro Glu Pro Val Arg Glu Asp Ile Pro Ala Arg Cys Arg
        35   40   45

<210> 5721
<211> 99
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1261; "

<220>
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<223> /note="Gene Symbol: APOC3; "

<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID: P02656; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000227667"

<400> 5721
Met Gln Pro Arg Val Leu Leu Val Val Ala Leu Leu Ala Leu Leu Ala
1   5   10   15

Ser Ala Arg Ala Ser Glu Ala Glu Asp Ala Ser Leu Leu Ser Phe Met
            20   25   30

Gln Gly Tyr Met Lys His Ala Thr Lys Thr Ala Lys Asp Ala Leu Ser
        35   40   45

Ser Val Gln Glu Ser Gln Val Ala Gln Gln Ala Arg Gly Trp Val Thr
    50   55   60

Asp Gly Phe Ser Ser Leu Lys Asp Tyr Trp Ser Thr Val Lys Asp Lys

65 70 75 80

Phe Ser Glu Phe Trp Asp Leu Asp Pro Glu Val Arg Pro Thr Ser Ala
85 90 95

Val Ala Ala

<210> 5722
<211> 117
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
apolipoprt C-III; "

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<223> /note="ENSP ID: ENSP00000364494"

<400> 5722
Met Gly Thr Trp Gly Ala Pro His Arg Thr Leu Pro Cys Arg Asn Arg
1 5 10 15

Gly Ala Met Gln Pro Arg Val Leu Leu Val Val Ala Leu Leu Ala Leu
20 25 30

Leu Ala Ser Ala Arg Ala Ser Glu Ala Glu Asp Ala Ser Leu Leu Ser
35 40 45

Phe Met Gln Gly Tyr Met Lys His Ala Thr Lys Thr Ala Lys Asp Ala
50 55 60

Leu Ser Ser Val Gln Glu Ser Gln Val Ala Gln Gln Ala Arg Gly Trp
65 70 75 80

Val Thr Asp Gly Phe Ser Ser Leu Lys Asp Tyr Trp Ser Thr Val Lys
85 90 95

Asp Lys Phe Ser Glu Phe Trp Asp Leu Asp Pro Glu Val Arg Pro Thr
100 105 110

Ser Ala Val Ala Ala
115

<210> 5723
<211> 55
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
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<223> /note="ENSP ID: ENSP00000410614"

<400> 5723
Met Gln Pro Arg Val Leu Leu Val Val Ala Leu Leu Ala Leu Leu Ala
1 5 10 15

Ser Ala Arg Ala Ser Glu Ala Glu Asp Ala Ser Leu Leu Ser Phe Met
20 25 30

Gln Gly Tyr Met Lys His Ala Thr Lys Thr Ala Lys Asp Ala Leu Ser
35 40 45

Ser Val Gln Glu Ser Gln Val
50 55

<210> 5724
<211> 117
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
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<220>
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<400> 5724
Met Gly Thr Trp Gly Ala Pro His Arg Thr Leu Pro Cys Arg Asn Arg
1 5 10 15

Gly Ala Met Gln Pro Arg Val Leu Leu Val Val Ala Leu Leu Ala Leu
20 25 30

Leu Ala Ser Ala Arg Ala Ser Glu Ala Glu Asp Ala Ser Leu Leu Ser
35 40 45

Phe Met Gln Gly Tyr Met Lys His Ala Thr Lys Thr Ala Lys Asp Ala
50 55 60

Leu Ser Ser Val Gln Glu Ser Gln Val Ala Gln Gln Ala Arg Gly Trp
65 70 75 80

Val Thr Asp Gly Phe Ser Ser Leu Lys Asp Tyr Trp Ser Thr Val Lys
85 90 95

Asp Lys Phe Ser Glu Phe Trp Asp Leu Asp Pro Glu Val Arg Pro Thr
100 105 110

Ser Ala Val Ala Ala
115

<210> 5725
<211> 73
<212> PRT
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<220>
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<220>
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<223> /note="Gene Symbol: APOC4; "

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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000466444"

<400> 5725
Met Ser Leu Leu Arg Asn Arg Leu Gln Ala Leu Pro Ala Leu Cys Leu
1 5 10 15

Cys Val Leu Val Leu Ala Cys Ile Gly Ala Cys Gln Pro Glu Ala Gln
20 25 30

Glu Gly Thr Leu Ser Pro Pro Pro Lys Leu Lys Met Ser Arg Trp Ser
35 40 45

Leu Val Arg Gly Arg Met Lys Glu Leu Leu Glu Thr Val Val Asn Arg
50 55 60

Thr Arg Asp Gly Trp Gln Trp Phe Trp
65 70

<210> 5726
<211> 127
<212> PRT
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<220>
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<220>
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<223> /note="Gene Symbol: APOC4; "

<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID: P55056; "

<220>
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<223> /note="ENSP ID: ENSP00000468236"

<400> 5726
Met Ser Leu Leu Arg Asn Arg Leu Gln Ala Leu Pro Ala Leu Cys Leu
1 5 10 15

Cys Val Leu Val Leu Ala Cys Ile Gly Ala Cys Gln Pro Glu Ala Gln
20 25 30

Glu Gly Thr Leu Ser Pro Pro Pro Lys Leu Lys Met Ser Arg Trp Ser
35 40 45

Leu Val Arg Gly Arg Met Lys Glu Leu Leu Glu Thr Val Val Asn Arg
50 55 60

Thr Arg Asp Gly Trp Gln Trp Phe Trp Ser Pro Ser Thr Phe Arg Gly
65 70 75 80

Phe Met Gln Thr Tyr Tyr Asp Asp His Leu Arg Asp Leu Gly Pro Leu
85 90 95

Thr Lys Ala Trp Phe Leu Glu Ser Lys Asp Ser Leu Leu Lys Lys Thr
100 105 110

His Ser Leu Cys Pro Arg Leu Val Cys Gly Asp Lys Asp Gln Gly
115 120 125

<210> 5727
<211> 189
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: APOD; "

<220>
<221> source
<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID: P05090; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000345179"

<400> 5727
Met Val Met Leu Leu Leu Leu Leu Ser Ala Leu Ala Gly Leu Phe Gly
1   5   10   15

Ala Ala Glu Gly Gln Ala Phe His Leu Gly Lys Cys Pro Asn Pro Pro
            20   25   30

Val Gln Glu Asn Phe Asp Val Asn Lys Tyr Leu Gly Arg Trp Tyr Glu
        35   40   45

Ile Glu Lys Ile Pro Thr Thr Phe Glu Asn Gly Arg Cys Ile Gln Ala
    50   55   60

Asn Tyr Ser Leu Met Glu Asn Gly Lys Ile Lys Val Leu Asn Gln Glu
65   70   75   80

Leu Arg Ala Asp Gly Thr Val Asn Gln Ile Glu Gly Glu Ala Thr Pro
                85   90   95

Val Asn Leu Thr Glu Pro Ala Lys Leu Glu Val Lys Phe Ser Trp Phe
            100   105   110

Met Pro Ser Ala Pro Tyr Trp Ile Leu Ala Thr Asp Tyr Glu Asn Tyr
        115   120   125

Ala Leu Val Tyr Ser Cys Thr Cys Ile Ile Gln Leu Phe His Val Asp
    130   135   140

Phe Ala Trp Ile Leu Ala Arg Asn Pro Asn Leu Pro Pro Glu Thr Val
145   150   155   160

Asp Ser Leu Lys Asn Ile Leu Thr Ser Asn Asn Ile Asp Val Lys Lys
                165   170   175

Met Thr Val Thr Asp Gln Val Asn Cys Pro Lys Leu Ser
            180   185

<210> 5728
<211> 108
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Name:
apolipoprt D; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000391597"

<400> 5728
Met Val Met Leu Leu Leu Leu Leu Ser Ala Leu Ala Gly Leu Phe Gly
1 5 10 15

Ala Ala Glu Gly Gln Ala Phe His Leu Gly Lys Cys Pro Asn Pro Pro
20 25 30

Val Gln Glu Asn Phe Asp Val Asn Lys Thr Glu Ser His Phe Val Thr
35 40 45

Gln Gly Gly Val Gln His His His Leu Gly Ser Leu Gln Pro Pro Pro
50 55 60

Pro Gly Phe Lys Gln Phe Ser Cys Leu Ser Leu Pro Ser Ser Trp Asp
65 70 75 80

Tyr Ser Ile Ser Glu Asp Gly Thr Lys Leu Arg Arg Ser Gln Gln Pro
85 90 95

Leu Arg Met Asp Ala Ala Ser Arg Pro Thr Thr His
100 105

<210> 5729
<211> 149
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1263; "

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<223> /note="Gene Symbol: APOD; "

<220>
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<223> /note="Gene Name:
apolipoprt D; "

<220>
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<223> /note="ENSP ID: ENSP00000393076"

<400> 5729
Met Val Met Leu Leu Leu Leu Leu Ser Ala Leu Ala Gly Leu Phe Gly
1 5 10 15

Ala Ala Glu Gly Gln Ala Phe His Leu Gly Lys Cys Pro Asn Pro Pro
20 25 30

Val Gln Glu Asn Phe Asp Val Asn Lys Tyr Leu Gly Arg Trp Tyr Glu
35 40 45

Ile Glu Lys Ile Pro Thr Thr Phe Glu Asn Gly Arg Cys Ile Gln Ala
50 55 60

Asn Tyr Ser Leu Met Glu Asn Gly Lys Ile Lys Val Leu Asn Gln Glu
65 70 75 80

Leu Arg Ala Asp Gly Thr Val Asn Gln Ile Glu Gly Glu Ala Thr Pro
85 90 95

Val Asn Leu Thr Glu Pro Ala Lys Leu Glu Val Lys Phe Ser Trp Phe
100 105 110

Met Pro Ser Ala Pro Tyr Trp Ile Leu Ala Thr Asp Tyr Glu Asn Tyr
115 120 125

Ala Leu Val Tyr Ser Cys Thr Cys Ile Ile Gln Leu Phe His Val Asp
130 135 140

Phe Ala Trp Ile Leu
145

<210> 5730
<211> 215
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: APOD; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt D; "

<220>
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<400> 5730

```
Met Phe Lys Gln Leu Ser Cys Ile Ser Leu Pro Ser Ser Cys Asp Tyr
1               5                  10                  15

Ser Ser Arg Ser Leu Leu Gln Pro Pro Ser Pro Lys Met Val Met Leu
            20                  25                  30

Leu Leu Leu Leu Ser Ala Leu Ala Gly Leu Phe Gly Ala Ala Glu Gly
        35                  40                  45

Gln Ala Phe His Leu Gly Lys Cys Pro Asn Pro Pro Val Gln Glu Asn
    50                  55                  60

Phe Asp Val Asn Lys Tyr Leu Gly Arg Trp Tyr Glu Ile Glu Lys Ile
65                  70                  75                  80

Pro Thr Thr Phe Glu Asn Gly Arg Cys Ile Gln Ala Asn Tyr Ser Leu
                85                  90                  95

Met Glu Asn Gly Lys Ile Lys Val Leu Asn Gln Glu Leu Arg Ala Asp
            100                 105                 110

Gly Thr Val Asn Gln Ile Glu Gly Glu Ala Thr Pro Val Asn Leu Thr
        115                 120                 125

Glu Pro Ala Lys Leu Glu Val Lys Phe Ser Trp Phe Met Pro Ser Ala
    130                 135                 140

Pro Tyr Trp Ile Leu Ala Thr Asp Tyr Glu Asn Tyr Ala Leu Val Tyr
145                 150                 155                 160
```

```
Ser Cys Thr Cys Ile Ile Gln Leu Phe His Val Asp Phe Ala Trp Ile
                165                 170                 175

Leu Ala Arg Asn Pro Asn Leu Pro Pro Glu Thr Val Asp Ser Leu Lys
            180                 185                 190

Asn Ile Leu Thr Ser Asn Asn Ile Asp Val Lys Lys Met Thr Val Thr
        195                 200                 205

Asp Gln Val Asn Cys Pro Lys
    210                 215


<210> 5731
<211> 317
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: APOE; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID:  P02649; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000252486"

<400> 5731
Met Lys Val Leu Trp Ala Ala Leu Leu Val Thr Phe Leu Ala Gly Cys
1               5                   10                  15

Gln Ala Lys Val Glu Gln Ala Val Glu Thr Glu Pro Glu Pro Glu Leu
            20                  25                  30

Arg Gln Gln Thr Glu Trp Gln Ser Gly Gln Arg Trp Glu Leu Ala Leu
        35                  40                  45

Gly Arg Phe Trp Asp Tyr Leu Arg Trp Val Gln Thr Leu Ser Glu Gln
```

```
    50                  55                  60

Val Gln Glu Glu Leu Leu Ser Ser Gln Val Thr Gln Glu Leu Arg Ala
65                  70                  75                  80

Leu Met Asp Glu Thr Met Lys Glu Leu Lys Ala Tyr Lys Ser Glu Leu
                85                  90                  95

Glu Glu Gln Leu Thr Pro Val Ala Glu Glu Thr Arg Ala Arg Leu Ser
            100                 105                 110

Lys Glu Leu Gln Ala Ala Gln Ala Arg Leu Gly Ala Asp Met Glu Asp
        115                 120                 125

Val Cys Gly Arg Leu Val Gln Tyr Arg Gly Glu Val Gln Ala Met Leu
    130                 135                 140

Gly Gln Ser Thr Glu Glu Leu Arg Val Arg Leu Ala Ser His Leu Arg
145                 150                 155                 160

Lys Leu Arg Lys Arg Leu Leu Arg Asp Ala Asp Asp Leu Gln Lys Arg
                165                 170                 175

Leu Ala Val Tyr Gln Ala Gly Ala Arg Glu Gly Ala Glu Arg Gly Leu
            180                 185                 190

Ser Ala Ile Arg Glu Arg Leu Gly Pro Leu Val Glu Gln Gly Arg Val
        195                 200                 205

Arg Ala Ala Thr Val Gly Ser Leu Ala Gly Gln Pro Leu Gln Glu Arg
    210                 215                 220

Ala Gln Ala Trp Gly Glu Arg Leu Arg Ala Arg Met Glu Glu Met Gly
225                 230                 235                 240

Ser Arg Thr Arg Asp Arg Leu Asp Glu Val Lys Glu Gln Val Ala Glu
                245                 250                 255

Val Arg Ala Lys Leu Glu Glu Gln Ala Gln Gln Ile Arg Leu Gln Ala
            260                 265                 270

Glu Ala Phe Gln Ala Arg Leu Lys Ser Trp Phe Glu Pro Leu Val Glu
        275                 280                 285
```

```
Asp Met Gln Arg Gln Trp Ala Gly Leu Val Glu Lys Val Gln Ala Ala
    290                 295                 300

Val Gly Thr Ser Ala Ala Pro Val Pro Ser Asp Asn His
305                 310                 315

<210> 5732
<211> 219
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1264; "

<220>
<221> source
<223> /note="Gene Symbol: APOE; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt E; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000410423"

<400> 5732
Met Lys Val Leu Trp Ala Ala Leu Leu Val Thr Phe Leu Ala Gly Cys
1               5                   10                  15

Gln Ala Lys Val Glu Gln Ala Val Glu Thr Glu Pro Glu Pro Glu Leu
            20                  25                  30

Arg Gln Gln Thr Glu Trp Gln Ser Gly Gln Arg Trp Glu Leu Ala Leu
        35                  40                  45

Gly Arg Phe Trp Asp Tyr Leu Arg Trp Val Gln Thr Leu Ser Glu Gln
    50                  55                  60

Val Gln Glu Glu Leu Leu Ser Ser Gln Val Thr Gln Glu Leu Arg Ala
65                  70                  75                  80

Leu Met Asp Glu Thr Met Lys Glu Leu Lys Ala Tyr Lys Ser Glu Leu
                85                  90                  95
```

```
Glu Glu Gln Leu Thr Pro Val Ala Glu Glu Thr Arg Ala Arg Leu Ser
            100                 105                 110

Lys Glu Leu Gln Ala Ala Gln Ala Arg Leu Gly Ala Asp Met Glu Asp
        115                 120                 125

Val Cys Gly Arg Leu Val Gln Tyr Arg Gly Glu Val Gln Ala Met Leu
    130                 135                 140

Gly Gln Ser Thr Glu Glu Leu Arg Val Arg Leu Ala Ser His Leu Arg
145                 150                 155                 160

Lys Leu Arg Lys Arg Leu Leu Arg Asp Ala Asp Asp Leu Gln Lys Arg
                165                 170                 175

Leu Ala Val Tyr Gln Ala Gly Ala Arg Glu Gly Ala Glu Arg Gly Leu
            180                 185                 190

Ser Ala Ile Arg Glu Arg Leu Gly Pro Leu Val Glu Gln Gly Arg Val
        195                 200                 205

Arg Ala Ala Thr Val Gly Ser Leu Ala Gly Gln
    210                 215


<210> 5733
<211> 216
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: APOE; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt E; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000413135"

<400> 5733
Met Lys Val Leu Trp Ala Ala Leu Leu Val Thr Phe Leu Ala Gly Cys
1               5                   10                  15
```

Gln Ala Lys Val Glu Gln Ala Val Glu Thr Glu Pro Glu Pro Glu Leu
20 25 30

Arg Gln Gln Thr Glu Trp Gln Ser Gly Gln Arg Trp Glu Leu Ala Leu
35 40 45

Gly Arg Phe Trp Asp Tyr Leu Arg Trp Val Gln Thr Leu Ser Glu Gln
50 55 60

Val Gln Glu Glu Leu Leu Ser Ser Gln Val Thr Gln Glu Leu Arg Ala
65 70 75 80

Leu Met Asp Glu Thr Met Lys Glu Leu Lys Ala Tyr Lys Ser Glu Leu
85 90 95

Glu Glu Gln Leu Thr Pro Val Ala Glu Glu Thr Arg Ala Arg Leu Ser
100 105 110

Lys Glu Leu Gln Ala Ala Gln Ala Arg Leu Gly Ala Asp Met Glu Asp
115 120 125

Val Cys Gly Arg Leu Val Gln Tyr Arg Gly Glu Val Gln Ala Met Leu
130 135 140

Gly Gln Ser Thr Glu Glu Leu Arg Val Arg Leu Ala Ser His Leu Arg
145 150 155 160

Lys Leu Arg Lys Arg Leu Leu Arg Asp Ala Asp Asp Leu Gln Lys Arg
165 170 175

Leu Ala Val Tyr Gln Ala Gly Ala Arg Glu Gly Ala Glu Arg Gly Leu
180 185 190

Ser Ala Ile Arg Glu Arg Leu Gly Pro Leu Val Glu Gln Gly Arg Val
195 200 205

Arg Ala Ala Thr Val Gly Ser Leu
210 215

<210> 5734
<211> 269
<212> PRT

<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1264; "

<220>
<221> source
<223> /note="Gene Symbol: APOE; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt E; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000413653"

<400> 5734

```
Met Ser Ser Gly Ala Ser Arg Lys Ser Trp Asp Pro Gly Asn Pro Trp
1               5                  10                  15

Pro Pro Asp Trp Pro Ile Thr Gly Arg Lys Met Lys Val Leu Trp Ala
            20                  25                  30

Ala Leu Leu Val Thr Phe Leu Ala Gly Cys Gln Ala Lys Val Glu Gln
        35                  40                  45

Ala Val Glu Thr Glu Pro Glu Pro Glu Leu Arg Gln Gln Thr Glu Trp
    50                  55                  60

Gln Ser Gly Gln Arg Trp Glu Leu Ala Leu Gly Arg Phe Trp Asp Tyr
65                  70                  75                  80

Leu Arg Trp Val Gln Thr Leu Ser Glu Gln Val Gln Glu Glu Leu Leu
                85                  90                  95

Ser Ser Gln Val Thr Gln Glu Leu Arg Ala Leu Met Asp Glu Thr Met
            100                 105                 110

Lys Glu Leu Lys Ala Tyr Lys Ser Glu Leu Glu Glu Gln Leu Thr Pro
        115                 120                 125

Val Ala Glu Glu Thr Arg Ala Arg Leu Ser Lys Glu Leu Gln Ala Ala
    130                 135                 140

Gln Ala Arg Leu Gly Ala Asp Met Glu Asp Val Cys Gly Arg Leu Val
```

```
145                 150                 155                 160

Gln Tyr Arg Gly Glu Val Gln Ala Met Leu Gly Gln Ser Thr Glu Glu
                165                 170                 175

Leu Arg Val Arg Leu Ala Ser His Leu Arg Lys Leu Arg Lys Arg Leu
            180                 185                 190

Leu Arg Asp Ala Asp Asp Leu Gln Lys Arg Leu Ala Val Tyr Gln Ala
        195                 200                 205

Gly Ala Arg Glu Gly Ala Glu Arg Gly Leu Ser Ala Ile Arg Glu Arg
    210                 215                 220

Leu Gly Pro Leu Val Glu Gln Gly Arg Val Arg Ala Ala Thr Val Gly
225                 230                 235                 240

Ser Leu Ala Gly Gln Pro Leu Gln Glu Arg Ala Gln Ala Trp Gly Glu
                245                 250                 255

Arg Leu Arg Ala Arg Met Glu Glu Met Gly Ser Arg Thr
            260                 265


<210> 5735
<211> 326
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1265; "

<220>
<221> source
<223> /note="Gene Symbol: APOF; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt F; "

<220>
<221> source
<223> /note="Uniprot ID:  Q13790; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000381250"
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<400> 5735
Met Thr Gly Leu Cys Gly Tyr Ser Ala Pro Asp Met Arg Gly Leu Arg
1 5 10 15

Leu Ile Met Ile Pro Val Glu Leu Leu Leu Cys Tyr Leu Leu Leu His
20 25 30

Pro Val Asp Ala Thr Ser Tyr Gly Lys Gln Thr Asn Val Leu Met His
35 40 45

Phe Pro Leu Ser Leu Glu Ser Gln Thr Pro Ser Ser Asp Pro Leu Ser
50 55 60

Cys Gln Phe Leu His Pro Lys Ser Leu Pro Gly Phe Ser His Met Ala
65 70 75 80

Pro Leu Pro Lys Phe Leu Val Ser Leu Ala Leu Arg Asn Ala Leu Glu
85 90 95

Glu Ala Gly Cys Gln Ala Asp Val Trp Ala Leu Gln Leu Gln Leu Tyr
100 105 110

Arg Gln Gly Gly Val Asn Ala Thr Gln Val Leu Ile Gln His Leu Arg
115 120 125

Gly Leu Gln Lys Gly Arg Ser Thr Glu Arg Asn Val Ser Val Glu Ala
130 135 140

Leu Ala Ser Ala Leu Gln Leu Leu Ala Arg Glu Gln Gln Ser Thr Gly
145 150 155 160

Arg Val Gly Arg Ser Leu Pro Thr Glu Asp Cys Glu Asn Glu Lys Glu
165 170 175

Gln Ala Val His Asn Val Val Gln Leu Leu Pro Gly Val Gly Thr Phe
180 185 190

Tyr Asn Leu Gly Thr Ala Leu Tyr Tyr Ala Thr Gln Asn Cys Leu Gly
195 200 205

Lys Ala Arg Glu Arg Gly Arg Asp Gly Ala Ile Asp Leu Gly Tyr Asp
210 215 220

```
Leu Leu Met Thr Met Ala Gly Met Ser Gly Gly Pro Met Gly Leu Ala
225                 230                 235                 240

Ile Ser Ala Ala Leu Lys Pro Ala Leu Arg Ser Gly Val Gln Gln Leu
                245                 250                 255

Ile Gln Tyr Tyr Gln Asp Gln Lys Asp Ala Asn Ile Ser Gln Pro Glu
            260                 265                 270

Thr Thr Lys Glu Gly Leu Arg Ala Ile Ser Asp Val Ser Asp Leu Glu
        275                 280                 285

Glu Thr Thr Thr Leu Ala Ser Phe Ile Ser Glu Val Val Ser Ser Ala
    290                 295                 300

Pro Tyr Trp Gly Trp Ala Ile Ile Lys Ser Tyr Asp Leu Asp Pro Gly
305                 310                 315                 320

Ala Gly Ser Leu Glu Ile
                325
```

<210> 5736
<211> 345
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1266; "

<220>
<221> source
<223> /note="Gene Symbol: APOH; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt H (beta-2-glycoprt I); "

<220>
<221> source
<223> /note="Uniprot ID: P02749; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000205948"

<400> 5736

```
Met Ile Ser Pro Val Leu Ile Leu Phe Ser Ser Phe Leu Cys His Val
1               5                   10                  15
```

```
Ala Ile Ala Gly Arg Thr Cys Pro Lys Pro Asp Asp Leu Pro Phe Ser
            20                  25                  30

Thr Val Val Pro Leu Lys Thr Phe Tyr Glu Pro Gly Glu Glu Ile Thr
        35                  40                  45

Tyr Ser Cys Lys Pro Gly Tyr Val Ser Arg Gly Gly Met Arg Lys Phe
    50                  55                  60

Ile Cys Pro Leu Thr Gly Leu Trp Pro Ile Asn Thr Leu Lys Cys Thr
65                  70                  75                  80

Pro Arg Val Cys Pro Phe Ala Gly Ile Leu Glu Asn Gly Ala Val Arg
                85                  90                  95

Tyr Thr Thr Phe Glu Tyr Pro Asn Thr Ile Ser Phe Ser Cys Asn Thr
            100                 105                 110

Gly Phe Tyr Leu Asn Gly Ala Asp Ser Ala Lys Cys Thr Glu Glu Gly
        115                 120                 125

Lys Trp Ser Pro Glu Leu Pro Val Cys Ala Pro Ile Ile Cys Pro Pro
    130                 135                 140

Pro Ser Ile Pro Thr Phe Ala Thr Leu Arg Val Tyr Lys Pro Ser Ala
145                 150                 155                 160

Gly Asn Asn Ser Leu Tyr Arg Asp Thr Ala Val Phe Glu Cys Leu Pro
                165                 170                 175

Gln His Ala Met Phe Gly Asn Asp Thr Ile Thr Cys Thr Thr His Gly
            180                 185                 190

Asn Trp Thr Lys Leu Pro Glu Cys Arg Glu Val Lys Cys Pro Phe Pro
        195                 200                 205

Ser Arg Pro Asp Asn Gly Phe Val Asn Tyr Pro Ala Lys Pro Thr Leu
    210                 215                 220

Tyr Tyr Lys Asp Lys Ala Thr Phe Gly Cys His Asp Gly Tyr Ser Leu
225                 230                 235                 240
```

```
Asp Gly Pro Glu Glu Ile Glu Cys Thr Lys Leu Gly Asn Trp Ser Ala
                245                 250                 255

Met Pro Ser Cys Lys Ala Ser Cys Lys Val Pro Val Lys Lys Ala Thr
            260                 265                 270

Val Val Tyr Gln Gly Glu Arg Val Lys Ile Gln Glu Lys Phe Lys Asn
        275                 280                 285

Gly Met Leu His Gly Asp Lys Val Ser Phe Phe Cys Lys Asn Lys Glu
    290                 295                 300

Lys Lys Cys Ser Tyr Thr Glu Asp Ala Gln Cys Ile Asp Gly Thr Ile
305                 310                 315                 320

Glu Val Pro Lys Cys Phe Lys Glu His Ser Ser Leu Ala Phe Trp Lys
                325                 330                 335

Thr Asp Ala Ser Asp Val Lys Pro Cys
            340                 345


<210> 5737
<211> 104
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1266; "

<220>
<221> source
<223> /note="Gene Symbol: APOH; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt H (beta-2-glycoprt I); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000462260"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid
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<400> 5737
Xaa Gln His Ala Met Phe Gly Asn Asp Thr Ile Thr Cys Thr Thr His
1 5 10 15

Gly Asn Trp Thr Lys Leu Pro Glu Cys Arg Glu Val Lys Cys Pro Phe
20 25 30

Pro Ser Arg Pro Asp Asn Gly Phe Val Asn Tyr Pro Ala Lys Pro Thr
35 40 45

Leu Tyr Tyr Lys Asp Lys Ala Thr Phe Gly Cys His Asp Gly Tyr Ser
50 55 60

Leu Asp Gly Pro Glu Glu Ile Glu Cys Thr Lys Leu Gly Asn Trp Ser
65 70 75 80

Ala Met Pro Ser Cys Lys Glu His Ser Ser Leu Ala Phe Trp Lys Thr
85 90 95

Asp Ala Ser Asp Val Lys Pro Cys
100

<210> 5738
<211> 200
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1266; "

<220>
<221> source
<223> /note="Gene Symbol: APOH; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt H (beta-2-glycoprt I); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000463553"

<400> 5738
Met Arg Lys Phe Ile Cys Pro Leu Thr Gly Leu Trp Pro Ile Asn Thr
1 5 10 15

Leu Lys Cys Thr Pro Arg Val Cys Pro Phe Ala Gly Ile Leu Glu Asn

```
            20                  25                  30

Gly Ala Val Arg Tyr Thr Thr Phe Glu Tyr Pro Asn Thr Ile Ser Phe
        35                  40                  45

Ser Cys Asn Thr Gly Phe Tyr Leu Asn Gly Ala Asp Ser Ala Lys Cys
    50                  55                  60

Thr Glu Glu Gly Lys Trp Ser Pro Glu Leu Pro Val Cys Ala Pro Ile
65                  70                  75                  80

Ile Cys Pro Pro Pro Ser Ile Pro Thr Phe Ala Thr Leu Arg Val Tyr
                85                  90                  95

Lys Pro Ser Ala Gly Asn Asn Ser Leu Tyr Arg Asp Thr Ala Val Phe
            100                 105                 110

Glu Cys Leu Pro Gln His Ala Met Phe Gly Asn Asp Thr Ile Thr Cys
        115                 120                 125

Thr Thr His Gly Asn Trp Thr Lys Leu Pro Glu Cys Arg Glu Val Lys
    130                 135                 140

Cys Pro Phe Pro Ser Arg Pro Asp Asn Gly Phe Val Asn Tyr Pro Ala
145                 150                 155                 160

Lys Pro Thr Leu Tyr Tyr Lys Asp Lys Ala Thr Phe Gly Cys His Asp
                165                 170                 175

Gly Tyr Ser Leu Asp Gly Pro Glu Glu Ile Glu Cys Thr Lys Leu Gly
            180                 185                 190

Asn Trp Ser Ala Met Pro Ser Cys
        195                 200


<210> 5739
<211> 181
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1266; "

<220>
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<221> source
<223> /note="Gene Symbol: APOH; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt H (beta-2-glycoprt I); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000464301"

<400> 5739

```
Met Ile Ser Pro Val Leu Ile Leu Phe Ser Ser Phe Leu Cys His Val
1               5                  10                  15

Ala Ile Ala Gly Arg Thr Cys Pro Lys Pro Asp Asp Leu Pro Phe Ser
            20                  25                  30

Thr Val Val Pro Leu Lys Thr Phe Tyr Glu Pro Gly Glu Glu Ile Thr
        35                  40                  45

Tyr Ser Cys Lys Pro Gly Tyr Val Ser Arg Gly Gly Met Arg Lys Phe
    50                  55                  60

Ile Cys Pro Leu Thr Gly Leu Trp Pro Ile Asn Thr Leu Lys Cys Thr
65                  70                  75                  80

Pro Arg Val Cys Pro Phe Ala Gly Ile Leu Glu Asn Gly Ala Val Arg
                85                  90                  95

Tyr Thr Thr Phe Glu Tyr Pro Asn Thr Ile Ser Phe Ser Cys Asn Thr
            100                 105                 110

Gly Phe Tyr Leu Asn Gly Ala Asp Ser Ala Lys Cys Thr Glu Glu Gly
        115                 120                 125

Lys Trp Ser Pro Glu Leu Pro Val Cys Ala Pro Ile Ile Cys Pro Pro
    130                 135                 140

Pro Ser Ile Pro Thr Phe Ala Thr Leu Arg Val Tyr Lys Pro Ser Ala
145                 150                 155                 160

Gly Asn Asn Ser Leu Tyr Arg Asp Thr Ala Val Phe Glu Cys Leu Pro
                165                 170                 175
```

Gln His Ala Met Phe
180

<210> 5740
<211> 279
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1267; "

<220>
<221> source
<223> /note="Gene Symbol: APOLD1; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt L
domain containing 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q96LR9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000324277"

<400> 5740
Met Phe Arg Ala Pro Cys His Arg Leu Arg Ala Arg Gly Thr Arg Lys
1 5 10 15

Ala Arg Ala Gly Ala Trp Arg Gly Cys Thr Phe Pro Cys Leu Gly Lys
20 25 30

Gly Met Glu Arg Pro Ala Ala Arg Glu Pro His Gly Pro Asp Ala Leu
35 40 45

Arg Arg Phe Gln Gly Leu Leu Leu Asp Arg Arg Gly Arg Leu His Gly
50 55 60

Gln Val Leu Arg Leu Arg Glu Val Ala Arg Arg Leu Glu Arg Leu Arg
65 70 75 80

Arg Arg Ser Leu Val Ala Asn Val Ala Gly Ser Ser Leu Ser Ala Thr
85 90 95

Gly Ala Leu Ala Ala Ile Val Gly Leu Ser Leu Ser Pro Val Thr Leu

```
            100                 105                 110

Gly Thr Ser Leu Leu Val Ser Ala Val Gly Leu Gly Val Ala Thr Ala
        115                 120                 125

Gly Gly Ala Val Thr Ile Thr Ser Asp Leu Ser Leu Ile Phe Cys Asn
    130                 135                 140

Ser Arg Glu Leu Arg Arg Val Gln Glu Ile Ala Ala Thr Cys Gln Asp
145                 150                 155                 160

Gln Met Arg Glu Ile Leu Ser Cys Leu Glu Phe Phe Cys Arg Trp Gln
                165                 170                 175

Gly Cys Gly Asp Arg Gln Leu Leu Gln Cys Gly Arg Asn Ala Ser Ile
            180                 185                 190

Ala Leu Tyr Asn Ser Val Tyr Phe Ile Val Phe Phe Gly Ser Arg Gly
        195                 200                 205

Phe Leu Ile Pro Arg Arg Ala Glu Gly Asp Thr Lys Val Ser Gln Ala
    210                 215                 220

Val Leu Lys Ala Lys Ile Gln Lys Leu Ala Glu Ser Leu Glu Ser Cys
225                 230                 235                 240

Thr Gly Ala Leu Asp Glu Leu Ser Glu Gln Leu Glu Ser Arg Val Gln
                245                 250                 255

Leu Cys Thr Lys Ser Ser Arg Gly His Asp Leu Lys Ile Ser Ala Asp
            260                 265                 270

Gln Arg Ala Gly Leu Phe Phe
        275


<210> 5741
<211> 248
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1267; "

<220>
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<221> source
<223> /note="Gene Symbol: APOLD1; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt L
domain containing 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q96LR9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000348998"

<400> 5741

```
Met Gly Met Glu Arg Pro Ala Ala Arg Glu Pro His Gly Pro Asp Ala
1               5                  10                  15

Leu Arg Arg Phe Gln Gly Leu Leu Leu Asp Arg Arg Gly Arg Leu His
            20                  25                  30

Gly Gln Val Leu Arg Leu Arg Glu Val Ala Arg Arg Leu Glu Arg Leu
        35                  40                  45

Arg Arg Arg Ser Leu Val Ala Asn Val Ala Gly Ser Ser Leu Ser Ala
    50                  55                  60

Thr Gly Ala Leu Ala Ala Ile Val Gly Leu Ser Leu Ser Pro Val Thr
65                  70                  75                  80

Leu Gly Thr Ser Leu Leu Val Ser Ala Val Gly Leu Gly Val Ala Thr
                85                  90                  95

Ala Gly Gly Ala Val Thr Ile Thr Ser Asp Leu Ser Leu Ile Phe Cys
            100                 105                 110

Asn Ser Arg Glu Leu Arg Arg Val Gln Glu Ile Ala Ala Thr Cys Gln
        115                 120                 125

Asp Gln Met Arg Glu Ile Leu Ser Cys Leu Glu Phe Phe Cys Arg Trp
    130                 135                 140

Gln Gly Cys Gly Asp Arg Gln Leu Leu Gln Cys Gly Arg Asn Ala Ser
145                 150                 155                 160
```

```
Ile Ala Leu Tyr Asn Ser Val Tyr Phe Ile Val Phe Phe Gly Ser Arg
                165                 170                 175

Gly Phe Leu Ile Pro Arg Arg Ala Glu Gly Asp Thr Lys Val Ser Gln
            180                 185                 190

Ala Val Leu Lys Ala Lys Ile Gln Lys Leu Ala Glu Ser Leu Glu Ser
        195                 200                 205

Cys Thr Gly Ala Leu Asp Glu Leu Ser Glu Gln Leu Glu Ser Arg Val
    210                 215                 220

Gln Leu Cys Thr Lys Ser Ser Arg Gly His Asp Leu Lys Ile Ser Ala
225                 230                 235                 240

Asp Gln Arg Ala Gly Leu Phe Phe
                245
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<210> 5742
<211> 40
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1267; "

<220>
<221> source
<223> /note="Gene Symbol: APOLD1; "

<220>
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<223> /note="Gene Name:
apolipoprt L
domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000454511"

<400> 5742

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Met Phe Arg Ala Pro Cys His Arg Leu Arg Ala Arg Gly Thr Arg Lys
1               5                   10                  15

Ala Arg Ala Gly Ala Trp Arg Gly Cys Thr Phe Pro Cys Leu Gly Lys
            20                  25                  30
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Ser Val Phe Ala Gly Gly Ile Cys
35 40

<210> 5743
<211> 40
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
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domain containing 1; "

<220>
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<223> /note="ENSP ID: ENSP00000456719"

<400> 5743
Met Phe Arg Ala Pro Cys His Arg Leu Arg Ala Arg Gly Thr Arg Lys
1 5 10 15

Ala Arg Ala Gly Ala Trp Arg Gly Cys Thr Phe Pro Cys Leu Gly Lys
20 25 30

Ser Val Phe Ala Gly Gly Ile Cys
35 40

<210> 5744
<211> 414
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
apolipoprt L, 1; "

<220>
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<223> /note="Uniprot ID: O14791; "

<220>
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<223> /note="ENSP ID: ENSP00000317674"

<400> 5744
Met Arg Phe Lys Ser His Thr Val Glu Leu Arg Arg Pro Cys Ser Asp
1   5   10   15

Met Glu Gly Ala Ala Leu Leu Arg Val Ser Val Leu Cys Ile Trp Met
            20   25   30

Ser Ala Leu Phe Leu Gly Val Gly Val Arg Ala Glu Glu Ala Gly Ala
        35   40   45

Arg Val Gln Gln Asn Val Pro Ser Gly Thr Asp Thr Gly Asp Pro Gln
    50   55   60

Ser Lys Pro Leu Gly Asp Trp Ala Ala Gly Thr Met Asp Pro Glu Ser
65   70   75   80

Ser Ile Phe Ile Glu Asp Ala Ile Lys Tyr Phe Lys Glu Lys Val Ser
                85   90   95

Thr Gln Asn Leu Leu Leu Leu Leu Thr Asp Asn Glu Ala Trp Asn Gly
            100   105   110

Phe Val Ala Ala Ala Glu Leu Pro Arg Asn Glu Ala Asp Glu Leu Arg
        115   120   125

Lys Ala Leu Asp Asn Leu Ala Arg Gln Met Ile Met Lys Asp Lys Asn
    130   135   140

Trp His Asp Lys Gly Gln Gln Tyr Arg Asn Trp Phe Leu Lys Glu Phe
145   150   155   160

Pro Arg Leu Lys Ser Glu Leu Glu Asp Asn Ile Arg Arg Leu Arg Ala
                165   170   175

Leu Ala Asp Gly Val Gln Lys Val His Lys Gly Thr Thr Ile Ala Asn
            180   185   190

```
Val Val Ser Gly Ser Leu Ser Ile Ser Ser Gly Ile Leu Thr Leu Val
        195                 200                 205

Gly Met Gly Leu Ala Pro Phe Thr Glu Gly Gly Ser Leu Val Leu Leu
    210                 215                 220

Glu Pro Gly Met Glu Leu Gly Ile Thr Ala Ala Leu Thr Gly Ile Thr
225                 230                 235                 240

Ser Ser Thr Met Asp Tyr Gly Lys Lys Trp Trp Thr Gln Ala Gln Ala
                245                 250                 255

His Asp Leu Val Ile Lys Ser Leu Asp Lys Leu Lys Glu Val Arg Glu
            260                 265                 270

Phe Leu Gly Glu Asn Ile Ser Asn Phe Leu Ser Leu Ala Gly Asn Thr
        275                 280                 285

Tyr Gln Leu Thr Arg Gly Ile Gly Lys Asp Ile Arg Ala Leu Arg Arg
    290                 295                 300

Ala Arg Ala Asn Leu Gln Ser Val Pro His Ala Ser Ala Ser Arg Pro
305                 310                 315                 320

Arg Val Thr Glu Pro Ile Ser Ala Glu Ser Gly Glu Gln Val Glu Arg
                325                 330                 335

Val Asn Glu Pro Ser Ile Leu Glu Met Ser Arg Gly Val Lys Leu Thr
            340                 345                 350

Asp Val Ala Pro Val Ser Phe Phe Leu Val Leu Asp Val Val Tyr Leu
        355                 360                 365

Val Tyr Glu Ser Lys His Leu His Glu Gly Ala Lys Ser Glu Thr Ala
    370                 375                 380

Glu Glu Leu Lys Lys Val Ala Gln Glu Leu Glu Glu Lys Leu Asn Ile
385                 390                 395                 400

Leu Asn Asn Asn Tyr Lys Ile Leu Gln Ala Asp Gln Glu Leu
                405                 410
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<210> 5745
<211> 398
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: APOL1; "

<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID: O14791; "

<220>
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<223> /note="ENSP ID: ENSP00000380448"

<400> 5745
Met Glu Gly Ala Ala Leu Leu Arg Val Ser Val Leu Cys Ile Trp Met
1   5   10   15

Ser Ala Leu Phe Leu Gly Val Gly Val Arg Ala Glu Glu Ala Gly Ala
            20   25   30

Arg Val Gln Gln Asn Val Pro Ser Gly Thr Asp Thr Gly Asp Pro Gln
        35   40   45

Ser Lys Pro Leu Gly Asp Trp Ala Ala Gly Thr Met Asp Pro Glu Ser
    50   55   60

Ser Ile Phe Ile Glu Asp Ala Ile Lys Tyr Phe Lys Glu Lys Val Ser
65   70   75   80

Thr Gln Asn Leu Leu Leu Leu Leu Thr Asp Asn Glu Ala Trp Asn Gly
                85   90   95

Phe Val Ala Ala Ala Glu Leu Pro Arg Asn Glu Ala Asp Glu Leu Arg
            100   105   110

Lys Ala Leu Asp Asn Leu Ala Arg Gln Met Ile Met Lys Asp Lys Asn
        115   120   125

```
Trp His Asp Lys Gly Gln Gln Tyr Arg Asn Trp Phe Leu Lys Glu Phe
    130                 135                 140

Pro Arg Leu Lys Ser Glu Leu Glu Asp Asn Ile Arg Arg Leu Arg Ala
145                 150                 155                 160

Leu Ala Asp Gly Val Gln Lys Val His Lys Gly Thr Thr Ile Ala Asn
                165                 170                 175

Val Val Ser Gly Ser Leu Ser Ile Ser Ser Gly Ile Leu Thr Leu Val
            180                 185                 190

Gly Met Gly Leu Ala Pro Phe Thr Glu Gly Gly Ser Leu Val Leu Leu
        195                 200                 205

Glu Pro Gly Met Glu Leu Gly Ile Thr Ala Ala Leu Thr Gly Ile Thr
    210                 215                 220

Ser Ser Thr Met Asp Tyr Gly Lys Lys Trp Trp Thr Gln Ala Gln Ala
225                 230                 235                 240

His Asp Leu Val Ile Lys Ser Leu Asp Lys Leu Lys Glu Val Arg Glu
                245                 250                 255

Phe Leu Gly Glu Asn Ile Ser Asn Phe Leu Ser Leu Ala Gly Asn Thr
            260                 265                 270

Tyr Gln Leu Thr Arg Gly Ile Gly Lys Asp Ile Arg Ala Leu Arg Arg
        275                 280                 285

Ala Arg Ala Asn Leu Gln Ser Val Pro His Ala Ser Ala Ser Arg Pro
    290                 295                 300

Arg Val Thr Glu Pro Ile Ser Ala Glu Ser Gly Glu Gln Val Glu Arg
305                 310                 315                 320

Val Asn Glu Pro Ser Ile Leu Glu Met Ser Arg Gly Val Lys Leu Thr
                325                 330                 335

Asp Val Ala Pro Val Ser Phe Phe Leu Val Leu Asp Val Val Tyr Leu
            340                 345                 350
```

Val Tyr Glu Ser Lys His Leu His Glu Gly Ala Lys Ser Glu Thr Ala
        355   360   365

Glu Glu Leu Lys Lys Val Ala Gln Glu Leu Glu Glu Lys Leu Asn Ile
    370   375   380

Leu Asn Asn Asn Tyr Lys Ile Leu Gln Ala Asp Gln Glu Leu
385   390   395

<210> 5746
<211> 398
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1268; "

<220>
<221> source
<223> /note="Gene Symbol: APOL1; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt L, 1; "

<220>
<221> source
<223> /note="Uniprot ID: O14791; "

<220>
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<223> /note="ENSP ID: ENSP00000380449"

<400> 5746
Met Glu Gly Ala Ala Leu Leu Arg Val Ser Val Leu Cys Ile Trp Met
1   5   10   15

Ser Ala Leu Phe Leu Gly Val Gly Val Arg Ala Glu Glu Ala Gly Ala
            20   25   30

Arg Val Gln Gln Asn Val Pro Ser Gly Thr Asp Thr Gly Asp Pro Gln
        35   40   45

Ser Lys Pro Leu Gly Asp Trp Ala Ala Gly Thr Met Asp Pro Glu Ser
    50   55   60

Ser Ile Phe Ile Glu Asp Ala Ile Lys Tyr Phe Lys Glu Lys Val Ser

65 70 75 80

Thr Gln Asn Leu Leu Leu Leu Leu Thr Asp Asn Glu Ala Trp Asn Gly
85 90 95

Phe Val Ala Ala Ala Glu Leu Pro Arg Asn Glu Ala Asp Glu Leu Arg
100 105 110

Lys Ala Leu Asp Asn Leu Ala Arg Gln Met Ile Met Lys Asp Lys Asn
115 120 125

Trp His Asp Lys Gly Gln Gln Tyr Arg Asn Trp Phe Leu Lys Glu Phe
130 135 140

Pro Arg Leu Lys Ser Glu Leu Glu Asp Asn Ile Arg Arg Leu Arg Ala
145 150 155 160

Leu Ala Asp Gly Val Gln Lys Val His Lys Gly Thr Thr Ile Ala Asn
165 170 175

Val Val Ser Gly Ser Leu Ser Ile Ser Ser Gly Ile Leu Thr Leu Val
180 185 190

Gly Met Gly Leu Ala Pro Phe Thr Glu Gly Gly Ser Leu Val Leu Leu
195 200 205

Glu Pro Gly Met Glu Leu Gly Ile Thr Ala Ala Leu Thr Gly Ile Thr
210 215 220

Ser Ser Thr Met Asp Tyr Gly Lys Lys Trp Trp Thr Gln Ala Gln Ala
225 230 235 240

His Asp Leu Val Ile Lys Ser Leu Asp Lys Leu Lys Glu Val Arg Glu
245 250 255

Phe Leu Gly Glu Asn Ile Ser Asn Phe Leu Ser Leu Ala Gly Asn Thr
260 265 270

Tyr Gln Leu Thr Arg Gly Ile Gly Lys Asp Ile Arg Ala Leu Arg Arg
275 280 285

Ala Arg Ala Asn Leu Gln Ser Val Pro His Ala Ser Ala Ser Arg Pro
290 295 300

```
Arg Val Thr Glu Pro Ile Ser Ala Glu Ser Gly Glu Gln Val Glu Arg
305                 310                 315                 320

Val Asn Glu Pro Ser Ile Leu Glu Met Ser Arg Gly Val Lys Leu Thr
                325                 330                 335

Asp Val Ala Pro Val Ser Phe Phe Leu Val Leu Asp Val Val Tyr Leu
            340                 345                 350

Val Tyr Glu Ser Lys His Leu His Glu Gly Ala Lys Ser Glu Thr Ala
        355                 360                 365

Glu Glu Leu Lys Lys Val Ala Gln Glu Leu Glu Glu Lys Leu Asn Ile
    370                 375                 380

Leu Asn Asn Asn Tyr Lys Ile Leu Gln Ala Asp Gln Glu Leu
385                 390                 395


<210> 5747
<211> 380
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1268; "

<220>
<221> source
<223> /note="Gene Symbol: APOL1; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID:  O14791; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000388477"

<400> 5747
Met Glu Gly Ala Ala Leu Leu Arg Val Ser Val Leu Cys Ile Trp Val
1               5                   10                  15
```

```
Gln Gln Asn Val Pro Ser Gly Thr Asp Thr Gly Asp Pro Gln Ser Lys
            20                  25                  30

Pro Leu Gly Asp Trp Ala Ala Gly Thr Met Asp Pro Glu Ser Ser Ile
        35                  40                  45

Phe Ile Glu Asp Ala Ile Lys Tyr Phe Lys Glu Lys Val Ser Thr Gln
    50                  55                  60

Asn Leu Leu Leu Leu Leu Thr Asp Asn Glu Ala Trp Asn Gly Phe Val
65                  70                  75                  80

Ala Ala Ala Glu Leu Pro Arg Asn Glu Ala Asp Glu Leu Arg Lys Ala
                85                  90                  95

Leu Asp Asn Leu Ala Arg Gln Met Ile Met Lys Asp Lys Asn Trp His
            100                 105                 110

Asp Lys Gly Gln Gln Tyr Arg Asn Trp Phe Leu Lys Glu Phe Pro Arg
        115                 120                 125

Leu Lys Ser Glu Leu Glu Asp Asn Ile Arg Arg Leu Arg Ala Leu Ala
    130                 135                 140

Asp Gly Val Gln Lys Val His Lys Gly Thr Thr Ile Ala Asn Val Val
145                 150                 155                 160

Ser Gly Ser Leu Ser Ile Ser Ser Gly Ile Leu Thr Leu Val Gly Met
                165                 170                 175

Gly Leu Ala Pro Phe Thr Glu Gly Gly Ser Leu Val Leu Leu Glu Pro
            180                 185                 190

Gly Met Glu Leu Gly Ile Thr Ala Ala Leu Thr Gly Ile Thr Ser Ser
        195                 200                 205

Thr Met Asp Tyr Gly Lys Lys Trp Trp Thr Gln Ala Gln Ala His Asp
    210                 215                 220

Leu Val Ile Lys Ser Leu Asp Lys Leu Lys Glu Val Arg Glu Phe Leu
225                 230                 235                 240

Gly Glu Asn Ile Ser Asn Phe Leu Ser Leu Ala Gly Asn Thr Tyr Gln
```

```
                245                 250                 255

Leu Thr Arg Gly Ile Gly Lys Asp Ile Arg Ala Leu Arg Arg Ala Arg
            260                 265                 270

Ala Asn Leu Gln Ser Val Pro His Ala Ser Ala Ser Arg Pro Arg Val
        275                 280                 285

Thr Glu Pro Ile Ser Ala Glu Ser Gly Glu Gln Val Glu Arg Val Asn
    290                 295                 300

Glu Pro Ser Ile Leu Glu Met Ser Arg Gly Val Lys Leu Thr Asp Val
305                 310                 315                 320

Ala Pro Val Ser Phe Phe Leu Val Leu Asp Val Val Tyr Leu Val Tyr
                325                 330                 335

Glu Ser Lys His Leu His Glu Gly Ala Lys Ser Glu Thr Ala Glu Glu
            340                 345                 350

Leu Lys Lys Val Ala Gln Glu Leu Glu Glu Lys Leu Asn Ile Leu Asn
        355                 360                 365

Asn Asn Tyr Lys Ile Leu Gln Ala Asp Gln Glu Leu
    370                 375                 380


<210> 5748
<211> 141
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1268; "

<220>
<221> source
<223> /note="Gene Symbol: APOL1; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt L, 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000391206"
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<400> 5748
Met Glu Gly Ala Ala Leu Leu Arg Val Ser Val Leu Cys Ile Trp Met
1 5 10 15

Ser Ala Leu Phe Leu Gly Val Gly Val Arg Ala Glu Glu Ala Gly Ala
20 25 30

Arg Val Gln Gln Asn Val Pro Ser Gly Thr Asp Thr Gly Asp Pro Gln
35 40 45

Ser Lys Pro Leu Gly Asp Trp Ala Ala Gly Thr Met Asp Pro Gly Pro
50 55 60

Ala Gly Ser Arg Gly Asp Ser Gly Glu Pro Cys Thr Leu Arg Pro Ala
65 70 75 80

Cys Arg Gly Gln Arg Gln His Gly Gly Ala Ser Arg Ile Ser Ala Glu
85 90 95

Gly Pro Ala Pro Met Pro Arg Arg Arg Thr Pro Ser Thr Ala His Leu
100 105 110

Arg Val Pro Lys Thr Ser Arg Arg Asn Leu Leu Cys Met Arg Ala Val
115 120 125

Ser Leu Leu Arg Met Pro Leu Ser Ile Ser Arg Lys Lys
130 135 140

<210> 5749
<211> 159
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1268; "

<220>
<221> source
<223> /note="Gene Symbol: APOL1; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt L, 1; "

<220>
<221> source

<223> /note="ENSP ID: ENSP00000391302"

<400> 5749
Met Glu Gly Ala Ala Leu Leu Arg Val Ser Val Leu Cys Ile Trp Met
1 5 10 15

Ser Ala Leu Phe Leu Gly Val Gly Val Arg Ala Glu Glu Ala Gly Ala
20 25 30

Arg Val Gln Gln Asn Val Pro Ser Gly Thr Asp Thr Gly Asp Pro Gln
35 40 45

Ser Lys Pro Leu Gly Asp Trp Ala Ala Gly Thr Met Asp Pro Glu Ser
50 55 60

Ser Ile Phe Ile Glu Asp Ala Ile Lys Tyr Phe Lys Glu Lys Val Ser
65 70 75 80

Thr Gln Asn Leu Leu Leu Leu Leu Thr Asp Asn Glu Ala Trp Asn Gly
85 90 95

Phe Val Ala Ala Ala Glu Leu Pro Arg Asn Glu Ala Asp Glu Leu Arg
100 105 110

Lys Ala Leu Asp Asn Leu Ala Arg Gln Met Ile Met Lys Asp Lys Asn
115 120 125

Trp His Asp Lys Gly Gln Gln Tyr Arg Asn Trp Phe Leu Lys Glu Phe
130 135 140

Pro Arg Leu Lys Ser Glu Leu Glu Asp Asn Ile Arg Arg Leu Arg
145 150 155

<210> 5750
<211> 141
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1268; "

<220>
<221> source
<223> /note="Gene Symbol: APOL1; "

<220>

<221> source
<223> /note="Gene Name:
apolipoprt L, 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000392514"

<400> 5750
Met Glu Gly Ala Ala Leu Leu Arg Val Ser Val Leu Cys Ile Trp Met
1 5 10 15

Ser Ala Leu Phe Leu Gly Val Gly Val Arg Ala Glu Glu Ala Gly Ala
20 25 30

Arg Val Gln Gln Asn Val Pro Ser Gly Thr Asp Thr Gly Asp Pro Gln
35 40 45

Ser Lys Pro Leu Gly Asp Trp Ala Ala Gly Thr Met Asp Pro Gly Pro
50 55 60

Ala Gly Ser Arg Gly Asp Ser Gly Glu Pro Cys Thr Leu Arg Pro Ala
65 70 75 80

Cys Arg Gly Gln Arg Gln His Gly Gly Ala Ser Arg Ile Ser Ala Glu
85 90 95

Gly Pro Ala Pro Met Pro Arg Arg Arg Thr Pro Ser Thr Ala His Leu
100 105 110

Arg Val Pro Lys Thr Ser Arg Arg Asn Leu Leu Cys Met Arg Ala Val
115 120 125

Ser Leu Leu Arg Met Pro Leu Ser Ile Ser Arg Lys Lys
130 135 140

<210> 5751
<211> 142
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1268; "

<220>
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<223> /note="Gene Symbol: APOL1; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt L, 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000392857"

<400> 5751
Met Glu Gly Ala Ala Leu Leu Arg Val Ser Val Leu Cys Ile Trp Met
1 5 10 15

Ser Ala Leu Phe Leu Gly Val Gly Val Arg Ala Glu Glu Ala Gly Ala
20 25 30

Arg Val Gln Gln Asn Val Pro Ser Gly Thr Asp Thr Gly Asp Pro Gln
35 40 45

Ser Lys Pro Leu Gly Asp Trp Ala Ala Gly Thr Met Asp Pro Gly Pro
50 55 60

Ala Gly Ser Arg Gly Asp Ser Gly Glu Pro Cys Thr Leu Arg Pro Ala
65 70 75 80

Cys Arg Gly Gln Arg Gln His Gly Gly Ala Ser Arg Ile Ser Ala Glu
85 90 95

Gly Pro Ala Pro Met Pro Arg Arg Arg Thr Pro Ser Thr Ala His Leu
100 105 110

Arg Val Pro Lys Thr Ser Arg Arg Asn Leu Leu Cys Met Val Val Val
115 120 125

Leu Asn Ala Val Glu Phe Glu Thr Leu Phe Leu Asn Phe Lys
130 135 140

<210> 5752
<211> 123
<212> PRT
<213> Homo sapiens

<220>
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<220>

<221> source
<223> /note="Gene Symbol: APOL1; "

<220>
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<223> /note="Gene Name:
apolipoprt L, 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000397141"

<400> 5752
Met Glu Gly Ala Ala Leu Leu Arg Val Ser Val Leu Cys Ile Trp Val
1 5 10 15

Gln Gln Asn Val Pro Ser Gly Thr Asp Thr Gly Asp Pro Gln Ser Lys
20 25 30

Pro Leu Gly Asp Trp Ala Ala Gly Thr Met Asp Pro Gly Pro Ala Gly
35 40 45

Ser Arg Gly Asp Ser Gly Glu Pro Cys Thr Leu Arg Pro Ala Cys Arg
50 55 60

Gly Gln Arg Gln His Gly Gly Ala Ser Arg Ile Ser Ala Glu Gly Pro
65 70 75 80

Ala Pro Met Pro Arg Arg Arg Thr Pro Ser Thr Ala His Leu Arg Val
85 90 95

Pro Lys Thr Ser Arg Arg Asn Leu Leu Cys Met Arg Ala Val Ser Leu
100 105 110

Leu Arg Met Pro Leu Ser Ile Ser Arg Lys Lys
115 120

<210> 5753
<211> 118
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1268; "

<220>
<221> source
<223> /note="Gene Symbol: APOL1; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt L, 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000404525"

<400> 5753
Met Arg Phe Lys Ser His Thr Val Glu Leu Arg Ser Thr Leu Ser Gln
1 5 10 15

Pro Leu Phe Ser Cys Ser Arg Arg Arg Pro Cys Ser Asp Met Glu Gly
20 25 30

Ala Ala Leu Leu Arg Val Ser Val Leu Cys Ile Trp Met Ser Ala Leu
35 40 45

Phe Leu Gly Val Gly Val Arg Ala Glu Glu Ala Gly Ala Arg Val Gln
50 55 60

Gln Asn Val Pro Ser Gly Thr Asp Thr Gly Asp Pro Gln Ser Lys Pro
65 70 75 80

Leu Gly Asp Trp Ala Ala Gly Thr Met Asp Pro Glu Ser Ser Ile Phe
85 90 95

Ile Glu Asp Ala Ile Lys Tyr Phe Lys Glu Lys Val Ser Thr Gln Asn
100 105 110

Leu Leu Leu Leu Leu Thr
115

<210> 5754
<211> 398
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1268; "

<220>
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<220>

<221> source
<223> /note="Gene Name:
apolipoprt L, 1; "

<220>
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<223> /note="Uniprot ID: O14791; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000411507"

<400> 5754

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Met Glu Gly Ala Ala Leu Leu Arg Val Ser Val Leu Cys Ile Trp Met
1               5                  10                  15

Ser Ala Leu Phe Leu Gly Val Gly Val Arg Ala Glu Glu Ala Gly Ala
            20                  25                  30

Arg Val Gln Gln Asn Val Pro Ser Gly Thr Asp Thr Gly Asp Pro Gln
        35                  40                  45

Ser Lys Pro Leu Gly Asp Trp Ala Ala Gly Thr Met Asp Pro Glu Ser
    50                  55                  60

Ser Ile Phe Ile Glu Asp Ala Ile Lys Tyr Phe Lys Glu Lys Val Ser
65                  70                  75                  80

Thr Gln Asn Leu Leu Leu Leu Leu Thr Asp Asn Glu Ala Trp Asn Gly
                85                  90                  95

Phe Val Ala Ala Ala Glu Leu Pro Arg Asn Glu Ala Asp Glu Leu Arg
            100                 105                 110

Lys Ala Leu Asp Asn Leu Ala Arg Gln Met Ile Met Lys Asp Lys Asn
        115                 120                 125

Trp His Asp Lys Gly Gln Gln Tyr Arg Asn Trp Phe Leu Lys Glu Phe
    130                 135                 140

Pro Arg Leu Lys Ser Glu Leu Glu Asp Asn Ile Arg Arg Leu Arg Ala
145                 150                 155                 160

Leu Ala Asp Gly Val Gln Lys Val His Lys Gly Thr Thr Ile Ala Asn
                165                 170                 175
```

```
Val Val Ser Gly Ser Leu Ser Ile Ser Ser Gly Ile Leu Thr Leu Val
            180                 185                 190

Gly Met Gly Leu Ala Pro Phe Thr Glu Gly Gly Ser Leu Val Leu Leu
        195                 200                 205

Glu Pro Gly Met Glu Leu Gly Ile Thr Ala Ala Leu Thr Gly Ile Thr
    210                 215                 220

Ser Ser Thr Met Asp Tyr Gly Lys Lys Trp Trp Thr Gln Ala Gln Ala
225                 230                 235                 240

His Asp Leu Val Ile Lys Ser Leu Asp Lys Leu Lys Glu Val Arg Glu
                245                 250                 255

Phe Leu Gly Glu Asn Ile Ser Asn Phe Leu Ser Leu Ala Gly Asn Thr
            260                 265                 270

Tyr Gln Leu Thr Arg Gly Ile Gly Lys Asp Ile Arg Ala Leu Arg Arg
        275                 280                 285

Ala Arg Ala Asn Leu Gln Ser Val Pro His Ala Ser Ala Ser Arg Pro
    290                 295                 300

Arg Val Thr Glu Pro Ile Ser Ala Glu Ser Gly Glu Gln Val Glu Arg
305                 310                 315                 320

Val Asn Glu Pro Ser Ile Leu Glu Met Ser Arg Gly Val Lys Leu Thr
                325                 330                 335

Asp Val Ala Pro Val Ser Phe Phe Leu Val Leu Asp Val Val Tyr Leu
            340                 345                 350

Val Tyr Glu Ser Lys His Leu His Glu Gly Ala Lys Ser Glu Thr Ala
        355                 360                 365

Glu Glu Leu Lys Lys Val Ala Gln Glu Leu Glu Glu Lys Leu Asn Ile
    370                 375                 380

Leu Asn Asn Asn Tyr Lys Ile Leu Gln Ala Asp Gln Glu Leu
385                 390                 395
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<210> 5755

<211> 337
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1269; "

<220>
<221> source
<223> /note="Gene Symbol: APOL2; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt L, 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q9BQE5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000249066"

<400> 5755

Met	Asn	Pro	Glu	Ser	Ser	Ile	Phe	Ile	Glu	Asp	Tyr	Leu	Lys	Tyr	Phe
1				5					10					15	

Gln	Asp	Gln	Val	Ser	Arg	Glu	Asn	Leu	Leu	Gln	Leu	Leu	Thr	Asp	Asp
			20					25					30		

Glu	Ala	Trp	Asn	Gly	Phe	Val	Ala	Ala	Ala	Glu	Leu	Pro	Arg	Asp	Glu
			35					40					45		

Ala	Asp	Glu	Leu	Arg	Lys	Ala	Leu	Asn	Lys	Leu	Ala	Ser	His	Met	Val
	50					55					60				

Met	Lys	Asp	Lys	Asn	Arg	His	Asp	Lys	Asp	Gln	Gln	His	Arg	Gln	Trp
65				70					75					80	

Phe	Leu	Lys	Glu	Phe	Pro	Arg	Leu	Lys	Arg	Glu	Leu	Glu	Asp	His	Ile
				85					90					95	

Arg	Lys	Leu	Arg	Ala	Leu	Ala	Glu	Glu	Val	Glu	Gln	Val	His	Arg	Gly
			100					105					110		

Thr	Thr	Ile	Ala	Asn	Val	Val	Ser	Asn	Ser	Val	Gly	Thr	Thr	Ser	Gly
			115					120					125		

Ile Leu Thr Leu Leu Gly Leu Gly Leu Ala Pro Phe Thr Glu Gly Ile
130 135 140

Ser Phe Val Leu Leu Asp Thr Gly Met Gly Leu Gly Ala Ala Ala Ala
145 150 155 160

Val Ala Gly Ile Thr Cys Ser Val Val Glu Leu Val Asn Lys Leu Arg
165 170 175

Ala Arg Ala Gln Ala Arg Asn Leu Asp Gln Ser Gly Thr Asn Val Ala
180 185 190

Lys Val Met Lys Glu Phe Val Gly Gly Asn Thr Pro Asn Val Leu Thr
195 200 205

Leu Val Asp Asn Trp Tyr Gln Val Thr Gln Gly Ile Gly Arg Asn Ile
210 215 220

Arg Ala Ile Arg Arg Ala Arg Ala Asn Pro Gln Leu Gly Ala Tyr Ala
225 230 235 240

Pro Pro Pro His Val Ile Gly Arg Ile Ser Ala Glu Gly Gly Glu Gln
245 250 255

Val Glu Arg Val Val Glu Gly Pro Ala Gln Ala Met Ser Arg Gly Thr
260 265 270

Met Ile Val Gly Ala Ala Thr Gly Gly Ile Leu Leu Leu Leu Asp Val
275 280 285

Val Ser Leu Ala Tyr Glu Ser Lys His Leu Leu Glu Gly Ala Lys Ser
290 295 300

Glu Ser Ala Glu Glu Leu Lys Lys Arg Ala Gln Glu Leu Glu Gly Lys
305 310 315 320

Leu Asn Phe Leu Thr Lys Ile His Glu Met Leu Gln Pro Gly Gln Asp
325 330 335

Gln

<210> 5756
<211> 337
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: APOL2; "

<220>
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<223> /note="Gene Name:
apolipoprt L, 2; "

<220>
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<223> /note="Uniprot ID: Q9BQE5; "

<220>
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<223> /note="ENSP ID: ENSP00000351292"

<400> 5756
Met Asn Pro Glu Ser Ser Ile Phe Ile Glu Asp Tyr Leu Lys Tyr Phe
1 5 10 15

Gln Asp Gln Val Ser Arg Glu Asn Leu Leu Gln Leu Leu Thr Asp Asp
            20 25 30

Glu Ala Trp Asn Gly Phe Val Ala Ala Ala Glu Leu Pro Arg Asp Glu
        35 40 45

Ala Asp Glu Leu Arg Lys Ala Leu Asn Lys Leu Ala Ser His Met Val
    50 55 60

Met Lys Asp Lys Asn Arg His Asp Lys Asp Gln Gln His Arg Gln Trp
65 70 75 80

Phe Leu Lys Glu Phe Pro Arg Leu Lys Arg Glu Leu Glu Asp His Ile
                85 90 95

Arg Lys Leu Arg Ala Leu Ala Glu Glu Val Glu Gln Val His Arg Gly
            100 105 110

Thr Thr Ile Ala Asn Val Val Ser Asn Ser Val Gly Thr Thr Ser Gly
        115 120 125

Ile Leu Thr Leu Leu Gly Leu Gly Leu Ala Pro Phe Thr Glu Gly Ile
130 135 140

Ser Phe Val Leu Leu Asp Thr Gly Met Gly Leu Gly Ala Ala Ala Ala
145 150 155 160

Val Ala Gly Ile Thr Cys Ser Val Val Glu Leu Val Asn Lys Leu Arg
165 170 175

Ala Arg Ala Gln Ala Arg Asn Leu Asp Gln Ser Gly Thr Asn Val Ala
180 185 190

Lys Val Met Lys Glu Phe Val Gly Gly Asn Thr Pro Asn Val Leu Thr
195 200 205

Leu Val Asp Asn Trp Tyr Gln Val Thr Gln Gly Ile Gly Arg Asn Ile
210 215 220

Arg Ala Ile Arg Arg Ala Arg Ala Asn Pro Gln Leu Gly Ala Tyr Ala
225 230 235 240

Pro Pro Pro His Val Ile Gly Arg Ile Ser Ala Glu Gly Gly Glu Gln
245 250 255

Val Glu Arg Val Val Glu Gly Pro Ala Gln Ala Met Ser Arg Gly Thr
260 265 270

Met Ile Val Gly Ala Ala Thr Gly Gly Ile Leu Leu Leu Leu Asp Val
275 280 285

Val Ser Leu Ala Tyr Glu Ser Lys His Leu Leu Glu Gly Ala Lys Ser
290 295 300

Glu Ser Ala Glu Glu Leu Lys Lys Arg Ala Gln Glu Leu Glu Gly Lys
305 310 315 320

Leu Asn Phe Leu Thr Lys Ile His Glu Met Leu Gln Pro Gly Gln Asp
325 330 335

Gln

<210> 5757
<211> 74
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
apolipoprt L, 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000400486"

<400> 5757
Met Asn Pro Glu Ser Ser Ile Phe Ile Glu Asp Tyr Leu Lys Tyr Phe
1 5 10 15

Gln Asp Gln Val Ser Arg Glu Asn Leu Leu Gln Leu Leu Thr Asp Asp
20 25 30

Glu Ala Trp Asn Gly Phe Val Ala Ala Ala Glu Leu Pro Arg Asp Glu
35 40 45

Ala Asp Glu Leu Arg Lys Ala Leu Asn Lys Leu Ala Ser His Met Val
50 55 60

Met Lys Asp Lys Asn Arg His Asp Lys Asp
65 70

<210> 5758
<211> 449
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: APOL2; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt L, 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000403153"

<400> 5758
Met His Ser Trp Thr Trp Asp Pro His Ser Ser Glu Gln Leu Asp Leu
1 5 10 15

Ala Gln Ser Leu Ser Glu Glu Asp Pro Leu Ser Ser Leu Arg Gly Ser
20 25 30

Ile Gln Pro Gln Pro Pro Ala Glu Ala Pro Asp Lys Gly Gly Ser Gln
35 40 45

Ala Asn Asn Asp Pro Gly Gly Trp Asp Pro Gly Cys Ser Ser Ser Gln
50 55 60

Val Leu Gly Arg Thr Arg Gly Pro Cys Leu Gly Val Arg Val Arg Glu
65 70 75 80

Glu Glu Ala Gly Thr Arg Val Lys Glu Asn Leu Pro Val Trp Thr Val
85 90 95

Thr Gly Glu Leu Gln Gly Lys Pro Leu Gly Asn Pro Ala Ala Gly Thr
100 105 110

Met Asn Pro Glu Ser Ser Ile Phe Ile Glu Asp Tyr Leu Lys Tyr Phe
115 120 125

Gln Asp Gln Val Ser Arg Glu Asn Leu Leu Gln Leu Leu Thr Asp Asp
130 135 140

Glu Ala Trp Asn Gly Phe Val Ala Ala Ala Glu Leu Pro Arg Asp Glu
145 150 155 160

Ala Asp Glu Leu Arg Lys Ala Leu Asn Lys Leu Ala Ser His Met Val
165 170 175

Met Lys Asp Lys Asn Arg His Asp Lys Asp Gln Gln His Arg Gln Trp
180 185 190

```
Phe Leu Lys Glu Phe Pro Arg Leu Lys Arg Glu Leu Glu Asp His Ile
        195                 200                 205

Arg Lys Leu Arg Ala Leu Ala Glu Glu Val Glu Gln Val His Arg Gly
    210                 215                 220

Thr Thr Ile Ala Asn Val Val Ser Asn Ser Val Gly Thr Thr Ser Gly
225                 230                 235                 240

Ile Leu Thr Leu Leu Gly Leu Gly Leu Ala Pro Phe Thr Glu Gly Ile
                245                 250                 255

Ser Phe Val Leu Leu Asp Thr Gly Met Gly Leu Gly Ala Ala Ala Ala
            260                 265                 270

Val Ala Gly Ile Thr Cys Ser Val Val Glu Leu Val Asn Lys Leu Arg
        275                 280                 285

Ala Arg Ala Gln Ala Arg Asn Leu Asp Gln Ser Gly Thr Asn Val Ala
    290                 295                 300

Lys Val Met Lys Glu Phe Val Gly Gly Asn Thr Pro Asn Val Leu Thr
305                 310                 315                 320

Leu Val Asp Asn Trp Tyr Gln Val Thr Gln Gly Ile Gly Arg Asn Ile
                325                 330                 335

Arg Ala Ile Arg Arg Ala Arg Ala Asn Pro Gln Leu Gly Ala Tyr Ala
            340                 345                 350

Pro Pro Pro His Val Ile Gly Arg Ile Ser Ala Glu Gly Gly Glu Gln
        355                 360                 365

Val Glu Arg Val Val Glu Gly Pro Ala Gln Ala Met Ser Arg Gly Thr
    370                 375                 380

Met Ile Val Gly Ala Ala Thr Gly Gly Ile Leu Leu Leu Leu Asp Val
385                 390                 395                 400

Val Ser Leu Ala Tyr Glu Ser Lys His Leu Leu Glu Gly Ala Lys Ser
                405                 410                 415
```

Glu Ser Ala Glu Glu Leu Lys Lys Arg Ala Gln Glu Leu Glu Gly Lys
420 425 430

Leu Asn Phe Leu Thr Lys Ile His Glu Met Leu Gln Pro Gly Gln Asp
435 440 445

Gln

<210> 5759
<211> 128
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1269; "

<220>
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<223> /note="Gene Symbol: APOL2; "

<220>
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<223> /note="Gene Name:
apolipoprt L, 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431231"

<400> 5759
Met Asn Pro Glu Ser Ser Ile Phe Ile Glu Asp Tyr Leu Lys Tyr Phe
1 5 10 15

Gln Asp Gln Val Ser Arg Glu Asn Leu Leu Gln Leu Leu Thr Asp Asp
20 25 30

Glu Ala Trp Asn Gly Phe Val Ala Ala Ala Glu Leu Pro Arg Asp Glu
35 40 45

Ala Asp Glu Leu Arg Lys Ala Leu Asn Lys Leu Ala Ser His Met Val
50 55 60

Met Lys Asp Lys Asn Arg His Asp Lys Asp Gln Gln His Arg Gln Trp
65 70 75 80

Phe Leu Lys Glu Phe Pro Arg Leu Lys Arg Glu Leu Glu Asp His Ile
85 90 95

```
Arg Lys Leu Arg Ala Leu Ala Glu Glu Val Glu Gln Val His Arg Gly
            100                 105                 110

Thr Thr Ile Ala Asn Val Val Ser Asn Ser Val Gly Thr Thr Ser Gly
        115                 120                 125


<210> 5760
<211> 402
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1270; "

<220>
<221> source
<223> /note="Gene Symbol: APOL3; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt L, 3; "

<220>
<221> source
<223> /note="Uniprot ID:  O95236; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000344577"

<400> 5760
Met Gly Leu Gly Gln Gly Trp Gly Trp Glu Ala Ser Cys Phe Ala Cys
1               5                   10                  15

Leu Ile Arg Ser Cys Cys Gln Val Val Thr Phe Thr Phe Pro Phe Gly
            20                  25                  30

Phe Gln Gly Ile Ser Gln Ser Leu Glu Asn Val Ser Gly Tyr Tyr Ala
        35                  40                  45

Asp Ala Arg Leu Glu Val Gly Ser Thr Gln Leu Arg Thr Ala Gly Ser
    50                  55                  60

Cys Ser His Ser Phe Lys Arg Ser Phe Leu Glu Lys Lys Arg Phe Thr
65                  70                  75                  80
```

```
Glu Glu Ala Thr Lys Tyr Phe Arg Glu Arg Val Ser Pro Val His Leu
                85                  90                  95

Gln Ile Leu Leu Thr Asn Asn Glu Ala Trp Lys Arg Phe Val Thr Ala
            100                 105                 110

Ala Glu Leu Pro Arg Asp Glu Ala Asp Ala Leu Tyr Glu Ala Leu Lys
        115                 120                 125

Lys Leu Arg Thr Tyr Ala Ala Ile Glu Asp Glu Tyr Val Gln Gln Lys
    130                 135                 140

Asp Glu Gln Phe Arg Glu Trp Phe Leu Lys Glu Phe Pro Gln Val Lys
145                 150                 155                 160

Arg Lys Ile Gln Glu Ser Ile Glu Lys Leu Arg Ala Leu Ala Asn Gly
                165                 170                 175

Ile Glu Glu Val His Arg Gly Cys Thr Ile Ser Asn Val Val Ser Ser
            180                 185                 190

Ser Thr Gly Ala Ala Ser Gly Ile Met Ser Leu Ala Gly Leu Val Leu
        195                 200                 205

Ala Pro Phe Thr Ala Gly Thr Ser Leu Ala Leu Thr Ala Ala Gly Val
    210                 215                 220

Gly Leu Gly Ala Ala Ser Ala Val Thr Gly Ile Thr Thr Ser Ile Val
225                 230                 235                 240

Glu His Ser Tyr Thr Ser Ser Ala Glu Ala Glu Ala Ser Arg Leu Thr
                245                 250                 255

Ala Thr Ser Ile Asp Arg Leu Lys Val Phe Lys Glu Val Met Arg Asp
            260                 265                 270

Ile Thr Pro Asn Leu Leu Ser Leu Leu Asn Asn Tyr Tyr Glu Ala Thr
        275                 280                 285

Gln Thr Ile Gly Ser Glu Ile Arg Ala Ile Arg Gln Ala Arg Ala Arg
    290                 295                 300

Ala Arg Leu Pro Val Thr Thr Trp Arg Ile Ser Ala Gly Ser Gly Gly
```

305 310 315 320

Gln Ala Glu Arg Thr Ile Ala Gly Thr Thr Arg Ala Val Ser Arg Gly
325 330 335

Ala Arg Ile Leu Ser Ala Thr Thr Ser Gly Ile Phe Leu Ala Leu Asp
340 345 350

Val Val Asn Leu Val Tyr Glu Ser Lys His Leu His Glu Gly Ala Lys
355 360 365

Ser Ala Ser Ala Glu Glu Leu Arg Arg Gln Ala Gln Glu Leu Glu Glu
370 375 380

Asn Leu Met Glu Leu Thr Gln Ile Tyr Gln Arg Leu Asn Pro Cys His
385 390 395 400

Thr His

<210> 5761
<211> 202
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1270; "

<220>
<221> source
<223> /note="Gene Symbol: APOL3; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt L, 3; "

<220>
<221> source
<223> /note="Uniprot ID: O95236; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000355164"

<400> 5761
Met Ser Leu Ala Gly Leu Val Leu Ala Pro Phe Thr Ala Gly Thr Ser
1 5 10 15

```
Leu Ala Leu Thr Ala Ala Gly Val Gly Leu Gly Ala Ala Ser Ala Val
            20                  25                  30

Thr Gly Ile Thr Thr Ser Ile Val Glu His Ser Tyr Thr Ser Ser Ala
        35                  40                  45

Glu Ala Glu Ala Ser Arg Leu Thr Ala Thr Ser Ile Asp Arg Leu Lys
    50                  55                  60

Val Phe Lys Glu Val Met Arg Asp Ile Thr Pro Asn Leu Leu Ser Leu
65                  70                  75                  80

Leu Asn Asn Tyr Tyr Glu Ala Thr Gln Thr Ile Gly Ser Glu Ile Arg
                85                  90                  95

Ala Ile Arg Gln Ala Arg Ala Arg Ala Arg Leu Pro Val Thr Thr Trp
            100                 105                 110

Arg Ile Ser Ala Gly Ser Gly Gly Gln Ala Glu Arg Thr Ile Ala Gly
        115                 120                 125

Thr Thr Arg Ala Val Ser Arg Gly Ala Arg Ile Leu Ser Ala Thr Thr
    130                 135                 140

Ser Gly Ile Phe Leu Ala Leu Asp Val Val Asn Leu Val Tyr Glu Ser
145                 150                 155                 160

Lys His Leu His Glu Gly Ala Lys Ser Ala Ser Ala Glu Glu Leu Arg
                165                 170                 175

Arg Gln Ala Gln Glu Leu Glu Glu Asn Leu Met Glu Leu Thr Gln Ile
            180                 185                 190

Tyr Gln Arg Leu Asn Pro Cys His Thr His
        195                 200
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<210> 5762
<211> 202
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1270; "

<220>
<221> source
<223> /note="Gene Symbol: APOL3; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt L, 3; "

<220>
<221> source
<223> /note="Uniprot ID: O95236; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000380456"

<400> 5762
Met Ser Leu Ala Gly Leu Val Leu Ala Pro Phe Thr Ala Gly Thr Ser
1 5 10 15

Leu Ala Leu Thr Ala Ala Gly Val Gly Leu Gly Ala Ala Ser Ala Val
20 25 30

Thr Gly Ile Thr Thr Ser Ile Val Glu His Ser Tyr Thr Ser Ser Ala
35 40 45

Glu Ala Glu Ala Ser Arg Leu Thr Ala Thr Ser Ile Asp Arg Leu Lys
50 55 60

Val Phe Lys Glu Val Met Arg Asp Ile Thr Pro Asn Leu Leu Ser Leu
65 70 75 80

Leu Asn Asn Tyr Tyr Glu Ala Thr Gln Thr Ile Gly Ser Glu Ile Arg
85 90 95

Ala Ile Arg Gln Ala Arg Ala Arg Ala Arg Leu Pro Val Thr Thr Trp
100 105 110

Arg Ile Ser Ala Gly Ser Gly Gly Gln Ala Glu Arg Thr Ile Ala Gly
115 120 125

Thr Thr Arg Ala Val Ser Arg Gly Ala Arg Ile Leu Ser Ala Thr Thr
130 135 140

Ser Gly Ile Phe Leu Ala Leu Asp Val Val Asn Leu Val Tyr Glu Ser
145 150 155 160

```
Lys His Leu His Glu Gly Ala Lys Ser Ala Ser Ala Glu Glu Leu Arg
                165                 170                 175

Arg Gln Ala Gln Glu Leu Glu Glu Asn Leu Met Glu Leu Thr Gln Ile
            180                 185                 190

Tyr Gln Arg Leu Asn Pro Cys His Thr His
        195                 200
```

<210> 5763
<211> 97
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1270; "

<220>
<221> source
<223> /note="Gene Symbol: APOL3; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt L, 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000380457"

<400> 5763

```
Met Gly Leu Gly Gln Gly Trp Gly Trp Glu Ala Ser Cys Phe Ala Cys
1               5                   10                  15

Leu Ile Arg Ser Cys Cys Gln Val Val Thr Phe Thr Phe Pro Phe Gly
            20                  25                  30

Phe Gln Gly Ile Ser Gln Ser Leu Glu Asn Val Ser Gly Tyr Tyr Ala
        35                  40                  45

Asp Ala Arg Leu Glu Val Gly Ser Thr Gln Leu Arg Thr Ala Gly Ser
    50                  55                  60

Cys Ser His Ser Phe Lys Arg Ser Phe Leu Gly Leu Arg Lys Lys Thr
65                  70                  75                  80
```

```
Asn Pro Ser Ser Gln Val Ser Asp Trp Arg Ala Pro Trp Lys Val Ser
                85                  90                  95

Gln
```

<210> 5764
<211> 202
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1270; "

<220>
<221> source
<223> /note="Gene Symbol: APOL3; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt L, 3; "

<220>
<221> source
<223> /note="Uniprot ID: O95236; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000380461"

<400> 5764

```
Met Ser Leu Ala Gly Leu Val Leu Ala Pro Phe Thr Ala Gly Thr Ser
1               5                  10                  15

Leu Ala Leu Thr Ala Ala Gly Val Gly Leu Gly Ala Ala Ser Ala Val
            20                  25                  30

Thr Gly Ile Thr Thr Ser Ile Val Glu His Ser Tyr Thr Ser Ser Ala
        35                  40                  45

Glu Ala Glu Ala Ser Arg Leu Thr Ala Thr Ser Ile Asp Arg Leu Lys
    50                  55                  60

Val Phe Lys Glu Val Met Arg Asp Ile Thr Pro Asn Leu Leu Ser Leu
65                  70                  75                  80

Leu Asn Asn Tyr Tyr Glu Ala Thr Gln Thr Ile Gly Ser Glu Ile Arg
                85                  90                  95
```

```
Ala Ile Arg Gln Ala Arg Ala Arg Ala Arg Leu Pro Val Thr Thr Trp
            100                 105                 110

Arg Ile Ser Ala Gly Ser Gly Gly Gln Ala Glu Arg Thr Ile Ala Gly
        115                 120                 125

Thr Thr Arg Ala Val Ser Arg Gly Ala Arg Ile Leu Ser Ala Thr Thr
    130                 135                 140

Ser Gly Ile Phe Leu Ala Leu Asp Val Val Asn Leu Val Tyr Glu Ser
145                 150                 155                 160

Lys His Leu His Glu Gly Ala Lys Ser Ala Ser Ala Glu Glu Leu Arg
                165                 170                 175

Arg Gln Ala Gln Glu Leu Glu Glu Asn Leu Met Glu Leu Thr Gln Ile
            180                 185                 190

Tyr Gln Arg Leu Asn Pro Cys His Thr His
        195                 200
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<210> 5765
<211> 52
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1270; "

<220>
<221> source
<223> /note="Gene Symbol: APOL3; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt L, 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000391174"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5765
Xaa Tyr Ala Asp Ala Arg Leu Glu Val Gly Ser Thr Gln Leu Arg Thr
1   5   10   15

Ala Gly Ser Cys Ser His Ser Phe Lys Arg Ser Phe Leu Gly Leu Arg
            20   25   30

Lys Lys Thr Asn Pro Ser Ser Gln Val Ser Asp Trp Arg Ala Pro Trp
        35   40   45

Lys Val Ser Gln
    50

<210> 5766
<211> 82
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1270; "

<220>
<221> source
<223> /note="Gene Symbol: APOL3; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt L, 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000409345"

<400> 5766
Met Gly Leu Gly Gln Gly Trp Gly Trp Glu Ala Ser Cys Phe Ala Cys
1   5   10   15

Leu Ile Arg Ser Cys Cys Gln Val Val Thr Phe Thr Phe Pro Phe Gly
            20   25   30

Phe Gln Gly Ile Ser Gln Ser Leu Glu Asn Val Ser Gly Tyr Tyr Ala
        35   40   45

Asp Ala Arg Leu Glu Val Gly Ser Thr Gln Leu Arg Thr Ala Gly Ser
    50   55   60

Cys Ser His Ser Phe Lys Arg Ser Phe Leu Gly Gln Lys Asp Pro Ala
65 70 75 80

Leu Val

<210> 5767
<211> 331
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1270; "

<220>
<221> source
<223> /note="Gene Symbol: APOL3; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt L, 3; "

<220>
<221> source
<223> /note="Uniprot ID: O95236; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000415779"

<400> 5767
Met Asp Ser Glu Lys Lys Arg Phe Thr Glu Glu Ala Thr Lys Tyr Phe
1 5 10 15

Arg Glu Arg Val Ser Pro Val His Leu Gln Ile Leu Leu Thr Asn Asn
20 25 30

Glu Ala Trp Lys Arg Phe Val Thr Ala Ala Glu Leu Pro Arg Asp Glu
35 40 45

Ala Asp Ala Leu Tyr Glu Ala Leu Lys Lys Leu Arg Thr Tyr Ala Ala
50 55 60

Ile Glu Asp Glu Tyr Val Gln Gln Lys Asp Glu Gln Phe Arg Glu Trp
65 70 75 80

Phe Leu Lys Glu Phe Pro Gln Val Lys Arg Lys Ile Gln Glu Ser Ile
85 90 95

```
Glu Lys Leu Arg Ala Leu Ala Asn Gly Ile Glu Glu Val His Arg Gly
            100                 105                 110

Cys Thr Ile Ser Asn Val Val Ser Ser Ser Thr Gly Ala Ala Ser Gly
        115                 120                 125

Ile Met Ser Leu Ala Gly Leu Val Leu Ala Pro Phe Thr Ala Gly Thr
    130                 135                 140

Ser Leu Ala Leu Thr Ala Ala Gly Val Gly Leu Gly Ala Ala Ser Ala
145                 150                 155                 160

Val Thr Gly Ile Thr Thr Ser Ile Val Glu His Ser Tyr Thr Ser Ser
                165                 170                 175

Ala Glu Ala Glu Ala Ser Arg Leu Thr Ala Thr Ser Ile Asp Arg Leu
            180                 185                 190

Lys Val Phe Lys Glu Val Met Arg Asp Ile Thr Pro Asn Leu Leu Ser
        195                 200                 205

Leu Leu Asn Asn Tyr Tyr Glu Ala Thr Gln Thr Ile Gly Ser Glu Ile
    210                 215                 220

Arg Ala Ile Arg Gln Ala Arg Ala Arg Ala Arg Leu Pro Val Thr Thr
225                 230                 235                 240

Trp Arg Ile Ser Ala Gly Ser Gly Gly Gln Ala Glu Arg Thr Ile Ala
                245                 250                 255

Gly Thr Thr Arg Ala Val Ser Arg Gly Ala Arg Ile Leu Ser Ala Thr
            260                 265                 270

Thr Ser Gly Ile Phe Leu Ala Leu Asp Val Val Asn Leu Val Tyr Glu
        275                 280                 285

Ser Lys His Leu His Glu Gly Ala Lys Ser Ala Ser Ala Glu Glu Leu
    290                 295                 300

Arg Arg Gln Ala Gln Glu Leu Glu Glu Asn Leu Met Glu Leu Thr Gln
305                 310                 315                 320
```

Ile Tyr Gln Arg Leu Asn Pro Cys His Thr His
325 330

<210> 5768
<211> 82
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1270; "

<220>
<221> source
<223> /note="Gene Symbol: APOL3; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt L, 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000416732"

<400> 5768
Met Gly Leu Gly Gln Gly Trp Gly Trp Glu Ala Ser Cys Phe Ala Cys
1 5 10 15

Leu Ile Arg Ser Cys Cys Gln Val Val Thr Phe Thr Phe Pro Phe Gly
20 25 30

Phe Gln Gly Ile Ser Gln Ser Leu Glu Asn Val Ser Gly Tyr Tyr Ala
35 40 45

Asp Ala Arg Leu Glu Val Gly Ser Thr Gln Leu Arg Thr Ala Gly Ser
50 55 60

Cys Ser His Ser Phe Lys Arg Ser Phe Leu Gly Gln Lys Asp Pro Ala
65 70 75 80

Leu Val

<210> 5769
<211> 40
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1270; "

<220>
<221> source
<223> /note="Gene Symbol: APOL3; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt L, 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000432271"

<400> 5769
Ser Gln Ser Leu Glu Asn Val Ser Gly Tyr Tyr Ala Asp Ala Arg Leu
1 5 10 15

Glu Val Gly Ser Thr Gln Leu Arg Thr Ala Gly Ser Cys Ser His Ser
20 25 30

Phe Lys Arg Ser Phe Leu Gly Glu
35 40

<210> 5770
<211> 86
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1270; "

<220>
<221> source
<223> /note="Gene Symbol: APOL3; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt L, 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000432868"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5770
Xaa Tyr Ala Asp Ala Arg Leu Glu Val Gly Ser Thr Gln Leu Arg Thr
1 5 10 15

Ala Gly Ser Cys Ser His Ser Phe Lys Arg Ser Phe Leu Ala Trp Trp
20 25 30

Tyr Val Pro Val Gly Thr Thr Thr Trp Glu Val Glu Ala Glu Ala Ser
35 40 45

Leu Ala Ala Arg Thr Tyr Arg Gln Lys Gln Gly Gly Gln Arg Val Ser
50 55 60

Ser Thr Ala Pro Val Asn Ser Pro Arg Gln Thr Leu Gly His Arg Val
65 70 75 80

Gln Asp Thr Asp Leu Glu
85

<210> 5771
<211> 33
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1270; "

<220>
<221> source
<223> /note="Gene Symbol: APOL3; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt L, 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000433618"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5771
Xaa Tyr Ala Asp Ala Arg Leu Glu Val Gly Ser Thr Gln Leu Arg Thr
1 5 10 15

```
Ala Gly Ser Cys Ser His Ser Phe Lys Arg Ser Phe Leu Glu Met Ser
            20                  25                  30

Ile
```

<210> 5772
<211> 52
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1270; "

<220>
<221> source
<223> /note="Gene Symbol: APOL3; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt L, 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000434449"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5772

```
Xaa Tyr Ala Asp Ala Arg Leu Glu Val Gly Ser Thr Gln Leu Arg Thr
1               5                   10                  15

Ala Gly Ser Cys Ser His Ser Phe Lys Arg Ser Phe Leu Gly Leu Arg
            20                  25                  30

Lys Lys Thr Asn Pro Ser Ser Gln Val Ser Asp Trp Arg Ala Pro Trp
        35                  40                  45

Lys Val Ser Gln
    50
```

<210> 5773
<211> 37

<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1270; "

<220>
<221> source
<223> /note="Gene Symbol: APOL3; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt L, 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000435958"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5773
Xaa Tyr Ala Asp Ala Arg Leu Glu Val Gly Ser Thr Gln Leu Arg Thr
1 5 10 15

Ala Gly Ser Cys Ser His Ser Phe Lys Arg Ser Phe Leu Gly Gln Lys
20 25 30

Asp Pro Ala Leu Val
35

<210> 5774
<211> 39
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1270; "

<220>
<221> source
<223> /note="Gene Symbol: APOL3; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt L, 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436331"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5774
Xaa Tyr Ala Asp Ala Arg Leu Glu Val Gly Ser Thr Gln Leu Arg Thr
1 5 10 15

Ala Gly Ser Cys Ser His Ser Phe Lys Arg Ser Phe Leu Ala Trp Leu
20 25 30

Pro Gln Pro Pro Arg Phe Leu
35

<210> 5775
<211> 107
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1271; "

<220>
<221> source
<223> /note="Gene Symbol: APOL4; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt L, 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000331089"

<400> 5775
Met Gly Ser Trp Val Gln Leu Ile Thr Ser Val Gly Thr Ser Gly Leu
1 5 10 15

Phe Leu Gly Val Arg Val Arg Glu Glu Gly Ala Gly Met Arg Cys Ser
20 25 30

Lys Thr Ile Gln Ala Gly Gln Trp Leu Asp Ser Ser Lys Gly Pro Leu
35 40 45

```
Gly Pro Ser Pro Pro Pro Val Pro Thr Ala Gly Tyr Ser Ser Ser Phe
    50                  55                  60

Cys Val His Tyr Val Asn Leu Leu Pro Gly Val Leu Val Leu Ser Val
65                  70                  75                  80

Thr Ser Gln Tyr Pro His Leu Ser Met Ala Leu Cys Gln Leu Ala Ala
                85                  90                  95

His Asp Trp Pro Arg Leu Ser Cys Val Cys Val
            100                 105


<210> 5776
<211> 348
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1271; "

<220>
<221> source
<223> /note="Gene Symbol: APOL4; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt L, 4; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9BPW4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000333229"

<400> 5776
Met Gly Ser Trp Val Gln Leu Ile Thr Ser Val Gly Val Gln Gln Asn
1               5                   10                  15

His Pro Gly Trp Thr Val Ala Gly Gln Phe Gln Glu Lys Lys Arg Phe
            20                  25                  30

Thr Glu Glu Val Ile Glu Tyr Phe Gln Lys Lys Val Ser Pro Val His
        35                  40                  45

Leu Lys Ile Leu Leu Thr Ser Asp Glu Ala Trp Lys Arg Phe Val Arg
```

```
    50                  55                  60

Val Ala Glu Leu Pro Arg Glu Glu Ala Asp Ala Leu Tyr Glu Ala Leu
65                  70                  75                  80

Lys Asn Leu Thr Pro Tyr Val Ala Ile Glu Asp Lys Asp Met Gln Gln
                85                  90                  95

Lys Glu Gln Gln Phe Arg Glu Trp Phe Leu Lys Glu Phe Pro Gln Ile
            100                 105                 110

Arg Trp Lys Ile Gln Glu Ser Ile Glu Arg Leu Arg Val Ile Ala Asn
        115                 120                 125

Glu Ile Glu Lys Val His Arg Gly Cys Val Ile Ala Asn Val Val Ser
    130                 135                 140

Gly Ser Thr Gly Ile Leu Ser Val Ile Gly Val Met Leu Ala Pro Phe
145                 150                 155                 160

Thr Ala Gly Leu Ser Leu Ser Ile Thr Ala Ala Gly Val Gly Leu Gly
                165                 170                 175

Ile Ala Ser Ala Thr Ala Gly Ile Ala Ser Ser Ile Val Glu Asn Thr
            180                 185                 190

Tyr Thr Arg Ser Ala Glu Leu Thr Ala Ser Arg Leu Thr Ala Thr Ser
        195                 200                 205

Thr Asp Gln Leu Glu Ala Leu Arg Asp Ile Leu Arg Asp Ile Thr Pro
    210                 215                 220

Asn Val Leu Ser Phe Ala Leu Asp Phe Asp Glu Ala Thr Lys Met Ile
225                 230                 235                 240

Ala Asn Asp Val His Thr Leu Arg Arg Ser Lys Ala Thr Val Gly Arg
                245                 250                 255

Pro Leu Ile Ala Trp Arg Tyr Val Pro Ile Asn Val Val Glu Thr Leu
            260                 265                 270

Arg Thr Arg Gly Ala Pro Thr Arg Ile Val Arg Lys Val Ala Arg Asn
        275                 280                 285
```

```
Leu Gly Lys Ala Thr Ser Gly Val Leu Val Val Leu Asp Val Val Asn
    290                 295                 300

Leu Val Gln Asp Ser Leu Asp Leu His Lys Gly Ala Lys Ser Glu Ser
305                 310                 315                 320

Ala Glu Ser Leu Arg Gln Trp Ala Gln Glu Leu Glu Glu Asn Leu Asn
                325                 330                 335

Glu Leu Thr His Ile His Gln Ser Leu Lys Ala Gly
            340                 345
```

<210> 5777
<211> 351
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1271; "

<220>
<221> source
<223> /note="Gene Symbol: APOL4; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt L, 4; "

<220>
<221> source
<223> /note="Uniprot ID: Q9BPW4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000338260"

<400> 5777

```
Met Glu Gly Ala Ala Leu Leu Lys Ile Phe Val Val Cys Ile Trp Val
1               5                   10                  15

Gln Gln Asn His Pro Gly Trp Thr Val Ala Gly Gln Phe Gln Glu Lys
            20                  25                  30

Lys Arg Phe Thr Glu Glu Val Ile Glu Tyr Phe Gln Lys Lys Val Ser
        35                  40                  45
```

```
Pro Val His Leu Lys Ile Leu Leu Thr Ser Asp Glu Ala Trp Lys Arg
    50                  55                  60

Phe Val Arg Val Ala Glu Leu Pro Arg Glu Glu Ala Asp Ala Leu Tyr
65                  70                  75                  80

Glu Ala Leu Lys Asn Leu Thr Pro Tyr Val Ala Ile Glu Asp Lys Asp
                85                  90                  95

Met Gln Gln Lys Glu Gln Gln Phe Arg Glu Trp Phe Leu Lys Glu Phe
            100                 105                 110

Pro Gln Ile Arg Trp Lys Ile Gln Glu Ser Ile Glu Arg Leu Arg Val
        115                 120                 125

Ile Ala Asn Glu Ile Glu Lys Val His Arg Gly Cys Val Ile Ala Asn
    130                 135                 140

Val Val Ser Gly Ser Thr Gly Ile Leu Ser Val Ile Gly Val Met Leu
145                 150                 155                 160

Ala Pro Phe Thr Ala Gly Leu Ser Leu Ser Ile Thr Ala Ala Gly Val
                165                 170                 175

Gly Leu Gly Ile Ala Ser Ala Thr Ala Gly Ile Ala Ser Ser Ile Val
            180                 185                 190

Glu Asn Thr Tyr Thr Arg Ser Ala Glu Leu Thr Ala Ser Arg Leu Thr
        195                 200                 205

Ala Thr Ser Thr Asp Gln Leu Glu Ala Leu Arg Asp Ile Leu Arg Asp
    210                 215                 220

Ile Thr Pro Asn Val Leu Ser Phe Ala Leu Asp Phe Asp Glu Ala Thr
225                 230                 235                 240

Lys Met Ile Ala Asn Asp Val His Thr Leu Arg Arg Ser Lys Ala Thr
                245                 250                 255

Val Gly Arg Pro Leu Ile Ala Trp Arg Tyr Val Pro Ile Asn Val Val
            260                 265                 270

Glu Thr Leu Arg Thr Arg Gly Ala Pro Thr Arg Ile Val Arg Lys Val
```

```
        275                 280                 285

Ala Arg Asn Leu Gly Lys Ala Thr Ser Gly Val Leu Val Val Leu Asp
    290                 295                 300

Val Val Asn Leu Val Gln Asp Ser Leu Asp Leu His Lys Gly Ala Lys
305                 310                 315                 320

Ser Glu Ser Ala Glu Ser Leu Arg Gln Trp Ala Gln Glu Leu Glu Glu
                325                 330                 335

Asn Leu Asn Glu Leu Thr His Ile His Gln Ser Leu Lys Ala Gly
            340                 345                 350


<210> 5778
<211> 107
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1271; "

<220>
<221> source
<223> /note="Gene Symbol: APOL4; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt L, 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000380445"

<400> 5778
Met Gly Ser Trp Val Gln Leu Ile Thr Ser Val Gly Thr Ser Gly Leu
1               5                   10                  15

Phe Leu Gly Val Arg Val Arg Glu Glu Gly Ala Gly Met Arg Cys Ser
            20                  25                  30

Lys Thr Ile Gln Ala Gly Gln Trp Leu Asp Ser Ser Lys Gly Pro Leu
        35                  40                  45

Gly Pro Ser Pro Pro Pro Val Pro Thr Ala Gly Tyr Ser Ser Ser Phe
    50                  55                  60
```

```
Cys Val His Tyr Val Asn Leu Leu Pro Gly Val Leu Val Leu Ser Val
65                  70                  75                  80


Thr Ser Gln Tyr Pro His Leu Ser Met Ala Leu Cys Gln Leu Ala Ala
                85                  90                  95


His Asp Trp Pro Arg Leu Ser Cys Val Cys Val
            100                 105


<210> 5779
<211> 25
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1271; "

<220>
<221> source
<223> /note="Gene Symbol: APOL4; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt L, 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000393096"

<400> 5779
Met Gly Ser Trp Val Gln Leu Ile Thr Ser Val Gly Val Gln Gln Asn
1               5                   10                  15


His Pro Gly Trp Thr Val Ala Gly Gln
            20                  25


<210> 5780
<211> 64
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1271; "

<220>
<221> source
<223> /note="Gene Symbol: APOL4; "
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<220>
<221> source
<223> /note="Gene Name:
apolipoprt L, 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000395548"

<400> 5780
Met Gly Ser Trp Val Gln Leu Ile Thr Ser Val Gly Val Gln Gln Asn
1 5 10 15

His Pro Gly Trp Thr Val Ala Gly Gln Phe Gln Glu Lys Lys Arg Phe
20 25 30

Thr Glu Glu Val Ile Glu Tyr Phe Gln Lys Lys Val Ser Pro Val His
35 40 45

Leu Lys Ile Leu Leu Thr Ser Asp Glu Ala Trp Lys Arg Phe Val Arg
50 55 60

<210> 5781
<211> 72
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1271; "

<220>
<221> source
<223> /note="Gene Symbol: APOL4; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt L, 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000409085"

<400> 5781
Met Gly Ser Trp Val Gln Leu Ile Thr Ser Val Gly Val Gln Gln Asn
1 5 10 15

His Pro Gly Trp Thr Val Ala Gly Gln Phe Gln Glu Lys Lys Arg Phe
20 25 30

```
Thr Glu Glu Val Ile Glu Tyr Phe Gln Lys Lys Val Ser Pro Val His
        35                  40                  45


Leu Lys Ile Leu Leu Thr Ser Asp Glu Ala Trp Lys Arg Phe Val Arg
    50                  55                  60


Val Ala Glu Leu Pro Arg Glu Glu
65                  70


<210> 5782
<211> 70
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1271; "

<220>
<221> source
<223> /note="Gene Symbol: APOL4; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt L, 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000432133"

<400> 5782
Met Gly Ser Trp Val Gln Leu Ile Thr Ser Val Gly Val Gln Gln Asn
1               5                   10                  15


His Pro Gly Trp Thr Val Ala Gly Gln Phe Gln Glu Lys Lys Arg Phe
            20                  25                  30


Thr Glu Glu Val Ile Glu Tyr Phe Gln Lys Lys Val Ser Pro Val His
        35                  40                  45


Leu Lys Ile Leu Leu Thr Ser Asp Glu Ala Trp Lys Arg Phe Val Arg
    50                  55                  60


Val Ala Glu Leu Pro Arg
65                  70


<210> 5783
<211> 348
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<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1271; "

<220>
<221> source
<223> /note="Gene Symbol: APOL4; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt L, 4; "

<220>
<221> source
<223> /note="Uniprot ID: Q9BPW4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000483497"

<400> 5783

```
Met Gly Ser Trp Val Gln Leu Ile Thr Ser Val Gly Val Gln Gln Asn
1               5                  10                  15


His Pro Gly Trp Thr Val Ala Gly Gln Phe Gln Glu Lys Lys Arg Phe
            20                  25                  30


Thr Glu Glu Val Ile Glu Tyr Phe Gln Lys Lys Val Ser Pro Val His
        35                  40                  45


Leu Lys Ile Leu Leu Thr Ser Asp Glu Ala Trp Lys Arg Phe Val Arg
    50                  55                  60


Val Ala Glu Leu Pro Arg Glu Glu Ala Asp Ala Leu Tyr Glu Ala Leu
65                  70                  75                  80


Lys Asn Leu Thr Pro Tyr Val Ala Ile Glu Asp Lys Asp Met Gln Gln
                85                  90                  95


Lys Glu Gln Gln Phe Arg Glu Trp Phe Leu Lys Glu Phe Pro Gln Ile
            100                 105                 110


Arg Trp Lys Ile Gln Glu Ser Ile Glu Arg Leu Arg Val Ile Ala Asn
        115                 120                 125
```

```
Glu Ile Glu Lys Val His Arg Gly Cys Val Ile Ala Asn Val Val Ser
    130                 135                 140

Gly Ser Thr Gly Ile Leu Ser Val Ile Gly Val Met Leu Ala Pro Phe
145                 150                 155                 160

Thr Ala Gly Leu Ser Leu Ser Ile Thr Ala Ala Gly Val Gly Leu Gly
                165                 170                 175

Ile Ala Ser Ala Thr Ala Gly Ile Ala Ser Ser Ile Val Glu Asn Thr
            180                 185                 190

Tyr Thr Arg Ser Ala Glu Leu Thr Ala Ser Arg Leu Thr Ala Thr Ser
        195                 200                 205

Thr Asp Gln Leu Glu Ala Leu Arg Asp Ile Leu Arg Asp Ile Thr Pro
    210                 215                 220

Asn Val Leu Ser Phe Ala Leu Asp Phe Asp Glu Ala Thr Lys Met Ile
225                 230                 235                 240

Ala Asn Asp Val His Thr Leu Arg Arg Ser Lys Ala Thr Val Gly Arg
                245                 250                 255

Pro Leu Ile Ala Trp Arg Tyr Val Pro Ile Asn Val Val Glu Thr Leu
            260                 265                 270

Arg Thr Arg Gly Ala Pro Thr Arg Ile Val Arg Lys Val Ala Arg Asn
        275                 280                 285

Leu Gly Lys Ala Thr Ser Gly Val Leu Val Val Leu Asp Val Val Asn
    290                 295                 300

Leu Val Gln Asp Ser Leu Asp Leu His Lys Gly Ala Lys Ser Glu Ser
305                 310                 315                 320

Ala Glu Ser Leu Arg Gln Trp Ala Gln Glu Leu Glu Glu Asn Leu Asn
                325                 330                 335

Glu Leu Thr His Ile His Gln Ser Leu Lys Ala Gly
            340                 345
```

<210> 5784

<211> 433
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1272; "

<220>
<221> source
<223> /note="Gene Symbol: APOL5; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt L, 5; "

<220>
<221> source
<223> /note="Uniprot ID: Q9BWW9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000249044"

<400> 5784

```
Met Pro Cys Gly Lys Gln Gly Asn Leu Gln Val Pro Gly Ser Lys Val
1               5                  10                  15

Leu Pro Gly Leu Gly Glu Gly Cys Lys Glu Met Trp Leu Arg Lys Val
            20                  25                  30

Ile Tyr Gly Gly Glu Val Trp Gly Lys Ser Pro Glu Pro Glu Phe Pro
        35                  40                  45

Ser Leu Val Asn Leu Cys Gln Ser Trp Lys Ile Asn Asn Leu Met Ser
    50                  55                  60

Thr Val His Ser Asp Glu Ala Gly Met Leu Ser Tyr Phe Leu Phe Glu
65                  70                  75                  80

Glu Leu Met Arg Cys Asp Lys Asp Ser Met Pro Asp Gly Asn Leu Ser
                85                  90                  95

Glu Glu Glu Lys Leu Phe Leu Ser Tyr Phe Pro Leu His Lys Phe Glu
            100                 105                 110

Leu Glu Gln Asn Ile Lys Glu Leu Asn Thr Leu Ala Asp Gln Val Asp
        115                 120                 125
```

```
Thr Thr His Glu Leu Leu Thr Lys Thr Ser Leu Val Ala Ser Ser Ser
    130                 135                 140

Gly Ala Val Ser Gly Val Met Asn Ile Leu Gly Leu Ala Leu Ala Pro
145                 150                 155                 160

Val Thr Ala Gly Gly Ser Leu Met Leu Ser Ala Thr Gly Thr Gly Leu
                165                 170                 175

Gly Ala Ala Ala Ala Ile Thr Asn Ile Val Thr Asn Val Leu Glu Asn
            180                 185                 190

Arg Ser Asn Ser Ala Ala Arg Asp Lys Ala Ser Arg Leu Gly Pro Leu
        195                 200                 205

Thr Thr Ser His Glu Ala Phe Gly Gly Ile Asn Trp Ser Glu Ile Glu
    210                 215                 220

Ala Ala Gly Phe Cys Val Asn Lys Cys Val Lys Ala Ile Gln Gly Ile
225                 230                 235                 240

Lys Asp Leu His Ala Tyr Gln Met Ala Lys Ser Asn Ser Gly Phe Met
                245                 250                 255

Ala Met Val Lys Asn Phe Val Ala Lys Arg His Ile Pro Phe Trp Thr
            260                 265                 270

Ala Arg Gly Val Gln Arg Ala Phe Glu Gly Thr Thr Leu Ala Met Thr
        275                 280                 285

Asn Gly Ala Trp Val Met Gly Ala Ala Gly Ala Gly Phe Leu Leu Met
    290                 295                 300

Lys Asp Met Ser Ser Phe Leu Gln Ser Trp Lys His Leu Glu Asp Gly
305                 310                 315                 320

Ala Arg Thr Glu Thr Ala Glu Glu Leu Arg Ala Leu Ala Lys Lys Leu
                325                 330                 335

Glu Gln Glu Leu Asp Arg Leu Thr Gln His His Arg His Leu Pro Gln
            340                 345                 350
```

```
Lys Ala Ser Gln Thr Cys Ser Ser Ser Arg Gly Arg Ala Val Arg Gly
        355                 360                 365

Ser Arg Val Val Lys Pro Glu Gly Ser Arg Ser Pro Leu Pro Trp Pro
    370                 375                 380

Val Val Glu His Gln Pro Arg Leu Gly Pro Gly Val Ala Leu Arg Thr
385                 390                 395                 400

Pro Lys Arg Thr Val Ser Ala Pro Arg Met Leu Gly His Gln Pro Ala
                405                 410                 415

Pro Pro Ala Pro Ala Arg Lys Gly Arg Gln Ala Pro Gly Arg His Arg
            420                 425                 430

Gln
```

<210> 5785
<211> 433
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1272; "

<220>
<221> source
<223> /note="Gene Symbol: APOL5; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt L, 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000479050"

<400> 5785

```
Met Pro Cys Gly Lys Gln Gly Asn Leu Gln Val Pro Gly Ser Lys Val
1               5                   10                  15

Leu Pro Gly Leu Gly Glu Gly Cys Lys Glu Met Trp Leu Arg Lys Val
            20                  25                  30

Ile Tyr Gly Gly Glu Val Trp Gly Lys Ser Pro Glu Pro Glu Phe Pro
        35                  40                  45
```

```
Ser Leu Val Asn Leu Cys Gln Ser Trp Lys Ile Asn Asn Leu Met Ser
    50                  55                  60

Thr Val His Ser Asp Glu Ala Gly Met Leu Ser Tyr Phe Leu Phe Glu
65                  70                  75                  80

Glu Leu Met Arg Cys Asp Lys Asp Ser Met Pro Asp Gly Asn Leu Ser
                85                  90                  95

Glu Glu Glu Lys Leu Phe Leu Ser Tyr Phe Pro Leu His Lys Phe Glu
            100                 105                 110

Leu Glu Gln Asn Ile Lys Glu Leu Asn Thr Leu Ala Asp Gln Val Asp
        115                 120                 125

Thr Thr His Glu Leu Leu Thr Lys Thr Ser Leu Val Ala Ser Ser Ser
    130                 135                 140

Gly Ala Val Ser Gly Val Met Asn Ile Leu Gly Leu Ala Leu Ala Pro
145                 150                 155                 160

Val Thr Ala Gly Gly Ser Leu Met Leu Ser Ala Thr Gly Thr Gly Leu
                165                 170                 175

Gly Ala Ala Ala Ala Ile Thr Asn Ile Val Thr Asn Val Leu Glu Asn
            180                 185                 190

Arg Ser Asn Ser Ala Ala Arg Asp Lys Ala Ser Arg Leu Gly Pro Leu
        195                 200                 205

Thr Thr Ser His Glu Ala Phe Gly Gly Ile Asn Trp Ser Glu Ile Glu
    210                 215                 220

Ala Ala Gly Phe Cys Val Asn Lys Cys Val Lys Ala Ile Gln Gly Ile
225                 230                 235                 240

Lys Asp Leu His Ala Tyr Gln Met Ala Lys Ser Asn Ser Gly Phe Met
                245                 250                 255

Ala Met Val Lys Asn Phe Val Ala Lys Arg His Ile Pro Phe Trp Met
            260                 265                 270
```

```
Ala Arg Gly Val Gln Arg Ala Phe Glu Gly Thr Thr Leu Ala Met Thr
        275                 280                 285

Asn Gly Ala Trp Val Met Gly Ala Ala Gly Ala Gly Phe Leu Leu Met
    290                 295                 300

Lys Asp Met Ser Ser Phe Leu Gln Ser Trp Lys His Leu Glu Asp Gly
305                 310                 315                 320

Ala Arg Thr Glu Thr Ala Glu Glu Leu Arg Ala Leu Ala Lys Lys Leu
                325                 330                 335

Glu Gln Glu Leu Asp Arg Leu Thr Gln His His Arg His Leu Pro Gln
            340                 345                 350

Lys Ala Ser Gln Thr Cys Ser Ser Ser Arg Gly Arg Ala Val Arg Gly
        355                 360                 365

Ser Arg Val Val Lys Pro Glu Gly Ser Arg Ser Pro Leu Pro Trp Pro
    370                 375                 380

Val Val Glu His Gln Pro Arg Leu Gly Pro Gly Val Ala Leu Arg Thr
385                 390                 395                 400

Pro Lys Arg Thr Val Cys Ala Pro Arg Met Leu Gly His Gln Pro Ala
                405                 410                 415

Pro Pro Ala Pro Ala Arg Lys Gly Arg Gln Ala Pro Gly Arg His Arg
            420                 425                 430

Gln
```

<210> 5786
<211> 343
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1273; "

<220>
<221> source
<223> /note="Gene Symbol: APOL6; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt L, 6; "

<220>
<221> source
<223> /note="Uniprot ID: Q9BWW8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000386280"

<400> 5786

```
Met Asp Asn Gln Ala Glu Arg Glu Ser Glu Ala Gly Val Gly Leu Gln
1               5                  10                  15

Arg Asp Glu Asp Asp Ala Pro Leu Cys Glu Asp Val Glu Leu Gln Asp
            20                  25                  30

Gly Asp Leu Ser Pro Glu Glu Lys Ile Phe Leu Arg Glu Phe Pro Arg
        35                  40                  45

Leu Lys Glu Asp Leu Lys Gly Asn Ile Asp Lys Leu Arg Ala Leu Ala
    50                  55                  60

Asp Asp Ile Asp Lys Thr His Lys Lys Phe Thr Lys Ala Asn Met Val
65                  70                  75                  80

Ala Thr Ser Thr Ala Val Ile Ser Gly Val Met Ser Leu Leu Gly Leu
                85                  90                  95

Ala Leu Ala Pro Ala Thr Gly Gly Gly Ser Leu Leu Leu Ser Thr Ala
            100                 105                 110

Gly Gln Gly Leu Ala Thr Ala Ala Gly Val Thr Ser Ile Val Ser Gly
        115                 120                 125

Thr Leu Glu Arg Ser Lys Asn Lys Glu Ala Gln Ala Arg Ala Glu Asp
    130                 135                 140

Ile Leu Pro Thr Tyr Asp Gln Glu Asp Arg Glu Asp Glu Glu Glu Lys
145                 150                 155                 160

Ala Asp Tyr Val Thr Ala Ala Gly Lys Ile Ile Tyr Asn Leu Arg Asn
                165                 170                 175
```

```
Thr Leu Lys Tyr Ala Lys Lys Asn Val Arg Ala Phe Trp Lys Leu Arg
            180                 185                 190

Ala Asn Pro Arg Leu Ala Asn Ala Thr Lys Arg Leu Leu Thr Thr Gly
        195                 200                 205

Gln Val Ser Ser Arg Ser Arg Val Gln Val Gln Lys Ala Phe Ala Gly
    210                 215                 220

Thr Thr Leu Ala Met Thr Lys Asn Ala Arg Val Leu Gly Gly Val Met
225                 230                 235                 240

Ser Ala Phe Ser Leu Gly Tyr Asp Leu Ala Thr Leu Ser Lys Glu Trp
                245                 250                 255

Lys His Leu Lys Glu Gly Ala Arg Thr Lys Phe Ala Glu Glu Leu Arg
            260                 265                 270

Ala Lys Ala Leu Glu Leu Glu Arg Lys Leu Thr Glu Leu Thr Gln Leu
        275                 280                 285

Tyr Lys Ser Leu Gln Gln Lys Val Arg Ser Arg Ala Arg Gly Val Gly
    290                 295                 300

Lys Asp Leu Thr Gly Thr Cys Glu Thr Glu Ala Tyr Trp Lys Glu Leu
305                 310                 315                 320

Arg Glu His Val Trp Met Trp Leu Trp Leu Cys Val Cys Leu Cys Val
                325                 330                 335

Cys Val Tyr Val Gln Phe Thr
            340


<210> 5787
<211> 188
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<223> /note="Gene Symbol: APOM; "

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<400> 5787

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Met Phe His Gln Ile Trp Ala Ala Leu Leu Tyr Phe Tyr Gly Ile Ile
1               5                  10                  15

Leu Asn Ser Ile Tyr Gln Cys Pro Glu His Ser Gln Leu Thr Thr Leu
            20                  25                  30

Gly Val Asp Gly Lys Glu Phe Pro Glu Val His Leu Gly Gln Trp Tyr
        35                  40                  45

Phe Ile Ala Gly Ala Ala Pro Thr Lys Glu Glu Leu Ala Thr Phe Asp
    50                  55                  60

Pro Val Asp Asn Ile Val Phe Asn Met Ala Ala Gly Ser Ala Pro Met
65                  70                  75                  80

Gln Leu His Leu Arg Ala Thr Ile Arg Met Lys Asp Gly Leu Cys Val
                85                  90                  95

Pro Arg Lys Trp Ile Tyr His Leu Thr Glu Gly Ser Thr Asp Leu Arg
            100                 105                 110

Thr Glu Gly Arg Pro Asp Met Lys Thr Glu Leu Phe Ser Ser Ser Cys
        115                 120                 125

Pro Gly Gly Ile Met Leu Asn Glu Thr Gly Gln Gly Tyr Gln Arg Phe
    130                 135                 140

Leu Leu Tyr Asn Arg Ser Pro His Pro Pro Glu Lys Cys Val Glu Glu
145                 150                 155                 160

Phe Lys Ser Leu Thr Ser Cys Leu Asp Ser Lys Ala Phe Leu Leu Thr
```

```
                165                 170                 175

Pro Arg Asn Gln Glu Ala Cys Glu Leu Ser Asn Asn
            180                 185


<210> 5788
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Met Ala Ala Gly Ser Ala Pro Met Gln Leu His Leu Arg Ala Thr Ile
1               5                   10                  15


Arg Met Lys Asp Gly Leu Cys Val Pro Arg Lys Trp Ile Tyr His Leu
            20                  25                  30


Thr Glu Gly Ser Thr Asp Leu Arg Thr Glu Gly Arg Pro Asp Met Lys
        35                  40                  45


Thr Glu Leu Phe Ser Ser Ser Cys Pro Gly Gly Ile Met Leu Asn Glu
    50                  55                  60


Thr Gly Gln Gly Tyr Gln Arg Phe Leu Leu Tyr Asn Arg Ser Pro His
65                  70                  75                  80


Pro Pro Glu Lys Cys Val Glu Glu Phe Lys Ser Leu Thr Ser Cys Leu
                85                  90                  95


Asp Ser Lys Ala Phe Leu Leu Thr Pro Arg Asn Gln Gly Lys Gly Leu
            100                 105                 110
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Lys Ser His Lys Thr Gly Leu Gly Leu Thr Lys Ser Ser Gly Val Thr
        115   120   125

Gly

<210> 5789
<211> 116
<212> PRT
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<400> 5789
Met Ala Ala Gly Ser Ala Pro Met Gln Leu His Leu Arg Ala Thr Ile
1   5   10   15

Arg Met Lys Asp Gly Leu Cys Val Pro Arg Lys Trp Ile Tyr His Leu
            20   25   30

Thr Glu Gly Ser Thr Asp Leu Arg Thr Glu Gly Arg Pro Asp Met Lys
        35   40   45

Thr Glu Leu Phe Ser Ser Ser Cys Pro Gly Gly Ile Met Leu Asn Glu
    50   55   60

Thr Gly Gln Gly Tyr Gln Arg Phe Leu Leu Tyr Asn Arg Ser Pro His
65   70   75   80

Pro Pro Glu Lys Cys Val Glu Glu Phe Lys Ser Leu Thr Ser Cys Leu

```
                85                  90                  95

Asp Ser Lys Ala Phe Leu Leu Thr Pro Arg Asn Gln Glu Ala Cys Glu
            100                 105                 110

Leu Ser Asn Asn
        115


<210> 5790
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<400> 5790
Met Phe His Gln Ile Trp Ala Ala Leu Leu Tyr Phe Tyr Gly Ile Ile
1               5                   10                  15

Leu Asn Ser Ile Tyr Gln Cys Pro Glu His Ser Gln Leu Thr Thr Leu
            20                  25                  30

Gly Val Asp Gly Lys Glu Phe Pro Glu Val His Leu Gly Gln Trp Tyr
        35                  40                  45

Phe Ile Ala Gly Ala Ala Pro Thr Lys Glu Glu Leu Ala Thr Phe Asp
    50                  55                  60

Pro Val Asp Asn Ile Val Phe Asn Met Ala Ala Gly Ser Ala Pro Met
65                  70                  75                  80
```

```
Gln Leu His Leu Arg Ala Thr Ile Arg Met Lys Asp Gly Leu Cys Val
                85                  90                  95

Pro Arg Lys Trp Ile Tyr His Leu Thr Glu Gly Ser Thr Asp Leu Arg
            100                 105                 110

Thr Glu Gly Arg Pro Asp Met Lys Thr Glu Leu Phe Ser Ser Ser Cys
        115                 120                 125

Pro Gly Gly Ile Met Leu Asn Glu Thr Gly Gln Gly Tyr Gln Arg Phe
    130                 135                 140

Leu Leu Tyr Asn Arg Ser Pro His Pro Pro Glu Lys Cys Val Glu Glu
145                 150                 155                 160

Phe Lys Ser Leu Thr Ser Cys Leu Asp Ser Lys Ala Phe Leu Leu Thr
                165                 170                 175

Pro Arg Asn Gln Glu Ala Cys Glu Leu Ser Asn Asn
            180                 185


<210> 5791
<211> 116
<212> PRT
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<223> /note="ENSP ID: ENSP00000383021"

<400> 5791
Met Ala Ala Gly Ser Ala Pro Met Gln Leu His Leu Arg Ala Thr Ile
```

```
1               5                   10                  15

Arg Met Lys Asp Gly Leu Cys Val Pro Arg Lys Trp Ile Tyr His Leu
            20                  25                  30

Thr Glu Gly Ser Thr Asp Leu Arg Thr Glu Gly Arg Pro Asp Met Lys
        35                  40                  45

Thr Glu Leu Phe Ser Ser Ser Cys Pro Gly Gly Ile Met Leu Asn Glu
    50                  55                  60

Thr Gly Gln Gly Tyr Gln Arg Phe Leu Leu Tyr Asn Arg Ser Pro His
65                  70                  75                  80

Pro Pro Glu Lys Cys Val Glu Glu Phe Lys Ser Leu Thr Ser Cys Leu
                85                  90                  95

Asp Ser Lys Ala Phe Leu Leu Thr Pro Arg Asn Gln Glu Ala Cys Glu
            100                 105                 110

Leu Ser Asn Asn
        115


<210> 5792
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<400> 5792
Met Phe His Gln Ile Trp Ala Ala Leu Leu Tyr Phe Tyr Gly Ile Ile
1 5 10 15

Leu Asn Ser Ile Tyr Gln Cys Pro Glu His Ser Gln Leu Thr Thr Leu
20 25 30

Gly Val Asp Gly Lys Glu Phe Pro Glu Val His Leu Gly Gln Trp Tyr
35 40 45

Phe Ile Ala Gly Ala Ala Pro Thr Lys Glu Glu Leu Ala Thr Phe Asp
50 55 60

Pro Val Asp Asn Ile Val Phe Asn Met Ala Ala Gly Ser Ala Pro Met
65 70 75 80

Gln Leu His Leu Arg Ala Thr Ile Arg Met Lys Asp Gly Leu Cys Val
85 90 95

Pro Arg Lys Trp Ile Tyr His Leu Thr Glu Gly Ser Thr Asp Leu Arg
100 105 110

Thr Glu Gly Arg Pro Asp Met Lys Thr Glu Leu Phe Ser Ser Ser Cys
115 120 125

Pro Gly Gly Ile Met Leu Asn Glu Thr Gly Gln Gly Tyr Gln Arg Phe
130 135 140

Leu Leu Tyr Asn Arg Ser Pro His Pro Pro Glu Lys Cys Val Glu Glu
145 150 155 160

Phe Lys Ser Leu Thr Ser Cys Leu Asp Ser Lys Ala Phe Leu Leu Thr
165 170 175

Pro Arg Asn Gln Glu Ala Cys Glu Leu Ser Asn Asn
180 185

<210> 5793
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<400> 5793
Met Ala Ala Gly Ser Ala Pro Met Gln Leu His Leu Arg Ala Thr Ile
1 5 10 15

Arg Met Lys Asp Gly Leu Cys Val Pro Arg Lys Trp Ile Tyr His Leu
            20 25 30

Thr Glu Gly Ser Thr Asp Leu Arg Thr Glu Gly Arg Pro Asp Met Lys
        35 40 45

Thr Glu Leu Phe Ser Ser Ser Cys Pro Gly Gly Ile Met Leu Asn Glu
    50 55 60

Thr Gly Gln Gly Tyr Gln Arg Phe Leu Leu Tyr Asn Arg Ser Pro His
65 70 75 80

Pro Pro Glu Lys Cys Val Glu Glu Phe Lys Ser Leu Thr Ser Cys Leu
                85 90 95

Asp Ser Lys Ala Phe Leu Leu Thr Pro Arg Asn Gln Glu Ala Cys Glu
            100 105 110

Leu Ser Asn Asn
        115

<210> 5794
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<212> PRT
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<400> 5794
Met Ala Ala Gly Ser Ala Pro Met Gln Leu His Leu Arg Ala Thr Ile
1 5 10 15

Arg Met Lys Asp Gly Leu Cys Val Pro Arg Lys Trp Ile Tyr His Leu
20 25 30

Thr Glu Gly Ser Thr Asp Leu Arg Thr Glu Gly Arg Pro Asp Met Lys
35 40 45

Thr Glu Leu Phe Ser Ser Ser Cys Pro Gly Gly Ile Met Leu Asn Glu
50 55 60

Thr Gly Gln Gly Tyr Gln Arg Phe Leu Leu Tyr Asn Arg Ser Pro His
65 70 75 80

Pro Pro Glu Lys Cys Val Glu Glu Phe Lys Ser Leu Thr Ser Cys Leu
85 90 95

Asp Ser Lys Ala Phe Leu Leu Thr Pro Arg Asn Gln Gly Lys Gly Leu
100 105 110

Lys Ser His Lys Thr Gly Leu Gly Leu Thr Lys Ser Ser Gly Val Thr
115 120 125

Gly

<210> 5795
<211> 116
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<400> 5795
Met Ala Ala Gly Ser Ala Pro Met Gln Leu His Leu Arg Ala Thr Ile
1   5   10   15

Arg Met Lys Asp Gly Leu Cys Val Pro Arg Lys Trp Ile Tyr His Leu
            20   25   30

Thr Glu Gly Ser Thr Asp Leu Arg Thr Glu Gly Arg Pro Asp Met Lys
        35   40   45

Thr Glu Leu Phe Ser Ser Ser Cys Pro Gly Gly Ile Met Leu Asn Glu
    50   55   60

Thr Gly Gln Gly Tyr Gln Arg Phe Leu Leu Tyr Asn Arg Ser Pro His
65   70   75   80

Pro Pro Glu Lys Cys Val Glu Glu Phe Lys Ser Leu Thr Ser Cys Leu
                85   90   95

Asp Ser Lys Ala Phe Leu Leu Thr Pro Arg Asn Gln Glu Ala Cys Glu
            100   105   110

Leu Ser Asn Asn
        115

<210> 5796
<211> 188

<212> PRT
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<400> 5796

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Met Phe His Gln Ile Trp Ala Ala Leu Leu Tyr Phe Tyr Gly Ile Ile
1               5                  10                  15


Leu Asn Ser Ile Tyr Gln Cys Pro Glu His Ser Gln Leu Thr Thr Leu
            20                  25                  30


Gly Val Asp Gly Lys Glu Phe Pro Glu Val His Leu Gly Gln Trp Tyr
        35                  40                  45


Phe Ile Ala Gly Ala Ala Pro Thr Lys Glu Glu Leu Ala Thr Phe Asp
    50                  55                  60


Pro Val Asp Asn Ile Val Phe Asn Met Ala Ala Gly Ser Ala Pro Met
65                  70                  75                  80


Gln Leu His Leu Arg Ala Thr Ile Arg Met Lys Asp Gly Leu Cys Val
                85                  90                  95


Pro Arg Lys Trp Ile Tyr His Leu Thr Glu Gly Ser Thr Asp Leu Arg
            100                 105                 110


Thr Glu Gly Arg Pro Asp Met Lys Thr Glu Leu Phe Ser Ser Ser Cys
        115                 120                 125
```

```
Pro Gly Gly Ile Met Leu Asn Glu Thr Gly Gln Gly Tyr Gln Arg Phe
    130                 135                 140

Leu Leu Tyr Asn Arg Ser Pro His Pro Pro Glu Lys Cys Val Glu Glu
145                 150                 155                 160

Phe Lys Ser Leu Thr Ser Cys Leu Asp Ser Lys Ala Phe Leu Leu Thr
                165                 170                 175

Pro Arg Asn Gln Glu Ala Cys Glu Leu Ser Asn Asn
            180                 185


<210> 5797
<211> 129
<212> PRT
<213> Homo sapiens

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<400> 5797
Met Ala Ala Gly Ser Ala Pro Met Gln Leu His Leu Arg Ala Thr Ile
1               5                   10                  15

Arg Met Lys Asp Gly Leu Cys Val Pro Arg Lys Trp Ile Tyr His Leu
            20                  25                  30

Thr Glu Gly Ser Thr Asp Leu Arg Thr Glu Gly Arg Pro Asp Met Lys
        35                  40                  45

Thr Glu Leu Phe Ser Ser Ser Cys Pro Gly Gly Ile Met Leu Asn Glu
    50                  55                  60

Thr Gly Gln Gly Tyr Gln Arg Phe Leu Leu Tyr Asn Arg Ser Pro His
65                  70                  75                  80
```

```
Pro Pro Glu Lys Cys Val Glu Glu Phe Lys Ser Leu Thr Ser Cys Leu
                85                  90                  95

Asp Ser Lys Ala Phe Leu Leu Thr Pro Arg Asn Gln Gly Lys Gly Leu
            100                 105                 110

Lys Ser His Lys Thr Gly Leu Gly Leu Thr Lys Ser Ser Gly Val Thr
        115                 120                 125

Gly
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<210> 5798
<211> 129
<212> PRT
<213> Homo sapiens

<220>
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<400> 5798

```
Met Ala Ala Gly Ser Ala Pro Met Gln Leu His Leu Arg Ala Thr Ile
1               5                  10                  15

Arg Met Lys Asp Gly Leu Cys Val Pro Arg Lys Trp Ile Tyr His Leu
            20                  25                  30

Thr Glu Gly Ser Thr Asp Leu Arg Thr Glu Gly Arg Pro Asp Met Lys
        35                  40                  45

Thr Glu Leu Phe Ser Ser Ser Cys Pro Gly Gly Ile Met Leu Asn Glu
    50                  55                  60
```

```
Thr Gly Gln Gly Tyr Gln Arg Phe Leu Leu Tyr Asn Arg Ser Pro His
65                  70                  75                  80

Pro Pro Glu Lys Cys Val Glu Glu Phe Lys Ser Leu Thr Ser Cys Leu
                85                  90                  95

Asp Ser Lys Ala Phe Leu Leu Thr Pro Arg Asn Gln Gly Lys Gly Leu
            100                 105                 110

Lys Ser His Lys Thr Gly Leu Gly Leu Thr Lys Ser Ser Gly Val Thr
        115                 120                 125

Gly
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<210> 5799
<211> 188
<212> PRT
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<400> 5799

```
Met Phe His Gln Ile Trp Ala Ala Leu Leu Tyr Phe Tyr Gly Ile Ile
1               5                   10                  15

Leu Asn Ser Ile Tyr Gln Cys Pro Glu His Ser Gln Leu Thr Thr Leu
            20                  25                  30

Gly Val Asp Gly Lys Glu Phe Pro Glu Val His Leu Gly Gln Trp Tyr
        35                  40                  45
```

```
Phe Ile Ala Gly Ala Ala Pro Thr Lys Glu Glu Leu Ala Thr Phe Asp
    50                  55                  60

Pro Val Asp Asn Ile Val Phe Asn Met Ala Ala Gly Ser Ala Pro Met
65                  70                  75                  80

Gln Leu His Leu Arg Ala Thr Ile Arg Met Lys Asp Gly Leu Cys Val
                85                  90                  95

Pro Arg Lys Trp Ile Tyr His Leu Thr Glu Gly Ser Thr Asp Leu Arg
            100                 105                 110

Thr Glu Gly Arg Pro Asp Met Lys Thr Glu Leu Phe Ser Ser Ser Cys
        115                 120                 125

Pro Gly Gly Ile Met Leu Asn Glu Thr Gly Gln Gly Tyr Gln Arg Phe
    130                 135                 140

Leu Leu Tyr Asn Arg Ser Pro His Pro Pro Glu Lys Cys Val Glu Glu
145                 150                 155                 160

Phe Lys Ser Leu Thr Ser Cys Leu Asp Ser Lys Ala Phe Leu Leu Thr
                165                 170                 175

Pro Arg Asn Gln Glu Ala Cys Glu Leu Ser Asn Asn
            180                 185


<210> 5800
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<400> 5800
Met Phe His Gln Ile Trp Ala Ala Leu Leu Tyr Phe Tyr Gly Ile Ile
1   5   10   15

Leu Asn Ser Ile Tyr Gln Cys Pro Glu His Ser Gln Leu Thr Thr Leu
            20   25   30

Gly Val Asp Gly Lys Glu Phe Pro Glu Val His Leu Gly Gln Trp Tyr
        35   40   45

Phe Ile Ala Gly Ala Ala Pro Thr Lys Glu Glu Leu Ala Thr Phe Asp
    50   55   60

Pro Val Asp Asn Ile Val Phe Asn Met Ala Ala Gly Ser Ala Pro Met
65   70   75   80

Gln Leu His Leu Arg Ala Thr Ile Arg Met Lys Asp Gly Leu Cys Val
                85   90   95

Pro Arg Lys Trp Ile Tyr His Leu Thr Glu Gly Ser Thr Asp Leu Arg
            100   105   110

Thr Glu Gly Arg Pro Asp Met Lys Thr Glu Leu Phe Ser Ser Ser Cys
        115   120   125

Pro Gly Gly Ile Met Leu Asn Glu Thr Gly Gln Gly Tyr Gln Arg Phe
    130   135   140

Leu Leu Tyr Asn Arg Ser Pro His Pro Pro Glu Lys Cys Val Glu Glu
145   150   155   160

Phe Lys Ser Leu Thr Ser Cys Leu Asp Ser Lys Ala Phe Leu Leu Thr
                165   170   175

Pro Arg Asn Gln Glu Ala Cys Glu Leu Ser Asn Asn
            180   185

<210> 5801

<211> 116
<212> PRT
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<220>
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<400> 5801

Met	Ala	Ala	Gly	Ser	Ala	Pro	Met	Gln	Leu	His	Leu	Arg	Ala	Thr	Ile
1				5				10						15	

Arg	Met	Lys	Asp	Gly	Leu	Cys	Val	Pro	Arg	Lys	Trp	Ile	Tyr	His	Leu
			20					25					30		

Thr	Glu	Gly	Ser	Thr	Asp	Leu	Arg	Thr	Glu	Gly	Arg	Pro	Asp	Met	Lys
		35					40					45			

Thr	Glu	Leu	Phe	Ser	Ser	Ser	Cys	Pro	Gly	Gly	Ile	Met	Leu	Asn	Glu
	50					55					60				

Thr	Gly	Gln	Gly	Tyr	Gln	Arg	Phe	Leu	Leu	Tyr	Asn	Arg	Ser	Pro	His
65					70					75					80

Pro	Pro	Glu	Lys	Cys	Val	Glu	Glu	Phe	Lys	Ser	Leu	Thr	Ser	Cys	Leu
				85					90					95	

Asp	Ser	Lys	Ala	Phe	Leu	Leu	Thr	Pro	Arg	Asn	Gln	Glu	Ala	Cys	Glu
			100					105					110		

Leu	Ser	Asn	Asn
		115	

<210> 5802
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<220>
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<400> 5802
Met Phe His Gln Ile Trp Ala Ala Leu Leu Tyr Phe Tyr Gly Ile Ile
1   5   10   15

Leu Asn Ser Ile Tyr Gln Cys Pro Glu His Ser Gln Leu Thr Thr Leu
            20   25   30

Gly Val Asp Gly Lys Glu Phe Pro Glu Val His Leu Gly Gln Trp Tyr
        35   40   45

Phe Ile Ala Gly Ala Ala Pro Thr Lys Glu Glu Leu Ala Thr Phe Asp
    50   55   60

Pro Val Asp Asn Ile Val Phe Asn Met Ala Ala Gly Ser Ala Pro Met
65   70   75   80

Gln Leu His Leu Arg Ala Thr Ile Arg Met Lys Asp Gly Leu Cys Val
                85   90   95

Pro Arg Lys Trp Ile Tyr His Leu Thr Glu Gly Ser Thr Asp Leu Arg
            100   105   110

Thr Glu Gly Arg Pro Asp Met Lys Thr Glu Leu Phe Ser Ser Ser Cys

115 120 125

Pro Gly Gly Ile Met Leu Asn Glu Thr Gly Gln Gly Tyr Gln Arg Phe
130 135 140

Leu Leu Tyr Asn Arg Ser Pro His Pro Pro Glu Lys Cys Val Glu Glu
145 150 155 160

Phe Lys Ser Leu Thr Ser Cys Leu Asp Ser Lys Ala Phe Leu Leu Thr
165 170 175

Pro Arg Asn Gln Glu Ala Cys Glu Leu Ser Asn Asn
180 185

<210> 5803
<211> 129
<212> PRT
<213> Homo sapiens

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<221> source
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Met Ala Ala Gly Ser Ala Pro Met Gln Leu His Leu Arg Ala Thr Ile
1 5 10 15

Arg Met Lys Asp Gly Leu Cys Val Pro Arg Lys Trp Ile Tyr His Leu
20 25 30

Thr Glu Gly Ser Thr Asp Leu Arg Thr Glu Gly Arg Pro Asp Met Lys
35 40 45

Thr Glu Leu Phe Ser Ser Ser Cys Pro Gly Gly Ile Met Leu Asn Glu
50 55 60

```
Thr Gly Gln Gly Tyr Gln Arg Phe Leu Leu Tyr Asn Arg Ser Pro His
65                  70                  75                  80

Pro Pro Glu Lys Cys Val Glu Glu Phe Lys Ser Leu Thr Ser Cys Leu
                85                  90                  95

Asp Ser Lys Ala Phe Leu Leu Thr Pro Arg Asn Gln Gly Lys Gly Leu
            100                 105                 110

Lys Ser His Lys Thr Gly Leu Gly Leu Thr Lys Ser Ser Gly Val Thr
        115                 120                 125

Gly
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<210> 5804
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<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
apolipoprt M; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000413055"

<400> 5804

```
Met Ala Ala Gly Ser Ala Pro Met Gln Leu His Leu Arg Ala Thr Ile
1               5                   10                  15

Arg Met Lys Asp Gly Leu Cys Val Pro Arg Lys Trp Ile Tyr His Leu
            20                  25                  30

Thr Glu Gly Ser Thr Asp Leu Arg Thr Glu Gly Arg Pro Asp Met Lys
        35                  40                  45

Thr Glu Leu Phe Ser Ser Ser Cys Pro Gly Gly Ile Met Leu Asn Glu
```

50 55 60

Thr Gly Gln Gly Tyr Gln Arg Phe Leu Leu Tyr Asn Arg Ser Pro His
65 70 75 80

Pro Pro Glu Lys Cys Val Glu Glu Phe Lys Ser Leu Thr Ser Cys Leu
85 90 95

Asp Ser Lys Ala Phe Leu Leu Thr Pro Arg Asn Gln Gly Lys Gly Leu
100 105 110

Lys Ser His Lys Thr Gly Leu Gly Leu Thr Lys Ser Ser Gly Val Thr
115 120 125

Gly

<210> 5805
<211> 116
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1274; "

<220>
<221> source
<223> /note="Gene Symbol: APOM; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt M; "

<220>
<221> source
<223> /note="Uniprot ID: O95445; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000413446"

<400> 5805
Met Ala Ala Gly Ser Ala Pro Met Gln Leu His Leu Arg Ala Thr Ile
1 5 10 15

Arg Met Lys Asp Gly Leu Cys Val Pro Arg Lys Trp Ile Tyr His Leu
20 25 30

```
Thr Glu Gly Ser Thr Asp Leu Arg Thr Glu Gly Arg Pro Asp Met Lys
        35                  40                  45

Thr Glu Leu Phe Ser Ser Ser Cys Pro Gly Gly Ile Met Leu Asn Glu
    50                  55                  60

Thr Gly Gln Gly Tyr Gln Arg Phe Leu Leu Tyr Asn Arg Ser Pro His
65                  70                  75                  80

Pro Pro Glu Lys Cys Val Glu Glu Phe Lys Ser Leu Thr Ser Cys Leu
                85                  90                  95

Asp Ser Lys Ala Phe Leu Leu Thr Pro Arg Asn Gln Glu Ala Cys Glu
            100                 105                 110

Leu Ser Asn Asn
        115


<210> 5806
<211> 129
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: APOM; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt M; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000414574"

<400> 5806
Met Ala Ala Gly Ser Ala Pro Met Gln Leu His Leu Arg Ala Thr Ile
1               5                   10                  15

Arg Met Lys Asp Gly Leu Cys Val Pro Arg Lys Trp Ile Tyr His Leu
            20                  25                  30

Thr Glu Gly Ser Thr Asp Leu Arg Thr Glu Gly Arg Pro Asp Met Lys
```

```
        35                  40                  45

Thr Glu Leu Phe Ser Ser Ser Cys Pro Gly Gly Ile Met Leu Asn Glu
    50                  55                  60

Thr Gly Gln Gly Tyr Gln Arg Phe Leu Leu Tyr Asn Arg Ser Pro His
65                  70                  75                  80

Pro Pro Glu Lys Cys Val Glu Glu Phe Lys Ser Leu Thr Ser Cys Leu
                85                  90                  95

Asp Ser Lys Ala Phe Leu Leu Thr Pro Arg Asn Gln Gly Lys Gly Leu
            100                 105                 110

Lys Ser His Lys Thr Gly Leu Gly Leu Thr Lys Ser Ser Gly Val Thr
        115                 120                 125

Gly
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<210> 5807
<211> 116
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: APOM; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt M; "

<220>
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<223> /note="Uniprot ID: O95445; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000416335"

<400> 5807
```
Met Ala Ala Gly Ser Ala Pro Met Gln Leu His Leu Arg Ala Thr Ile
1               5                   10                  15
```

```
Arg Met Lys Asp Gly Leu Cys Val Pro Arg Lys Trp Ile Tyr His Leu
            20                  25                  30

Thr Glu Gly Ser Thr Asp Leu Arg Thr Glu Gly Arg Pro Asp Met Lys
        35                  40                  45

Thr Glu Leu Phe Ser Ser Ser Cys Pro Gly Gly Ile Met Leu Asn Glu
    50                  55                  60

Thr Gly Gln Gly Tyr Gln Arg Phe Leu Leu Tyr Asn Arg Ser Pro His
65                  70                  75                  80

Pro Pro Glu Lys Cys Val Glu Glu Phe Lys Ser Leu Thr Ser Cys Leu
                85                  90                  95

Asp Ser Lys Ala Phe Leu Leu Thr Pro Arg Asn Gln Glu Ala Cys Glu
            100                 105                 110

Leu Ser Asn Asn
        115


<210> 5808
<211> 198
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1275; "

<220>
<221> source
<223> /note="Gene Symbol: APOO; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt O; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9BUR5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000368528"

<400> 5808
Met Phe Lys Val Ile Gln Arg Ser Val Gly Pro Ala Ser Leu Ser Leu
```

1 5 10 15

Leu Thr Phe Lys Val Tyr Ala Ala Pro Lys Lys Asp Ser Pro Pro Lys
20 25 30

Asn Ser Val Lys Val Asp Glu Leu Ser Leu Tyr Ser Val Pro Glu Gly
35 40 45

Gln Ser Lys Tyr Val Glu Glu Ala Arg Ser Gln Leu Glu Glu Ser Ile
50 55 60

Ser Gln Leu Arg His Tyr Cys Glu Pro Tyr Thr Thr Trp Cys Gln Glu
65 70 75 80

Thr Tyr Ser Gln Thr Lys Pro Lys Met Gln Ser Leu Val Gln Trp Gly
85 90 95

Leu Asp Ser Tyr Asp Tyr Leu Gln Asn Ala Pro Pro Gly Phe Phe Pro
100 105 110

Arg Leu Gly Val Ile Gly Phe Ala Gly Leu Ile Gly Leu Leu Leu Ala
115 120 125

Arg Gly Ser Lys Ile Lys Lys Leu Val Tyr Pro Pro Gly Phe Met Gly
130 135 140

Leu Ala Ala Ser Leu Tyr Tyr Pro Gln Gln Ala Ile Val Phe Ala Gln
145 150 155 160

Val Ser Gly Glu Arg Leu Tyr Asp Trp Gly Leu Arg Gly Tyr Ile Val
165 170 175

Ile Glu Asp Leu Trp Lys Glu Asn Phe Gln Lys Pro Gly Asn Val Lys
180 185 190

Asn Ser Pro Gly Thr Lys
195

<210> 5809
<211> 178
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1275; "

<220>
<221> source
<223> /note="Gene Symbol: APOO; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt O; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000402557"

<400> 5809

```
Val Tyr Ala Ala Pro Lys Lys Asp Ser Pro Pro Lys Asn Ser Val Lys
1               5                  10                  15


Val Asp Glu Leu Ser Leu Tyr Ser Val Pro Glu Gly Gln Ser Lys Tyr
            20                  25                  30


Val Glu Glu Ala Arg Ser Gln Leu Glu Glu Ser Ile Ser Gln Leu Arg
        35                  40                  45


His Tyr Cys Glu Pro Tyr Thr Thr Trp Cys Gln Glu Thr Tyr Ser Gln
    50                  55                  60


Thr Lys Pro Lys Met Gln Ser Leu Val Gln Trp Gly Leu Asp Ser Tyr
65                  70                  75                  80


Asp Tyr Leu Gln Asn Ala Pro Pro Gly Phe Phe Pro Arg Leu Gly Val
                85                  90                  95


Ile Gly Phe Ala Gly Leu Ile Gly Leu Leu Leu Ala Arg Gly Ser Lys
            100                 105                 110


Ile Lys Lys Leu Val Tyr Pro Pro Gly Phe Met Gly Leu Ala Ala Ser
        115                 120                 125


Leu Tyr Tyr Pro Gln Gln Ala Ile Val Phe Ala Gln Val Ser Gly Glu
    130                 135                 140


Arg Leu Tyr Asp Trp Gly Leu Arg Gly Tyr Ile Val Ile Glu Asp Leu
145                 150                 155                 160
```

```
Trp Lys Glu Asn Phe Gln Lys Pro Gly Asn Val Lys Asn Ser Pro Gly
                165                 170                 175


Thr Lys



<210> 5810
<211> 114
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1275; "

<220>
<221> source
<223> /note="Gene Symbol: APOO; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt O; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000434341"

<400> 5810
Met Phe Lys Val Ile Gln Arg Ser Val Gly Pro Ala Ser Leu Ser Leu
1               5                   10                  15


Leu Thr Phe Lys Val Tyr Ala Ala Pro Lys Lys Asp Ser Pro Pro Lys
            20                  25                  30


Asn Ser Val Lys Val Asp Glu Leu Ser Leu Tyr Ser Val Pro Glu Gly
        35                  40                  45


Gln Ser Lys Tyr Val Glu Glu Ala Arg Ser Gln Leu Glu Glu Ser Ile
    50                  55                  60


Ser Gln Leu Arg His Tyr Cys Glu Pro Tyr Thr Thr Trp Cys Gln Thr
65                  70                  75                  80


Ala Met Thr Ile Ser Lys Met His Leu Leu Asp Phe Phe Arg Asp Leu
                85                  90                  95


Val Leu Leu Val Leu Leu Ala Leu Leu Asp Ser Phe Trp Leu Glu Val
            100                 105                 110
```

Gln Lys

<210> 5811
<211> 90
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1275; "

<220>
<221> source
<223> /note="Gene Symbol: APOO; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt O; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000488146"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5811
Xaa Phe Phe Pro Arg Leu Gly Val Ile Gly Phe Ala Gly Leu Ile Gly
1 5 10 15

Leu Leu Leu Ala Arg Gly Ser Lys Ile Lys Lys Leu Val Tyr Pro Pro
20 25 30

Gly Phe Met Gly Leu Ala Ala Ser Leu Tyr Tyr Pro Gln Gln Ala Ile
35 40 45

Val Phe Ala Gln Val Ser Gly Glu Arg Leu Tyr Asp Trp Gly Leu Arg
50 55 60

Gly Tyr Ile Val Ile Glu Asp Leu Trp Lys Glu Asn Phe Gln Lys Pro
65 70 75 80

Gly Asn Val Lys Asn Ser Pro Gly Thr Lys
85 90

<210> 5812
<211> 81
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1275; "

<220>
<221> source
<223> /note="Gene Symbol: APOO; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt O; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000488524"

<400> 5812
Met Gln Ser Leu Val Gln Trp Gly Leu Asp Ser Tyr Asp Tyr Leu Gln
1 5 10 15

Asn Ala Pro Pro Gly Phe Phe Pro Arg Leu Gly Val Ile Gly Phe Ala
20 25 30

Gly Leu Ile Gly Leu Leu Leu Ala Arg Gly Ser Lys Ile Lys Lys Leu
35 40 45

Val Tyr Pro Pro Gly Phe Met Gly Leu Ala Ala Ser Leu Tyr Tyr Pro
50 55 60

Gln Gln Ala Ile Val Phe Ala Gln Val Ser Gly Glu Arg Leu Tyr Asp
65 70 75 80

Trp

<210> 5813
<211> 49
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1275; "

<220>
<221> source
<223> /note="Gene Symbol: APOO; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt O; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000488538"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5813
Xaa Gly Leu Leu Leu Ala Arg Gly Ser Lys Ile Lys Lys Leu Val Tyr
1 5 10 15

Pro Pro Gly Phe Met Gly Leu Ala Ala Ser Leu Tyr Tyr Pro Gln Gln
20 25 30

Ala Ile Val Phe Ala Gln Pro Gly Asn Val Lys Asn Ser Pro Gly Thr
35 40 45

Lys

<210> 5814
<211> 268
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1276; "

<220>
<221> source
<223> /note="Gene Symbol: APOOL; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt O-like; "

<220>
<221> source

<223> /note="Uniprot ID: Q6UXV4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000362268"

<400> 5814

```
Met Ala Ala Ile Arg Met Gly Lys Leu Thr Thr Met Pro Ala Gly Leu
1               5                  10                  15

Ile Tyr Ala Ser Val Ser Val His Ala Ala Lys Gln Glu Glu Ser Lys
            20                  25                  30

Lys Gln Leu Val Lys Pro Glu Gln Leu Pro Ile Tyr Thr Ala Pro Pro
        35                  40                  45

Leu Gln Ser Lys Tyr Val Glu Glu Gln Pro Gly His Leu Gln Met Gly
    50                  55                  60

Phe Ala Ser Ile Arg Thr Ala Thr Gly Cys Tyr Ile Gly Trp Cys Lys
65                  70                  75                  80

Gly Val Tyr Val Phe Val Lys Asn Gly Ile Met Asp Thr Val Gln Phe
                85                  90                  95

Gly Lys Asp Ala Tyr Val Tyr Leu Lys Asn Pro Pro Arg Asp Phe Leu
            100                 105                 110

Pro Lys Met Gly Val Ile Thr Val Ser Gly Leu Ala Gly Leu Val Ser
        115                 120                 125

Ala Arg Lys Gly Ser Lys Phe Lys Lys Ile Thr Tyr Pro Leu Gly Leu
    130                 135                 140

Ala Thr Leu Gly Ala Thr Val Cys Tyr Pro Val Gln Ser Val Ile Ile
145                 150                 155                 160

Ala Lys Val Thr Ala Lys Lys Val Tyr Ala Thr Ser Gln Gln Ile Phe
                165                 170                 175

Gly Ala Val Lys Ser Leu Trp Thr Lys Ser Ser Lys Glu Glu Ser Leu
            180                 185                 190

Pro Lys Pro Lys Glu Lys Thr Lys Leu Gly Ser Ser Ser Glu Ile Glu
        195                 200                 205
```

```
Val Pro Ala Lys Thr Thr His Val Leu Lys His Ser Val Pro Leu Pro
    210                 215                 220

Thr Glu Leu Ser Ser Glu Ala Lys Thr Lys Ser Glu Ser Thr Ser Gly
225                 230                 235                 240

Ala Thr Gln Phe Met Pro Asp Pro Lys Leu Met Asp His Gly Gln Ser
                245                 250                 255

His Pro Glu Asp Ile Asp Met Tyr Ser Thr Arg Ser
            260                 265


<210> 5815
<211> 263
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1276; "

<220>
<221> source
<223> /note="Gene Symbol: APOOL; "

<220>
<221> source
<223> /note="Gene Name:
      apolipoprt O-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000479012"

<400> 5815
Met Gly Lys Leu Thr Thr Met Pro Ala Gly Leu Ile Tyr Ala Ser Val
1               5                   10                  15

Ser Val His Ala Ala Lys Gln Glu Glu Ser Lys Lys Gln Leu Val Lys
            20                  25                  30

Pro Glu Gln Leu Pro Ile Tyr Thr Ala Pro Pro Leu Gln Ser Lys Tyr
        35                  40                  45

Val Glu Glu Gln Pro Gly His Leu Gln Met Gly Phe Ala Ser Ile Arg
    50                  55                  60
```

```
Thr Ala Thr Gly Cys Tyr Ile Gly Trp Cys Lys Gly Val Tyr Val Phe
65                  70                  75                  80

Val Lys Asn Gly Ile Met Asp Thr Val Gln Phe Gly Lys Asp Ala Tyr
                85                  90                  95

Val Tyr Leu Lys Asn Pro Pro Arg Asp Phe Leu Pro Lys Met Gly Val
            100                 105                 110

Ile Thr Val Ser Gly Leu Ala Gly Leu Val Ser Ala Arg Lys Gly Ser
        115                 120                 125

Lys Phe Lys Lys Ile Thr Tyr Pro Leu Gly Leu Ala Thr Leu Gly Ala
    130                 135                 140

Thr Val Cys Tyr Pro Val Gln Ser Val Ile Ile Ala Lys Val Thr Ala
145                 150                 155                 160

Lys Arg Tyr Met Leu Gln Ala Ser Lys Phe Leu Glu Gln Leu Asn His
                165                 170                 175

Cys Gly Gln Lys Ala Ala Lys Lys Ser His Ser Leu Asn Leu Lys Lys
            180                 185                 190

Lys Leu Arg Leu Gly Ser Ser Ser Glu Ile Glu Val Pro Ala Lys Thr
        195                 200                 205

Thr His Val Leu Lys His Ser Val Pro Leu Pro Thr Glu Leu Ser Ser
    210                 215                 220

Glu Ala Lys Thr Lys Ser Glu Ser Thr Ser Gly Ala Thr Gln Phe Met
225                 230                 235                 240

Pro Asp Pro Lys Leu Met Asp His Gly Gln Ser His Pro Glu Asp Ile
                245                 250                 255

Asp Met Tyr Ser Thr Arg Ser
            260
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<210> 5816
<211> 268
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1276; "

<220>
<221> source
<223> /note="Gene Symbol: APOOL; "

<220>
<221> source
<223> /note="Gene Name:
apolipoprt O-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000481770"

<400> 5816

```
Met Ser Glu Ile Lys Met Gly Lys Leu Thr Thr Met Pro Ala Gly Leu
1               5                  10                  15

Ile Tyr Ala Ser Val Ser Val His Ala Ala Lys Gln Glu Glu Ser Lys
            20                  25                  30

Lys Gln Leu Val Lys Pro Glu Gln Leu Pro Ile Tyr Thr Ala Pro Pro
        35                  40                  45

Leu Gln Ser Lys Tyr Val Glu Glu Gln Pro Gly His Leu Gln Met Gly
    50                  55                  60

Phe Ala Ser Ile Arg Thr Ala Thr Gly Cys Tyr Ile Gly Trp Cys Lys
65                  70                  75                  80

Gly Val Tyr Val Phe Val Lys Asn Gly Ile Met Asp Thr Val Gln Phe
                85                  90                  95

Gly Lys Asp Ala Tyr Val Tyr Leu Lys Asn Pro Pro Arg Asp Phe Leu
            100                 105                 110

Pro Lys Met Gly Val Ile Thr Val Ser Gly Leu Ala Gly Leu Val Ser
        115                 120                 125

Ala Arg Lys Gly Ser Lys Phe Lys Lys Ile Thr Tyr Pro Leu Gly Leu
    130                 135                 140

Ala Thr Leu Gly Ala Thr Val Cys Tyr Pro Val Gln Ser Val Ile Ile
145                 150                 155                 160
```

```
Ala Lys Val Thr Ala Lys Lys Val Tyr Ala Thr Ser Gln Gln Ile Phe
                165                 170                 175

Gly Ala Val Lys Ser Leu Trp Thr Lys Ser Ser Lys Glu Glu Ser Leu
            180                 185                 190

Pro Lys Pro Lys Glu Lys Thr Lys Leu Gly Ser Ser Ser Glu Ile Glu
        195                 200                 205

Val Pro Ala Lys Thr Thr His Val Leu Lys His Ser Val Pro Leu Pro
    210                 215                 220

Thr Glu Leu Ser Ser Glu Ala Lys Thr Lys Ser Glu Ser Thr Ser Gly
225                 230                 235                 240

Ala Thr Gln Phe Met Pro Asp Pro Lys Leu Met Asp His Gly Gln Ser
                245                 250                 255

His Pro Glu Asp Ile Asp Met Tyr Ser Thr Arg Ser
            260                 265


<210> 5817
<211> 206
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1277; "

<220>
<221> source
<223> /note="Gene Symbol: APOPT1; "

<220>
<221> source
<223> /note="Gene Name:
      apoptogenic 1,
      mitochondrial; "

<220>
<221> source
<223> /note="Uniprot ID:  Q96IL0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000386485"

<400> 5817
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```
Met Leu Pro Cys Ala Ala Gly Ala Arg Gly Arg Gly Ala Met Val Val
1               5                  10                  15

Leu Arg Ala Gly Lys Lys Thr Phe Leu Pro Pro Leu Cys Arg Ala Phe
            20                  25                  30

Ala Cys Arg Gly Cys Gln Leu Ala Pro Glu Arg Gly Ala Glu Arg Arg
        35                  40                  45

Asp Thr Ala Pro Ser Gly Val Ser Arg Phe Cys Pro Pro Arg Lys Ser
    50                  55                  60

Cys His Asp Trp Ile Gly Pro Pro Asp Lys Tyr Ser Asn Leu Arg Pro
65                  70                  75                  80

Val His Phe Tyr Ile Pro Glu Asn Glu Ser Pro Leu Glu Gln Lys Leu
                85                  90                  95

Arg Lys Leu Arg Gln Glu Thr Gln Glu Trp Asn Gln Gln Phe Trp Ala
            100                 105                 110

Asn Gln Asn Leu Thr Phe Ser Lys Glu Lys Glu Glu Phe Ile His Ser
        115                 120                 125

Arg Leu Lys Thr Lys Gly Leu Gly Leu Arg Thr Glu Ser Gly Gln Lys
    130                 135                 140

Ala Thr Leu Asn Ala Glu Glu Met Ala Asp Phe Tyr Lys Glu Phe Leu
145                 150                 155                 160

Ser Lys Asn Phe Gln Lys His Met Tyr Tyr Asn Arg Asp Trp Tyr Lys
                165                 170                 175

Arg Asn Phe Ala Ile Thr Phe Phe Met Gly Lys Val Ala Leu Glu Arg
            180                 185                 190

Ile Trp Asn Lys Leu Lys Gln Lys Gln Lys Lys Arg Ser Asn
        195                 200                 205
```

<210> 5818
<211> 118
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1277; "

<220>
<221> source
<223> /note="Gene Symbol: APOPT1; "

<220>
<221> source
<223> /note="Gene Name:
apoptogenic 1,
mitochondrial; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000388067"

<400> 5818
Ala Ala Val Arg Arg Gly Ser Gln Gly Ala Trp Gly His Gly Gly Leu
1 5 10 15

Ala Gly Gly Glu Glu Asp Leu Ser Pro Pro Ser Leu Pro Arg Leu Arg
20 25 30

Leu Pro Arg Leu Ser Thr Arg Ser Gly Ala Arg Arg Arg Ala Gln Gly
35 40 45

Tyr Gly Ala Gln Arg Gly Gln Lys Ala Thr Leu Asn Ala Glu Glu Met
50 55 60

Ala Asp Phe Tyr Lys Glu Phe Leu Ser Lys Asn Phe Gln Lys His Met
65 70 75 80

Tyr Tyr Asn Arg Asp Trp Tyr Lys Arg Asn Phe Ala Ile Thr Phe Phe
85 90 95

Met Gly Lys Val Ala Leu Glu Arg Ile Trp Asn Lys Leu Lys Gln Lys
100 105 110

Gln Lys Lys Arg Ser Asn
115

<210> 5819
<211> 120
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1277; "

<220>
<221> source
<223> /note="Gene Symbol: APOPT1; "

<220>
<221> source
<223> /note="Gene Name:
apoptogenic 1,
mitochondrial; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000408525"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5819

Xaa Gly Ala Arg Gly Arg Gly Ala Met Val Val Leu Arg Ala Gly Lys
1 5 10 15

Lys Thr Phe Leu Pro Pro Leu Cys Arg Ala Phe Ala Cys Arg Gly Cys
20 25 30

Gln Leu Ala Pro Glu Arg Gly Ala Glu Arg Arg Asp Thr Ala Pro Ser
35 40 45

Gly Val Ser Arg Phe Cys Pro Pro Arg Lys Ser Cys His Asp Trp Ile
50 55 60

Gly Pro Pro Asp Lys Tyr Ser Asn Leu Arg Pro Val His Phe Tyr Ile
65 70 75 80

Pro Glu Asn Glu Ser Pro Leu Glu Gln Lys Leu Arg Lys Leu Arg Gln
85 90 95

Glu Thr Gln Glu Trp Asn Gln Gln Phe Trp Ala Asn Gln Asn Leu Thr
100 105 110

Phe Ser Lys Val Arg Lys Gln His
115 120

<210> 5820

<211> 57
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1277; "

<220>
<221> source
<223> /note="Gene Symbol: APOPT1; "

<220>
<221> source
<223> /note="Gene Name:
apoptogenic 1,
mitochondrial; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000450756"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5820
Xaa Leu Arg Gln Glu Thr Gln Glu Trp Asn Gln Gln Phe Trp Ala Asn
1 5 10 15

Gln Asn Leu Thr Phe Ser Lys Met Glu Ser His Ser Val Thr Gln Ala
20 25 30

Gly Val Gln Trp His Asp Leu Gly Ser Leu Gln Thr Leu Pro Pro Gly
35 40 45

Ser Ser Asp Ser Pro Ala Ser Ala Phe
50 55

<210> 5821
<211> 108
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1277; "

<220>
<221> source
<223> /note="Gene Symbol: APOPT1; "

<220>
<221> source
<223> /note="Gene Name:
apoptogenic 1,
mitochondrial; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000451703"

<400> 5821
Leu Ala Pro Glu Arg Gly Ala Glu Arg Arg Asp Thr Ala Pro Ser Gly
1 5 10 15

Val Ser Arg Phe Cys Pro Pro Arg Lys Ser Cys His Asp Trp Ile Gly
20 25 30

Pro Pro Asp Lys Tyr Ser Asn Leu Arg Pro Val His Phe Tyr Ile Pro
35 40 45

Glu Asn Glu Ser Pro Leu Glu Gln Lys Leu Arg Lys Leu Arg Gln Glu
50 55 60

Thr Gln Glu Trp Asn Gln Gln Phe Trp Ala Asn Gln Asn Leu Thr Phe
65 70 75 80

Ser Lys Glu Lys Glu Glu Phe Ile His Ser Arg Leu Lys Thr Lys Gly
85 90 95

Leu Gly Leu Arg Thr Glu Ser Gly Gly Tyr Asp Gly
100 105

<210> 5822
<211> 72
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1277; "

<220>
<221> source
<223> /note="Gene Symbol: APOPT1; "

<220>
<221> source
<223> /note="Gene Name:
apoptogenic 1,

mitochondrial; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000451788"

<400> 5822
Ala Phe Ala Cys Arg Gly Cys Gln Leu Ala Pro Glu Arg Gly Ala Glu
1 5 10 15

Arg Arg Asp Thr Ala Pro Ser Gly Pro Pro Gln Ala Phe Val Gln Val
20 25 30

Leu Ser Arg Pro Ile Pro Asn Ser Pro Ala Ala Pro Arg Leu Pro His
35 40 45

Gln Arg Pro Gln Ser Asp Gly Thr Glu Gly Ala Ala Ala Thr Thr Pro
50 55 60

Gly Thr Val Asp Ser Gln Asn Leu
65 70

<210> 5823
<211> 177
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1277; "

<220>
<221> source
<223> /note="Gene Symbol: APOPT1; "

<220>
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<223> /note="Gene Name:
apoptogenic 1,
mitochondrial; "

<220>
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<223> /note="ENSP ID: ENSP00000451874"

<400> 5823
Met Val Val Leu Arg Ala Gly Lys Lys Thr Phe Leu Pro Pro Leu Cys
1 5 10 15

Arg Ala Phe Ala Cys Arg Gly Cys Gln Leu Ala Pro Glu Arg Gly Ala
20 25 30

```
Glu Arg Arg Asp Thr Ala Pro Ser Gly Val Ser Arg Phe Cys Pro Pro
        35                  40                  45

Arg Lys Ser Cys His Asp Trp Ile Gly Pro Pro Asp Lys Tyr Ser Asn
    50                  55                  60

Leu Arg Pro Val His Phe Tyr Ile Pro Glu Asn Glu Ser Pro Leu Glu
65                  70                  75                  80

Gln Lys Leu Arg Lys Leu Arg Gln Glu Thr Gln Glu Trp Asn Gln Gln
                85                  90                  95

Phe Trp Ala Asn Gln Asn Leu Thr Phe Ser Lys Glu Lys Glu Glu Phe
            100                 105                 110

Ile His Ser Arg Leu Lys Thr Lys Gly Leu Gly Leu Arg Thr Glu Ser
        115                 120                 125

Asp Pro Thr Leu Pro Arg Val Thr Glu Thr Met Glu Arg Lys Thr Met
    130                 135                 140

Asp Gly Gly Asp Ser Cys Ala Ala Ala Ile Ser Leu Thr Gln Ser Glu
145                 150                 155                 160

Ser Asn Ile Glu Cys Arg Arg Asn Gly Gly Leu Leu Gln Gly Ile Phe
                165                 170                 175

Lys
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<210> 5824
<211> 76
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1277; "

<220>
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<223> /note="Gene Symbol: APOPT1; "

<220>
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<223> /note="Gene Name:
apoptogenic 1,
mitochondrial; "

<220>
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<223> /note="ENSP ID: ENSP00000489047"

<400> 5824
Met Ala Asp Phe Tyr Lys Glu Phe Leu Ser Lys Asn Phe Gln Lys His
1 5 10 15

Met Tyr Tyr Asn Arg Leu Asp Thr Val Ala Arg Thr Trp Asn Pro Met
20 25 30

Thr Leu Gly Gly Gln Glu Ile Gly Thr Ser Ala Ile Leu Pro Ser Pro
35 40 45

Ser Ser Trp Glu Lys Trp Pro Trp Lys Gly Phe Gly Thr Ser Leu Asn
50 55 60

Arg Asn Lys Arg Arg Gly Ala Thr Arg Ser Pro Leu
65 70 75

<210> 5825
<211> 55
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: APOPT1; "

<220>
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<223> /note="Gene Name:
apoptogenic 1,
mitochondrial; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000489152"

<400> 5825
Met Ala Asp Phe Tyr Lys Glu Phe Leu Ser Lys Asn Phe Gln Lys His
1 5 10 15

```
Met Tyr Tyr Asn Arg Asp Trp Tyr Lys Arg Asn Phe Ala Ile Thr Phe
            20                  25                  30

Phe Met Gly Lys Val Ala Leu Glu Arg Ile Trp Asn Lys Leu Lys Gln
        35                  40                  45

Lys Gln Lys Lys Arg Ser Asn
    50                  55


<210> 5826
<211> 132
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: APOPT1; "

<220>
<221> source
<223> /note="Gene Name:
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      mitochondrial; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000489308"

<400> 5826
Gly Pro Pro Asp Lys Tyr Ser Asn Leu Arg Pro Val His Phe Tyr Ile
1               5                   10                  15

Pro Glu Asn Glu Ser Pro Leu Glu Gln Lys Leu Arg Lys Leu Arg Gln
            20                  25                  30

Glu Thr Gln Glu Trp Asn Gln Gln Phe Trp Ala Asn Gln Asn Leu Thr
        35                  40                  45

Phe Ser Lys Glu Lys Glu Glu Phe Ile His Ser Arg Leu Lys Thr Lys
    50                  55                  60

Gly Leu Gly Leu Arg Thr Glu Ser Asp Gly Val Ser Leu Cys His Pro
65                  70                  75                  80

Gly Trp Ser Ala Val Ala Arg Ser Arg Leu Thr Ala Asn Ser Ala Ser
```

85 90 95

Trp Phe Lys Arg Phe Ser Cys Leu Ser Leu Leu Ser Ser Trp Asp Tyr
100 105 110

Arg Ser Glu Ser Asn Ile Glu Cys Arg Arg Asn Gly Gly Leu Leu Gln
115 120 125

Gly Ile Phe Lys
130

<210> 5827
<211> 55
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
<221> source
<223> /note="Gene Name:
apoptogenic 1,
mitochondrial; "

<220>
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<223> /note="ENSP ID: ENSP00000489380"

<400> 5827
Met Ala Asp Phe Tyr Lys Glu Phe Leu Ser Lys Asn Phe Gln Lys His
1 5 10 15

Met Tyr Tyr Asn Arg Asp Trp Tyr Lys Arg Asn Phe Ala Ile Thr Phe
20 25 30

Phe Met Gly Lys Val Ala Leu Glu Arg Ile Trp Asn Lys Leu Lys Gln
35 40 45

Lys Gln Lys Lys Arg Ser Asn
50 55

<210> 5828
<211> 55

<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: APOPT1; "

<220>
<221> source
<223> /note="Gene Name:
apoptogenic 1,
mitochondrial; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000489557"

<400> 5828
Met Ala Asp Phe Tyr Lys Glu Phe Leu Ser Lys Asn Phe Gln Lys His
1 5 10 15

Met Tyr Tyr Asn Arg Asp Trp Tyr Lys Arg Asn Phe Ala Ile Thr Phe
20 25 30

Phe Met Gly Lys Val Ala Leu Glu Arg Ile Trp Asn Lys Leu Lys Gln
35 40 45

Lys Gln Lys Lys Arg Ser Asn
50 55

<210> 5829
<211> 560
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1278; "

<220>
<221> source
<223> /note="Gene Symbol: AATF; "

<220>
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<223> /note="Gene Name:
apoptosis antagonizing transcription
factor; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NY61; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000477848"

<400> 5829
Met Ala Gly Pro Gln Pro Leu Ala Leu Gln Leu Glu Gln Leu Leu Asn
1   5   10   15

Pro Arg Pro Ser Glu Ala Asp Pro Glu Ala Asp Pro Glu Glu Ala Thr
            20   25   30

Ala Ala Arg Val Ile Asp Arg Phe Asp Glu Gly Glu Asp Gly Glu Gly
        35   40   45

Asp Phe Leu Val Val Gly Ser Ile Arg Lys Leu Ala Ser Ala Ser Leu
    50   55   60

Leu Asp Thr Asp Lys Arg Tyr Cys Gly Lys Thr Thr Ser Arg Lys Ala
65   70   75   80

Trp Asn Glu Asp His Trp Glu Gln Thr Leu Pro Gly Ser Ser Asp Glu
                85   90   95

Glu Ile Ser Asp Glu Glu Gly Ser Gly Asp Glu Asp Ser Glu Gly Leu
            100   105   110

Gly Leu Glu Glu Tyr Asp Glu Asp Asp Leu Gly Ala Ala Glu Glu Gln
        115   120   125

Glu Cys Gly Asp His Arg Glu Ser Lys Lys Ser Arg Ser His Ser Ala
    130   135   140

Lys Thr Pro Gly Phe Ser Val Gln Ser Ile Ser Asp Phe Glu Lys Phe
145   150   155   160

Thr Lys Gly Met Asp Asp Leu Gly Ser Ser Glu Glu Glu Glu Asp Glu
                165   170   175

Glu Ser Gly Met Glu Glu Gly Asp Asp Ala Glu Asp Ser Gln Gly Glu
            180   185   190

```
Ser Glu Glu Asp Arg Ala Gly Asp Arg Asn Ser Glu Asp Asp Gly Val
        195                 200                 205

Val Met Thr Phe Ser Ser Val Lys Val Ser Glu Glu Val Glu Lys Gly
    210                 215                 220

Arg Ala Val Lys Asn Gln Ile Ala Leu Trp Asp Gln Leu Leu Glu Gly
225                 230                 235                 240

Arg Ile Lys Leu Gln Lys Ala Leu Leu Thr Thr Asn Gln Leu Pro Gln
                245                 250                 255

Pro Asp Val Phe Pro Leu Phe Lys Asp Lys Gly Gly Pro Glu Phe Ser
            260                 265                 270

Ser Ala Leu Lys Asn Ser His Lys Ala Leu Lys Ala Leu Leu Arg Ser
        275                 280                 285

Leu Val Gly Leu Gln Glu Glu Leu Leu Phe Gln Tyr Pro Asp Thr Arg
    290                 295                 300

Tyr Leu Val Asp Gly Thr Lys Pro Asn Ala Gly Ser Glu Glu Ile Ser
305                 310                 315                 320

Ser Glu Asp Asp Glu Leu Val Glu Glu Lys Lys Gln Gln Arg Arg Arg
                325                 330                 335

Val Pro Ala Lys Arg Lys Leu Glu Met Glu Asp Tyr Pro Ser Phe Met
            340                 345                 350

Ala Lys Arg Phe Ala Asp Phe Thr Val Tyr Arg Asn Arg Thr Leu Gln
        355                 360                 365

Lys Trp His Asp Lys Thr Lys Leu Ala Ser Gly Lys Leu Gly Lys Gly
    370                 375                 380

Phe Gly Ala Phe Glu Arg Ser Ile Leu Thr Gln Ile Asp His Ile Leu
385                 390                 395                 400

Met Asp Lys Glu Arg Leu Leu Arg Arg Thr Gln Thr Lys Arg Ser Val
                405                 410                 415

Tyr Arg Val Leu Gly Lys Pro Glu Pro Ala Ala Gln Pro Val Pro Glu
```

```
            420                 425                 430

Ser Leu Pro Gly Glu Pro Glu Ile Leu Pro Gln Ala Pro Ala Asn Ala
        435                 440                 445

His Leu Lys Asp Leu Asp Glu Glu Ile Phe Asp Asp Asp Asp Phe Tyr
    450                 455                 460

His Gln Leu Leu Arg Glu Leu Ile Glu Arg Lys Thr Ser Ser Leu Asp
465                 470                 475                 480

Pro Asn Asp Gln Val Ala Met Gly Arg Gln Trp Leu Ala Ile Gln Lys
                485                 490                 495

Leu Arg Ser Lys Ile His Lys Lys Val Asp Arg Lys Ala Ser Lys Gly
            500                 505                 510

Arg Lys Leu Arg Phe His Val Leu Ser Lys Leu Leu Ser Phe Met Ala
        515                 520                 525

Pro Ile Asp His Thr Thr Met Asn Asp Asp Ala Arg Thr Glu Leu Tyr
    530                 535                 540

Arg Ser Leu Phe Gly Gln Leu His Pro Pro Asp Glu Gly His Gly Asp
545                 550                 555                 560


<210> 5830
<211> 98
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1278; "

<220>
<221> source
<223> /note="Gene Symbol: AATF; "

<220>
<221> source
<223> /note="Gene Name:
      apoptosis antagonizing transcription
      factor; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000477881"
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<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5830
Xaa Ile Leu Pro Gln Ala Pro Ala Asn Ala His Leu Lys Asp Leu Asp
1   5   10   15

Glu Glu Ile Phe Asp Asp Asp Asp Phe Tyr His Gln Leu Leu Arg Glu
            20   25   30

Leu Ile Glu Arg Lys Thr Ser Ser Leu Asp Pro Asn Asp Gln Val Ala
        35   40   45

Met Gly Arg Gln Trp Leu Ala Ile Gln Lys Leu Arg Ser Lys Ile His
    50   55   60

Lys Lys Val Asp Arg Lys Ala Ser Lys Gly Arg Lys Leu Arg Thr Glu
65   70   75   80

Leu Tyr Arg Ser Leu Phe Gly Gln Leu His Pro Pro Asp Glu Gly His
                85   90   95

Gly Asp

<210> 5831
<211> 55
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1278; "

<220>
<221> source
<223> /note="Gene Symbol: AATF; "

<220>
<221> source
<223> /note="Gene Name:
      apoptosis antagonizing transcription
      factor; "

<220>
<221> source

<223> /note="ENSP ID: ENSP00000479926"

<400> 5831
Met Ala Gly Pro Gln Pro Leu Ala Leu Gln Leu Glu Gln Leu Leu Asn
1   5   10   15

Pro Arg Pro Ser Glu Ala Asp Pro Glu Ala Asp Pro Glu Glu Ala Thr
            20   25   30

Ala Ala Arg Val Ile Asp Arg Phe Asp Glu Gly Glu Asp Gly Glu Gly
        35   40   45

Ser Asn Tyr Lys Lys Leu Cys
    50   55

<210> 5832
<211> 154
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1278; "

<220>
<221> source
<223> /note="Gene Symbol: AATF; "

<220>
<221> source
<223> /note="Gene Name:
      apoptosis antagonizing transcription
      factor; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000480472"

<400> 5832
Arg Asn Arg Thr Leu Gln Lys Trp His Asp Lys Thr Lys Leu Ala Ser
1   5   10   15

Gly Lys Leu Gly Lys Gly Phe Gly Ala Phe Glu Arg Ser Ile Leu Thr
            20   25   30

Gln Ile Asp His Ile Leu Met Asp Lys Glu Arg Leu Leu Arg Arg Thr
        35   40   45

Gln Thr Lys Arg Ser Val Tyr Arg Val Leu Gly Lys Pro Glu Pro Ala
    50   55   60

```
Ala Gln Pro Val Pro Glu Ser Leu Pro Gly Glu Pro Glu Ile Leu Pro
65                  70                  75                  80

Gln Ala Pro Ala Asn Ala His Leu Lys Asp Leu Asp Glu Glu Ile Phe
                85                  90                  95

Asp Asp Asp Asp Phe Tyr His Gln Leu Leu Arg Glu Leu Ile Glu Arg
            100                 105                 110

Lys Thr Ser Ser Leu Asp Pro Asn Asp Gln Val Ala Met Gly Arg Gln
        115                 120                 125

Trp Leu Ala Ile Gln Lys Leu Arg Ser Lys Ile His Lys Lys Val Asp
    130                 135                 140

Arg Lys Ala Ser Lys Gly Arg Lys Leu Arg
145                 150


<210> 5833
<211> 560
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1278; "

<220>
<221> source
<223> /note="Gene Symbol: AATF; "

<220>
<221> source
<223> /note="Gene Name:
      apoptosis antagonizing transcription
      factor; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9NY61; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000481894"

<400> 5833
Met Ala Gly Pro Gln Pro Leu Ala Leu Gln Leu Glu Gln Leu Leu Asn
1               5                   10                  15
```

```
Pro Arg Pro Ser Glu Ala Asp Pro Glu Ala Asp Pro Glu Glu Ala Thr
            20                  25                  30

Ala Ala Arg Val Ile Asp Arg Phe Asp Glu Gly Glu Asp Gly Glu Gly
        35                  40                  45

Asp Phe Leu Val Val Gly Ser Ile Arg Lys Leu Ala Ser Ala Ser Leu
    50                  55                  60

Leu Asp Thr Asp Lys Arg Tyr Cys Gly Lys Thr Thr Ser Arg Lys Ala
65                  70                  75                  80

Trp Asn Glu Asp His Trp Glu Gln Thr Leu Pro Gly Ser Ser Asp Glu
                85                  90                  95

Glu Ile Ser Asp Glu Glu Gly Ser Gly Asp Glu Asp Ser Glu Gly Leu
            100                 105                 110

Gly Leu Glu Glu Tyr Asp Glu Asp Asp Leu Gly Ala Ala Glu Glu Gln
        115                 120                 125

Glu Cys Gly Asp His Arg Glu Ser Lys Lys Ser Arg Ser His Ser Ala
    130                 135                 140

Lys Thr Pro Gly Phe Ser Val Gln Ser Ile Ser Asp Phe Glu Lys Phe
145                 150                 155                 160

Thr Lys Gly Met Asp Asp Leu Gly Ser Ser Glu Glu Glu Glu Asp Glu
                165                 170                 175

Glu Ser Gly Met Glu Glu Gly Asp Asp Ala Glu Asp Ser Gln Gly Glu
            180                 185                 190

Ser Glu Glu Asp Arg Ala Gly Asp Arg Asn Ser Glu Asp Asp Gly Val
        195                 200                 205

Val Met Thr Phe Ser Ser Val Lys Val Ser Glu Glu Val Glu Lys Gly
    210                 215                 220

Arg Ala Val Lys Asn Gln Ile Ala Leu Trp Asp Gln Leu Leu Glu Gly
225                 230                 235                 240
```

```
Arg Ile Lys Leu Gln Lys Ala Leu Leu Thr Thr Asn Gln Leu Pro Gln
                245                 250                 255

Pro Asp Val Phe Pro Leu Phe Lys Asp Lys Gly Gly Pro Glu Phe Ser
            260                 265                 270

Ser Ala Leu Lys Asn Ser His Lys Ala Leu Lys Ala Leu Leu Arg Ser
        275                 280                 285

Leu Val Gly Leu Gln Glu Glu Leu Leu Phe Gln Tyr Pro Asp Thr Arg
    290                 295                 300

Tyr Leu Val Asp Gly Thr Lys Pro Asn Ala Gly Ser Glu Glu Ile Ser
305                 310                 315                 320

Ser Glu Asp Asp Glu Leu Val Glu Glu Lys Lys Gln Gln Arg Arg Arg
                325                 330                 335

Val Pro Ala Lys Arg Lys Leu Glu Met Glu Asp Tyr Pro Ser Phe Met
            340                 345                 350

Ala Lys Arg Phe Ala Asp Phe Thr Val Tyr Arg Asn Arg Thr Leu Gln
        355                 360                 365

Lys Trp His Asp Lys Thr Lys Leu Ala Ser Gly Lys Leu Gly Lys Gly
    370                 375                 380

Phe Gly Ala Phe Glu Arg Ser Ile Leu Thr Gln Ile Asp His Ile Leu
385                 390                 395                 400

Met Asp Lys Glu Arg Leu Leu Arg Arg Thr Gln Thr Lys Arg Ser Val
                405                 410                 415

Tyr Arg Val Leu Gly Lys Pro Glu Pro Ala Ala Gln Pro Val Pro Glu
            420                 425                 430

Ser Leu Pro Gly Glu Pro Glu Ile Leu Pro Gln Ala Pro Ala Asn Ala
        435                 440                 445

His Leu Lys Asp Leu Asp Glu Glu Ile Phe Asp Asp Asp Asp Phe Tyr
    450                 455                 460

His Gln Leu Leu Arg Glu Leu Ile Glu Arg Lys Thr Ser Ser Leu Asp
```

```
465                 470                 475                 480

Pro Asn Asp Gln Val Ala Met Gly Arg Gln Trp Leu Ala Ile Gln Lys
                485                 490                 495

Leu Arg Ser Lys Ile His Lys Lys Val Asp Arg Lys Ala Ser Lys Gly
            500                 505                 510

Arg Lys Leu Arg Phe His Val Leu Ser Lys Leu Leu Ser Phe Met Ala
        515                 520                 525

Pro Ile Asp His Thr Thr Met Asn Asp Asp Ala Arg Thr Glu Leu Tyr
    530                 535                 540

Arg Ser Leu Phe Gly Gln Leu His Pro Pro Asp Glu Gly His Gly Asp
545                 550                 555                 560


<210> 5834
<211> 98
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1278; "

<220>
<221> source
<223> /note="Gene Symbol: AATF; "

<220>
<221> source
<223> /note="Gene Name:
      apoptosis antagonizing transcription
      factor; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000487925"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5834
Xaa Ile Leu Pro Gln Ala Pro Ala Asn Ala His Leu Lys Asp Leu Asp
1               5                   10                  15
```

Glu Glu Ile Phe Asp Asp Asp Asp Phe Tyr His Gln Leu Leu Arg Glu
            20   25   30

Leu Ile Glu Arg Lys Thr Ser Ser Leu Asp Pro Asn Asp Gln Val Ala
        35   40   45

Met Gly Arg Gln Trp Leu Ala Ile Gln Lys Leu Arg Ser Lys Ile His
    50   55   60

Lys Lys Val Asp Arg Lys Ala Ser Lys Gly Arg Lys Leu Arg Thr Glu
65   70   75   80

Leu Tyr Arg Ser Leu Phe Gly Gln Leu His Pro Pro Asp Glu Gly His
                85   90   95

Gly Asp

<210> 5835
<211> 154
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1278; "

<220>
<221> source
<223> /note="Gene Symbol: AATF; "

<220>
<221> source
<223> /note="Gene Name:
      apoptosis antagonizing transcription
      factor; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000488221"

<400> 5835
Arg Asn Arg Thr Leu Gln Lys Trp His Asp Lys Thr Lys Leu Ala Ser
1   5   10   15

Gly Lys Leu Gly Lys Gly Phe Gly Ala Phe Glu Arg Ser Ile Leu Thr
            20   25   30

Gln Ile Asp His Ile Leu Met Asp Lys Glu Arg Leu Leu Arg Arg Thr

```
        35                  40                  45

Gln Thr Lys Arg Ser Val Tyr Arg Val Leu Gly Lys Pro Glu Pro Ala
    50                  55                  60

Ala Gln Pro Val Pro Glu Ser Leu Pro Gly Glu Pro Glu Ile Leu Pro
65                  70                  75                  80

Gln Ala Pro Ala Asn Ala His Leu Lys Asp Leu Asp Glu Glu Ile Phe
                85                  90                  95

Asp Asp Asp Asp Phe Tyr His Gln Leu Leu Arg Glu Leu Ile Glu Arg
            100                 105                 110

Lys Thr Ser Ser Leu Asp Pro Asn Asp Gln Val Ala Met Gly Arg Gln
        115                 120                 125

Trp Leu Ala Ile Gln Lys Leu Arg Ser Lys Ile His Lys Lys Val Asp
    130                 135                 140

Arg Lys Ala Ser Lys Gly Arg Lys Leu Arg
145                 150


<210> 5836
<211> 55
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1278; "

<220>
<221> source
<223> /note="Gene Symbol: AATF; "

<220>
<221> source
<223> /note="Gene Name:
      apoptosis antagonizing transcription
      factor; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000488862"

<400> 5836
Met Ala Gly Pro Gln Pro Leu Ala Leu Gln Leu Glu Gln Leu Leu Asn
1               5                   10                  15
```

```
Pro Arg Pro Ser Glu Ala Asp Pro Glu Ala Asp Pro Glu Glu Ala Thr
            20                  25                  30

Ala Ala Arg Val Ile Asp Arg Phe Asp Glu Gly Glu Asp Gly Glu Gly
        35                  40                  45

Ser Asn Tyr Lys Lys Leu Cys
    50                  55


<210> 5837
<211> 325
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1279; "

<220>
<221> source
<223> /note="Gene Symbol: AEN; "

<220>
<221> source
<223> /note="Gene Name:
      apoptosis enhancing nuclease; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8WTP8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000331944"

<400> 5837
Met Val Pro Arg Glu Ala Pro Glu Ser Ala Gln Cys Leu Cys Pro Ser
1               5                   10                  15

Leu Thr Ile Pro Asn Ala Lys Asp Val Leu Arg Lys Arg His Lys Arg
            20                  25                  30

Arg Ser Arg Gln His Gln Arg Phe Met Ala Arg Lys Ala Leu Leu Gln
        35                  40                  45

Glu Gln Gly Leu Leu Ser Met Pro Pro Glu Pro Gly Ser Ser Pro Leu
    50                  55                  60
```

```
Pro Thr Pro Phe Gly Ala Ala Thr Ala Thr Glu Ala Ala Ser Ser Gly
65                  70                  75                  80

Lys Gln Cys Leu Arg Ala Gly Ser Gly Ser Ala Pro Cys Ser Arg Arg
                85                  90                  95

Pro Ala Pro Gly Lys Ala Ser Gly Pro Leu Pro Ser Lys Cys Val Ala
            100                 105                 110

Ile Asp Cys Glu Met Val Gly Thr Gly Pro Arg Gly Arg Val Ser Glu
        115                 120                 125

Leu Ala Arg Cys Ser Ile Val Ser Tyr His Gly Asn Val Leu Tyr Asp
    130                 135                 140

Lys Tyr Ile Arg Pro Glu Met Pro Ile Ala Asp Tyr Arg Thr Arg Trp
145                 150                 155                 160

Ser Gly Ile Thr Arg Gln His Met Arg Lys Ala Val Pro Phe Gln Val
                165                 170                 175

Ala Gln Lys Glu Ile Leu Lys Leu Leu Lys Gly Lys Val Val Val Gly
            180                 185                 190

His Ala Leu His Asn Asp Phe Gln Ala Leu Lys Tyr Val His Pro Arg
        195                 200                 205

Ser Gln Thr Arg Asp Thr Thr Tyr Val Pro Asn Phe Leu Ser Glu Pro
    210                 215                 220

Gly Leu His Thr Arg Ala Arg Val Ser Leu Lys Asp Leu Ala Leu Gln
225                 230                 235                 240

Leu Leu His Lys Lys Ile Gln Val Gly Gln His Gly His Ser Ser Val
                245                 250                 255

Glu Asp Ala Thr Thr Ala Met Glu Leu Tyr Arg Leu Val Glu Val Gln
            260                 265                 270

Trp Glu Gln Gln Glu Ala Arg Ser Leu Trp Thr Cys Pro Glu Asp Arg
        275                 280                 285

Glu Pro Asp Ser Ser Thr Asp Met Glu Gln Tyr Met Glu Asp Gln Tyr
```

290 295 300

Trp Pro Asp Asp Leu Ala His Gly Ser Arg Gly Gly Ala Arg Glu Ala
305 310 315 320

Gln Asp Arg Arg Asn
325

<210> 5838
<211> 179
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1279; "

<220>
<221> source
<223> /note="Gene Symbol: AEN; "

<220>
<221> source
<223> /note="Gene Name:
apoptosis enhancing nuclease; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453631"

<400> 5838
Met Val Pro Arg Glu Ala Pro Glu Ser Ala Gln Cys Leu Cys Pro Ser
1 5 10 15

Leu Thr Ile Pro Asn Ala Lys Asp Val Leu Arg Lys Arg His Lys Arg
20 25 30

Arg Ser Arg Gln His Gln Arg Phe Met Ala Arg Lys Ala Leu Leu Gln
35 40 45

Glu Gln Gly Leu Leu Ser Met Pro Pro Glu Pro Gly Ser Ser Pro Leu
50 55 60

Pro Thr Pro Phe Gly Ala Ala Thr Ala Thr Glu Ala Ala Ser Ser Gly
65 70 75 80

Lys Gln Cys Leu Arg Ala Gly Ser Gly Ser Ala Pro Cys Ser Arg Arg
85 90 95

```
Pro Ala Pro Gly Lys Ala Ser Gly Pro Leu Pro Ser Lys Cys Val Ala
            100                 105                 110

Ile Asp Cys Glu Met Val Gly Thr Gly Pro Arg Gly Arg Val Ser Glu
        115                 120                 125

Leu Ala Arg Cys Ser Ile Val Ser Tyr His Gly Asn Val Leu Tyr Asp
    130                 135                 140

Lys Tyr Ile Arg Pro Glu Met Pro Ile Ala Asp Tyr Arg Thr Arg Trp
145                 150                 155                 160

Ser Gly Ile Thr Arg Gln His Met Arg Lys Ala Val Pro Phe Gln Val
                165                 170                 175

Ala Gln Lys
```

<210> 5839
<211> 504
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1280; "

<220>
<221> source
<223> /note="Gene Symbol: API5; "

<220>
<221> source
<223> /note="Gene Name:
apoptosis inhibitor 5; "

<220>
<221> source
<223> /note="Uniprot ID: Q9BZZ5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000368129"

<400> 5839

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Met Pro Thr Val Glu Glu Leu Tyr Arg Asn Tyr Gly Ile Leu Ala Asp
1               5                   10                  15

Ala Thr Glu Gln Val Gly Gln His Lys Asp Ala Tyr Gln Val Ile Leu
```

```
            20                  25                  30

Asp Gly Val Lys Gly Gly Thr Lys Glu Lys Arg Leu Ala Ala Gln Phe
        35                  40                  45

Ile Pro Lys Phe Phe Lys His Phe Pro Glu Leu Ala Asp Ser Ala Ile
    50                  55                  60

Asn Ala Gln Leu Asp Leu Cys Glu Asp Glu Asp Val Ser Ile Arg Arg
65                  70                  75                  80

Gln Ala Ile Lys Glu Leu Pro Gln Phe Ala Thr Gly Glu Asn Leu Pro
                85                  90                  95

Arg Val Ala Asp Ile Leu Thr Gln Leu Leu Gln Thr Asp Asp Ser Ala
            100                 105                 110

Glu Phe Asn Leu Val Asn Asn Ala Leu Leu Ser Ile Phe Lys Met Asp
        115                 120                 125

Ala Lys Gly Thr Leu Gly Gly Leu Phe Ser Gln Ile Leu Gln Gly Glu
    130                 135                 140

Asp Ile Val Arg Glu Arg Ala Ile Lys Phe Leu Ser Thr Lys Leu Lys
145                 150                 155                 160

Thr Leu Pro Asp Glu Val Leu Thr Lys Glu Val Glu Glu Leu Ile Leu
                165                 170                 175

Thr Glu Ser Lys Lys Val Leu Glu Asp Val Thr Gly Glu Glu Phe Val
            180                 185                 190

Leu Phe Met Lys Ile Leu Ser Gly Leu Lys Ser Leu Gln Thr Val Ser
        195                 200                 205

Gly Arg Gln Gln Leu Val Glu Leu Val Ala Glu Gln Ala Asp Leu Glu
    210                 215                 220

Gln Thr Phe Asn Pro Ser Asp Pro Asp Cys Val Asp Arg Leu Leu Gln
225                 230                 235                 240

Cys Thr Arg Gln Ala Val Pro Leu Phe Ser Lys Asn Val His Ser Thr
                245                 250                 255
```

```
Arg Phe Val Thr Tyr Phe Cys Glu Gln Val Leu Pro Asn Leu Gly Thr
            260                 265                 270

Leu Thr Thr Pro Val Glu Gly Leu Asp Ile Gln Leu Glu Val Leu Lys
        275                 280                 285

Leu Leu Ala Glu Met Ser Ser Phe Cys Gly Asp Met Glu Lys Leu Glu
    290                 295                 300

Thr Asn Leu Arg Lys Leu Phe Asp Lys Leu Leu Glu Tyr Met Pro Leu
305                 310                 315                 320

Pro Pro Glu Glu Ala Glu Asn Gly Glu Asn Ala Gly Asn Glu Glu Pro
                325                 330                 335

Lys Leu Gln Phe Ser Tyr Val Glu Cys Leu Leu Tyr Ser Phe His Gln
            340                 345                 350

Leu Gly Arg Lys Leu Pro Asp Phe Leu Thr Ala Lys Leu Asn Ala Glu
        355                 360                 365

Lys Leu Lys Asp Phe Lys Ile Arg Leu Gln Tyr Phe Ala Arg Gly Leu
    370                 375                 380

Gln Val Tyr Ile Arg Gln Leu Arg Leu Ala Leu Gln Gly Lys Thr Gly
385                 390                 395                 400

Glu Ala Leu Lys Thr Glu Glu Asn Lys Ile Lys Val Val Ala Leu Lys
                405                 410                 415

Ile Thr Asn Asn Ile Asn Val Leu Ile Lys Asp Leu Phe His Ile Pro
            420                 425                 430

Pro Ser Tyr Lys Ser Thr Val Thr Leu Ser Trp Lys Pro Val Gln Lys
        435                 440                 445

Val Glu Ile Gly Gln Lys Arg Ala Ser Glu Asp Thr Thr Ser Gly Ser
    450                 455                 460

Pro Pro Lys Lys Ser Ser Ala Gly Pro Lys Arg Asp Ala Arg Gln Ile
465                 470                 475                 480
```

Tyr Asn Pro Pro Ser Gly Lys Tyr Ser Ser Asn Leu Gly Asn Phe Asn
485 490 495

Tyr Glu Arg Ser Leu Gln Gly Lys
500

<210> 5840
<211> 513
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1280; "

<220>
<221> source
<223> /note="Gene Symbol: API5; "

<220>
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<223> /note="Gene Name:
apoptosis inhibitor 5; "

<220>
<221> source
<223> /note="Uniprot ID: Q9BZZ5; "

<220>
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<223> /note="ENSP ID: ENSP00000399341"

<400> 5840
Met Lys Gln Arg Trp Arg Glu Asn Gly Ile Gly Lys His Lys Asp Ala
1 5 10 15

Tyr Gln Val Ile Leu Asp Gly Val Lys Gly Gly Thr Lys Glu Lys Arg
20 25 30

Leu Ala Ala Gln Phe Ile Pro Lys Phe Phe Lys His Phe Pro Glu Leu
35 40 45

Ala Asp Ser Ala Ile Asn Ala Gln Leu Asp Leu Cys Glu Asp Glu Asp
50 55 60

Val Ser Ile Arg Arg Gln Ala Ile Lys Glu Leu Pro Gln Phe Ala Thr
65 70 75 80

Gly Glu Asn Leu Pro Arg Val Ala Asp Ile Leu Thr Gln Leu Leu Gln

```
                85                  90                  95

Thr Asp Asp Ser Ala Glu Phe Asn Leu Val Asn Asn Ala Leu Leu Ser
            100                 105                 110

Ile Phe Lys Met Asp Ala Lys Gly Thr Leu Gly Gly Leu Phe Ser Gln
        115                 120                 125

Ile Leu Gln Gly Glu Asp Ile Val Arg Glu Arg Ala Ile Lys Phe Leu
    130                 135                 140

Ser Thr Lys Leu Lys Thr Leu Pro Asp Glu Val Leu Thr Lys Glu Val
145                 150                 155                 160

Glu Glu Leu Ile Leu Thr Glu Ser Lys Lys Val Leu Glu Asp Val Thr
                165                 170                 175

Gly Glu Glu Phe Val Leu Phe Met Lys Ile Leu Ser Gly Leu Lys Ser
            180                 185                 190

Leu Gln Thr Val Ser Gly Arg Gln Gln Leu Val Glu Leu Val Ala Glu
        195                 200                 205

Gln Ala Asp Leu Glu Gln Thr Phe Asn Pro Ser Asp Pro Asp Cys Val
    210                 215                 220

Asp Arg Leu Leu Gln Cys Thr Arg Gln Ala Val Pro Leu Phe Ser Lys
225                 230                 235                 240

Asn Val His Ser Thr Arg Phe Val Thr Tyr Phe Cys Glu Gln Val Leu
                245                 250                 255

Pro Asn Leu Gly Thr Leu Thr Thr Pro Val Glu Gly Leu Asp Ile Gln
            260                 265                 270

Leu Glu Val Leu Lys Leu Leu Ala Glu Met Ser Ser Phe Cys Gly Asp
        275                 280                 285

Met Glu Lys Leu Glu Thr Asn Leu Arg Lys Leu Phe Asp Lys Leu Leu
    290                 295                 300

Glu Tyr Met Pro Leu Pro Pro Glu Glu Ala Glu Asn Gly Glu Asn Ala
305                 310                 315                 320
```

```
Gly Asn Glu Glu Pro Lys Leu Gln Phe Ser Tyr Val Glu Cys Leu Leu
                325                 330                 335

Tyr Ser Phe His Gln Leu Gly Arg Lys Leu Pro Asp Phe Leu Thr Ala
            340                 345                 350

Lys Leu Asn Ala Glu Lys Leu Lys Asp Phe Lys Ile Arg Leu Gln Tyr
        355                 360                 365

Phe Ala Arg Gly Leu Gln Val Tyr Ile Arg Gln Leu Arg Leu Ala Leu
    370                 375                 380

Gln Gly Lys Thr Gly Glu Ala Leu Lys Thr Glu Glu Asn Lys Ile Lys
385                 390                 395                 400

Val Val Ala Leu Lys Ile Thr Asn Asn Ile Asn Val Leu Ile Lys Asp
                405                 410                 415

Leu Phe His Ile Pro Pro Ser Tyr Lys Ser Thr Val Thr Leu Ser Trp
            420                 425                 430

Lys Pro Val Gln Lys Val Glu Ile Gly Gln Lys Arg Ala Ser Glu Asp
        435                 440                 445

Thr Thr Ser Gly Ser Pro Pro Lys Lys Ser Ser Ala Gly Pro Lys Arg
    450                 455                 460

Asp Ala Arg Gln Ile Tyr Asn Pro Pro Ser Gly Lys Tyr Ser Ser Asn
465                 470                 475                 480

Leu Gly Asn Phe Asn Tyr Glu Gln Arg Gly Ala Phe Arg Gly Ser Arg
                485                 490                 495

Gly Gly Arg Gly Trp Gly Thr Arg Gly Asn Arg Ser Arg Gly Arg Leu
            500                 505                 510

Tyr
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<210> 5841
<211> 450
<212> PRT

<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: API5; "

<220>
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<223> /note="Gene Name:
apoptosis inhibitor 5; "

<220>
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<223> /note="Uniprot ID: Q9BZZ5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000402540"

<400> 5841

```
Met Pro Thr Val Glu Glu Leu Tyr Arg Asn Tyr Gly Ile Leu Ala Asp
1               5                  10                  15

Ala Thr Glu Gln Val Gly Gln Ile Arg Arg Gln Ala Ile Lys Glu Leu
            20                  25                  30

Pro Gln Phe Ala Thr Gly Glu Asn Leu Pro Arg Val Ala Asp Ile Leu
        35                  40                  45

Thr Gln Leu Leu Gln Thr Asp Asp Ser Ala Glu Phe Asn Leu Val Asn
    50                  55                  60

Asn Ala Leu Leu Ser Ile Phe Lys Met Asp Ala Lys Gly Thr Leu Gly
65                  70                  75                  80

Gly Leu Phe Ser Gln Ile Leu Gln Gly Glu Asp Ile Val Arg Glu Arg
                85                  90                  95

Ala Ile Lys Phe Leu Ser Thr Lys Leu Lys Thr Leu Pro Asp Glu Val
            100                 105                 110

Leu Thr Lys Glu Val Glu Glu Leu Ile Leu Thr Glu Ser Lys Lys Val
        115                 120                 125

Leu Glu Asp Val Thr Gly Glu Glu Phe Val Leu Phe Met Lys Ile Leu
```

```
    130                 135                 140

Ser Gly Leu Lys Ser Leu Gln Thr Val Ser Gly Arg Gln Gln Leu Val
145                 150                 155                 160

Glu Leu Val Ala Glu Gln Ala Asp Leu Glu Gln Thr Phe Asn Pro Ser
                165                 170                 175

Asp Pro Asp Cys Val Asp Arg Leu Leu Gln Cys Thr Arg Gln Ala Val
            180                 185                 190

Pro Leu Phe Ser Lys Asn Val His Ser Thr Arg Phe Val Thr Tyr Phe
        195                 200                 205

Cys Glu Gln Val Leu Pro Asn Leu Gly Thr Leu Thr Thr Pro Val Glu
    210                 215                 220

Gly Leu Asp Ile Gln Leu Glu Val Leu Lys Leu Leu Ala Glu Met Ser
225                 230                 235                 240

Ser Phe Cys Gly Asp Met Glu Lys Leu Glu Thr Asn Leu Arg Lys Leu
                245                 250                 255

Phe Asp Lys Leu Leu Glu Tyr Met Pro Leu Pro Pro Glu Glu Ala Glu
            260                 265                 270

Asn Gly Glu Asn Ala Gly Asn Glu Glu Pro Lys Leu Gln Phe Ser Tyr
        275                 280                 285

Val Glu Cys Leu Leu Tyr Ser Phe His Gln Leu Gly Arg Lys Leu Pro
    290                 295                 300

Asp Phe Leu Thr Ala Lys Leu Asn Ala Glu Lys Leu Lys Asp Phe Lys
305                 310                 315                 320

Ile Arg Leu Gln Tyr Phe Ala Arg Gly Leu Gln Val Tyr Ile Arg Gln
                325                 330                 335

Leu Arg Leu Ala Leu Gln Gly Lys Thr Gly Glu Ala Leu Lys Thr Glu
            340                 345                 350

Glu Asn Lys Ile Lys Val Val Ala Leu Lys Ile Thr Asn Asn Ile Asn
        355                 360                 365
```

```
Val Leu Ile Lys Asp Leu Phe His Ile Pro Pro Ser Tyr Lys Ser Thr
    370                 375                 380

Val Thr Leu Ser Trp Lys Pro Val Gln Lys Val Glu Ile Gly Gln Lys
385                 390                 395                 400

Arg Ala Ser Glu Asp Thr Thr Ser Gly Ser Pro Pro Lys Lys Ser Ser
                405                 410                 415

Ala Gly Pro Lys Arg Asp Ala Arg Gln Ile Tyr Asn Pro Pro Ser Gly
            420                 425                 430

Lys Tyr Ser Ser Asn Leu Gly Asn Phe Asn Tyr Glu Arg Ser Leu Gln
        435                 440                 445

Gly Lys
    450


<210> 5842
<211> 524
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1280; "

<220>
<221> source
<223> /note="Gene Symbol: API5; "

<220>
<221> source
<223> /note="Gene Name:
      apoptosis inhibitor 5; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9BZZ5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431391"

<400> 5842
Met Pro Thr Val Glu Glu Leu Tyr Arg Asn Tyr Gly Ile Leu Ala Asp
1               5                   10                  15
```

```
Ala Thr Glu Gln Val Gly Gln His Lys Asp Ala Tyr Gln Val Ile Leu
            20                  25                  30

Asp Gly Val Lys Gly Gly Thr Lys Glu Lys Arg Leu Ala Ala Gln Phe
        35                  40                  45

Ile Pro Lys Phe Phe Lys His Phe Pro Glu Leu Ala Asp Ser Ala Ile
    50                  55                  60

Asn Ala Gln Leu Asp Leu Cys Glu Asp Glu Asp Val Ser Ile Arg Arg
65                  70                  75                  80

Gln Ala Ile Lys Glu Leu Pro Gln Phe Ala Thr Gly Glu Asn Leu Pro
                85                  90                  95

Arg Val Ala Asp Ile Leu Thr Gln Leu Leu Gln Thr Asp Asp Ser Ala
            100                 105                 110

Glu Phe Asn Leu Val Asn Asn Ala Leu Leu Ser Ile Phe Lys Met Asp
        115                 120                 125

Ala Lys Gly Thr Leu Gly Gly Leu Phe Ser Gln Ile Leu Gln Gly Glu
    130                 135                 140

Asp Ile Val Arg Glu Arg Ala Ile Lys Phe Leu Ser Thr Lys Leu Lys
145                 150                 155                 160

Thr Leu Pro Asp Glu Val Leu Thr Lys Glu Val Glu Glu Leu Ile Leu
                165                 170                 175

Thr Glu Ser Lys Lys Val Leu Glu Asp Val Thr Gly Glu Glu Phe Val
            180                 185                 190

Leu Phe Met Lys Ile Leu Ser Gly Leu Lys Ser Leu Gln Thr Val Ser
        195                 200                 205

Gly Arg Gln Gln Leu Val Glu Leu Val Ala Glu Gln Ala Asp Leu Glu
    210                 215                 220

Gln Thr Phe Asn Pro Ser Asp Pro Asp Cys Val Asp Arg Leu Leu Gln
225                 230                 235                 240

Cys Thr Arg Gln Ala Val Pro Leu Phe Ser Lys Asn Val His Ser Thr
```

```
                245                 250                 255

Arg Phe Val Thr Tyr Phe Cys Glu Gln Val Leu Pro Asn Leu Gly Thr
            260                 265                 270

Leu Thr Thr Pro Val Glu Gly Leu Asp Ile Gln Leu Glu Val Leu Lys
        275                 280                 285

Leu Leu Ala Glu Met Ser Ser Phe Cys Gly Asp Met Glu Lys Leu Glu
    290                 295                 300

Thr Asn Leu Arg Lys Leu Phe Asp Lys Leu Leu Glu Tyr Met Pro Leu
305                 310                 315                 320

Pro Pro Glu Glu Ala Glu Asn Gly Glu Asn Ala Gly Asn Glu Glu Pro
                325                 330                 335

Lys Leu Gln Phe Ser Tyr Val Glu Cys Leu Leu Tyr Ser Phe His Gln
            340                 345                 350

Leu Gly Arg Lys Leu Pro Asp Phe Leu Thr Ala Lys Leu Asn Ala Glu
        355                 360                 365

Lys Leu Lys Asp Phe Lys Ile Arg Leu Gln Tyr Phe Ala Arg Gly Leu
    370                 375                 380

Gln Val Tyr Ile Arg Gln Leu Arg Leu Ala Leu Gln Gly Lys Thr Gly
385                 390                 395                 400

Glu Ala Leu Lys Thr Glu Glu Asn Lys Ile Lys Val Val Ala Leu Lys
                405                 410                 415

Ile Thr Asn Asn Ile Asn Val Leu Ile Lys Asp Leu Phe His Ile Pro
            420                 425                 430

Pro Ser Tyr Lys Ser Thr Val Thr Leu Ser Trp Lys Pro Val Gln Lys
        435                 440                 445

Val Glu Ile Gly Gln Lys Arg Ala Ser Glu Asp Thr Thr Ser Gly Ser
    450                 455                 460

Pro Pro Lys Lys Ser Ser Ala Gly Pro Lys Arg Asp Ala Arg Gln Ile
465                 470                 475                 480
```

```
Tyr Asn Pro Pro Ser Gly Lys Tyr Ser Ser Asn Leu Gly Asn Phe Asn
                485                 490                 495

Tyr Glu Gln Arg Gly Ala Phe Arg Gly Ser Arg Gly Gly Arg Gly Trp
            500                 505                 510

Gly Thr Arg Gly Asn Arg Ser Arg Gly Arg Leu Tyr
        515                 520


<210> 5843
<211> 510
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1280; "

<220>
<221> source
<223> /note="Gene Symbol: API5; "

<220>
<221> source
<223> /note="Gene Name:
      apoptosis inhibitor 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000434462"

<400> 5843
Met Pro Thr Val Glu Glu Leu Tyr Arg Asn Tyr Gly Ile Leu Ala Asp
1               5                   10                  15

Ala Thr Glu Gln Val Gly Gln His Lys Asp Ala Tyr Gln Val Ile Leu
            20                  25                  30

Asp Gly Val Lys Gly Gly Thr Lys Glu Lys Arg Leu Ala Ala Gln Phe
        35                  40                  45

Ile Pro Lys Phe Phe Lys His Phe Pro Glu Leu Ala Asp Ser Ala Ile
    50                  55                  60

Asn Ala Gln Leu Asp Leu Cys Glu Asp Glu Asp Val Ser Ile Arg Arg
65                  70                  75                  80
```

```
Gln Ala Ile Lys Glu Leu Pro Gln Phe Ala Thr Gly Glu Asn Leu Pro
                85                  90                  95

Arg Val Ala Asp Ile Leu Thr Gln Leu Leu Gln Thr Asp Asp Ser Ala
            100                 105                 110

Glu Phe Asn Leu Val Asn Asn Ala Leu Leu Ser Ile Phe Lys Met Asp
        115                 120                 125

Ala Lys Gly Thr Leu Gly Gly Leu Phe Ser Gln Ile Leu Gln Gly Glu
    130                 135                 140

Asp Ile Val Arg Glu Arg Ala Ile Lys Phe Leu Ser Thr Lys Leu Lys
145                 150                 155                 160

Thr Leu Pro Asp Glu Val Leu Thr Lys Glu Val Glu Glu Leu Ile Leu
                165                 170                 175

Thr Glu Ser Lys Lys Val Leu Glu Asp Val Thr Gly Glu Glu Phe Val
            180                 185                 190

Leu Phe Met Lys Ile Leu Ser Gly Leu Lys Ser Leu Gln Thr Val Ser
        195                 200                 205

Gly Arg Gln Gln Leu Val Glu Leu Val Ala Glu Gln Ala Asp Leu Glu
    210                 215                 220

Gln Thr Phe Asn Pro Ser Asp Pro Asp Cys Val Asp Arg Leu Leu Gln
225                 230                 235                 240

Cys Thr Arg Gln Ala Val Pro Leu Phe Ser Lys Asn Val His Ser Thr
                245                 250                 255

Arg Phe Val Thr Tyr Phe Cys Glu Gln Val Leu Pro Asn Leu Gly Thr
            260                 265                 270

Leu Thr Thr Pro Val Glu Gly Leu Asp Ile Gln Leu Glu Val Leu Lys
        275                 280                 285

Leu Leu Ala Glu Met Ser Ser Phe Cys Gly Asp Met Glu Lys Leu Glu
    290                 295                 300

Thr Asn Leu Arg Lys Leu Phe Asp Lys Leu Leu Glu Tyr Met Pro Leu
```

```
305                 310                 315                 320

Pro Pro Glu Glu Ala Glu Asn Gly Glu Asn Ala Gly Asn Glu Glu Pro
                325                 330                 335

Lys Leu Gln Phe Ser Tyr Val Glu Cys Leu Leu Tyr Ser Phe His Gln
            340                 345                 350

Leu Gly Arg Lys Leu Pro Asp Phe Leu Thr Ala Lys Leu Asn Ala Glu
        355                 360                 365

Lys Leu Lys Asp Phe Lys Ile Arg Leu Gln Tyr Phe Ala Arg Gly Leu
    370                 375                 380

Gln Val Tyr Ile Arg Gln Leu Arg Leu Ala Leu Gln Gly Lys Thr Gly
385                 390                 395                 400

Glu Ala Leu Lys Thr Glu Glu Asn Lys Ile Lys Val Val Ala Leu Lys
                405                 410                 415

Ile Thr Asn Asn Ile Asn Val Leu Ile Lys Asp Leu Phe His Ile Pro
            420                 425                 430

Pro Ser Tyr Lys Ser Thr Val Thr Leu Ser Trp Lys Pro Val Gln Lys
        435                 440                 445

Val Glu Ile Gly Gln Lys Arg Ala Ser Glu Asp Thr Thr Ser Gly Ser
    450                 455                 460

Pro Pro Lys Lys Ser Ser Ala Gly Pro Lys Arg Asp Ala Arg Gln Ile
465                 470                 475                 480

Tyr Asn Pro Pro Ser Gly Lys Tyr Ser Ser Asn Leu Gly Asn Phe Asn
                485                 490                 495

Tyr Gly Glu Arg Phe Arg Leu Gly Thr Arg Asn Met Arg Asp
            500                 505                 510


<210> 5844
<211> 123
<212> PRT
<213> Homo sapiens

<220>
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<221> source
<223> /note="Payload ID: 1280; "

<220>
<221> source
<223> /note="Gene Symbol: API5; "

<220>
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<223> /note="Gene Name:
apoptosis inhibitor 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436189"

<400> 5844
Met Pro Thr Val Glu Glu Leu Tyr Arg Asn Tyr Gly Ile Leu Ala Asp
1 5 10 15

Ala Thr Glu Gln Val Gly Gln His Lys Asp Ala Tyr Gln Val Ile Leu
20 25 30

Asp Gly Val Lys Gly Gly Thr Lys Glu Lys Arg Leu Ala Ala Gln Phe
35 40 45

Ile Pro Lys Phe Phe Lys His Phe Pro Glu Leu Ala Asp Ser Ala Ile
50 55 60

Asn Ala Gln Leu Asp Leu Cys Glu Asp Glu Asp Val Ser Lys Thr Ser
65 70 75 80

Ala Phe Phe Ser Ile Val Met Ser Leu Ile Tyr Leu Asn Ser Thr Thr
85 90 95

His Trp Ile Ala Gly Asp Val Pro Leu Asn Arg Leu Leu Pro Ser Ala
100 105 110

Lys Asn Leu Met Phe Phe Ile Pro Leu Tyr Val
115 120

<210> 5845
<211> 294
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1280; "

<220>
<221> source
<223> /note="Gene Symbol: API5; "

<220>
<221> source
<223> /note="Gene Name:
apoptosis inhibitor 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436436"

<400> 5845

```
Ala Ile Lys Phe Leu Ser Thr Lys Leu Lys Thr Leu Pro Asp Glu Val
1               5                  10                  15

Leu Thr Lys Glu Val Glu Glu Leu Ile Leu Thr Glu Ser Lys Lys Val
            20                  25                  30

Leu Glu Asp Val Thr Gly Glu Glu Phe Val Leu Phe Met Lys Ile Leu
        35                  40                  45

Ser Gly Leu Lys Ser Leu Gln Thr Val Ser Gly Arg Gln Gln Leu Val
    50                  55                  60

Glu Leu Val Ala Glu Gln Ala Asp Leu Glu Gln Thr Phe Asn Pro Ser
65                  70                  75                  80

Asp Pro Asp Cys Val Asp Arg Leu Leu Gln Cys Thr Arg Gln Ala Val
                85                  90                  95

Pro Leu Phe Ser Val Leu Lys Leu Leu Ala Glu Met Ser Ser Phe Cys
            100                 105                 110

Gly Asp Met Glu Lys Leu Glu Thr Asn Leu Arg Lys Leu Phe Asp Lys
        115                 120                 125

Leu Leu Glu Tyr Met Pro Leu Pro Pro Glu Glu Ala Glu Asn Gly Glu
    130                 135                 140

Asn Ala Gly Asn Glu Glu Pro Lys Leu Gln Phe Ser Tyr Val Glu Cys
145                 150                 155                 160

Leu Leu Tyr Ser Phe His Gln Leu Gly Arg Lys Leu Pro Asp Phe Leu
                165                 170                 175
```

```
Thr Ala Lys Leu Asn Ala Glu Lys Leu Lys Asp Phe Lys Ile Arg Leu
            180                 185                 190

Gln Tyr Phe Ala Arg Gly Leu Gln Val Tyr Ile Arg Gln Leu Arg Leu
        195                 200                 205

Ala Leu Gln Gly Lys Thr Gly Glu Ala Leu Lys Thr Glu Glu Asn Lys
    210                 215                 220

Ile Lys Val Val Ala Leu Lys Ile Thr Asn Asn Ile Asn Val Leu Ile
225                 230                 235                 240

Lys Asp Leu Phe His Ile Pro Pro Ser Tyr Lys Ser Thr Val Thr Leu
                245                 250                 255

Ser Trp Lys Pro Val Gln Lys Val Glu Ile Gly Gln Lys Arg Ala Ser
            260                 265                 270

Glu Asp Thr Thr Ser Gly Ser Pro Pro Lys Lys Ser Ser Ala Gly Pro
        275                 280                 285

Lys Arg Asp Ala Arg Gln
    290


<210> 5846
<211> 823
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1281; "

<220>
<221> source
<223> /note="Gene Symbol: AREL1; "

<220>
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<223> /note="Gene Name:
      apoptosis resistant E3
      ubiquitin
      prt ligase 1; "

<220>
<221> source
<223> /note="Uniprot ID:  O15033; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000348714"

<400> 5846
Met Phe Tyr Val Ile Gly Gly Ile Thr Val Ser Val Val Ala Phe Phe
1   5   10   15

Phe Thr Ile Lys Phe Leu Phe Glu Leu Ala Ala Arg Val Val Ser Phe
            20   25   30

Leu Gln Asn Glu Asp Arg Glu Arg Arg Gly Asp Arg Thr Ile Tyr Asp
        35   40   45

Tyr Val Arg Gly Asn Tyr Leu Asp Pro Arg Ser Cys Lys Val Ser Trp
    50   55   60

Asp Trp Lys Asp Pro Tyr Glu Val Gly His Ser Met Ala Phe Arg Val
65   70   75   80

His Leu Phe Tyr Lys Asn Gly Gln Pro Phe Pro Ala His Arg Pro Val
                85   90   95

Gly Leu Arg Val His Ile Ser His Val Glu Leu Ala Val Glu Ile Pro
            100   105   110

Val Thr Gln Glu Val Leu Gln Glu Pro Asn Ser Asn Val Val Lys Val
        115   120   125

Ala Phe Thr Val Arg Lys Ala Gly Arg Tyr Glu Ile Thr Val Lys Leu
    130   135   140

Gly Gly Leu Asn Val Ala Tyr Ser Pro Tyr Tyr Lys Ile Phe Gln Pro
145   150   155   160

Gly Met Val Val Pro Ser Lys Thr Lys Ile Val Cys His Phe Ser Thr
                165   170   175

Leu Val Leu Thr Cys Gly Gln Pro His Thr Leu Gln Ile Val Pro Arg
            180   185   190

Asp Glu Tyr Asp Asn Pro Thr Asn Asn Ser Met Ser Leu Arg Asp Glu
        195   200   205

```
His Asn Tyr Thr Leu Ser Ile His Glu Leu Gly Pro Gln Glu Glu Glu
    210                 215                 220

Ser Thr Gly Val Ser Phe Glu Lys Ser Val Thr Ser Asn Arg Gln Thr
225                 230                 235                 240

Phe Gln Val Phe Leu Arg Leu Thr Leu His Ser Arg Gly Cys Phe His
                245                 250                 255

Ala Cys Ile Ser Tyr Gln Asn Gln Pro Ile Asn Asn Gly Glu Phe Asp
            260                 265                 270

Ile Ile Val Leu Ser Glu Asp Glu Lys Asn Ile Val Glu Arg Asn Val
        275                 280                 285

Ser Thr Ser Gly Val Ser Ile Tyr Phe Glu Ala Tyr Leu Tyr Asn Ala
    290                 295                 300

Thr Asn Cys Ser Ser Thr Pro Trp His Leu Pro Pro Met His Met Thr
305                 310                 315                 320

Ser Ser Gln Arg Arg Pro Ser Thr Ala Val Asp Glu Glu Asp Glu Asp
                325                 330                 335

Ser Pro Ser Glu Cys His Thr Pro Glu Lys Val Lys Lys Pro Lys Lys
            340                 345                 350

Val Tyr Cys Tyr Val Ser Pro Lys Gln Phe Ser Val Lys Glu Phe Tyr
        355                 360                 365

Leu Lys Ile Ile Pro Trp Arg Leu Tyr Thr Phe Arg Val Cys Pro Gly
    370                 375                 380

Thr Lys Phe Ser Tyr Leu Gly Pro Asp Pro Val His Lys Leu Leu Thr
385                 390                 395                 400

Leu Val Val Asp Asp Gly Ile Gln Pro Pro Val Glu Leu Ser Cys Lys
                405                 410                 415

Glu Arg Asn Ile Leu Ala Ala Thr Phe Ile Arg Ser Leu His Lys Asn
            420                 425                 430
```

```
Ile Gly Gly Ser Glu Thr Phe Gln Asp Lys Val Asn Phe Phe Gln Arg
        435                 440                 445

Glu Leu Arg Gln Val His Met Lys Arg Pro His Ser Lys Val Thr Leu
    450                 455                 460

Lys Val Ser Arg His Ala Leu Leu Glu Ser Ser Leu Lys Ala Thr Arg
465                 470                 475                 480

Asn Phe Ser Ile Ser Asp Trp Ser Lys Asn Phe Glu Val Val Phe Gln
                485                 490                 495

Asp Glu Glu Ala Leu Asp Trp Gly Gly Pro Arg Arg Glu Trp Phe Glu
            500                 505                 510

Leu Ile Cys Lys Ala Leu Phe Asp Thr Thr Asn Gln Leu Phe Thr Arg
        515                 520                 525

Phe Ser Asp Asn Asn Gln Ala Leu Val His Pro Asn Pro Asn Arg Pro
    530                 535                 540

Ala His Leu Arg Leu Lys Met Tyr Glu Phe Ala Gly Arg Leu Val Gly
545                 550                 555                 560

Lys Cys Leu Tyr Glu Ser Ser Leu Gly Gly Ala Tyr Lys Gln Leu Val
                565                 570                 575

Arg Ala Arg Phe Thr Arg Ser Phe Leu Ala Gln Ile Ile Gly Leu Arg
            580                 585                 590

Met His Tyr Lys Tyr Phe Glu Thr Asp Asp Pro Glu Phe Tyr Lys Ser
        595                 600                 605

Lys Val Cys Phe Ile Leu Asn Asn Asp Met Ser Glu Met Glu Leu Val
    610                 615                 620

Phe Ala Glu Glu Lys Tyr Asn Lys Ser Gly Gln Leu Asp Lys Val Val
625                 630                 635                 640

Glu Leu Met Thr Gly Gly Ala Gln Thr Pro Val Thr Asn Ala Asn Lys
                645                 650                 655

Ile Phe Tyr Leu Asn Leu Leu Ala Gln Tyr Arg Leu Ala Ser Gln Val
```

660 665 670

Lys Glu Glu Val Glu His Phe Leu Lys Gly Leu Asn Glu Leu Val Pro
675 680 685

Glu Asn Leu Leu Ala Ile Phe Asp Glu Asn Glu Leu Glu Leu Leu Met
690 695 700

Cys Gly Thr Gly Asp Ile Ser Val Ser Asp Phe Lys Ala His Ala Val
705 710 715 720

Val Val Gly Gly Ser Trp His Phe Arg Glu Lys Val Met Arg Trp Phe
725 730 735

Trp Thr Val Val Ser Ser Leu Thr Gln Glu Glu Leu Ala Arg Leu Leu
740 745 750

Gln Phe Thr Thr Gly Ser Ser Gln Leu Pro Pro Gly Gly Phe Ala Ala
755 760 765

Leu Cys Pro Ser Phe Gln Ile Ile Ala Ala Pro Thr His Ser Thr Leu
770 775 780

Pro Thr Ala His Thr Cys Phe Asn Gln Leu Cys Leu Pro Thr Tyr Asp
785 790 795 800

Ser Tyr Glu Glu Val His Arg Met Leu Gln Leu Ala Ile Ser Glu Gly
805 810 815

Cys Glu Gly Phe Gly Met Leu
820

<210> 5847
<211> 129
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1281; "

<220>
<221> source
<223> /note="Gene Symbol: AREL1; "

<220>

<221> source
<223> /note="Gene Name:
apoptosis resistant E3
ubiquitin
prt ligase 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000450458"

<400> 5847
Met Phe Tyr Val Ile Gly Gly Ile Thr Val Ser Val Val Ala Phe Phe
1 5 10 15

Phe Thr Ile Lys Phe Leu Phe Glu Leu Ala Ala Arg Val Val Ser Phe
20 25 30

Leu Gln Asn Glu Asp Arg Glu Arg Arg Gly Asp Arg Thr Ile Tyr Asp
35 40 45

Tyr Val Arg Gly Asn Tyr Leu Asp Pro Arg Ser Cys Lys Val Ser Trp
50 55 60

Asp Trp Lys Asp Pro Tyr Glu Val Gly His Ser Met Ala Phe Arg Val
65 70 75 80

His Leu Phe Tyr Lys Asn Gly Gln Pro Phe Pro Ala His Arg Pro Val
85 90 95

Gly Leu Arg Val His Ile Ser His Val Glu Leu Ala Val Glu Ile Pro
100 105 110

Val Thr Gln Glu Val Leu Gln Glu Pro Asn Ser Asn Val Val Lys Val
115 120 125

Ala

<210> 5848
<211> 504
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1281; "

<220>

<221> source
<223> /note="Gene Symbol: AREL1; "

<220>
<221> source
<223> /note="Gene Name:
apoptosis resistant E3
ubiquitin
prt ligase 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000450557"

<400> 5848

```
Met Phe Tyr Val Ile Gly Gly Ile Thr Val Ser Val Val Ala Phe Phe
1               5                  10                  15

Phe Thr Ile Lys Phe Leu Phe Glu Leu Ala Ala Arg Val Val Ser Phe
            20                  25                  30

Leu Gln Asn Glu Asp Arg Glu Arg Arg Gly Asp Arg Thr Ile Tyr Asp
        35                  40                  45

Tyr Val Arg Gly Asn Tyr Leu Asp Pro Arg Ser Cys Lys Val Ser Trp
    50                  55                  60

Asp Trp Lys Asp Pro Tyr Glu Val Gly His Ser Met Ala Phe Arg Val
65                  70                  75                  80

His Leu Phe Tyr Lys Asn Gly Gln Pro Phe Pro Ala His Arg Pro Val
                85                  90                  95

Gly Leu Arg Val His Ile Ser His Val Glu Leu Ala Val Glu Ile Pro
            100                 105                 110

Val Thr Gln Glu Val Leu Gln Glu Pro Asn Ser Asn Val Val Lys Val
        115                 120                 125

Ala Phe Thr Val Arg Lys Ala Gly Arg Tyr Glu Ile Thr Val Lys Leu
    130                 135                 140

Gly Gly Leu Asn Val Ala Tyr Ser Pro Tyr Tyr Lys Ile Phe Gln Pro
145                 150                 155                 160

Gly Met Val Val Pro Ser Lys Thr Lys Ile Val Cys His Phe Ser Thr
                165                 170                 175
```

```
Leu Val Leu Thr Cys Gly Gln Pro His Thr Leu Gln Ile Val Pro Arg
            180                 185                 190

Asp Glu Tyr Asp Asn Pro Thr Asn Asn Ser Met Ser Leu Arg Asp Glu
        195                 200                 205

His Asn Tyr Thr Leu Ser Ile His Glu Leu Gly Pro Gln Glu Glu Glu
    210                 215                 220

Ser Thr Gly Val Ser Phe Glu Lys Ser Val Thr Ser Asn Arg Gln Thr
225                 230                 235                 240

Phe Gln Val Phe Leu Arg Leu Thr Leu His Ser Arg Gly Cys Phe His
                245                 250                 255

Ala Cys Ile Ser Tyr Gln Asn Gln Pro Ile Asn Asn Gly Glu Phe Asp
            260                 265                 270

Ile Ile Val Leu Ser Glu Asp Glu Lys Asn Ile Val Glu Arg Asn Val
        275                 280                 285

Ser Thr Ser Gly Val Ser Ile Tyr Phe Glu Ala Tyr Leu Tyr Asn Ala
    290                 295                 300

Thr Asn Cys Ser Ser Thr Pro Trp His Leu Pro Pro Met His Met Thr
305                 310                 315                 320

Ser Ser Gln Arg Arg Pro Ser Thr Ala Val Asp Glu Glu Asp Glu Asp
                325                 330                 335

Ser Pro Ser Glu Cys His Thr Pro Glu Lys Val Lys Lys Pro Lys Lys
            340                 345                 350

Val Tyr Cys Tyr Val Ser Pro Lys Gln Phe Ser Val Lys Glu Phe Tyr
        355                 360                 365

Leu Lys Ile Ile Pro Trp Arg Leu Tyr Thr Phe Arg Val Cys Pro Gly
    370                 375                 380

Thr Lys Phe Ser Tyr Leu Gly Pro Asp Pro Val His Lys Leu Leu Thr
385                 390                 395                 400
```

```
Leu Val Val Asp Asp Gly Ile Gln Pro Pro Val Glu Leu Ser Cys Lys
                405                 410                 415

Glu Arg Asn Ile Leu Ala Ala Thr Phe Ile Arg Ser Leu His Lys Asn
            420                 425                 430

Ile Gly Gly Ser Glu Thr Phe Gln Asp Lys Val Asn Phe Phe Gln Arg
        435                 440                 445

Glu Leu Arg Gln Val His Met Lys Arg Pro His Ser Lys Val Thr Leu
    450                 455                 460

Lys Val Ser Arg His Ala Leu Leu Glu Ser Ser Leu Lys Ala Thr Arg
465                 470                 475                 480

Asn Phe Ser Ile Ser Asp Trp Ser Lys Asn Phe Glu Val Val Phe Gln
                485                 490                 495

Asp Glu Glu Gly Ala Ser Gln Pro
            500


<210> 5849
<211> 89
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1281; "

<220>
<221> source
<223> /note="Gene Symbol: AREL1; "

<220>
<221> source
<223> /note="Gene Name:
      apoptosis resistant E3
      ubiquitin
      prt ligase 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000450901"

<400> 5849
Trp Phe Trp Thr Val Val Ser Ser Leu Thr Gln Glu Glu Leu Ala Arg
1               5                   10                  15
```

```
Leu Leu Gln Phe Thr Thr Gly Ser Ser Gln Leu Pro Pro Gly Gly Phe
            20                  25                  30

Ala Ala Leu Cys Pro Ser Phe Gln Ile Ile Ala Ala Pro Thr His Ser
        35                  40                  45

Thr Leu Pro Thr Ala His Thr Cys Phe Asn Gln Leu Cys Leu Pro Thr
    50                  55                  60

Tyr Asp Ser Tyr Glu Glu Val His Arg Met Leu Gln Leu Ala Ile Ser
65                  70                  75                  80

Glu Gly Cys Glu Gly Phe Gly Met Leu
                85


<210> 5850
<211> 119
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1281; "

<220>
<221> source
<223> /note="Gene Symbol: AREL1; "

<220>
<221> source
<223> /note="Gene Name:
      apoptosis resistant E3
      ubiquitin
      prt ligase 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000450912"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5850
Xaa Ser Pro Lys Gln Phe Ser Val Lys Glu Phe Tyr Leu Lys Ile Ile
1               5                   10                  15

Pro Trp Arg Leu Tyr Thr Phe Arg Val Cys Pro Gly Thr Lys Phe Ser
```

```
            20                  25                  30

Tyr Leu Gly Pro Asp Pro Val His Lys Leu Leu Thr Leu Val Val Asp
        35                  40                  45

Asp Gly Ile Gln Pro Pro Val Glu Leu Ser Cys Lys Glu Arg Asn Ile
    50                  55                  60

Leu Ala Ala Thr Phe Ile Arg Ser Leu His Lys Asn Ile Gly Gly Ser
65                  70                  75                  80

Glu Thr Phe Gln Asp Lys Val Asn Phe Phe Gln Arg Glu Leu Arg Gln
                85                  90                  95

Val His Met Lys Arg Pro His Ser Lys Val Thr Leu Lys Val Ser Arg
            100                 105                 110

His Ala Leu Leu Glu Ser Glu
        115


<210> 5851
<211> 81
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1281; "

<220>
<221> source
<223> /note="Gene Symbol: AREL1; "

<220>
<221> source
<223> /note="Gene Name:
      apoptosis resistant E3
      ubiquitin
      prt ligase 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000451375"

<400> 5851
Val Ala Phe Thr Val Arg Lys Ala Gly Arg Tyr Glu Ile Thr Val Lys
1               5                   10                  15

Leu Gly Gly Leu Asn Val Ala Tyr Ser Pro Tyr Tyr Lys Ile Phe Gln
```

```
            20                  25                  30

Pro Gly Ile Gly Ser His Tyr Val Ala Gln Gly Gly Leu Glu Leu Leu
        35                  40                  45

Asp Ser Ser Asn Leu Pro Ala Leu Ala Phe Gln Ser Val Gly Ile Thr
    50                  55                  60

Gly Val Ser Gln Val Thr Gln Pro Asp Tyr Cys Ser Ser Tyr Asn Lys
65                  70                  75                  80

Ser



<210> 5852
<211> 131
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1281; "

<220>
<221> source
<223> /note="Gene Symbol: AREL1; "

<220>
<221> source
<223> /note="Gene Name:
      apoptosis resistant E3
      ubiquitin
      prt ligase 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000451710"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5852
Xaa Cys Phe His Ala Cys Ile Ser Tyr Gln Asn Gln Pro Ile Asn Asn
1               5                   10                  15

Gly Glu Phe Asp Ile Ile Val Leu Ser Glu Asp Glu Lys Asn Ile Val
            20                  25                  30
```

```
Glu Arg Asn Val Ser Thr Ser Gly Val Ser Ile Tyr Phe Glu Ala Tyr
        35                  40                  45

Leu Tyr Asn Ala Thr Asn Cys Ser Ser Thr Pro Trp His Leu Pro Pro
    50                  55                  60

Met His Met Thr Ser Ser Gln Arg Arg Pro Ser Thr Ala Val Asp Glu
65                  70                  75                  80

Glu Asp Glu Asp Ser Pro Ser Glu Cys His Thr Pro Glu Lys Gln Phe
                85                  90                  95

Ser Val Lys Glu Phe Tyr Leu Lys Ile Ile Pro Trp Arg Leu Tyr Thr
            100                 105                 110

Phe Arg Val Cys Pro Gly Thr Lys Phe Ser Tyr Leu Gly Pro Asp Pro
        115                 120                 125

Val His Lys
    130


<210> 5853
<211> 631
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1281; "

<220>
<221> source
<223> /note="Gene Symbol: AREL1; "

<220>
<221> source
<223> /note="Gene Name:
      apoptosis resistant E3
      ubiquitin
      prt ligase 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000452101"

<400> 5853
Met Val Val Pro Ser Lys Thr Lys Ile Val Cys His Phe Ser Thr Leu
1               5                   10                  15
```

```
Val Leu Thr Cys Gly Gln Pro His Thr Leu Gln Ile Val Pro Arg Asp
            20                  25                  30

Glu Tyr Asp Asn Pro Thr Asn Asn Ser Met Ser Leu Arg Asp Glu His
        35                  40                  45

Asn Tyr Thr Leu Ser Ile His Glu Leu Gly Pro Gln Glu Glu Glu Ser
    50                  55                  60

Thr Gly Val Ser Phe Glu Lys Ser Val Thr Ser Asn Arg Gln Thr Phe
65                  70                  75                  80

Gln Val Phe Leu Arg Leu Thr Leu His Ser Arg Gly Cys Phe His Ala
                85                  90                  95

Cys Ile Ser Tyr Gln Asn Gln Pro Ile Asn Asn Gly Glu Phe Asp Ile
            100                 105                 110

Ile Val Leu Ser Glu Asp Glu Lys Asn Ile Val Glu Arg Asn Val Ser
        115                 120                 125

Thr Ser Gly Val Ser Ile Tyr Phe Glu Ala Tyr Leu Tyr Asn Ala Thr
    130                 135                 140

Asn Cys Ser Ser Thr Pro Trp His Leu Pro Pro Met His Met Thr Ser
145                 150                 155                 160

Ser Gln Arg Arg Pro Ser Thr Ala Val Asp Glu Glu Asp Glu Asp Ser
                165                 170                 175

Pro Ser Glu Cys His Thr Pro Glu Lys Val Lys Lys Pro Lys Lys Val
            180                 185                 190

Tyr Cys Tyr Val Ser Pro Lys Gln Phe Ser Val Lys Glu Phe Tyr Leu
        195                 200                 205

Lys Ile Ile Pro Trp Arg Leu Tyr Thr Phe Arg Val Cys Pro Gly Thr
    210                 215                 220

Lys Phe Ser Tyr Leu Gly Pro Asp Pro Val His Lys Leu Leu Thr Leu
225                 230                 235                 240
```

```
Val Val Asp Asp Gly Ile Gln Pro Pro Val Glu Leu Ser Cys Lys Glu
                245                 250                 255

Arg Asn Ile Leu Ala Ala Thr Phe Ile Arg Ser Leu His Lys Asn Ile
            260                 265                 270

Gly Gly Ser Glu Thr Phe Gln Asp Lys Val Asn Phe Phe Gln Arg Glu
        275                 280                 285

Leu Arg Gln Val His Met Lys Arg Pro His Ser Lys Val Thr Leu Lys
    290                 295                 300

Val Ser Arg His Ala Leu Leu Glu Ser Ser Leu Lys Ala Thr Arg Asn
305                 310                 315                 320

Phe Ser Ile Ser Asp Trp Ser Lys Asn Phe Glu Val Val Phe Gln Asp
                325                 330                 335

Glu Glu Ala Leu Asp Trp Gly Gly Pro Arg Arg Glu Trp Phe Glu Leu
            340                 345                 350

Ile Cys Lys Ala Leu Phe Asp Thr Thr Asn Gln Leu Phe Thr Arg Phe
        355                 360                 365

Ser Asp Asn Asn Gln Ala Leu Val His Pro Asn Pro Asn Arg Pro Ala
    370                 375                 380

His Leu Arg Leu Lys Met Tyr Glu Phe Ala Gly Arg Leu Val Gly Lys
385                 390                 395                 400

Cys Leu Tyr Glu Ser Ser Leu Gly Gly Ala Tyr Lys Gln Leu Val Arg
                405                 410                 415

Ala Arg Phe Thr Arg Ser Phe Leu Ala Gln Ile Ile Gly Leu Arg Met
            420                 425                 430

His Tyr Lys Tyr Phe Glu Thr Asp Asp Pro Glu Phe Tyr Lys Ser Lys
        435                 440                 445

Val Cys Phe Ile Leu Asn Asn Asp Met Ser Glu Met Glu Leu Val Phe
    450                 455                 460

Ala Glu Glu Lys Tyr Asn Lys Ser Gly Gln Leu Asp Lys Val Val Glu
```

```
465                 470                 475                 480

Leu Met Thr Gly Gly Ala Gln Thr Pro Val Thr Asn Ala Asn Lys Ile
                485                 490                 495

Phe Tyr Leu Asn Leu Leu Ala Gln Tyr Arg Leu Ala Ser Gln Val Lys
            500                 505                 510

Glu Glu Val Glu His Phe Leu Lys Gly Leu Asn Glu Leu Val Pro Glu
        515                 520                 525

Asn Leu Leu Ala Ile Phe Asp Glu Asn Glu Leu Glu Leu Leu Met Cys
    530                 535                 540

Gly Thr Gly Asp Ile Ser Val Ser Asp Phe Lys Ala His Ala Val Val
545                 550                 555                 560

Val Gly Gly Ser Trp His Phe Arg Glu Lys Val Met Arg Trp Phe Trp
                565                 570                 575

Thr Val Val Ser Ser Leu Thr Gln Glu Glu Leu Ala Arg Leu Leu Gln
            580                 585                 590

Phe Thr Thr Gly Ser Ser Gln Leu Pro Pro Gly Gly Phe Ala Ala Leu
        595                 600                 605

Cys Pro Ser Phe Gln Ile Ile Ala Ala Pro Thr His Ser Thr Leu Pro
    610                 615                 620

Thr Ala His Thr Cys Phe Asn
625                 630


<210> 5854
<211> 99
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1281; "

<220>
<221> source
<223> /note="Gene Symbol: AREL1; "

<220>
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<221> source
<223> /note="Gene Name:
apoptosis resistant E3
ubiquitin
prt ligase 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000452456"

<400> 5854
Met Phe Tyr Val Ile Gly Gly Ile Thr Val Ser Val Val Ala Phe Phe
1 5 10 15

Phe Thr Ile Lys Phe Leu Phe Glu Leu Ala Ala Arg Val Val Ser Phe
20 25 30

Leu Gln Asn Glu Asp Arg Glu Arg Arg Gly Asp Arg Thr Ile Tyr Asp
35 40 45

Tyr Val Arg Gly Asn Tyr Leu Asp Pro Arg Ser Cys Lys Val Ser Trp
50 55 60

Asp Trp Lys Asp Pro Tyr Glu Val Gly His Ser Met Ala Phe Arg Val
65 70 75 80

His Glu Trp Trp Phe Leu Leu Arg Pro Lys Leu Cys Ala Thr Phe Leu
85 90 95

Leu Leu Tyr

<210> 5855
<211> 362
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1282; "

<220>
<221> source
<223> /note="Gene Symbol: AVEN; "

<220>
<221> source
<223> /note="Gene Name:
apoptosis, caspase activation inhibitor; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NQS1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000306822"

<400> 5855
Met Gln Ala Glu Arg Gly Ala Arg Gly Gly Arg Gly Arg Arg Pro Gly
1   5   10   15

Arg Gly Arg Pro Gly Gly Asp Arg His Ser Glu Arg Pro Gly Ala Ala
            20   25   30

Ala Ala Val Ala Arg Gly Gly Gly Gly Gly Gly Gly Gly Asp Gly Gly
        35   40   45

Gly Arg Arg Gly Arg Gly Arg Gly Arg Gly Phe Arg Gly Ala Arg Gly
    50   55   60

Gly Arg Gly Gly Gly Gly Ala Pro Arg Gly Ser Arg Arg Glu Pro Gly
65   70   75   80

Gly Trp Gly Ala Gly Ala Ser Ala Pro Val Glu Asp Asp Ser Asp Ala
                85   90   95

Glu Thr Tyr Gly Glu Glu Asn Asp Glu Gln Gly Asn Tyr Ser Lys Arg
            100   105   110

Lys Ile Val Ser Asn Trp Asp Arg Tyr Gln Asp Ile Glu Lys Glu Val
        115   120   125

Asn Asn Glu Ser Gly Glu Ser Gln Arg Gly Thr Asp Phe Ser Val Leu
    130   135   140

Leu Ser Ser Ala Gly Asp Ser Phe Ser Gln Phe Arg Phe Ala Glu Glu
145   150   155   160

Lys Glu Trp Asp Ser Glu Ala Ser Cys Pro Lys Gln Asn Ser Ala Phe
                165   170   175

Tyr Val Asp Ser Glu Leu Leu Val Arg Ala Leu Gln Glu Leu Pro Leu
            180   185   190

```
Cys Leu Arg Leu Asn Val Ala Ala Glu Leu Val Gln Gly Thr Val Pro
        195                 200                 205

Leu Glu Val Pro Gln Val Lys Pro Lys Arg Thr Asp Asp Gly Lys Gly
    210                 215                 220

Leu Gly Met Gln Leu Lys Gly Pro Leu Gly Pro Gly Gly Arg Gly Pro
225                 230                 235                 240

Ile Phe Glu Leu Lys Ser Val Ala Ala Gly Cys Pro Val Leu Leu Gly
                245                 250                 255

Lys Asp Asn Pro Ser Pro Gly Pro Ser Arg Asp Ser Gln Lys Pro Thr
            260                 265                 270

Ser Pro Leu Gln Ser Ala Gly Asp His Leu Glu Glu Glu Leu Asp Leu
        275                 280                 285

Leu Leu Asn Leu Asp Ala Pro Ile Lys Glu Gly Asp Asn Ile Leu Pro
    290                 295                 300

Asp Gln Thr Ser Gln Asp Leu Lys Ser Lys Glu Asp Gly Glu Val Val
305                 310                 315                 320

Gln Glu Glu Glu Val Cys Ala Lys Pro Ser Val Thr Glu Glu Lys Asn
                325                 330                 335

Met Glu Pro Glu Gln Pro Ser Thr Ser Lys Asn Val Thr Glu Glu Glu
            340                 345                 350

Leu Glu Asp Trp Leu Asp Ser Met Ile Ser
        355                 360


<210> 5856
<211> 59
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1282; "

<220>
<221> source
<223> /note="Gene Symbol: AVEN; "
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<220>
<221> source
<223> /note="Gene Name:
apoptosis, caspase activation inhibitor; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000452906"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5856
Xaa Asp Ser Phe Ser Gln Phe Arg Phe Ala Glu Glu Lys Glu Trp Asp
1 5 10 15

Ser Glu Ala Ser Cys Pro Lys Gln Asn Ser Ala Phe Tyr Val Asp Ser
20 25 30

Glu Leu Leu Val Arg Ala Leu Gln Glu Leu Pro Leu Cys Leu Arg Leu
35 40 45

Asn Val Ala Ala Glu Leu Val Gln Met His Leu
50 55

<210> 5857
<211> 1374
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1283; "

<220>
<221> source
<223> /note="Gene Symbol: AATK; "

<220>
<221> source
<223> /note="Gene Name:
apoptosis-associated tyr kinase; "

<220>
<221> source
<223> /note="Uniprot ID: Q6ZMQ8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000324196"

<400> 5857
Met Ser Ser Ser Phe Phe Asn Pro Ser Phe Ala Phe Ser Ser His Phe
1 5 10 15

Asp Pro Asp Gly Ala Pro Leu Ser Glu Leu Ser Trp Pro Ser Ser Leu
20 25 30

Ala Val Val Ala Val Ser Phe Ser Gly Leu Phe Ala Val Ile Val Leu
35 40 45

Met Leu Ala Cys Leu Cys Cys Lys Lys Gly Gly Ile Gly Phe Lys Glu
50 55 60

Phe Glu Asn Ala Glu Gly Asp Glu Tyr Ala Ala Asp Leu Ala Gln Gly
65 70 75 80

Ser Pro Ala Thr Ala Ala Gln Asn Gly Pro Asp Val Tyr Val Leu Pro
85 90 95

Leu Thr Glu Val Ser Leu Pro Met Ala Lys Gln Pro Gly Arg Ser Val
100 105 110

Gln Leu Leu Lys Ser Thr Asp Val Gly Arg His Ser Leu Leu Tyr Leu
115 120 125

Lys Glu Ile Gly Arg Gly Trp Phe Gly Lys Val Phe Leu Gly Glu Val
130 135 140

Asn Ser Gly Ile Ser Ser Ala Gln Val Val Val Lys Glu Leu Gln Ala
145 150 155 160

Ser Ala Ser Val Gln Glu Gln Met Gln Phe Leu Glu Glu Val Gln Pro
165 170 175

Tyr Arg Ala Leu Lys His Ser Asn Leu Leu Gln Cys Leu Ala Gln Cys
180 185 190

Ala Glu Val Thr Pro Tyr Leu Leu Val Met Glu Phe Cys Pro Leu Gly
195 200 205

Asp Leu Lys Gly Tyr Leu Arg Ser Cys Arg Val Ala Glu Ser Met Ala
210 215 220

```
Pro Asp Pro Arg Thr Leu Gln Arg Met Ala Cys Glu Val Ala Cys Gly
225                 230                 235                 240

Val Leu His Leu His Arg Asn Asn Phe Val His Ser Asp Leu Ala Leu
                245                 250                 255

Arg Asn Cys Leu Leu Thr Ala Asp Leu Thr Val Lys Ile Gly Asp Tyr
            260                 265                 270

Gly Leu Ala His Cys Lys Tyr Arg Glu Asp Tyr Phe Val Thr Ala Asp
        275                 280                 285

Gln Leu Trp Val Pro Leu Arg Trp Ile Ala Pro Glu Leu Val Asp Glu
    290                 295                 300

Val His Ser Asn Leu Leu Val Val Asp Gln Thr Lys Ser Gly Asn Val
305                 310                 315                 320

Trp Ser Leu Gly Val Thr Ile Trp Glu Leu Phe Glu Leu Gly Thr Gln
                325                 330                 335

Pro Tyr Pro Gln His Ser Asp Gln Gln Val Leu Ala Tyr Thr Val Arg
            340                 345                 350

Glu Gln Gln Leu Lys Leu Pro Lys Pro Gln Leu Gln Leu Thr Leu Ser
        355                 360                 365

Asp Arg Trp Tyr Glu Val Met Gln Phe Cys Trp Leu Gln Pro Glu Gln
    370                 375                 380

Arg Pro Thr Ala Glu Glu Val His Leu Leu Leu Ser Tyr Leu Cys Ala
385                 390                 395                 400

Lys Gly Ala Thr Glu Ala Glu Glu Glu Phe Glu Arg Arg Trp Arg Ser
                405                 410                 415

Leu Arg Pro Gly Gly Gly Gly Val Gly Pro Gly Pro Gly Ala Ala Gly
            420                 425                 430

Pro Met Leu Gly Gly Val Val Glu Leu Ala Ala Ala Ser Ser Phe Pro
        435                 440                 445
```

```
Leu Leu Glu Gln Phe Ala Gly Asp Gly Phe His Ala Asp Gly Asp Asp
    450                 455                 460

Val Leu Thr Val Thr Glu Thr Ser Arg Gly Leu Asn Phe Glu Tyr Lys
465                 470                 475                 480

Trp Glu Ala Gly Arg Gly Ala Glu Ala Phe Pro Ala Thr Leu Ser Pro
                485                 490                 495

Gly Arg Thr Ala Arg Leu Gln Glu Leu Cys Ala Pro Asp Gly Ala Pro
            500                 505                 510

Pro Gly Val Val Pro Val Leu Ser Ala His Ser Pro Ser Leu Gly Ser
        515                 520                 525

Glu Tyr Phe Ile Arg Leu Glu Glu Ala Ala Pro Ala Ala Gly His Asp
    530                 535                 540

Pro Asp Cys Ala Gly Cys Ala Pro Ser Pro Pro Ala Thr Ala Asp Gln
545                 550                 555                 560

Asp Asp Asp Ser Asp Gly Ser Thr Ala Ala Ser Leu Ala Met Glu Pro
                565                 570                 575

Leu Leu Gly His Gly Pro Pro Val Asp Val Pro Trp Gly Arg Gly Asp
            580                 585                 590

His Tyr Pro Arg Arg Ser Leu Ala Arg Asp Pro Leu Cys Pro Ser Arg
        595                 600                 605

Ser Pro Ser Pro Ser Ala Gly Pro Leu Ser Leu Ala Glu Gly Gly Ala
    610                 615                 620

Glu Asp Ala Asp Trp Gly Val Ala Ala Phe Cys Pro Ala Phe Phe Glu
625                 630                 635                 640

Asp Pro Leu Gly Thr Ser Pro Leu Gly Ser Ser Gly Ala Pro Pro Leu
                645                 650                 655

Pro Leu Thr Gly Glu Asp Glu Leu Glu Glu Val Gly Ala Arg Arg Ala
            660                 665                 670

Ala Gln Arg Gly His Trp Arg Ser Asn Val Ser Ala Asn Asn Asn Ser
```

675 680 685

Gly Ser Arg Cys Pro Glu Ser Trp Asp Pro Val Ser Ala Gly Gly His
690 695 700

Ala Glu Gly Cys Pro Ser Pro Lys Gln Thr Pro Arg Ala Ser Pro Glu
705 710 715 720

Pro Gly Tyr Pro Gly Glu Pro Leu Leu Gly Leu Gln Ala Ala Ser Ala
725 730 735

Gln Glu Pro Gly Cys Cys Pro Gly Leu Pro His Leu Cys Ser Ala Gln
740 745 750

Gly Leu Ala Pro Ala Pro Cys Leu Val Thr Pro Ser Trp Thr Glu Thr
755 760 765

Ala Ser Ser Gly Gly Asp His Pro Gln Ala Glu Pro Lys Leu Ala Thr
770 775 780

Glu Ala Glu Gly Thr Thr Gly Pro Arg Leu Pro Leu Pro Ser Val Pro
785 790 795 800

Ser Pro Ser Gln Glu Gly Ala Pro Leu Pro Ser Glu Glu Ala Ser Ala
805 810 815

Pro Asp Ala Pro Asp Ala Leu Pro Asp Ser Pro Thr Pro Ala Thr Gly
820 825 830

Gly Glu Val Ser Ala Ile Lys Leu Ala Ser Ala Leu Asn Gly Ser Ser
835 840 845

Ser Ser Pro Glu Val Glu Ala Pro Ser Ser Glu Asp Glu Asp Thr Ala
850 855 860

Glu Ala Thr Ser Gly Ile Phe Thr Asp Thr Ser Ser Asp Gly Leu Gln
865 870 875 880

Ala Arg Arg Pro Asp Val Val Pro Ala Phe Arg Ser Leu Gln Lys Gln
885 890 895

Val Gly Thr Pro Asp Ser Leu Asp Ser Leu Asp Ile Pro Ser Ser Ala
900 905 910

```
Ser Asp Gly Gly Tyr Glu Val Phe Ser Pro Ser Ala Thr Gly Pro Ser
        915                 920                 925

Gly Gly Gln Pro Arg Ala Leu Asp Ser Gly Tyr Asp Thr Glu Asn Tyr
    930                 935                 940

Glu Ser Pro Glu Phe Val Leu Lys Glu Ala Gln Glu Gly Cys Glu Pro
945                 950                 955                 960

Gln Ala Phe Ala Glu Leu Ala Ser Glu Gly Glu Gly Pro Gly Pro Glu
                965                 970                 975

Thr Arg Leu Ser Thr Ser Leu Ser Gly Leu Asn Glu Lys Asn Pro Tyr
            980                 985                 990

Arg Asp Ser Ala Tyr Phe Ser Asp  Leu Glu Ala Glu Ala  Glu Ala
Thr
        995                 1000                1005

Ser Gly  Pro Glu Lys Lys Cys  Gly Gly Asp Arg Ala  Pro Gly Pro
    1010                1015                1020

Glu Leu  Gly Leu Pro Ser Thr  Gly Gln Pro Ser Glu  Gln Val Cys
    1025                1030                1035

Leu Arg  Pro Gly Val Ser Gly  Glu Ala Gln Gly Ser  Gly Pro Gly
    1040                1045                1050

Glu Val  Leu Pro Pro Leu Leu  Gln Leu Glu Gly Ser  Ser Pro Glu
    1055                1060                1065

Pro Ser  Thr Cys Pro Ser Gly  Leu Val Pro Glu Pro  Pro Glu Pro
    1070                1075                1080

Gln Gly  Pro Ala Lys Val Arg  Pro Gly Pro Ser Pro  Ser Cys Ser
    1085                1090                1095

Gln Phe  Phe Leu Leu Thr Pro  Val Pro Leu Arg Ser  Glu Gly Asn
    1100                1105                1110

Ser Ser  Glu Phe Gln Gly Pro  Pro Gly Leu Leu Ser  Gly Pro Ala
    1115                1120                1125
```

```
Pro Gln  Lys Arg Met Gly Gly  Pro Gly Thr Pro Arg  Ala Pro Leu
    1130                1135                1140

Arg Leu  Ala Leu Pro Gly Leu  Pro Ala Ala Leu Glu  Gly Arg Pro
    1145                1150                1155

Glu Glu  Glu Glu Glu Asp Ser  Glu Asp Ser Asp Glu  Ser Asp Glu
    1160                1165                1170

Glu Leu  Arg Cys Tyr Ser Val  Gln Glu Pro Ser Glu  Asp Ser Glu
    1175                1180                1185

Glu Glu  Ala Pro Ala Val Pro  Val Val Val Ala Glu  Ser Gln Ser
    1190                1195                1200

Ala Arg  Asn Leu Arg Ser Leu  Leu Lys Met Pro Ser  Leu Leu Ser
    1205                1210                1215

Glu Thr  Phe Cys Glu Asp Leu  Glu Arg Lys Lys Lys  Ala Val Ser
    1220                1225                1230

Phe Phe  Asp Asp Val Thr Val  Tyr Leu Phe Asp Gln  Glu Ser Pro
    1235                1240                1245

Thr Arg  Glu Leu Gly Glu Pro  Phe Pro Gly Ala Lys  Glu Ser Pro
    1250                1255                1260

Pro Thr  Phe Leu Arg Gly Ser  Pro Gly Ser Pro Ser  Ala Pro Asn
    1265                1270                1275

Arg Pro  Gln Gln Ala Asp Gly  Ser Pro Asn Gly Ser  Thr Ala Glu
    1280                1285                1290

Glu Gly  Gly Gly Phe Ala Trp  Asp Asp Asp Phe Pro  Leu Met Thr
    1295                1300                1305

Ala Lys  Ala Ala Phe Ala Met  Ala Leu Asp Pro Ala  Ala Pro Ala
    1310                1315                1320

Pro Ala  Ala Pro Thr Pro Thr  Pro Ala Pro Phe Ser  Arg Phe Thr
    1325                1330                1335
```

```
Val Ser  Pro Ala Pro Thr Ser  Arg Phe Ser Ile Thr  His Val Ser
    1340                1345                1350

Asp Ser  Asp Ala Glu Ser Lys  Arg Gly Pro Glu Ala  Gly Ala Gly
    1355                1360                1365

Gly Glu  Ser Lys Glu Ala
    1370
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<210> 5858
<211> 879
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1283; "

<220>
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<223> /note="Gene Symbol: AATK; "

<220>
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<223> /note="Gene Name:
apoptosis-associated tyr kinase; "

<220>
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<223> /note="Uniprot ID: Q6ZMQ8; "

<220>
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<400> 5858

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Met Ser Ser Ser Phe Phe Asn Pro Ser Phe Ala Phe Ser Ser His Phe
1               5                  10                  15

Asp Pro Asp Gly Ala Pro Leu Ser Glu Leu Ser Trp Pro Ser Ser Leu
            20                  25                  30

Ala Val Val Ala Val Ser Phe Ser Gly Leu Phe Ala Val Ile Val Leu
        35                  40                  45

Met Leu Ala Cys Leu Cys Cys Lys Lys Gly Gly Ile Gly Phe Lys Glu
    50                  55                  60

Phe Glu Asn Ala Glu Gly Asp Glu Tyr Ala Ala Asp Leu Ala Gln Gly
```

65 70 75 80

Ser Pro Ala Thr Ala Ala Gln Asn Gly Pro Asp Val Tyr Val Leu Pro
85 90 95

Leu Thr Glu Val Ser Leu Pro Met Ala Lys Gln Pro Gly Arg Ser Val
100 105 110

Gln Leu Leu Lys Ser Thr Asp Val Gly Arg His Ser Leu Leu Tyr Leu
115 120 125

Lys Glu Ile Gly Arg Gly Trp Phe Gly Lys Val Phe Leu Gly Glu Val
130 135 140

Asn Ser Gly Ile Ser Ser Ala Gln Val Val Val Lys Glu Leu Gln Ala
145 150 155 160

Ser Ala Ser Val Gln Glu Gln Met Gln Phe Leu Glu Glu Val Gln Pro
165 170 175

Tyr Arg Ala Leu Lys His Ser Asn Leu Leu Gln Cys Leu Ala Gln Cys
180 185 190

Ala Glu Val Thr Pro Tyr Leu Leu Val Met Glu Phe Cys Pro Leu Gly
195 200 205

Asp Leu Lys Gly Tyr Leu Arg Ser Cys Arg Val Ala Glu Ser Met Ala
210 215 220

Pro Asp Pro Arg Thr Leu Gln Arg Met Ala Cys Glu Val Ala Cys Gly
225 230 235 240

Val Leu His Leu His Arg Asn Asn Phe Val His Ser Asp Leu Ala Leu
245 250 255

Arg Asn Cys Leu Leu Thr Ala Asp Leu Thr Val Lys Ile Gly Asp Tyr
260 265 270

Gly Leu Ala His Cys Lys Tyr Arg Glu Asp Tyr Phe Val Thr Ala Asp
275 280 285

Gln Leu Trp Val Pro Leu Arg Trp Ile Ala Pro Glu Leu Val Asp Glu
290 295 300

```
Val His Ser Asn Leu Leu Val Val Asp Gln Thr Lys Ser Gly Asn Val
305                 310                 315                 320

Trp Ser Leu Gly Val Thr Ile Trp Glu Leu Phe Glu Leu Gly Thr Gln
                325                 330                 335

Pro Tyr Pro Gln His Ser Asp Gln Gln Val Leu Ala Tyr Thr Val Arg
            340                 345                 350

Glu Gln Gln Leu Lys Leu Pro Lys Pro Gln Leu Gln Leu Thr Leu Ser
        355                 360                 365

Asp Arg Trp Tyr Glu Val Met Gln Phe Cys Trp Leu Gln Pro Glu Gln
    370                 375                 380

Arg Pro Thr Ala Glu Glu Val His Leu Leu Leu Ser Tyr Leu Cys Ala
385                 390                 395                 400

Lys Gly Ala Thr Glu Ala Glu Glu Glu Phe Glu Arg Arg Trp Arg Ser
                405                 410                 415

Leu Arg Pro Gly Gly Gly Gly Val Gly Pro Gly Pro Gly Ala Ala Gly
            420                 425                 430

Pro Met Leu Gly Gly Val Val Glu Leu Ala Ala Ala Ser Ser Phe Pro
        435                 440                 445

Leu Leu Glu Gln Phe Ala Gly Asp Gly Phe His Ala Asp Gly Asp Asp
    450                 455                 460

Val Leu Thr Glu Leu Cys Ala Pro Asp Gly Ala Pro Pro Gly Val Val
465                 470                 475                 480

Pro Val Leu Ser Ala His Ser Pro Ser Leu Gly Ser Glu Tyr Phe Ile
                485                 490                 495

Arg Leu Glu Glu Ala Ala Pro Ala Ala Gly His Asp Pro Asp Cys Ala
            500                 505                 510

Gly Cys Ala Pro Ser Pro Pro Ala Thr Ala Asp Gln Asp Asp Asp Ser
        515                 520                 525
```

```
Asp Gly Ser Thr Ala Ala Ser Leu Ala Met Glu Pro Leu Leu Gly His
    530                 535                 540

Gly Pro Pro Val Asp Val Pro Trp Gly Arg Gly Asp His Tyr Pro Arg
545                 550                 555                 560

Arg Ser Leu Ala Arg Asp Pro Leu Cys Pro Ser Arg Ser Pro Ser Pro
                565                 570                 575

Ser Ala Gly Pro Leu Ser Leu Ala Glu Gly Gly Ala Glu Asp Ala Asp
            580                 585                 590

Trp Gly Val Ala Ala Phe Cys Pro Ala Phe Phe Glu Asp Pro Leu Gly
        595                 600                 605

Thr Ser Pro Leu Gly Ser Ser Gly Ala Pro Pro Leu Pro Leu Thr Gly
    610                 615                 620

Glu Asp Glu Leu Glu Glu Val Gly Ala Arg Arg Ala Ala Gln Arg Gly
625                 630                 635                 640

His Trp Arg Ser Asn Val Ser Ala Asn Asn Asn Ser Gly Ser Arg Cys
                645                 650                 655

Pro Glu Ser Trp Asp Pro Val Ser Ala Gly Gly His Ala Glu Gly Cys
            660                 665                 670

Pro Ser Pro Lys Gln Thr Pro Arg Ala Ser Pro Glu Pro Gly Tyr Pro
        675                 680                 685

Gly Glu Pro Leu Leu Gly Leu Gln Ala Ala Ser Ala Gln Glu Pro Gly
    690                 695                 700

Cys Cys Pro Gly Leu Pro His Leu Cys Ser Ala Gln Gly Leu Ala Pro
705                 710                 715                 720

Ala Pro Cys Leu Val Thr Pro Ser Trp Thr Glu Thr Ala Ser Ser Gly
                725                 730                 735

Gly Asp His Pro Gln Ala Glu Pro Lys Leu Ala Thr Glu Ala Glu Gly
            740                 745                 750
```

```
Thr Thr Gly Pro Arg Leu Pro Leu Pro Ser Val Pro Ser Pro Ser Gln
        755                 760                 765

Glu Gly Ala Pro Leu Pro Ser Glu Glu Ala Ser Ala Pro Asp Ala Pro
    770                 775                 780

Asp Ala Leu Pro Asp Ser Pro Thr Pro Ala Thr Gly Gly Glu Val Ser
785                 790                 795                 800

Ala Ile Lys Leu Ala Ser Ala Leu Asn Gly Ser Ser Ser Ser Pro Glu
                805                 810                 815

Val Glu Ala Pro Ser Ser Glu Asp Glu Asp Thr Ala Glu Ala Thr Ser
            820                 825                 830

Gly Ile Phe Thr Asp Thr Ser Ser Asp Gly Leu Gln Ala Arg Arg Pro
        835                 840                 845

Asp Val Val Pro Ala Phe Arg Ser Leu Gln Lys Gln Trp Pro Gln Arg
    850                 855                 860

Glu Glu Ser Leu Pro Arg Leu Cys Leu Leu Leu Arg Pro Arg Gly
865                 870                 875


<210> 5859
<211> 1271
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1283; "

<220>
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<220>
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<223> /note="Gene Name:
      apoptosis-associated tyr kinase; "

<220>
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<223> /note="ENSP ID: ENSP00000398796"

<400> 5859
Met Ala Lys Gln Pro Gly Arg Ser Val Gln Leu Leu Lys Ser Thr Asp
1               5                   10                  15
```

```
Val Gly Arg His Ser Leu Leu Tyr Leu Lys Glu Ile Gly Arg Gly Trp
            20                  25                  30

Phe Gly Lys Val Phe Leu Gly Glu Val Asn Ser Gly Ile Ser Ser Ala
        35                  40                  45

Gln Val Val Val Lys Glu Leu Gln Ala Ser Ala Ser Val Gln Glu Gln
    50                  55                  60

Met Gln Phe Leu Glu Glu Val Gln Pro Tyr Arg Ala Leu Lys His Ser
65                  70                  75                  80

Asn Leu Leu Gln Cys Leu Ala Gln Cys Ala Glu Val Thr Pro Tyr Leu
                85                  90                  95

Leu Val Met Glu Phe Cys Pro Leu Gly Asp Leu Lys Gly Tyr Leu Arg
            100                 105                 110

Ser Cys Arg Val Ala Glu Ser Met Ala Pro Asp Pro Arg Thr Leu Gln
        115                 120                 125

Arg Met Ala Cys Glu Val Ala Cys Gly Val Leu His Leu His Arg Asn
    130                 135                 140

Asn Phe Val His Ser Asp Leu Ala Leu Arg Asn Cys Leu Leu Thr Ala
145                 150                 155                 160

Asp Leu Thr Val Lys Ile Gly Asp Tyr Gly Leu Ala His Cys Lys Tyr
                165                 170                 175

Arg Glu Asp Tyr Phe Val Thr Ala Asp Gln Leu Trp Val Pro Leu Arg
            180                 185                 190

Trp Ile Ala Pro Glu Leu Val Asp Glu Val His Ser Asn Leu Leu Val
        195                 200                 205

Val Asp Gln Thr Lys Ser Gly Asn Val Trp Ser Leu Gly Val Thr Ile
    210                 215                 220

Trp Glu Leu Phe Glu Leu Gly Thr Gln Pro Tyr Pro Gln His Ser Asp
225                 230                 235                 240
```

```
Gln Gln Val Leu Ala Tyr Thr Val Arg Glu Gln Gln Leu Lys Leu Pro
                245                 250                 255

Lys Pro Gln Leu Gln Leu Thr Leu Ser Asp Arg Trp Tyr Glu Val Met
            260                 265                 270

Gln Phe Cys Trp Leu Gln Pro Glu Gln Arg Pro Thr Ala Glu Glu Val
        275                 280                 285

His Leu Leu Leu Ser Tyr Leu Cys Ala Lys Gly Ala Thr Glu Ala Glu
    290                 295                 300

Glu Glu Phe Glu Arg Arg Trp Arg Ser Leu Arg Pro Gly Gly Gly Gly
305                 310                 315                 320

Val Gly Pro Gly Pro Gly Ala Ala Gly Pro Met Leu Gly Gly Val Val
                325                 330                 335

Glu Leu Ala Ala Ala Ser Ser Phe Pro Leu Leu Glu Gln Phe Ala Gly
            340                 345                 350

Asp Gly Phe His Ala Asp Gly Asp Asp Val Leu Thr Val Thr Glu Thr
        355                 360                 365

Ser Arg Gly Leu Asn Phe Glu Tyr Lys Trp Glu Ala Gly Arg Gly Ala
    370                 375                 380

Glu Ala Phe Pro Ala Thr Leu Ser Pro Gly Arg Thr Ala Arg Leu Gln
385                 390                 395                 400

Glu Leu Cys Ala Pro Asp Gly Ala Pro Pro Gly Val Val Pro Val Leu
                405                 410                 415

Ser Ala His Ser Pro Ser Leu Gly Ser Glu Tyr Phe Ile Arg Leu Glu
            420                 425                 430

Glu Ala Ala Pro Ala Ala Gly His Asp Pro Asp Cys Ala Gly Cys Ala
        435                 440                 445

Pro Ser Pro Pro Ala Thr Ala Asp Gln Asp Asp Asp Ser Asp Gly Ser
    450                 455                 460
```

```
Thr Ala Ala Ser Leu Ala Met Glu Pro Leu Leu Gly His Gly Pro Pro
465                 470                 475                 480

Val Asp Val Pro Trp Gly Arg Gly Asp His Tyr Pro Arg Arg Ser Leu
                485                 490                 495

Ala Arg Asp Pro Leu Cys Pro Ser Arg Ser Pro Ser Pro Ser Ala Gly
            500                 505                 510

Pro Leu Ser Leu Ala Glu Gly Gly Ala Glu Asp Ala Asp Trp Gly Val
        515                 520                 525

Ala Ala Phe Cys Pro Ala Phe Phe Glu Asp Pro Leu Gly Thr Ser Pro
    530                 535                 540

Leu Gly Ser Ser Gly Ala Pro Pro Leu Pro Leu Thr Gly Glu Asp Glu
545                 550                 555                 560

Leu Glu Glu Val Gly Ala Arg Arg Ala Ala Gln Arg Gly His Trp Arg
                565                 570                 575

Ser Asn Val Ser Ala Asn Asn Asn Ser Gly Ser Arg Cys Pro Glu Ser
            580                 585                 590

Trp Asp Pro Val Ser Ala Gly Gly His Ala Glu Gly Cys Pro Ser Pro
        595                 600                 605

Lys Gln Thr Pro Arg Ala Ser Pro Glu Pro Gly Tyr Pro Gly Glu Pro
    610                 615                 620

Leu Leu Gly Leu Gln Ala Ala Ser Ala Gln Glu Pro Gly Cys Cys Pro
625                 630                 635                 640

Gly Leu Pro His Leu Cys Ser Ala Gln Gly Leu Ala Pro Ala Pro Cys
                645                 650                 655

Leu Val Thr Pro Ser Trp Thr Glu Thr Ala Ser Ser Gly Gly Asp His
            660                 665                 670

Pro Gln Ala Glu Pro Lys Leu Ala Thr Glu Ala Glu Gly Thr Thr Gly
        675                 680                 685

Pro Arg Leu Pro Leu Pro Ser Val Pro Ser Pro Ser Gln Glu Gly Ala
```

690 695 700

Pro Leu Pro Ser Glu Glu Ala Ser Ala Pro Asp Ala Pro Asp Ala Leu
705 710 715 720

Pro Asp Ser Pro Thr Pro Ala Thr Gly Gly Glu Val Ser Ala Ile Lys
725 730 735

Leu Ala Ser Ala Leu Asn Gly Ser Ser Ser Ser Pro Glu Val Glu Ala
740 745 750

Pro Ser Ser Glu Asp Glu Asp Thr Ala Glu Ala Thr Ser Gly Ile Phe
755 760 765

Thr Asp Thr Ser Ser Asp Gly Leu Gln Ala Arg Arg Pro Asp Val Val
770 775 780

Pro Ala Phe Arg Ser Leu Gln Lys Gln Val Gly Thr Pro Asp Ser Leu
785 790 795 800

Asp Ser Leu Asp Ile Pro Ser Ser Ala Ser Asp Gly Gly Tyr Glu Val
805 810 815

Phe Ser Pro Ser Ala Thr Gly Pro Ser Gly Gly Gln Pro Arg Ala Leu
820 825 830

Asp Ser Gly Tyr Asp Thr Glu Asn Tyr Glu Ser Pro Glu Phe Val Leu
835 840 845

Lys Glu Ala Gln Glu Gly Cys Glu Pro Gln Ala Phe Ala Glu Leu Ala
850 855 860

Ser Glu Gly Glu Gly Pro Gly Pro Glu Thr Arg Leu Ser Thr Ser Leu
865 870 875 880

Ser Gly Leu Asn Glu Lys Asn Pro Tyr Arg Asp Ser Ala Tyr Phe Ser
885 890 895

Asp Leu Glu Ala Glu Ala Glu Ala Thr Ser Gly Pro Glu Lys Lys Cys
900 905 910

Gly Gly Asp Arg Ala Pro Gly Pro Glu Leu Gly Leu Pro Ser Thr Gly
915 920 925

```
Gln Pro Ser Glu Gln Val Cys Leu Arg Pro Gly Val Ser Gly Glu Ala
    930                 935                 940

Gln Gly Ser Gly Pro Gly Glu Val Leu Pro Pro Leu Leu Gln Leu Glu
945                 950                 955                 960

Gly Ser Ser Pro Glu Pro Ser Thr Cys Pro Ser Gly Leu Val Pro Glu
                965                 970                 975

Pro Pro Glu Pro Gln Gly Pro Ala Lys Val Arg Pro Gly Pro Ser Pro
            980                 985                 990

Ser Cys Ser Gln Phe Phe Leu Leu  Thr Pro Val Pro Leu  Arg Ser
Glu
        995                 1000                1005

Gly Asn  Ser Ser Glu Phe Gln  Gly Pro Pro Gly Leu  Leu Ser Gly
    1010                1015                1020

Pro Ala  Pro Gln Lys Arg Met  Gly Gly Pro Gly Thr  Pro Arg Ala
    1025                1030                1035

Pro Leu  Arg Leu Ala Leu Pro  Gly Leu Pro Ala Ala  Leu Glu Gly
    1040                1045                1050

Arg Pro  Glu Glu Glu Glu Glu  Asp Ser Glu Asp Ser  Asp Glu Ser
    1055                1060                1065

Asp Glu  Glu Leu Arg Cys Tyr  Ser Val Gln Glu Pro  Ser Glu Asp
    1070                1075                1080

Ser Glu  Glu Glu Ala Pro Ala  Val Pro Val Val Val  Ala Glu Ser
    1085                1090                1095

Gln Ser  Ala Arg Asn Leu Arg  Ser Leu Leu Lys Met  Pro Ser Leu
    1100                1105                1110

Leu Ser  Glu Thr Phe Cys Glu  Asp Leu Glu Arg Lys  Lys Lys Ala
    1115                1120                1125

Val Ser  Phe Phe Asp Asp Val  Thr Val Tyr Leu Phe  Asp Gln Glu
    1130                1135                1140
```

```
Ser Pro  Thr Arg Glu Leu Gly  Glu Pro Phe Pro Gly  Ala Lys Glu
    1145                1150                1155

Ser Pro  Pro Thr Phe Leu Arg  Gly Ser Pro Gly Ser  Pro Ser Ala
    1160                1165                1170

Pro Asn  Arg Pro Gln Gln Ala  Asp Gly Ser Pro Asn  Gly Ser Thr
    1175                1180                1185

Ala Glu  Glu Gly Gly Gly Phe  Ala Trp Asp Asp Asp  Phe Pro Leu
    1190                1195                1200

Met Thr  Ala Lys Ala Ala Phe  Ala Met Ala Leu Asp  Pro Ala Ala
    1205                1210                1215

Pro Ala  Pro Ala Ala Pro Thr  Pro Thr Pro Ala Pro  Phe Ser Arg
    1220                1225                1230

Phe Thr  Val Ser Pro Ala Pro  Thr Ser Arg Phe Ser  Ile Thr His
    1235                1240                1245

Val Ser  Asp Ser Asp Ala Glu  Ser Lys Arg Gly Pro  Glu Ala Gly
    1250                1255                1260

Ala Gly  Gly Glu Ser Lys Glu  Ala
    1265                1270


<210> 5860
<211> 116
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<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
      apoptosis-associated tyr kinase; "

<220>
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<221> source
<223> /note="ENSP ID: ENSP00000460202"

<400> 5860
Met Leu Thr Leu Cys Tyr Leu Ile Ala Arg Cys Ile Gly Arg Thr Arg
1   5   10   15

Leu Ala Pro Gly Gln Gln Glu Phe Glu Asn Ala Glu Gly Asp Glu Tyr
            20   25   30

Ala Ala Asp Leu Ala Gln Gly Ser Pro Ala Thr Ala Ala Gln Asn Gly
        35   40   45

Pro Asp Val Tyr Val Leu Pro Leu Thr Glu Val Ser Leu Pro Met Ala
    50   55   60

Lys Gln Pro Gly Arg Ser Val Gln Leu Leu Lys Ser Thr Asp Val Gly
65   70   75   80

Arg His Ser Leu Leu Tyr Leu Lys Glu Ile Gly Arg Gly Trp Phe Gly
                85   90   95

Lys Val Phe Leu Gly Glu Val Asn Ser Gly Ile Ser Ser Ala Gln Val
            100   105   110

Val Val Lys Glu
        115

<210> 5861
<211> 105
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1283; "

<220>
<221> source
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<220>
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<223> /note="Gene Name:
      apoptosis-associated tyr kinase; "

<220>
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<223> /note="ENSP ID: ENSP00000460986"

<400> 5861
Ser Glu Glu Ala Ser Ala Pro Asp Ala Pro Asp Ala Leu Pro Asp Ser
1   5   10   15

Pro Thr Pro Ala Thr Gly Gly Glu Val Ser Ala Ile Lys Leu Ala Ser
            20   25   30

Ala Leu Asn Gly Ser Ser Ser Ser Pro Glu Val Glu Ala Pro Ser Ser
        35   40   45

Glu Asp Glu Asp Thr Ala Glu Ala Thr Ser Gly Ile Phe Thr Asp Thr
    50   55   60

Ser Ser Asp Gly Leu Gln Ala Arg Arg Pro Asp Val Val Pro Ala Phe
65   70   75   80

Arg Ser Leu Gln Lys Gln Trp Pro Gln Arg Glu Glu Ser Leu Pro Arg
                85   90   95

Leu Cys Leu Leu Leu Arg Pro Arg Gly
            100   105

<210> 5862
<211> 613
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1284; "

<220>
<221> source
<223> /note="Gene Symbol: AIFM1; "

<220>
<221> source
<223> /note="Gene Name:
      apoptosis-inducing factor, mitochondrion-associated, 1; "

<220>
<221> source
<223> /note="Uniprot ID: O95831; "

<220>
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<223> /note="ENSP ID: ENSP00000287295"

<400> 5862

```
Met Phe Arg Cys Gly Gly Leu Ala Ala Gly Ala Leu Lys Gln Lys Leu
1               5                  10                  15

Val Pro Leu Val Arg Thr Val Cys Val Arg Ser Pro Arg Gln Arg Asn
            20                  25                  30

Arg Leu Pro Gly Asn Leu Phe Gln Arg Trp His Val Pro Leu Glu Leu
        35                  40                  45

Gln Met Thr Arg Gln Met Ala Ser Ser Gly Ala Ser Gly Gly Lys Ile
    50                  55                  60

Asp Asn Ser Val Leu Val Leu Ile Val Gly Leu Ser Thr Val Gly Ala
65                  70                  75                  80

Gly Ala Tyr Ala Tyr Lys Thr Met Lys Glu Asp Glu Lys Arg Tyr Asn
                85                  90                  95

Glu Arg Ile Ser Gly Leu Gly Leu Thr Pro Glu Gln Lys Gln Lys Lys
            100                 105                 110

Ala Ala Leu Ser Ala Ser Glu Gly Glu Glu Val Pro Gln Asp Lys Ala
        115                 120                 125

Pro Ser His Val Pro Phe Leu Leu Ile Gly Gly Gly Thr Ala Ala Phe
    130                 135                 140

Ala Ala Ala Arg Ser Ile Arg Ala Arg Asp Pro Gly Ala Arg Val Leu
145                 150                 155                 160

Ile Val Ser Glu Asp Pro Glu Leu Pro Tyr Met Arg Pro Pro Leu Ser
                165                 170                 175

Lys Glu Leu Trp Phe Ser Asp Asp Pro Asn Val Thr Lys Thr Leu Arg
            180                 185                 190

Phe Lys Gln Trp Asn Gly Lys Glu Arg Ser Ile Tyr Phe Gln Pro Pro
        195                 200                 205

Ser Phe Tyr Val Ser Ala Gln Asp Leu Pro His Ile Glu Asn Gly Gly
    210                 215                 220

Val Ala Val Leu Thr Gly Lys Lys Val Val Gln Leu Asp Val Arg Asp
```

225 230 235 240

Asn Met Val Lys Leu Asn Asp Gly Ser Gln Ile Thr Tyr Glu Lys Cys
245 250 255

Leu Ile Ala Thr Gly Gly Thr Pro Arg Ser Leu Ser Ala Ile Asp Arg
260 265 270

Ala Gly Ala Glu Val Lys Ser Arg Thr Thr Leu Phe Arg Lys Ile Gly
275 280 285

Asp Phe Arg Ser Leu Glu Lys Ile Ser Arg Glu Val Lys Ser Ile Thr
290 295 300

Ile Ile Gly Gly Gly Phe Leu Gly Ser Glu Leu Ala Cys Ala Leu Gly
305 310 315 320

Arg Lys Ala Arg Ala Leu Gly Thr Glu Val Ile Gln Leu Phe Pro Glu
325 330 335

Lys Gly Asn Met Gly Lys Ile Leu Pro Glu Tyr Leu Ser Asn Trp Thr
340 345 350

Met Glu Lys Val Arg Arg Glu Gly Val Lys Val Met Pro Asn Ala Ile
355 360 365

Val Gln Ser Val Gly Val Ser Ser Gly Lys Leu Leu Ile Lys Leu Lys
370 375 380

Asp Gly Arg Lys Val Glu Thr Asp His Ile Val Ala Ala Val Gly Leu
385 390 395 400

Glu Pro Asn Val Glu Leu Ala Lys Thr Gly Gly Leu Glu Ile Asp Ser
405 410 415

Asp Phe Gly Gly Phe Arg Val Asn Ala Glu Leu Gln Ala Arg Ser Asn
420 425 430

Ile Trp Val Ala Gly Asp Ala Ala Cys Phe Tyr Asp Ile Lys Leu Gly
435 440 445

Arg Arg Arg Val Glu His His Asp His Ala Val Val Ser Gly Arg Leu
450 455 460

```
Ala Gly Glu Asn Met Thr Gly Ala Ala Lys Pro Tyr Trp His Gln Ser
465                 470                 475                 480

Met Phe Trp Ser Asp Leu Gly Pro Asp Val Gly Tyr Glu Ala Ile Gly
                485                 490                 495

Leu Val Asp Ser Ser Leu Pro Thr Val Gly Val Phe Ala Lys Ala Thr
            500                 505                 510

Ala Gln Asp Asn Pro Lys Ser Ala Thr Glu Gln Ser Gly Thr Gly Ile
        515                 520                 525

Arg Ser Glu Ser Glu Thr Glu Ser Glu Ala Ser Glu Ile Thr Ile Pro
    530                 535                 540

Pro Ser Thr Pro Ala Val Pro Gln Ala Pro Val Gln Gly Glu Asp Tyr
545                 550                 555                 560

Gly Lys Gly Val Ile Phe Tyr Leu Arg Asp Lys Val Val Val Gly Ile
                565                 570                 575

Val Leu Trp Asn Ile Phe Asn Arg Met Pro Ile Ala Arg Lys Ile Ile
            580                 585                 590

Lys Asp Gly Glu Gln His Glu Asp Leu Asn Glu Val Ala Lys Leu Phe
        595                 600                 605

Asn Ile His Glu Asp
    610


<210> 5863
<211> 609
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: AIFM1; "

<220>
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<223> /note="Gene Name:
apoptosis-inducing factor, mitochondrion-associated, 1; "

<220>
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<223> /note="Uniprot ID: O95831; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000315122"

<400> 5863

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Met Phe Arg Cys Gly Gly Leu Ala Ala Gly Ala Leu Lys Gln Lys Leu
1               5                  10                  15

Val Pro Leu Val Arg Thr Val Cys Val Arg Ser Pro Arg Gln Arg Asn
            20                  25                  30

Arg Leu Pro Val Val Gln Ser His His Leu Gly Ser Pro Ser Arg Ser
        35                  40                  45

Leu Ala Ser Thr Gly Ala Ser Gly Lys Asp Gly Ser Asn Leu Val Tyr
    50                  55                  60

Phe Leu Ile Val Gly Ala Thr Val Thr Gly Ala Gly Val Tyr Tyr Ala
65                  70                  75                  80

Tyr Lys Thr Met Lys Glu Asp Glu Lys Arg Tyr Asn Glu Arg Ile Ser
                85                  90                  95

Gly Leu Gly Leu Thr Pro Glu Gln Lys Gln Lys Lys Ala Ala Leu Ser
            100                 105                 110

Ala Ser Glu Gly Glu Glu Val Pro Gln Asp Lys Ala Pro Ser His Val
        115                 120                 125

Pro Phe Leu Leu Ile Gly Gly Gly Thr Ala Ala Phe Ala Ala Ala Arg
    130                 135                 140

Ser Ile Arg Ala Arg Asp Pro Gly Ala Arg Val Leu Ile Val Ser Glu
145                 150                 155                 160

Asp Pro Glu Leu Pro Tyr Met Arg Pro Pro Leu Ser Lys Glu Leu Trp
                165                 170                 175

Phe Ser Asp Asp Pro Asn Val Thr Lys Thr Leu Arg Phe Lys Gln Trp
```

```
            180                 185                 190

Asn Gly Lys Glu Arg Ser Ile Tyr Phe Gln Pro Pro Ser Phe Tyr Val
        195                 200                 205

Ser Ala Gln Asp Leu Pro His Ile Glu Asn Gly Gly Val Ala Val Leu
    210                 215                 220

Thr Gly Lys Lys Val Val Gln Leu Asp Val Arg Asp Asn Met Val Lys
225                 230                 235                 240

Leu Asn Asp Gly Ser Gln Ile Thr Tyr Glu Lys Cys Leu Ile Ala Thr
                245                 250                 255

Gly Gly Thr Pro Arg Ser Leu Ser Ala Ile Asp Arg Ala Gly Ala Glu
            260                 265                 270

Val Lys Ser Arg Thr Thr Leu Phe Arg Lys Ile Gly Asp Phe Arg Ser
        275                 280                 285

Leu Glu Lys Ile Ser Arg Glu Val Lys Ser Ile Thr Ile Ile Gly Gly
    290                 295                 300

Gly Phe Leu Gly Ser Glu Leu Ala Cys Ala Leu Gly Arg Lys Ala Arg
305                 310                 315                 320

Ala Leu Gly Thr Glu Val Ile Gln Leu Phe Pro Glu Lys Gly Asn Met
                325                 330                 335

Gly Lys Ile Leu Pro Glu Tyr Leu Ser Asn Trp Thr Met Glu Lys Val
            340                 345                 350

Arg Arg Glu Gly Val Lys Val Met Pro Asn Ala Ile Val Gln Ser Val
        355                 360                 365

Gly Val Ser Ser Gly Lys Leu Leu Ile Lys Leu Lys Asp Gly Arg Lys
    370                 375                 380

Val Glu Thr Asp His Ile Val Ala Ala Val Gly Leu Glu Pro Asn Val
385                 390                 395                 400

Glu Leu Ala Lys Thr Gly Gly Leu Glu Ile Asp Ser Asp Phe Gly Gly
                405                 410                 415
```

Phe Arg Val Asn Ala Glu Leu Gln Ala Arg Ser Asn Ile Trp Val Ala
420 425 430

Gly Asp Ala Ala Cys Phe Tyr Asp Ile Lys Leu Gly Arg Arg Arg Val
435 440 445

Glu His His Asp His Ala Val Val Ser Gly Arg Leu Ala Gly Glu Asn
450 455 460

Met Thr Gly Ala Ala Lys Pro Tyr Trp His Gln Ser Met Phe Trp Ser
465 470 475 480

Asp Leu Gly Pro Asp Val Gly Tyr Glu Ala Ile Gly Leu Val Asp Ser
485 490 495

Ser Leu Pro Thr Val Gly Val Phe Ala Lys Ala Thr Ala Gln Asp Asn
500 505 510

Pro Lys Ser Ala Thr Glu Gln Ser Gly Thr Gly Ile Arg Ser Glu Ser
515 520 525

Glu Thr Glu Ser Glu Ala Ser Glu Ile Thr Ile Pro Pro Ser Thr Pro
530 535 540

Ala Val Pro Gln Ala Pro Val Gln Gly Glu Asp Tyr Gly Lys Gly Val
545 550 555 560

Ile Phe Tyr Leu Arg Asp Lys Val Val Val Gly Ile Val Leu Trp Asn
565 570 575

Ile Phe Asn Arg Met Pro Ile Ala Arg Lys Ile Ile Lys Asp Gly Glu
580 585 590

Gln His Glu Asp Leu Asn Glu Val Ala Lys Leu Phe Asn Ile His Glu
595 600 605

Asp

<210> 5864
<211> 326
<212> PRT

<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1284; "

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<223> /note="Gene Symbol: AIFM1; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID: O95831; "

<220>
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<400> 5864

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Met Phe Arg Cys Gly Gly Leu Ala Ala Gly Ala Leu Lys Gln Lys Leu
1               5                  10                  15

Val Pro Leu Val Arg Thr Val Cys Val Arg Ser Pro Arg Gln Arg Asn
            20                  25                  30

Arg Leu Pro Ala Arg Ala Leu Gly Thr Glu Val Ile Gln Leu Phe Pro
        35                  40                  45

Glu Lys Gly Asn Met Gly Lys Ile Leu Pro Glu Tyr Leu Ser Asn Trp
    50                  55                  60

Thr Met Glu Lys Val Arg Arg Glu Gly Val Lys Val Met Pro Asn Ala
65                  70                  75                  80

Ile Val Gln Ser Val Gly Val Ser Ser Gly Lys Leu Leu Ile Lys Leu
                85                  90                  95

Lys Asp Gly Arg Lys Val Glu Thr Asp His Ile Val Ala Ala Val Gly
            100                 105                 110

Leu Glu Pro Asn Val Glu Leu Ala Lys Thr Gly Gly Leu Glu Ile Asp
        115                 120                 125

Ser Asp Phe Gly Gly Phe Arg Val Asn Ala Glu Leu Gln Ala Arg Ser
```

```
    130                 135                 140

Asn Ile Trp Val Ala Gly Asp Ala Ala Cys Phe Tyr Asp Ile Lys Leu
145                 150                 155                 160

Gly Arg Arg Arg Val Glu His His Asp His Ala Val Val Ser Gly Arg
                165                 170                 175

Leu Ala Gly Glu Asn Met Thr Gly Ala Ala Lys Pro Tyr Trp His Gln
            180                 185                 190

Ser Met Phe Trp Ser Asp Leu Gly Pro Asp Val Gly Tyr Glu Ala Ile
        195                 200                 205

Gly Leu Val Asp Ser Ser Leu Pro Thr Val Gly Val Phe Ala Lys Ala
    210                 215                 220

Thr Ala Gln Asp Asn Pro Lys Ser Ala Thr Glu Gln Ser Gly Thr Gly
225                 230                 235                 240

Ile Arg Ser Glu Ser Glu Thr Glu Ser Glu Ala Ser Glu Ile Thr Ile
                245                 250                 255

Pro Pro Ser Thr Pro Ala Val Pro Gln Ala Pro Val Gln Gly Glu Asp
            260                 265                 270

Tyr Gly Lys Gly Val Ile Phe Tyr Leu Arg Asp Lys Val Val Val Gly
        275                 280                 285

Ile Val Leu Trp Asn Ile Phe Asn Arg Met Pro Ile Ala Arg Lys Ile
    290                 295                 300

Ile Lys Asp Gly Glu Gln His Glu Asp Leu Asn Glu Val Ala Lys Leu
305                 310                 315                 320

Phe Asn Ile His Glu Asp
                325
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<210> 5865
<211> 324
<212> PRT
<213> Homo sapiens

<220>

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<220>
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<223> /note="Uniprot ID: O95831; "

<220>
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<223> /note="ENSP ID: ENSP00000402535"

<400> 5865

```
Met Phe Arg Cys Gly Gly Leu Ala Ala Gly Ala Leu Lys Gln Lys Leu
1               5                  10                  15

Val Pro Leu Val Arg Thr Val Cys Val Arg Ser Pro Arg Gln Arg Asn
            20                  25                  30

Arg Leu Pro Gly Asn Leu Phe Gln Arg Trp His Val Pro Leu Glu Leu
        35                  40                  45

Gln Met Thr Arg Gln Met Ala Ser Ser Gly Ala Ser Gly Gly Lys Ile
    50                  55                  60

Asp Asn Ser Val Leu Val Leu Ile Val Gly Leu Ser Thr Val Gly Ala
65                  70                  75                  80

Gly Ala Tyr Ala Tyr Lys Thr Met Lys Glu Asp Glu Lys Arg Tyr Asn
                85                  90                  95

Glu Arg Ile Ser Gly Leu Gly Leu Thr Pro Glu Gln Lys Gln Lys Lys
            100                 105                 110

Ala Ala Leu Ser Ala Ser Glu Gly Glu Glu Val Pro Gln Asp Lys Ala
        115                 120                 125

Pro Ser His Val Pro Phe Leu Leu Ile Gly Gly Gly Thr Ala Ala Phe
    130                 135                 140
```

```
Ala Ala Ala Arg Ser Ile Arg Ala Arg Asp Pro Gly Ala Arg Val Leu
145                 150                 155                 160

Ile Val Ser Glu Asp Pro Glu Leu Pro Tyr Met Arg Pro Pro Leu Ser
                165                 170                 175

Lys Glu Leu Trp Phe Ser Asp Asp Pro Asn Val Thr Lys Thr Leu Arg
            180                 185                 190

Phe Lys Gln Trp Asn Gly Lys Glu Arg Ser Ile Tyr Phe Gln Pro Pro
        195                 200                 205

Ser Phe Tyr Val Ser Ala Gln Asp Leu Pro His Ile Glu Asn Gly Gly
    210                 215                 220

Val Ala Val Leu Thr Gly Lys Lys Val Val Gln Leu Asp Val Arg Asp
225                 230                 235                 240

Asn Met Val Lys Leu Asn Asp Gly Ser Gln Ile Thr Tyr Glu Lys Cys
                245                 250                 255

Leu Ile Ala Thr Gly Gly Thr Pro Arg Ser Leu Ser Ala Ile Asp Arg
            260                 265                 270

Ala Gly Ala Glu Val Lys Ser Arg Thr Thr Leu Phe Arg Lys Ile Gly
        275                 280                 285

Asp Phe Arg Ser Leu Glu Lys Ile Ser Arg Glu Val Lys Ser Ile Thr
    290                 295                 300

Ile Ile Gly Gly Gly Phe Leu Gly Ser Glu Leu Ala Cys Ala Leu Gly
305                 310                 315                 320

Arg Lys Asp Ile
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<210> 5866
<211> 274
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000431222"

<400> 5866

```
Met Gly Lys Ile Leu Pro Glu Tyr Leu Ser Asn Trp Thr Met Glu Lys
1               5                  10                  15

Val Arg Arg Glu Gly Val Lys Val Met Pro Asn Ala Ile Val Gln Ser
            20                  25                  30

Val Gly Val Ser Ser Gly Lys Leu Leu Ile Lys Leu Lys Asp Gly Arg
        35                  40                  45

Lys Val Glu Thr Asp His Ile Val Ala Ala Val Gly Leu Glu Pro Asn
    50                  55                  60

Val Glu Leu Ala Lys Thr Gly Gly Leu Glu Ile Asp Ser Asp Phe Gly
65                  70                  75                  80

Gly Phe Arg Val Asn Ala Glu Leu Gln Ala Arg Ser Asn Ile Trp Val
                85                  90                  95

Ala Gly Asp Ala Ala Cys Phe Tyr Asp Ile Lys Leu Gly Arg Arg Arg
            100                 105                 110

Val Glu His His Asp His Ala Val Val Ser Gly Arg Leu Ala Gly Glu
        115                 120                 125

Asn Met Thr Gly Ala Ala Lys Pro Tyr Trp His Gln Ser Met Phe Trp
    130                 135                 140

Ser Asp Leu Gly Pro Asp Val Gly Tyr Glu Ala Ile Gly Leu Val Asp
145                 150                 155                 160

Ser Ser Leu Pro Thr Val Gly Val Phe Ala Lys Ala Thr Ala Gln Asp
                165                 170                 175
```

```
Asn Pro Lys Ser Ala Thr Glu Gln Ser Gly Thr Gly Ile Arg Ser Glu
            180                 185                 190

Ser Glu Thr Glu Ser Glu Ala Ser Glu Ile Thr Ile Pro Pro Ser Thr
        195                 200                 205

Pro Ala Val Pro Gln Ala Pro Val Gln Gly Glu Asp Tyr Gly Lys Gly
    210                 215                 220

Val Ile Phe Tyr Leu Arg Asp Lys Val Val Val Gly Ile Val Leu Trp
225                 230                 235                 240

Asn Ile Phe Asn Arg Met Pro Ile Ala Arg Lys Ile Ile Lys Asp Gly
                245                 250                 255

Glu Gln His Glu Asp Leu Asn Glu Val Ala Lys Leu Phe Asn Ile His
            260                 265                 270

Glu Asp
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<210> 5867
<211> 89
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="ENSP ID: ENSP00000432998"

<400> 5867

```
Met Phe Arg Cys Gly Gly Leu Ala Ala Gly Ala Leu Lys Gln Lys Leu
1               5                   10                  15

Val Pro Leu Val Arg Thr Val Cys Val Arg Ser Pro Arg Gln Arg Asn
```

20 25 30

Arg Leu Pro Gly Asn Leu Phe Gln Arg Trp His Val Pro Leu Glu Leu
35 40 45

Gln Met Thr Arg Gln Met Ala Ser Ser Gly Ala Ser Gly Gly Lys Ile
50 55 60

Asp Asn Ser Val Leu Val Leu Ile Val Gly Leu Ser Thr Val Gly Ala
65 70 75 80

Gly Ala Tyr Leu Cys Ser Leu Ile Thr
85

<210> 5868
<211> 43
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="ENSP ID: ENSP00000435955"

<400> 5868
Met Phe Arg Cys Gly Gly Leu Ala Ala Gly Ala Leu Lys Gln Lys Leu
1 5 10 15

Val Pro Leu Val Arg Thr Val Cys Val Arg Ser Pro Arg Gln Arg Asn
20 25 30

Arg Leu Pro Gly Leu Gln Asp Tyr Glu Arg Gly
35 40

<210> 5869
<211> 324
<212> PRT

<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Uniprot ID: O95831; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000446113"

<400> 5869

```
Met Phe Arg Cys Gly Gly Leu Ala Ala Gly Ala Leu Lys Gln Lys Leu
1               5                  10                  15

Val Pro Leu Val Arg Thr Val Cys Val Arg Ser Pro Arg Gln Arg Asn
            20                  25                  30

Arg Leu Pro Gly Asn Leu Phe Gln Arg Trp His Val Pro Leu Glu Leu
        35                  40                  45

Gln Met Thr Arg Gln Met Ala Ser Ser Gly Ala Ser Gly Gly Lys Ile
    50                  55                  60

Asp Asn Ser Val Leu Val Leu Ile Val Gly Leu Ser Thr Val Gly Ala
65                  70                  75                  80

Gly Ala Tyr Ala Tyr Lys Thr Met Lys Glu Asp Glu Lys Arg Tyr Asn
                85                  90                  95

Glu Arg Ile Ser Gly Leu Gly Leu Thr Pro Glu Gln Lys Gln Lys Lys
            100                 105                 110

Ala Ala Leu Ser Ala Ser Glu Gly Glu Glu Val Pro Gln Asp Lys Ala
        115                 120                 125

Pro Ser His Val Pro Phe Leu Leu Ile Gly Gly Gly Thr Ala Ala Phe
```

130 135 140

Ala Ala Ala Arg Ser Ile Arg Ala Arg Asp Pro Gly Ala Arg Val Leu
145 150 155 160

Ile Val Ser Glu Asp Pro Glu Leu Pro Tyr Met Arg Pro Pro Leu Ser
165 170 175

Lys Glu Leu Trp Phe Ser Asp Asp Pro Asn Val Thr Lys Thr Leu Arg
180 185 190

Phe Lys Gln Trp Asn Gly Lys Glu Arg Ser Ile Tyr Phe Gln Pro Pro
195 200 205

Ser Phe Tyr Val Ser Ala Gln Asp Leu Pro His Ile Glu Asn Gly Gly
210 215 220

Val Ala Val Leu Thr Gly Lys Lys Val Val Gln Leu Asp Val Arg Asp
225 230 235 240

Asn Met Val Lys Leu Asn Asp Gly Ser Gln Ile Thr Tyr Glu Lys Cys
245 250 255

Leu Ile Ala Thr Gly Gly Thr Pro Arg Ser Leu Ser Ala Ile Asp Arg
260 265 270

Ala Gly Ala Glu Val Lys Ser Arg Thr Thr Leu Phe Arg Lys Ile Gly
275 280 285

Asp Phe Arg Ser Leu Glu Lys Ile Ser Arg Glu Val Lys Ser Ile Thr
290 295 300

Ile Ile Gly Gly Gly Phe Leu Gly Ser Glu Leu Ala Cys Ala Leu Gly
305 310 315 320

Arg Lys Asp Ile

<210> 5870
<211> 373
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1285; "

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<223> /note="Gene Symbol: AIFM2; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID: Q9BRQ8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000312370"

<400> 5870

```
Met Gly Ser Gln Val Ser Val Glu Ser Gly Ala Leu His Val Val Ile
1               5                  10                  15

Val Gly Gly Gly Phe Gly Gly Ile Ala Ala Ala Ser Gln Leu Gln Ala
            20                  25                  30

Leu Asn Val Pro Phe Met Leu Val Asp Met Lys Asp Ser Phe His His
        35                  40                  45

Asn Val Ala Ala Leu Arg Ala Ser Val Glu Thr Gly Phe Ala Lys Lys
    50                  55                  60

Thr Phe Ile Ser Tyr Ser Val Thr Phe Lys Asp Asn Phe Arg Gln Gly
65                  70                  75                  80

Leu Val Val Gly Ile Asp Leu Lys Asn Gln Met Val Leu Leu Gln Gly
                85                  90                  95

Gly Glu Ala Leu Pro Phe Ser His Leu Ile Leu Ala Thr Gly Ser Thr
            100                 105                 110

Gly Pro Phe Pro Gly Lys Phe Asn Glu Val Ser Ser Gln Gln Ala Ala
        115                 120                 125

Ile Gln Ala Tyr Glu Asp Met Val Arg Gln Val Gln Arg Ser Arg Phe
    130                 135                 140
```

```
Ile Val Val Val Gly Gly Gly Ser Ala Gly Val Glu Met Ala Ala Glu
145                 150                 155                 160

Ile Lys Thr Glu Tyr Pro Glu Lys Glu Val Thr Leu Ile His Ser Gln
                165                 170                 175

Val Ala Leu Ala Asp Lys Glu Leu Leu Pro Ser Val Arg Gln Glu Val
            180                 185                 190

Lys Glu Ile Leu Leu Arg Lys Gly Val Gln Leu Leu Leu Ser Glu Arg
        195                 200                 205

Val Ser Asn Leu Glu Glu Leu Pro Leu Asn Glu Tyr Arg Glu Tyr Ile
    210                 215                 220

Lys Val Gln Thr Asp Lys Gly Thr Glu Val Ala Thr Asn Leu Val Ile
225                 230                 235                 240

Leu Cys Thr Gly Ile Lys Ile Asn Ser Ser Ala Tyr Arg Lys Ala Phe
                245                 250                 255

Glu Ser Arg Leu Ala Ser Ser Gly Ala Leu Arg Val Asn Glu His Leu
            260                 265                 270

Gln Val Glu Gly His Ser Asn Val Tyr Ala Ile Gly Asp Cys Ala Asp
        275                 280                 285

Val Arg Thr Pro Lys Met Ala Tyr Leu Ala Gly Leu His Ala Asn Ile
    290                 295                 300

Ala Val Ala Asn Ile Val Asn Ser Val Lys Gln Arg Pro Leu Gln Ala
305                 310                 315                 320

Tyr Lys Pro Gly Ala Leu Thr Phe Leu Leu Ser Met Gly Arg Asn Asp
                325                 330                 335

Gly Val Gly Gln Ile Ser Gly Phe Tyr Val Gly Arg Leu Met Val Arg
            340                 345                 350

Leu Thr Lys Ser Arg Asp Leu Phe Val Ser Thr Ser Trp Lys Thr Met
        355                 360                 365

Arg Gln Ser Pro Pro
```

370

<210> 5871
<211> 373
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1285; "

<220>
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<223> /note="Gene Symbol: AIFM2; "

<220>
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<220>
<221> source
<223> /note="Uniprot ID: Q9BRQ8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000362345"

<400> 5871
Met Gly Ser Gln Val Ser Val Glu Ser Gly Ala Leu His Val Val Ile
1   5   10   15

Val Gly Gly Gly Phe Gly Gly Ile Ala Ala Ala Ser Gln Leu Gln Ala
            20   25   30

Leu Asn Val Pro Phe Met Leu Val Asp Met Lys Asp Ser Phe His His
        35   40   45

Asn Val Ala Ala Leu Arg Ala Ser Val Glu Thr Gly Phe Ala Lys Lys
    50   55   60

Thr Phe Ile Ser Tyr Ser Val Thr Phe Lys Asp Asn Phe Arg Gln Gly
65   70   75   80

Leu Val Val Gly Ile Asp Leu Lys Asn Gln Met Val Leu Leu Gln Gly
                85   90   95

Gly Glu Ala Leu Pro Phe Ser His Leu Ile Leu Ala Thr Gly Ser Thr
            100   105   110

```
Gly Pro Phe Pro Gly Lys Phe Asn Glu Val Ser Ser Gln Gln Ala Ala
        115                 120                 125

Ile Gln Ala Tyr Glu Asp Met Val Arg Gln Val Gln Arg Ser Arg Phe
    130                 135                 140

Ile Val Val Val Gly Gly Gly Ser Ala Gly Val Glu Met Ala Ala Glu
145                 150                 155                 160

Ile Lys Thr Glu Tyr Pro Glu Lys Glu Val Thr Leu Ile His Ser Gln
                165                 170                 175

Val Ala Leu Ala Asp Lys Glu Leu Leu Pro Ser Val Arg Gln Glu Val
            180                 185                 190

Lys Glu Ile Leu Leu Arg Lys Gly Val Gln Leu Leu Leu Ser Glu Arg
        195                 200                 205

Val Ser Asn Leu Glu Glu Leu Pro Leu Asn Glu Tyr Arg Glu Tyr Ile
    210                 215                 220

Lys Val Gln Thr Asp Lys Gly Thr Glu Val Ala Thr Asn Leu Val Ile
225                 230                 235                 240

Leu Cys Thr Gly Ile Lys Ile Asn Ser Ser Ala Tyr Arg Lys Ala Phe
                245                 250                 255

Glu Ser Arg Leu Ala Ser Ser Gly Ala Leu Arg Val Asn Glu His Leu
            260                 265                 270

Gln Val Glu Gly His Ser Asn Val Tyr Ala Ile Gly Asp Cys Ala Asp
        275                 280                 285

Val Arg Thr Pro Lys Met Ala Tyr Leu Ala Gly Leu His Ala Asn Ile
    290                 295                 300

Ala Val Ala Asn Ile Val Asn Ser Val Lys Gln Arg Pro Leu Gln Ala
305                 310                 315                 320

Tyr Lys Pro Gly Ala Leu Thr Phe Leu Leu Ser Met Gly Arg Asn Asp
                325                 330                 335
```

```
Gly Val Gly Gln Ile Ser Gly Phe Tyr Val Gly Arg Leu Met Val Arg
            340                 345                 350

Leu Thr Lys Ser Arg Asp Leu Phe Val Ser Thr Ser Trp Lys Thr Met
        355                 360                 365

Arg Gln Ser Pro Pro
    370


<210> 5872
<211> 373
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1285; "

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<220>
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<220>
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<223> /note="Uniprot ID:  Q9BRQ8; "

<220>
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<223> /note="ENSP ID: ENSP00000478931"

<400> 5872
Met Gly Ser Gln Val Ser Val Glu Ser Gly Ala Leu His Val Val Ile
1               5                   10                  15

Val Gly Gly Gly Phe Gly Gly Ile Ala Ala Ala Ser Gln Leu Gln Ala
            20                  25                  30

Leu Asn Val Pro Phe Met Leu Val Asp Met Lys Asp Ser Phe His His
        35                  40                  45

Asn Val Ala Ala Leu Arg Ala Ser Val Glu Thr Gly Phe Ala Lys Lys
    50                  55                  60

Thr Phe Ile Ser Tyr Ser Val Thr Phe Lys Asp Asn Phe Arg Gln Gly
65                  70                  75                  80
```

```
Leu Val Val Gly Ile Asp Leu Lys Asn Gln Met Val Leu Leu Gln Gly
                85                  90                  95

Gly Glu Ala Leu Pro Phe Ser His Leu Ile Leu Ala Thr Gly Ser Thr
            100                 105                 110

Gly Pro Phe Pro Gly Lys Phe Asn Glu Val Ser Ser Gln Gln Ala Ala
        115                 120                 125

Ile Gln Ala Tyr Glu Asp Met Val Arg Gln Val Gln Arg Ser Arg Phe
    130                 135                 140

Ile Val Val Val Gly Gly Gly Ser Ala Gly Val Glu Met Ala Ala Glu
145                 150                 155                 160

Ile Lys Thr Glu Tyr Pro Glu Lys Glu Val Thr Leu Ile His Ser Gln
                165                 170                 175

Val Ala Leu Ala Asp Lys Glu Leu Leu Pro Ser Val Arg Gln Glu Val
            180                 185                 190

Lys Glu Ile Leu Leu Arg Lys Gly Val Gln Leu Leu Leu Ser Glu Arg
        195                 200                 205

Val Ser Asn Leu Glu Glu Leu Pro Leu Asn Glu Tyr Arg Glu Tyr Ile
    210                 215                 220

Lys Val Gln Thr Asp Lys Gly Thr Glu Val Ala Thr Asn Leu Val Ile
225                 230                 235                 240

Leu Cys Thr Gly Ile Lys Ile Asn Ser Ser Ala Tyr Arg Lys Ala Phe
                245                 250                 255

Glu Ser Arg Leu Ala Ser Ser Gly Ala Leu Arg Val Asn Glu His Leu
            260                 265                 270

Gln Val Glu Gly His Ser Asn Val Tyr Ala Ile Gly Asp Cys Ala Asp
        275                 280                 285

Val Arg Thr Pro Lys Met Ala Tyr Leu Ala Gly Leu His Ala Asn Ile
    290                 295                 300
```

```
Ala Val Ala Asn Ile Val Asn Ser Val Lys Gln Arg Pro Leu Gln Ala
305                 310                 315                 320

Tyr Lys Pro Gly Ala Leu Thr Phe Leu Leu Ser Met Gly Arg Asn Asp
                325                 330                 335

Gly Val Gly Gln Ile Ser Gly Phe Tyr Val Gly Arg Leu Met Val Arg
            340                 345                 350

Leu Thr Lys Ser Arg Asp Leu Phe Val Ser Thr Ser Trp Lys Thr Met
        355                 360                 365

Arg Gln Ser Pro Pro
    370
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<210> 5873
<211> 598
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1286; "

<220>
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<223> /note="Gene Symbol: AIFM3; "

<220>
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<220>
<221> source
<223> /note="Uniprot ID: Q96NN9; "

<220>
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<223> /note="ENSP ID: ENSP00000382116"

<400> 5873

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Met Gly Gly Cys Phe Ser Lys Pro Lys Pro Val Glu Leu Lys Ile Glu
1               5                   10                  15

Val Val Leu Pro Glu Lys Glu Arg Gly Lys Glu Glu Leu Ser Ala Ser
            20                  25                  30

Gly Lys Gly Ser Pro Arg Ala Tyr Gln Gly Asn Gly Thr Ala Arg His
```

```
        35                  40                  45

Phe His Thr Glu Glu Arg Leu Ser Thr Pro His Pro Tyr Pro Ser Pro
    50                  55                  60

Gln Asp Cys Val Glu Ala Ala Val Cys His Val Lys Asp Leu Glu Asn
65                  70                  75                  80

Gly Gln Met Arg Glu Val Glu Leu Gly Trp Gly Lys Val Leu Leu Val
                85                  90                  95

Lys Asp Asn Gly Glu Phe His Ala Leu Gly His Lys Cys Pro His Tyr
            100                 105                 110

Gly Ala Pro Leu Val Lys Gly Val Leu Ser Arg Gly Arg Val Arg Cys
        115                 120                 125

Pro Trp His Gly Ala Cys Phe Asn Ile Ser Thr Gly Asp Leu Glu Asp
    130                 135                 140

Phe Pro Gly Leu Asp Ser Leu His Lys Phe Gln Val Lys Ile Glu Lys
145                 150                 155                 160

Glu Lys Val Tyr Val Arg Ala Ser Lys Gln Ala Leu Gln Leu Gln Arg
                165                 170                 175

Arg Thr Lys Val Met Ala Lys Cys Ile Ser Pro Ser Ala Gly Tyr Ser
            180                 185                 190

Ser Ser Thr Asn Val Leu Ile Val Gly Ala Gly Ala Ala Gly Leu Val
        195                 200                 205

Cys Ala Glu Thr Leu Arg Gln Glu Gly Phe Ser Asp Arg Ile Val Leu
    210                 215                 220

Cys Thr Leu Asp Arg His Leu Pro Tyr Asp Arg Pro Lys Leu Ser Lys
225                 230                 235                 240

Ser Leu Asp Thr Gln Pro Glu Gln Leu Ala Leu Arg Pro Lys Glu Phe
                245                 250                 255

Phe Arg Ala Tyr Gly Ile Glu Val Leu Thr Glu Ala Gln Val Val Thr
            260                 265                 270
```

```
Val Asp Val Arg Thr Lys Lys Val Val Phe Lys Asp Gly Phe Lys Leu
        275                 280                 285

Glu Tyr Ser Lys Leu Leu Leu Ala Pro Gly Ser Ser Pro Lys Thr Leu
    290                 295                 300

Ser Cys Lys Gly Lys Glu Val Glu Asn Val Phe Thr Ile Arg Thr Pro
305                 310                 315                 320

Glu Asp Ala Asn Arg Val Val Arg Leu Ala Arg Gly Arg Asn Val Val
                325                 330                 335

Val Val Gly Ala Gly Phe Leu Gly Met Glu Val Ala Ala Tyr Leu Thr
            340                 345                 350

Glu Lys Ala His Ser Val Ser Val Val Glu Leu Glu Glu Thr Pro Phe
        355                 360                 365

Arg Arg Phe Leu Gly Glu Arg Val Gly Arg Ala Leu Met Lys Met Phe
    370                 375                 380

Glu Asn Asn Arg Val Lys Phe Tyr Met Gln Thr Glu Val Ser Glu Leu
385                 390                 395                 400

Arg Gly Gln Glu Gly Lys Leu Lys Glu Val Val Leu Lys Ser Ser Lys
                405                 410                 415

Val Val Arg Ala Asp Val Cys Val Val Gly Ile Gly Ala Val Pro Ala
            420                 425                 430

Thr Gly Phe Leu Arg Gln Ser Gly Ile Gly Leu Asp Ser Arg Gly Phe
        435                 440                 445

Ile Pro Val Asn Lys Met Met Gln Thr Asn Val Pro Gly Val Phe Ala
    450                 455                 460

Ala Gly Asp Ala Val Thr Phe Pro Leu Ala Trp Arg Asn Asn Arg Lys
465                 470                 475                 480

Val Asn Ile Pro His Trp Gln Met Ala His Ala Gln Gly Arg Val Ala
                485                 490                 495
```

```
Ala Gln Asn Met Leu Ala Gln Glu Ala Glu Met Ser Thr Val Pro Tyr
            500                 505                 510

Leu Trp Thr Ala Met Phe Gly Lys Ser Leu Arg Tyr Ala Gly Tyr Gly
        515                 520                 525

Glu Gly Phe Asp Asp Val Ile Ile Gln Gly Asp Leu Glu Glu Leu Lys
    530                 535                 540

Phe Val Ala Phe Tyr Thr Lys Gly Asp Glu Val Ile Ala Val Ala Ser
545                 550                 555                 560

Met Asn Tyr Asp Pro Ile Val Ser Lys Val Ala Glu Val Leu Ala Ser
                565                 570                 575

Gly Arg Ala Ile Arg Lys Arg Glu Val Glu Thr Gly Asp Met Ser Trp
            580                 585                 590

Leu Thr Gly Lys Gly Ser
        595


<210> 5874
<211> 605
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<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID:  Q96NN9; "

<220>
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<400> 5874
Met Gly Gly Cys Phe Ser Lys Pro Lys Pro Val Glu Leu Lys Ile Glu
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```
1               5                   10                  15

Val Val Leu Pro Glu Lys Glu Arg Gly Lys Glu Glu Leu Ser Ala Ser
            20                  25                  30

Gly Lys Gly Ser Pro Arg Ala Tyr Gln Gly Asn Gly Thr Ala Arg His
        35                  40                  45

Phe His Thr Glu Glu Arg Leu Ser Thr Pro His Pro Tyr Pro Ser Pro
    50                  55                  60

Gln Asp Cys Val Glu Ala Ala Val Cys His Val Lys Asp Leu Glu Asn
65                  70                  75                  80

Gly Gln Met Arg Glu Val Glu Leu Gly Trp Gly Lys Val Leu Leu Val
                85                  90                  95

Lys Asp Asn Gly Glu Phe His Ala Leu Gly His Lys Cys Pro His Tyr
            100                 105                 110

Gly Ala Pro Leu Val Lys Gly Val Leu Ser Arg Gly Arg Val Arg Cys
        115                 120                 125

Pro Trp His Gly Ala Cys Phe Asn Ile Ser Thr Gly Asp Leu Glu Asp
    130                 135                 140

Phe Pro Gly Leu Asp Ser Leu His Lys Phe Gln Val Lys Ile Glu Lys
145                 150                 155                 160

Glu Lys Val Tyr Val Arg Ala Ser Lys Gln Ala Leu Gln Leu Gln Arg
                165                 170                 175

Arg Thr Lys Val Met Ala Lys Cys Ile Ser Pro Ser Ala Gly Tyr Ser
            180                 185                 190

Ser Ser Thr Asn Val Leu Ile Val Gly Ala Gly Ala Ala Gly Leu Val
        195                 200                 205

Cys Ala Glu Thr Leu Arg Gln Glu Gly Phe Ser Asp Arg Ile Val Leu
    210                 215                 220

Cys Thr Leu Asp Arg His Leu Pro Tyr Asp Arg Pro Lys Leu Ser Lys
225                 230                 235                 240
```

```
Ser Leu Asp Thr Gln Pro Glu Gln Leu Ala Leu Arg Pro Lys Glu Phe
                245                 250                 255

Phe Arg Ala Tyr Gly Ile Glu Val Leu Thr Glu Ala Gln Val Val Thr
            260                 265                 270

Val Asp Val Arg Thr Lys Lys Val Val Phe Lys Asp Gly Phe Lys Leu
        275                 280                 285

Glu Tyr Ser Lys Leu Leu Leu Ala Pro Gly Ser Ser Pro Lys Thr Leu
    290                 295                 300

Ser Cys Lys Gly Lys Glu Val Glu Asn Val Phe Thr Ile Arg Thr Pro
305                 310                 315                 320

Glu Asp Ala Asn Arg Val Val Arg Leu Ala Arg Gly Arg Asn Val Val
                325                 330                 335

Val Val Gly Ala Gly Phe Leu Gly Met Glu Val Ala Ala Tyr Leu Thr
            340                 345                 350

Glu Lys Ala His Ser Val Ser Val Val Glu Leu Glu Glu Thr Pro Phe
        355                 360                 365

Arg Arg Phe Leu Gly Glu Arg Val Gly Arg Ala Leu Met Lys Met Phe
    370                 375                 380

Glu Asn Asn Arg Val Lys Phe Tyr Met Gln Thr Glu Val Ser Glu Leu
385                 390                 395                 400

Arg Gly Gln Glu Gly Lys Leu Lys Glu Val Val Leu Lys Ser Ser Lys
                405                 410                 415

Val Val Arg Ala Asp Val Cys Val Val Gly Ile Gly Ala Val Pro Ala
            420                 425                 430

Thr Gly Phe Leu Arg Gln Ser Gly Ile Gly Leu Asp Ser Arg Gly Phe
        435                 440                 445

Ile Pro Val Asn Lys Met Met Gln Thr Asn Val Pro Gly Val Phe Ala
    450                 455                 460
```

```
Ala Gly Asp Ala Val Thr Phe Pro Leu Ala Trp Arg Asn Asn Arg Lys
465                 470                 475                 480

Val Asn Ile Pro His Trp Gln Met Ala His Ala Gln Gly Arg Val Ala
                485                 490                 495

Ala Gln Asn Met Leu Ala Gln Glu Ala Glu Met Ser Thr Val Pro Tyr
            500                 505                 510

Leu Trp Thr Ala Met Phe Gly Lys Ser Leu Arg Tyr Ala Gly Tyr Gly
        515                 520                 525

Glu Gly Phe Asp Asp Val Ile Ile Gln Gly Asp Leu Glu Glu Leu Lys
    530                 535                 540

Phe Val Ala Phe Tyr Thr Lys Gly Asp Glu Val Ile Ala Val Ala Ser
545                 550                 555                 560

Met Asn Tyr Asp Pro Ile Val Ser Lys Val Ala Glu Val Leu Ala Ser
                565                 570                 575

Gly Arg Ala Ile Arg Lys Arg Glu Val Glu Leu Phe Val Leu His Ser
            580                 585                 590

Lys Thr Gly Asp Met Ser Trp Leu Thr Gly Lys Gly Ser
        595                 600                 605


<210> 5875
<211> 604
<212> PRT
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<220>
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<220>
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<223> /note="Uniprot ID: Q96NN9; "

<220>
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<400> 5875

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Met Gly Gly Cys Phe Ser Lys Pro Lys Pro Gly Ala Ala Leu Pro Thr
1               5                  10                  15

Val Glu Leu Lys Ile Glu Val Val Leu Pro Glu Lys Glu Arg Gly Lys
            20                  25                  30

Glu Glu Leu Ser Ala Ser Gly Lys Gly Ser Pro Arg Ala Tyr Gln Gly
        35                  40                  45

Asn Gly Thr Ala Arg His Phe His Thr Glu Glu Arg Leu Ser Thr Pro
    50                  55                  60

His Pro Tyr Pro Ser Pro Gln Asp Cys Val Glu Ala Ala Val Cys His
65                  70                  75                  80

Val Lys Asp Leu Glu Asn Gly Gln Met Arg Glu Val Glu Leu Gly Trp
                85                  90                  95

Gly Lys Val Leu Leu Val Lys Asp Asn Gly Glu Phe His Ala Leu Gly
            100                 105                 110

His Lys Cys Pro His Tyr Gly Ala Pro Leu Val Lys Gly Val Leu Ser
        115                 120                 125

Arg Gly Arg Val Arg Cys Pro Trp His Gly Ala Cys Phe Asn Ile Ser
    130                 135                 140

Thr Gly Asp Leu Glu Asp Phe Pro Gly Leu Asp Ser Leu His Lys Phe
145                 150                 155                 160

Gln Val Lys Ile Glu Lys Glu Lys Val Tyr Val Arg Ala Ser Lys Gln
                165                 170                 175

Ala Leu Gln Leu Gln Arg Arg Thr Lys Val Met Ala Lys Cys Ile Ser
            180                 185                 190

Pro Ser Ala Gly Tyr Ser Ser Ser Thr Asn Val Leu Ile Val Gly Ala
        195                 200                 205
```

```
Gly Ala Ala Gly Leu Val Cys Ala Glu Thr Leu Arg Gln Glu Gly Phe
    210                 215                 220

Ser Asp Arg Ile Val Leu Cys Thr Leu Asp Arg His Leu Pro Tyr Asp
225                 230                 235                 240

Arg Pro Lys Leu Ser Lys Ser Leu Asp Thr Gln Pro Glu Gln Leu Ala
                245                 250                 255

Leu Arg Pro Lys Glu Phe Phe Arg Ala Tyr Gly Ile Glu Val Leu Thr
            260                 265                 270

Glu Ala Gln Val Val Thr Val Asp Val Arg Thr Lys Lys Val Val Phe
        275                 280                 285

Lys Asp Gly Phe Lys Leu Glu Tyr Ser Lys Leu Leu Leu Ala Pro Gly
    290                 295                 300

Ser Ser Pro Lys Thr Leu Ser Cys Lys Gly Lys Glu Val Glu Asn Val
305                 310                 315                 320

Phe Thr Ile Arg Thr Pro Glu Asp Ala Asn Arg Val Val Arg Leu Ala
                325                 330                 335

Arg Gly Arg Asn Val Val Val Val Gly Ala Gly Phe Leu Gly Met Glu
            340                 345                 350

Val Ala Ala Tyr Leu Thr Glu Lys Ala His Ser Val Ser Val Val Glu
        355                 360                 365

Leu Glu Glu Thr Pro Phe Arg Arg Phe Leu Gly Glu Arg Val Gly Arg
    370                 375                 380

Ala Leu Met Lys Met Phe Glu Asn Asn Arg Val Lys Phe Tyr Met Gln
385                 390                 395                 400

Thr Glu Val Ser Glu Leu Arg Gly Gln Glu Gly Lys Leu Lys Glu Val
                405                 410                 415

Val Leu Lys Ser Ser Lys Val Val Arg Ala Asp Val Cys Val Val Gly
            420                 425                 430
```

```
Ile Gly Ala Val Pro Ala Thr Gly Phe Leu Arg Gln Ser Gly Ile Gly
        435                 440                 445

Leu Asp Ser Arg Gly Phe Ile Pro Val Asn Lys Met Met Gln Thr Asn
    450                 455                 460

Val Pro Gly Val Phe Ala Ala Gly Asp Ala Val Thr Phe Pro Leu Ala
465                 470                 475                 480

Trp Arg Asn Asn Arg Lys Val Asn Ile Pro His Trp Gln Met Ala His
                485                 490                 495

Ala Gln Gly Arg Val Ala Ala Gln Asn Met Leu Ala Gln Glu Ala Glu
            500                 505                 510

Met Ser Thr Val Pro Tyr Leu Trp Thr Ala Met Phe Gly Lys Ser Leu
        515                 520                 525

Arg Tyr Ala Gly Tyr Gly Glu Gly Phe Asp Asp Val Ile Ile Gln Gly
    530                 535                 540

Asp Leu Glu Glu Leu Lys Phe Val Ala Phe Tyr Thr Lys Gly Asp Glu
545                 550                 555                 560

Val Ile Ala Val Ala Ser Met Asn Tyr Asp Pro Ile Val Ser Lys Val
                565                 570                 575

Ala Glu Val Leu Ala Ser Gly Arg Ala Ile Arg Lys Arg Glu Val Glu
            580                 585                 590

Thr Gly Asp Met Ser Trp Leu Thr Gly Lys Gly Ser
        595                 600


<210> 5876
<211> 605
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1286; "

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<223> /note="Gene Symbol: AIFM3; "
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<220>
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apoptosis-inducing factor, mitochondrion-associated, 3; "

<220>
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<220>
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<400> 5876
Met Gly Gly Cys Phe Ser Lys Pro Lys Pro Val Glu Leu Lys Ile Glu
1   5   10   15

Val Val Leu Pro Glu Lys Glu Arg Gly Lys Glu Glu Leu Ser Ala Ser
            20   25   30

Gly Lys Gly Ser Pro Arg Ala Tyr Gln Gly Asn Gly Thr Ala Arg His
        35   40   45

Phe His Thr Glu Glu Arg Leu Ser Thr Pro His Pro Tyr Pro Ser Pro
    50   55   60

Gln Asp Cys Val Glu Ala Ala Val Cys His Val Lys Asp Leu Glu Asn
65   70   75   80

Gly Gln Met Arg Glu Val Glu Leu Gly Trp Gly Lys Val Leu Leu Val
                85   90   95

Lys Asp Asn Gly Glu Phe His Ala Leu Gly His Lys Cys Pro His Tyr
            100   105   110

Gly Ala Pro Leu Val Lys Gly Val Leu Ser Arg Gly Arg Val Arg Cys
        115   120   125

Pro Trp His Gly Ala Cys Phe Asn Ile Ser Thr Gly Asp Leu Glu Asp
    130   135   140

Phe Pro Gly Leu Asp Ser Leu His Lys Phe Gln Val Lys Ile Glu Lys
145   150   155   160

Glu Lys Val Tyr Val Arg Ala Ser Lys Gln Ala Leu Gln Leu Gln Arg
                165   170   175

```
Arg Thr Lys Val Met Ala Lys Cys Ile Ser Pro Ser Ala Gly Tyr Ser
            180                 185                 190

Ser Ser Thr Asn Val Leu Ile Val Gly Ala Gly Ala Ala Gly Leu Val
        195                 200                 205

Cys Ala Glu Thr Leu Arg Gln Glu Gly Phe Ser Asp Arg Ile Val Leu
    210                 215                 220

Cys Thr Leu Asp Arg His Leu Pro Tyr Asp Arg Pro Lys Leu Ser Lys
225                 230                 235                 240

Ser Leu Asp Thr Gln Pro Glu Gln Leu Ala Leu Arg Pro Lys Glu Phe
                245                 250                 255

Phe Arg Ala Tyr Gly Ile Glu Val Leu Thr Glu Ala Gln Val Val Thr
            260                 265                 270

Val Asp Val Arg Thr Lys Lys Val Val Phe Lys Asp Gly Phe Lys Leu
        275                 280                 285

Glu Tyr Ser Lys Leu Leu Leu Ala Pro Gly Ser Ser Pro Lys Thr Leu
    290                 295                 300

Ser Cys Lys Gly Lys Glu Val Glu Asn Val Phe Thr Ile Arg Thr Pro
305                 310                 315                 320

Glu Asp Ala Asn Arg Val Val Arg Leu Ala Arg Gly Arg Asn Val Val
                325                 330                 335

Val Val Gly Ala Gly Phe Leu Gly Met Glu Val Ala Ala Tyr Leu Thr
            340                 345                 350

Glu Lys Ala His Ser Val Ser Val Val Glu Leu Glu Glu Thr Pro Phe
        355                 360                 365

Arg Arg Phe Leu Gly Glu Arg Val Gly Arg Ala Leu Met Lys Met Phe
    370                 375                 380

Glu Asn Asn Arg Val Lys Phe Tyr Met Gln Thr Glu Val Ser Glu Leu
385                 390                 395                 400
```

```
Arg Gly Gln Glu Gly Lys Leu Lys Glu Val Val Leu Lys Ser Ser Lys
                405                 410                 415

Val Val Arg Ala Asp Val Cys Val Val Gly Ile Gly Ala Val Pro Ala
            420                 425                 430

Thr Gly Phe Leu Arg Gln Ser Gly Ile Gly Leu Asp Ser Arg Gly Phe
        435                 440                 445

Ile Pro Val Asn Lys Met Met Gln Thr Asn Val Pro Gly Val Phe Ala
    450                 455                 460

Ala Gly Asp Ala Val Thr Phe Pro Leu Ala Trp Arg Asn Asn Arg Lys
465                 470                 475                 480

Val Asn Ile Pro His Trp Gln Met Ala His Ala Gln Gly Arg Val Ala
                485                 490                 495

Ala Gln Asn Met Leu Ala Gln Glu Ala Glu Met Ser Thr Val Pro Tyr
            500                 505                 510

Leu Trp Thr Ala Met Phe Gly Lys Ser Leu Arg Tyr Ala Gly Tyr Gly
        515                 520                 525

Glu Gly Phe Asp Asp Val Ile Ile Gln Gly Asp Leu Glu Glu Leu Lys
    530                 535                 540

Phe Val Ala Phe Tyr Thr Lys Gly Asp Glu Val Ile Ala Val Ala Ser
545                 550                 555                 560

Met Asn Tyr Asp Pro Ile Val Ser Lys Val Ala Glu Val Leu Ala Ser
                565                 570                 575

Gly Arg Ala Ile Arg Lys Arg Glu Val Glu Leu Phe Val Leu His Ser
            580                 585                 590

Lys Thr Gly Asp Met Ser Trp Leu Thr Gly Lys Gly Ser
        595                 600                 605
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<210> 5877
<211> 269
<212> PRT
<213> Homo sapiens

<220>
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<400> 5877
Met Gly Gly Cys Phe Ser Lys Pro Lys Pro Val Glu Leu Lys Ile Glu
1 5 10 15

Val Val Leu Pro Glu Lys Glu Arg Gly Lys Glu Glu Leu Ser Ala Ser
20 25 30

Gly Lys Gly Ser Pro Arg Ala Tyr Gln Gly Asn Gly Thr Ala Arg His
35 40 45

Phe His Thr Glu Glu Arg Leu Ser Thr Pro His Pro Tyr Pro Ser Pro
50 55 60

Gln Asp Cys Val Glu Ala Ala Val Cys His Val Lys Asp Leu Glu Asn
65 70 75 80

Gly Gln Met Arg Glu Val Glu Leu Gly Trp Gly Lys Val Leu Leu Val
85 90 95

Lys Asp Asn Gly Glu Phe His Ala Leu Gly His Lys Cys Pro His Tyr
100 105 110

Gly Ala Pro Leu Val Lys Gly Val Leu Ser Arg Gly Arg Val Arg Cys
115 120 125

Pro Trp His Gly Ala Cys Phe Asn Ile Ser Thr Gly Asp Leu Glu Asp
130 135 140

Phe Pro Gly Leu Asp Ser Leu His Lys Phe Gln Val Lys Ile Glu Lys
145 150 155 160

```
Glu Lys Val Tyr Val Arg Ala Ser Lys Gln Ala Leu Gln Leu Gln Arg
                165                 170                 175

Arg Thr Lys Val Met Ala Lys Cys Ile Ser Pro Ser Ala Gly Tyr Ser
            180                 185                 190

Ser Ser Thr Asn Val Leu Ile Val Gly Ala Gly Ala Ala Gly Leu Val
        195                 200                 205

Cys Ala Glu Thr Leu Arg Gln Glu Gly Phe Ser Asp Arg Ile Val Leu
    210                 215                 220

Cys Thr Leu Asp Arg His Leu Pro Tyr Asp Arg Pro Lys Leu Ser Lys
225                 230                 235                 240

Ser Leu Asp Thr Gln Pro Glu Gln Leu Ala Leu Arg Pro Lys Glu Phe
                245                 250                 255

Phe Arg Ala Tyr Gly Ile Glu Val Leu Thr Glu Ala Gln
            260                 265


<210> 5878
<211> 129
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1286; "

<220>
<221> source
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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000402067"

<400> 5878
Met Gly Gly Cys Phe Ser Lys Pro Lys Pro Val Glu Leu Lys Ile Glu
1               5                   10                  15
```

```
Val Val Leu Pro Glu Lys Glu Arg Gly Lys Glu Glu Leu Ser Ala Ser
            20                  25                  30

Gly Lys Gly Ser Pro Arg Ala Tyr Gln Gly Asn Gly Thr Ala Arg His
        35                  40                  45

Phe His Thr Glu Glu Arg Leu Ser Thr Pro His Pro Tyr Pro Ser Pro
    50                  55                  60

Gln Asp Cys Val Glu Ala Ala Val Cys His Val Lys Asp Leu Glu Asn
65                  70                  75                  80

Gly Gln Met Arg Glu Val Glu Leu Gly Trp Gly Lys Val Leu Leu Val
                85                  90                  95

Lys Asp Asn Gly Glu Phe His Ala Leu Gly His Lys Cys Pro His Tyr
            100                 105                 110

Gly Ala Pro Leu Val Lys Gly Val Leu Ser Arg Gly Arg Val Arg Cys
        115                 120                 125

Pro
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<210> 5879
<211> 74
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1286; "

<220>
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<400> 5879
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Met Gly Gly Cys Phe Ser Lys Pro Lys Pro Val Gly Arg Ala Ala Pro
1               5                   10                  15
```

Gly Pro Thr Arg Ala Met Ala Arg Pro Ala Thr Ser Thr Arg Arg Ser
            20   25   30

Ala Cys Pro Pro Leu Thr Pro Thr Pro Ala Leu Arg Ile Ala Trp Arg
        35   40   45

Leu Leu Ser Ala Thr Ser Arg Thr Ser Arg Met Ala Arg Cys Gly Lys
    50   55   60

Trp Ser Trp Ala Gly Gly Arg Cys Cys Trp
65   70

<210> 5880
<211> 121
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000412973"

<400> 5880
Met Gly Gly Cys Phe Ser Lys Pro Lys Pro Val Glu Leu Lys Ile Glu
1   5   10   15

Val Val Leu Pro Glu Lys Glu Arg Gly Lys Glu Glu Leu Ser Ala Ser
            20   25   30

Gly Lys Gly Ser Pro Arg Ala Tyr Gln Gly Asn Gly Thr Ala Arg His
        35   40   45

Phe His Thr Glu Glu Arg Leu Ser Thr Pro His Pro Tyr Pro Ser Pro
    50   55   60

```
Gln Asp Cys Val Glu Ala Ala Val Cys His Val Lys Asp Leu Glu Asn
65                  70                  75                  80


Gly Gln Arg Ser Val Pro Trp Ser Gly Ala Leu Pro Leu Ala Arg Arg
                85                  90                  95


Leu Leu Gln His Gln His Trp Gly Pro Gly Gly Leu Pro Trp Pro Gly
            100                 105                 110


Gln Ser Thr Gln Val Pro Gly Glu Asp
        115                 120


<210> 5881
<211> 138
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1287; "

<220>
<221> source
<223> /note="Gene Symbol: APITD1; "

<220>
<221> source
<223> /note="Gene Name:
      apoptosis-inducing, TAF9-like domain 1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8N2Z9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000308583"

<400> 5881
Met Glu Glu Glu Ala Glu Thr Glu Glu Gln Gln Arg Phe Ser Tyr Gln
1               5                   10                  15


Gln Arg Leu Lys Ala Ala Val His Tyr Thr Val Gly Cys Leu Cys Glu
            20                  25                  30


Glu Val Ala Leu Asp Lys Glu Met Gln Phe Ser Lys Gln Thr Ile Ala
        35                  40                  45


Ala Ile Ser Glu Leu Thr Phe Arg Gln Cys Glu Asn Phe Ala Lys Asp
    50                  55                  60
```

```
Leu Glu Met Phe Ala Arg His Ala Lys Arg Thr Thr Ile Asn Thr Glu
65                  70                  75                  80


Asp Val Lys Leu Leu Ala Arg Arg Ser Asn Ser Leu Leu Lys Tyr Ile
                85                  90                  95


Thr Asp Lys Ser Glu Glu Ile Ala Gln Ile Asn Leu Glu Arg Lys Ala
            100                 105                 110


Gln Lys Lys Lys Lys Ser Glu Asp Gly Ser Lys Asn Ser Arg Gln Pro
        115                 120                 125


Ala Glu Ala Gly Val Val Glu Ser Glu Asn
    130                 135


<210> 5882
<211> 78
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1287; "

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<223> /note="Gene Symbol: APITD1; "

<220>
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<223> /note="Gene Name:
      apoptosis-inducing, TAF9-like domain 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000468629"

<400> 5882
Met Ser Ser Arg Arg Gly Ser Phe Leu Ser Thr Lys Leu His Cys Ser
1               5                   10                  15


Ser Cys Leu Pro Cys Pro Leu Ser Phe Glu Lys Phe Lys Pro Ser Glu
            20                  25                  30


Lys Leu Gln Glu His Glu Ala Lys Gly Ser Ser Ser Leu Tyr Cys Gly
        35                  40                  45
```

Leu Ser Leu Arg Gly Ser Cys Ile Gly Gln Arg Asp Ala Val Gln Gln
50 55 60

Thr Asp His Cys Gly His Phe Gly Ala Asp Phe Pro Thr Val
65 70 75

<210> 5883
<211> 49
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: APITD1; "

<220>
<221> source
<223> /note="Gene Name:
apoptosis-inducing, TAF9-like domain 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000489524"

<400> 5883
Met Ser Ser Arg Arg Gly Ser Phe Leu Ser Thr Lys Leu His Cys Ser
1 5 10 15

Ser Cys Leu Pro Cys Pro Leu Ser Phe Glu Lys Phe Lys Pro Ser Glu
20 25 30

Lys Leu Gln Glu His Asp Met Arg Lys Glu Pro Gln Leu Thr Leu Lys
35 40 45

Met

<210> 5884
<211> 1341
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1288; "

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<221> source
<223> /note="Gene Symbol: ACIN1; "

<220>
<221> source
<223> /note="Gene Name:
apoptotic chromatin condensation inducer 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q9UKV3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000262710"

<400> 5884

Met	Trp	Arg	Arg	Lys	His	Pro	Arg	Thr	Ser	Gly	Gly	Thr	Arg	Gly	Val
1				5				10					15		

Leu	Ser	Gly	Asn	Arg	Gly	Val	Glu	Tyr	Gly	Ser	Gly	Arg	Gly	His	Leu
			20					25					30		

Gly	Thr	Phe	Glu	Gly	Arg	Trp	Arg	Lys	Leu	Pro	Lys	Met	Pro	Glu	Ala
		35					40					45			

Val	Gly	Thr	Asp	Pro	Ser	Thr	Ser	Arg	Lys	Met	Ala	Glu	Leu	Glu	Glu
	50					55					60				

Val	Thr	Leu	Asp	Gly	Lys	Pro	Leu	Gln	Ala	Leu	Arg	Val	Thr	Asp	Leu
65					70					75					80

Lys	Ala	Ala	Leu	Glu	Gln	Arg	Gly	Leu	Ala	Lys	Ser	Gly	Gln	Lys	Ser
				85					90					95	

Ala	Leu	Val	Lys	Arg	Leu	Lys	Gly	Ala	Leu	Met	Leu	Glu	Asn	Leu	Gln
			100					105					110		

Lys	His	Ser	Thr	Pro	His	Ala	Ala	Phe	Gln	Pro	Asn	Ser	Gln	Ile	Gly
		115					120					125			

Glu	Glu	Met	Ser	Gln	Asn	Ser	Phe	Ile	Lys	Gln	Tyr	Leu	Glu	Lys	Gln
	130					135					140				

Gln	Glu	Leu	Leu	Arg	Gln	Arg	Leu	Glu	Arg	Glu	Ala	Arg	Glu	Ala	Ala
145					150					155					160

```
Glu Leu Glu Glu Ala Ser Ala Glu Ser Glu Asp Glu Met Ile His Pro
                165                 170                 175

Glu Gly Val Ala Ser Leu Leu Pro Pro Asp Phe Gln Ser Ser Leu Glu
            180                 185                 190

Arg Pro Glu Leu Glu Leu Ser Arg His Ser Pro Arg Lys Ser Ser Ser
        195                 200                 205

Ile Ser Glu Glu Lys Gly Asp Ser Asp Asp Glu Lys Pro Arg Lys Gly
    210                 215                 220

Glu Arg Arg Ser Ser Arg Val Arg Gln Ala Arg Ala Ala Lys Leu Ser
225                 230                 235                 240

Glu Gly Ser Gln Pro Ala Glu Glu Glu Glu Asp Gln Glu Thr Pro Ser
                245                 250                 255

Arg Asn Leu Arg Val Arg Ala Asp Arg Asn Leu Lys Thr Glu Glu Glu
            260                 265                 270

Glu Glu Glu Glu Glu Glu Glu Glu Glu Asp Asp Glu Glu Glu Glu Gly
        275                 280                 285

Asp Asp Glu Gly Gln Lys Ser Arg Glu Ala Pro Ile Leu Lys Glu Phe
    290                 295                 300

Lys Glu Glu Gly Glu Glu Ile Pro Arg Val Lys Pro Glu Glu Met Met
305                 310                 315                 320

Asp Glu Arg Pro Lys Thr Arg Ser Gln Glu Gln Glu Val Leu Glu Arg
                325                 330                 335

Gly Gly Arg Phe Thr Arg Ser Gln Glu Glu Ala Arg Lys Ser His Leu
            340                 345                 350

Ala Arg Gln Gln Gln Glu Lys Glu Met Lys Thr Thr Ser Pro Leu Glu
        355                 360                 365

Glu Glu Glu Arg Glu Ile Lys Ser Ser Gln Gly Leu Lys Glu Lys Ser
    370                 375                 380

Lys Ser Pro Ser Pro Pro Arg Leu Thr Glu Asp Arg Lys Lys Ala Ser
```

385 390 395 400

Leu Val Ala Leu Pro Glu Gln Thr Ala Ser Glu Glu Glu Thr Pro Pro
405 410 415

Pro Leu Leu Thr Lys Glu Ala Ser Ser Pro Pro Pro His Pro Gln Leu
420 425 430

His Ser Glu Glu Glu Ile Glu Pro Met Glu Gly Pro Ala Pro Ala Val
435 440 445

Leu Ile Gln Leu Ser Pro Pro Asn Thr Asp Ala Asp Thr Arg Glu Leu
450 455 460

Leu Val Ser Gln His Thr Val Gln Leu Val Gly Gly Leu Ser Pro Leu
465 470 475 480

Ser Ser Pro Ser Asp Thr Lys Ala Glu Ser Pro Ala Glu Lys Val Pro
485 490 495

Glu Glu Ser Val Leu Pro Leu Val Gln Lys Ser Thr Leu Ala Asp Tyr
500 505 510

Ser Ala Gln Lys Asp Leu Glu Pro Glu Ser Asp Arg Ser Ala Gln Pro
515 520 525

Leu Pro Leu Lys Ile Glu Glu Leu Ala Leu Ala Lys Gly Ile Thr Glu
530 535 540

Glu Cys Leu Lys Gln Pro Ser Leu Glu Gln Lys Glu Gly Arg Arg Ala
545 550 555 560

Ser His Thr Leu Leu Pro Ser His Arg Leu Lys Gln Ser Ala Asp Ser
565 570 575

Ser Ser Ser Arg Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Arg Ser Arg
580 585 590

Ser Arg Ser Pro Asp Ser Ser Gly Ser Arg Ser His Ser Pro Leu Arg
595 600 605

Ser Lys Gln Arg Asp Val Ala Gln Ala Arg Thr His Ala Asn Pro Arg
610 615 620

```
Gly Arg Pro Lys Met Gly Ser Arg Ser Thr Ser Glu Ser Arg Ser Arg
625                 630                 635                 640

Ser Arg Ser Arg Ser Arg Ser Ala Ser Ser Asn Ser Arg Lys Ser Leu
                645                 650                 655

Ser Pro Gly Val Ser Arg Asp Ser Ser Thr Ser Tyr Thr Glu Thr Lys
            660                 665                 670

Asp Pro Ser Ser Gly Gln Glu Val Ala Thr Pro Pro Val Pro Gln Leu
        675                 680                 685

Gln Val Cys Glu Pro Lys Glu Arg Thr Ser Thr Ser Ser Ser Ser Val
    690                 695                 700

Gln Ala Arg Arg Leu Ser Gln Pro Glu Ser Ala Glu Lys His Val Thr
705                 710                 715                 720

Gln Arg Leu Gln Pro Glu Arg Gly Ser Pro Lys Lys Cys Glu Ala Glu
                725                 730                 735

Glu Ala Glu Pro Pro Ala Ala Thr Gln Pro Gln Thr Ser Glu Thr Gln
            740                 745                 750

Thr Ser His Leu Pro Glu Ser Glu Arg Ile His His Thr Val Glu Glu
        755                 760                 765

Lys Glu Glu Val Thr Met Asp Thr Ser Glu Asn Arg Pro Glu Asn Asp
    770                 775                 780

Val Pro Glu Pro Pro Met Pro Ile Ala Asp Gln Val Ser Asn Asp Asp
785                 790                 795                 800

Arg Pro Glu Gly Ser Val Glu Asp Glu Glu Lys Lys Glu Ser Ser Leu
                805                 810                 815

Pro Lys Ser Phe Lys Arg Lys Ile Ser Val Val Ser Ala Thr Lys Gly
            820                 825                 830

Val Pro Ala Gly Asn Ser Asp Thr Glu Gly Gly Gln Pro Gly Arg Lys
        835                 840                 845
```

```
Arg Arg Trp Gly Ala Ser Thr Ala Thr Thr Gln Lys Lys Pro Ser Ile
    850                 855                 860

Ser Ile Thr Thr Glu Ser Leu Lys Ser Leu Ile Pro Asp Ile Lys Pro
865                 870                 875                 880

Leu Ala Gly Gln Glu Ala Val Val Asp Leu His Ala Asp Asp Ser Arg
                885                 890                 895

Ile Ser Glu Asp Glu Thr Glu Arg Asn Gly Asp Asp Gly Thr His Asp
            900                 905                 910

Lys Gly Leu Lys Ile Cys Arg Thr Val Thr Gln Val Val Pro Ala Glu
        915                 920                 925

Gly Gln Glu Asn Gly Gln Arg Glu Glu Glu Glu Glu Glu Lys Glu Pro
    930                 935                 940

Glu Ala Glu Pro Pro Val Pro Pro Gln Val Ser Val Glu Val Ala Leu
945                 950                 955                 960

Pro Pro Pro Ala Glu His Glu Val Lys Lys Val Thr Leu Gly Asp Thr
                965                 970                 975

Leu Thr Arg Arg Ser Ile Ser Gln Gln Lys Ser Gly Val Ser Ile Thr
            980                 985                 990

Ile Asp Asp Pro Val Arg Thr Ala  Gln Val Pro Ser Pro  Pro Arg
Gly
        995                 1000                1005

Lys Ile  Ser Asn Ile Val His  Ile Ser Asn Leu Val  Arg Pro Phe
    1010                1015                1020

Thr Leu  Gly Gln Leu Lys Glu  Leu Leu Gly Arg Thr  Gly Thr Leu
    1025                1030                1035

Val Glu  Glu Ala Phe Trp Ile  Asp Lys Ile Lys Ser  His Cys Phe
    1040                1045                1050

Val Thr  Tyr Ser Thr Val Glu  Glu Ala Val Ala Thr  Arg Thr Ala
    1055                1060                1065
```

```
Leu His  Gly Val Lys Trp Pro  Gln Ser Asn Pro Lys  Phe Leu Cys
    1070                1075                1080

Ala Asp  Tyr Ala Glu Gln Asp  Glu Leu Asp Tyr His  Arg Gly Leu
    1085                1090                1095

Leu Val  Asp Arg Pro Ser Glu  Thr Lys Thr Glu Glu  Gln Gly Ile
    1100                1105                1110

Pro Arg  Pro Leu His Pro Pro  Pro Pro Pro Pro Val  Gln Pro Pro
    1115                1120                1125

Gln His  Pro Arg Ala Glu Gln  Arg Glu Gln Glu Arg  Ala Val Arg
    1130                1135                1140

Glu Gln  Trp Ala Glu Arg Glu  Arg Glu Met Glu Arg  Arg Glu Arg
    1145                1150                1155

Thr Arg  Ser Glu Arg Glu Trp  Asp Arg Asp Lys Val  Arg Glu Gly
    1160                1165                1170

Pro Arg  Ser Arg Ser Arg Ser  Arg Asp Arg Arg Arg  Lys Glu Arg
    1175                1180                1185

Ala Lys  Ser Lys Glu Lys Lys  Ser Glu Lys Lys Glu  Lys Ala Gln
    1190                1195                1200

Glu Glu  Pro Pro Ala Lys Leu  Leu Asp Asp Leu Phe  Arg Lys Thr
    1205                1210                1215

Lys Ala  Ala Pro Cys Ile Tyr  Trp Leu Pro Leu Thr  Asp Ser Gln
    1220                1225                1230

Ile Val  Gln Lys Glu Ala Glu  Arg Ala Glu Arg Ala  Lys Glu Arg
    1235                1240                1245

Glu Lys  Arg Arg Lys Glu Gln  Glu Glu Glu Glu Gln  Lys Glu Arg
    1250                1255                1260

Glu Lys  Glu Ala Glu Arg Glu  Arg Asn Arg Gln Leu  Glu Arg Glu
    1265                1270                1275
```

```
Lys Arg  Arg Glu His Ser Arg  Glu Arg Asp Arg Glu  Arg Glu Arg
    1280                1285                1290

Glu Arg  Glu Arg Asp Arg Gly  Asp Arg Asp Arg Asp  Arg Glu Arg
    1295                1300                1305

Asp Arg  Glu Arg Gly Arg Glu  Arg Asp Arg Arg Asp  Thr Lys Arg
    1310                1315                1320

His Ser  Arg Ser Arg Ser Arg  Ser Thr Pro Val Arg  Asp Arg Gly
    1325                1330                1335

Gly Arg  Arg
    1340


<210> 5885
<211> 614
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1288; "

<220>
<221> source
<223> /note="Gene Symbol: ACIN1; "

<220>
<221> source
<223> /note="Gene Name:
      apoptotic chromatin condensation inducer 1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9UKV3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000345541"

<400> 5885
Met Ser Pro Ala Asp Arg Cys Arg Ser Ala Asn Thr Ile Glu Pro Ala
1               5                  10                  15

Thr Thr Ser Ser Leu Ala Leu Phe Leu Leu Leu Gln Arg Asp Gln Ser
            20                  25                  30

Ser Arg Thr Arg Gly Leu Pro Glu Glu Lys Glu Glu Val Thr Met Asp
        35                  40                  45
```

```
Thr Ser Glu Asn Arg Pro Glu Asn Asp Val Pro Glu Pro Pro Met Pro
    50                  55                  60

Ile Ala Asp Gln Val Ser Asn Asp Asp Arg Pro Glu Gly Ser Val Glu
65                  70                  75                  80

Asp Glu Glu Lys Lys Glu Ser Ser Leu Pro Lys Ser Phe Lys Arg Lys
                85                  90                  95

Ile Ser Val Val Ser Ala Thr Lys Gly Val Pro Ala Gly Asn Ser Asp
            100                 105                 110

Thr Glu Gly Gly Gln Pro Gly Arg Lys Arg Arg Trp Gly Ala Ser Thr
        115                 120                 125

Ala Thr Thr Gln Lys Lys Pro Ser Ile Ser Ile Thr Thr Glu Ser Leu
    130                 135                 140

Lys Ser Leu Ile Pro Asp Ile Lys Pro Leu Ala Gly Gln Glu Ala Val
145                 150                 155                 160

Val Asp Leu His Ala Asp Asp Ser Arg Ile Ser Glu Asp Glu Thr Glu
                165                 170                 175

Arg Asn Gly Asp Asp Gly Thr His Asp Lys Gly Leu Lys Ile Cys Arg
            180                 185                 190

Thr Val Thr Gln Val Val Pro Ala Glu Gly Gln Glu Asn Gly Gln Arg
        195                 200                 205

Glu Glu Glu Glu Glu Glu Lys Glu Pro Glu Ala Glu Pro Pro Val Pro
    210                 215                 220

Pro Gln Val Ser Val Glu Val Ala Leu Pro Pro Pro Ala Glu His Glu
225                 230                 235                 240

Val Lys Lys Val Thr Leu Gly Asp Thr Leu Thr Arg Arg Ser Ile Ser
                245                 250                 255

Gln Gln Lys Ser Gly Val Ser Ile Thr Ile Asp Asp Pro Val Arg Thr
            260                 265                 270
```

```
Ala Gln Val Pro Ser Pro Pro Arg Gly Lys Ile Ser Asn Ile Val His
        275                 280                 285

Ile Ser Asn Leu Val Arg Pro Phe Thr Leu Gly Gln Leu Lys Glu Leu
    290                 295                 300

Leu Gly Arg Thr Gly Thr Leu Val Glu Glu Ala Phe Trp Ile Asp Lys
305                 310                 315                 320

Ile Lys Ser His Cys Phe Val Thr Tyr Ser Thr Val Glu Glu Ala Val
                325                 330                 335

Ala Thr Arg Thr Ala Leu His Gly Val Lys Trp Pro Gln Ser Asn Pro
            340                 345                 350

Lys Phe Leu Cys Ala Asp Tyr Ala Glu Gln Asp Glu Leu Asp Tyr His
        355                 360                 365

Arg Gly Leu Leu Val Asp Arg Pro Ser Glu Thr Lys Thr Glu Glu Gln
    370                 375                 380

Gly Ile Pro Arg Pro Leu His Pro Pro Pro Pro Pro Pro Val Gln Pro
385                 390                 395                 400

Pro Gln His Pro Arg Ala Glu Gln Arg Glu Gln Glu Arg Ala Val Arg
                405                 410                 415

Glu Gln Trp Ala Glu Arg Glu Arg Glu Met Glu Arg Arg Glu Arg Thr
            420                 425                 430

Arg Ser Glu Arg Glu Trp Asp Arg Asp Lys Val Arg Glu Gly Pro Arg
        435                 440                 445

Ser Arg Ser Arg Ser Arg Asp Arg Arg Arg Lys Glu Arg Ala Lys Ser
    450                 455                 460

Lys Glu Lys Lys Ser Glu Lys Lys Glu Lys Ala Gln Glu Glu Pro Pro
465                 470                 475                 480

Ala Lys Leu Leu Asp Asp Leu Phe Arg Lys Thr Lys Ala Ala Pro Cys
                485                 490                 495
```

```
Ile Tyr Trp Leu Pro Leu Thr Asp Ser Gln Ile Val Gln Lys Glu Ala
            500                 505                 510

Glu Arg Ala Glu Arg Ala Lys Glu Arg Glu Lys Arg Arg Lys Glu Gln
        515                 520                 525

Glu Glu Glu Glu Gln Lys Glu Arg Glu Lys Glu Ala Glu Arg Glu Arg
    530                 535                 540

Asn Arg Gln Leu Glu Arg Glu Lys Arg Arg Glu His Ser Arg Glu Arg
545                 550                 555                 560

Asp Arg Glu Arg Glu Arg Glu Arg Glu Arg Asp Arg Gly Asp Arg Asp
                565                 570                 575

Arg Asp Arg Glu Arg Asp Arg Glu Arg Gly Arg Glu Arg Asp Arg Arg
            580                 585                 590

Asp Thr Lys Arg His Ser Arg Ser Arg Ser Arg Ser Thr Pro Val Arg
        595                 600                 605

Asp Arg Gly Gly Arg Arg
    610


<210> 5886
<211> 583
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1288; "

<220>
<221> source
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<220>
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<220>
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<223> /note="Uniprot ID:  Q9UKV3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000350073"
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<400> 5886
Met Leu Ser Glu Ser Lys Glu Gly Glu Glu Lys Glu Glu Val Thr Met
1 5 10 15

Asp Thr Ser Glu Asn Arg Pro Glu Asn Asp Val Pro Glu Pro Pro Met
20 25 30

Pro Ile Ala Asp Gln Val Ser Asn Asp Asp Arg Pro Glu Gly Ser Val
35 40 45

Glu Asp Glu Glu Lys Lys Glu Ser Ser Leu Pro Lys Ser Phe Lys Arg
50 55 60

Lys Ile Ser Val Val Ser Ala Thr Lys Gly Val Pro Ala Gly Asn Ser
65 70 75 80

Asp Thr Glu Gly Gly Gln Pro Gly Arg Lys Arg Arg Trp Gly Ala Ser
85 90 95

Thr Ala Thr Thr Gln Lys Lys Pro Ser Ile Ser Ile Thr Thr Glu Ser
100 105 110

Leu Lys Ser Leu Ile Pro Asp Ile Lys Pro Leu Ala Gly Gln Glu Ala
115 120 125

Val Val Asp Leu His Ala Asp Asp Ser Arg Ile Ser Glu Asp Glu Thr
130 135 140

Glu Arg Asn Gly Asp Asp Gly Thr His Asp Lys Gly Leu Lys Ile Cys
145 150 155 160

Arg Thr Val Thr Gln Val Val Pro Ala Glu Gly Gln Glu Asn Gly Gln
165 170 175

Arg Glu Glu Glu Glu Glu Glu Lys Glu Pro Glu Ala Glu Pro Pro Val
180 185 190

Pro Pro Gln Val Ser Val Glu Val Ala Leu Pro Pro Pro Ala Glu His
195 200 205

Glu Val Lys Lys Val Thr Leu Gly Asp Thr Leu Thr Arg Arg Ser Ile
210 215 220

```
Ser Gln Gln Lys Ser Gly Val Ser Ile Thr Ile Asp Asp Pro Val Arg
225                 230                 235                 240

Thr Ala Gln Val Pro Ser Pro Pro Arg Gly Lys Ile Ser Asn Ile Val
                245                 250                 255

His Ile Ser Asn Leu Val Arg Pro Phe Thr Leu Gly Gln Leu Lys Glu
            260                 265                 270

Leu Leu Gly Arg Thr Gly Thr Leu Val Glu Glu Ala Phe Trp Ile Asp
        275                 280                 285

Lys Ile Lys Ser His Cys Phe Val Thr Tyr Ser Thr Val Glu Glu Ala
    290                 295                 300

Val Ala Thr Arg Thr Ala Leu His Gly Val Lys Trp Pro Gln Ser Asn
305                 310                 315                 320

Pro Lys Phe Leu Cys Ala Asp Tyr Ala Glu Gln Asp Glu Leu Asp Tyr
                325                 330                 335

His Arg Gly Leu Leu Val Asp Arg Pro Ser Glu Thr Lys Thr Glu Glu
            340                 345                 350

Gln Gly Ile Pro Arg Pro Leu His Pro Pro Pro Pro Pro Pro Val Gln
        355                 360                 365

Pro Pro Gln His Pro Arg Ala Glu Gln Arg Glu Gln Glu Arg Ala Val
    370                 375                 380

Arg Glu Gln Trp Ala Glu Arg Glu Arg Glu Met Glu Arg Arg Glu Arg
385                 390                 395                 400

Thr Arg Ser Glu Arg Glu Trp Asp Arg Asp Lys Val Arg Glu Gly Pro
                405                 410                 415

Arg Ser Arg Ser Arg Ser Arg Asp Arg Arg Arg Lys Glu Arg Ala Lys
            420                 425                 430

Ser Lys Glu Lys Lys Ser Glu Lys Lys Glu Lys Ala Gln Glu Glu Pro
        435                 440                 445
```

```
Pro Ala Lys Leu Leu Asp Asp Leu Phe Arg Lys Thr Lys Ala Ala Pro
    450                 455                 460

Cys Ile Tyr Trp Leu Pro Leu Thr Asp Ser Gln Ile Val Gln Lys Glu
465                 470                 475                 480

Ala Glu Arg Ala Glu Arg Ala Lys Glu Arg Glu Lys Arg Arg Lys Glu
                485                 490                 495

Gln Glu Glu Glu Glu Gln Lys Glu Arg Glu Lys Glu Ala Glu Arg Glu
            500                 505                 510

Arg Asn Arg Gln Leu Glu Arg Glu Lys Arg Arg Glu His Ser Arg Glu
        515                 520                 525

Arg Asp Arg Glu Arg Glu Arg Glu Arg Glu Arg Asp Arg Gly Asp Arg
    530                 535                 540

Asp Arg Asp Arg Glu Arg Asp Arg Glu Arg Gly Arg Glu Arg Asp Arg
545                 550                 555                 560

Arg Asp Thr Lys Arg His Ser Arg Ser Arg Ser Arg Ser Thr Pro Val
                565                 570                 575

Arg Asp Arg Gly Gly Arg Arg
            580


<210> 5887
<211> 583
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1288; "

<220>
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<220>
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<223> /note="Gene Name:
      apoptotic chromatin condensation inducer 1; "

<220>
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<223> /note="Uniprot ID:  Q9UKV3; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000380502"

<400> 5887
Met Leu Ser Glu Ser Lys Glu Gly Glu Glu Lys Glu Glu Val Thr Met
1   5   10   15

Asp Thr Ser Glu Asn Arg Pro Glu Asn Asp Val Pro Glu Pro Pro Met
            20   25   30

Pro Ile Ala Asp Gln Val Ser Asn Asp Asp Arg Pro Glu Gly Ser Val
        35   40   45

Glu Asp Glu Glu Lys Lys Glu Ser Ser Leu Pro Lys Ser Phe Lys Arg
    50   55   60

Lys Ile Ser Val Val Ser Ala Thr Lys Gly Val Pro Ala Gly Asn Ser
65   70   75   80

Asp Thr Glu Gly Gly Gln Pro Gly Arg Lys Arg Arg Trp Gly Ala Ser
                85   90   95

Thr Ala Thr Thr Gln Lys Lys Pro Ser Ile Ser Ile Thr Thr Glu Ser
            100   105   110

Leu Lys Ser Leu Ile Pro Asp Ile Lys Pro Leu Ala Gly Gln Glu Ala
        115   120   125

Val Val Asp Leu His Ala Asp Asp Ser Arg Ile Ser Glu Asp Glu Thr
    130   135   140

Glu Arg Asn Gly Asp Asp Gly Thr His Asp Lys Gly Leu Lys Ile Cys
145   150   155   160

Arg Thr Val Thr Gln Val Val Pro Ala Glu Gly Gln Glu Asn Gly Gln
                165   170   175

Arg Glu Glu Glu Glu Glu Glu Lys Glu Pro Glu Ala Glu Pro Pro Val
            180   185   190

Pro Pro Gln Val Ser Val Glu Val Ala Leu Pro Pro Pro Ala Glu His
        195   200   205

```
Glu Val Lys Lys Val Thr Leu Gly Asp Thr Leu Thr Arg Arg Ser Ile
    210                 215                 220

Ser Gln Gln Lys Ser Gly Val Ser Ile Thr Ile Asp Asp Pro Val Arg
225                 230                 235                 240

Thr Ala Gln Val Pro Ser Pro Pro Arg Gly Lys Ile Ser Asn Ile Val
                245                 250                 255

His Ile Ser Asn Leu Val Arg Pro Phe Thr Leu Gly Gln Leu Lys Glu
            260                 265                 270

Leu Leu Gly Arg Thr Gly Thr Leu Val Glu Glu Ala Phe Trp Ile Asp
        275                 280                 285

Lys Ile Lys Ser His Cys Phe Val Thr Tyr Ser Thr Val Glu Glu Ala
    290                 295                 300

Val Ala Thr Arg Thr Ala Leu His Gly Val Lys Trp Pro Gln Ser Asn
305                 310                 315                 320

Pro Lys Phe Leu Cys Ala Asp Tyr Ala Glu Gln Asp Glu Leu Asp Tyr
                325                 330                 335

His Arg Gly Leu Leu Val Asp Arg Pro Ser Glu Thr Lys Thr Glu Glu
            340                 345                 350

Gln Gly Ile Pro Arg Pro Leu His Pro Pro Pro Pro Pro Pro Val Gln
        355                 360                 365

Pro Pro Gln His Pro Arg Ala Glu Gln Arg Glu Gln Glu Arg Ala Val
    370                 375                 380

Arg Glu Gln Trp Ala Glu Arg Glu Arg Glu Met Glu Arg Arg Glu Arg
385                 390                 395                 400

Thr Arg Ser Glu Arg Glu Trp Asp Arg Asp Lys Val Arg Glu Gly Pro
                405                 410                 415

Arg Ser Arg Ser Arg Ser Arg Asp Arg Arg Arg Lys Glu Arg Ala Lys
            420                 425                 430
```

```
Ser Lys Glu Lys Lys Ser Glu Lys Lys Glu Lys Ala Gln Glu Glu Pro
        435                 440                 445

Pro Ala Lys Leu Leu Asp Asp Leu Phe Arg Lys Thr Lys Ala Ala Pro
    450                 455                 460

Cys Ile Tyr Trp Leu Pro Leu Thr Asp Ser Gln Ile Val Gln Lys Glu
465                 470                 475                 480

Ala Glu Arg Ala Glu Arg Ala Lys Glu Arg Glu Lys Arg Arg Lys Glu
                485                 490                 495

Gln Glu Glu Glu Glu Gln Lys Glu Arg Glu Lys Glu Ala Glu Arg Glu
            500                 505                 510

Arg Asn Arg Gln Leu Glu Arg Glu Lys Arg Arg Glu His Ser Arg Glu
        515                 520                 525

Arg Asp Arg Glu Arg Glu Arg Glu Arg Glu Arg Asp Arg Gly Asp Arg
    530                 535                 540

Asp Arg Asp Arg Glu Arg Asp Arg Glu Arg Gly Arg Glu Arg Asp Arg
545                 550                 555                 560

Arg Asp Thr Lys Arg His Ser Arg Ser Arg Ser Arg Ser Thr Pro Val
                565                 570                 575

Arg Asp Arg Gly Gly Arg Arg
            580


<210> 5888
<211> 1301
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
      apoptotic chromatin condensation inducer 1; "
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<220>
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<223> /note="ENSP ID: ENSP00000405677"

<400> 5888
Met Trp Arg Arg Lys His Pro Arg Thr Ser Gly Gly Thr Arg Gly Val
1   5   10   15

Leu Ser Gly Asn Arg Gly Val Glu Tyr Gly Ser Gly Arg Gly His Leu
            20   25   30

Gly Thr Phe Glu Gly Arg Trp Arg Lys Leu Pro Lys Met Pro Glu Ala
        35   40   45

Val Gly Thr Asp Pro Ser Thr Ser Arg Lys Met Ala Glu Leu Glu Glu
    50   55   60

Val Thr Leu Asp Gly Lys Pro Leu Gln Ala Leu Arg Val Thr Asp Leu
65   70   75   80

Lys Ala Ala Leu Glu Gln Arg Gly Leu Ala Lys Ser Gly Gln Lys Ser
                85   90   95

Ala Leu Val Lys Arg Leu Lys Gly Ala Leu Met Leu Glu Asn Leu Gln
            100   105   110

Lys His Ser Thr Pro His Ala Ala Phe Gln Pro Asn Ser Gln Ile Gly
        115   120   125

Glu Glu Met Ser Gln Asn Ser Phe Ile Lys Gln Tyr Leu Glu Lys Gln
    130   135   140

Gln Glu Leu Leu Arg Gln Arg Leu Glu Arg Glu Ala Arg Glu Ala Ala
145   150   155   160

Glu Leu Glu Gly Lys Ser Ser Ser Ile Ser Glu Glu Lys Gly Asp Ser
                165   170   175

Asp Asp Glu Lys Pro Arg Lys Gly Glu Arg Arg Ser Ser Arg Val Arg
            180   185   190

Gln Ala Arg Ala Ala Lys Leu Ser Glu Gly Ser Gln Pro Ala Glu Glu
        195   200   205

```
Glu Glu Asp Gln Glu Thr Pro Ser Arg Asn Leu Arg Val Arg Ala Asp
    210                 215                 220

Arg Asn Leu Lys Thr Glu Glu Glu Glu Glu Glu Glu Glu Glu Glu Glu
225                 230                 235                 240

Glu Asp Asp Glu Glu Glu Glu Gly Asp Asp Glu Gly Gln Lys Ser Arg
                245                 250                 255

Glu Ala Pro Ile Leu Lys Glu Phe Lys Glu Glu Gly Glu Glu Ile Pro
            260                 265                 270

Arg Val Lys Pro Glu Glu Met Met Asp Glu Arg Pro Lys Thr Arg Ser
        275                 280                 285

Gln Glu Gln Glu Val Leu Glu Arg Gly Gly Arg Phe Thr Arg Ser Gln
    290                 295                 300

Glu Glu Ala Arg Lys Ser His Leu Ala Arg Gln Gln Gln Glu Lys Glu
305                 310                 315                 320

Met Lys Thr Thr Ser Pro Leu Glu Glu Glu Glu Arg Glu Ile Lys Ser
                325                 330                 335

Ser Gln Gly Leu Lys Glu Lys Ser Lys Ser Pro Ser Pro Pro Arg Leu
            340                 345                 350

Thr Glu Asp Arg Lys Lys Ala Ser Leu Val Ala Leu Pro Glu Gln Thr
        355                 360                 365

Ala Ser Glu Glu Glu Thr Pro Pro Pro Leu Leu Thr Lys Glu Ala Ser
    370                 375                 380

Ser Pro Pro Pro His Pro Gln Leu His Ser Glu Glu Glu Ile Glu Pro
385                 390                 395                 400

Met Glu Gly Pro Ala Pro Ala Val Leu Ile Gln Leu Ser Pro Pro Asn
                405                 410                 415

Thr Asp Ala Asp Thr Arg Glu Leu Leu Val Ser Gln His Thr Val Gln
            420                 425                 430
```

```
Leu Val Gly Gly Leu Ser Pro Leu Ser Ser Pro Ser Asp Thr Lys Ala
        435                 440                 445

Glu Ser Pro Ala Glu Lys Val Pro Glu Glu Ser Val Leu Pro Leu Val
    450                 455                 460

Gln Lys Ser Thr Leu Ala Asp Tyr Ser Ala Gln Lys Asp Leu Glu Pro
465                 470                 475                 480

Glu Ser Asp Arg Ser Ala Gln Pro Leu Pro Leu Lys Ile Glu Glu Leu
                485                 490                 495

Ala Leu Ala Lys Gly Ile Thr Glu Glu Cys Leu Lys Gln Pro Ser Leu
            500                 505                 510

Glu Gln Lys Glu Gly Arg Arg Ala Ser His Thr Leu Leu Pro Ser His
        515                 520                 525

Arg Leu Lys Gln Ser Ala Asp Ser Ser Ser Ser Arg Ser Ser Ser Ser
    530                 535                 540

Ser Ser Ser Ser Ser Arg Ser Arg Ser Arg Ser Pro Asp Ser Ser Gly
545                 550                 555                 560

Ser Arg Ser His Ser Pro Leu Arg Ser Lys Gln Arg Asp Val Ala Gln
                565                 570                 575

Ala Arg Thr His Ala Asn Pro Arg Gly Arg Pro Lys Met Gly Ser Arg
            580                 585                 590

Ser Thr Ser Glu Ser Arg Ser Arg Ser Arg Ser Arg Ser Arg Ser Ala
        595                 600                 605

Ser Ser Asn Ser Arg Lys Ser Leu Ser Pro Gly Val Ser Arg Asp Ser
    610                 615                 620

Ser Thr Ser Tyr Thr Glu Thr Lys Asp Pro Ser Ser Gly Gln Glu Val
625                 630                 635                 640

Ala Thr Pro Pro Val Pro Gln Leu Gln Val Cys Glu Pro Lys Glu Arg
                645                 650                 655

Thr Ser Thr Ser Ser Ser Ser Val Gln Ala Arg Arg Leu Ser Gln Pro
```

660 665 670

Glu Ser Ala Glu Lys His Val Thr Gln Arg Leu Gln Pro Glu Arg Gly
675 680 685

Ser Pro Lys Lys Cys Glu Ala Glu Glu Ala Glu Pro Pro Ala Ala Thr
690 695 700

Gln Pro Gln Thr Ser Glu Thr Gln Thr Ser His Leu Pro Glu Ser Glu
705 710 715 720

Arg Ile His His Thr Val Glu Glu Lys Glu Glu Val Thr Met Asp Thr
725 730 735

Ser Glu Asn Arg Pro Glu Asn Asp Val Pro Glu Pro Pro Met Pro Ile
740 745 750

Ala Asp Gln Val Ser Asn Asp Asp Arg Pro Glu Gly Ser Val Glu Asp
755 760 765

Glu Glu Lys Lys Glu Ser Ser Leu Pro Lys Ser Phe Lys Arg Lys Ile
770 775 780

Ser Val Val Ser Ala Thr Lys Gly Val Pro Ala Gly Asn Ser Asp Thr
785 790 795 800

Glu Gly Gly Gln Pro Gly Arg Lys Arg Arg Trp Gly Ala Ser Thr Ala
805 810 815

Thr Thr Gln Lys Lys Pro Ser Ile Ser Ile Thr Thr Glu Ser Leu Lys
820 825 830

Ser Leu Ile Pro Asp Ile Lys Pro Leu Ala Gly Gln Glu Ala Val Val
835 840 845

Asp Leu His Ala Asp Asp Ser Arg Ile Ser Glu Asp Glu Thr Glu Arg
850 855 860

Asn Gly Asp Asp Gly Thr His Asp Lys Gly Leu Lys Ile Cys Arg Thr
865 870 875 880

Val Thr Gln Val Val Pro Ala Glu Gly Gln Glu Asn Gly Gln Arg Glu
885 890 895

```
Glu Glu Glu Glu Glu Lys Glu Pro Glu Ala Glu Pro Pro Val Pro Pro
            900                 905                 910

Gln Val Ser Val Glu Val Ala Leu Pro Pro Pro Ala Glu His Glu Val
        915                 920                 925

Lys Lys Val Thr Leu Gly Asp Thr Leu Thr Arg Arg Ser Ile Ser Gln
    930                 935                 940

Gln Lys Ser Gly Val Ser Ile Thr Ile Asp Asp Pro Val Arg Thr Ala
945                 950                 955                 960

Gln Val Pro Ser Pro Pro Arg Gly Lys Ile Ser Asn Ile Val His Ile
                965                 970                 975

Ser Asn Leu Val Arg Pro Phe Thr Leu Gly Gln Leu Lys Glu Leu Leu
            980                 985                 990

Gly Arg Thr Gly Thr Leu Val Glu  Glu Ala Phe Trp Ile  Asp Lys
Ile
        995                 1000                1005

Lys Ser  His Cys Phe Val Thr  Tyr Ser Thr Val Glu  Glu Ala Val
    1010                1015                1020

Ala Thr  Arg Thr Ala Leu His  Gly Val Lys Trp Pro  Gln Ser Asn
    1025                1030                1035

Pro Lys  Phe Leu Cys Ala Asp  Tyr Ala Glu Gln Asp  Glu Leu Asp
    1040                1045                1050

Tyr His  Arg Gly Leu Leu Val  Asp Arg Pro Ser Glu  Thr Lys Thr
    1055                1060                1065

Glu Glu  Gln Gly Ile Pro Arg  Pro Leu His Pro Pro  Pro Pro Pro
    1070                1075                1080

Pro Val  Gln Pro Pro Gln His  Pro Arg Ala Glu Gln  Arg Glu Gln
    1085                1090                1095

Glu Arg  Ala Val Arg Glu Gln  Trp Ala Glu Arg Glu  Arg Glu Met
    1100                1105                1110
```

```
Glu Arg  Arg Glu Arg Thr Arg  Ser Glu Arg Glu Trp  Asp Arg Asp
    1115                1120                1125

Lys Val  Arg Glu Gly Pro Arg  Ser Arg Ser Arg Ser  Arg Asp Arg
    1130                1135                1140

Arg Arg  Lys Glu Arg Ala Lys  Ser Lys Glu Lys Lys  Ser Glu Lys
    1145                1150                1155

Lys Glu  Lys Ala Gln Glu Glu  Pro Pro Ala Lys Leu  Leu Asp Asp
    1160                1165                1170

Leu Phe  Arg Lys Thr Lys Ala  Ala Pro Cys Ile Tyr  Trp Leu Pro
    1175                1180                1185

Leu Thr  Asp Ser Gln Ile Val  Gln Lys Glu Ala Glu  Arg Ala Glu
    1190                1195                1200

Arg Ala  Lys Glu Arg Glu Lys  Arg Arg Lys Glu Gln  Glu Glu Glu
    1205                1210                1215

Glu Gln  Lys Glu Arg Glu Lys  Glu Ala Glu Arg Glu  Arg Asn Arg
    1220                1225                1230

Gln Leu  Glu Arg Glu Lys Arg  Arg Glu His Ser Arg  Glu Arg Asp
    1235                1240                1245

Arg Glu  Arg Glu Arg Glu Arg  Glu Arg Asp Arg Gly  Asp Arg Asp
    1250                1255                1260

Arg Asp  Arg Glu Arg Asp Arg  Glu Arg Gly Arg Glu  Arg Asp Arg
    1265                1270                1275

Arg Asp  Thr Lys Arg His Ser  Arg Ser Arg Ser Arg  Ser Thr Pro
    1280                1285                1290

Val Arg  Asp Arg Gly Gly Arg  Arg
    1295                1300
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<210> 5889
<211> 582
<212> PRT

<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1288; "

<220>
<221> source
<223> /note="Gene Symbol: ACIN1; "

<220>
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<223> /note="Gene Name:
apoptotic chromatin condensation inducer 1; "

<220>
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<223> /note="ENSP ID: ENSP00000451138"

<400> 5889

```
Met Leu Ser Glu Ser Lys Glu Gly Glu Glu Lys Glu Glu Val Thr Met
1               5                  10                  15

Asp Thr Ser Glu Asn Arg Pro Glu Asn Asp Val Pro Glu Pro Pro Met
            20                  25                  30

Pro Ile Ala Asp Gln Val Ser Asn Asp Asp Arg Pro Glu Gly Ser Val
        35                  40                  45

Glu Asp Glu Glu Lys Lys Glu Ser Ser Leu Pro Lys Ser Phe Lys Arg
    50                  55                  60

Lys Ile Ser Val Val Ser Thr Lys Gly Val Pro Ala Gly Asn Ser Asp
65                  70                  75                  80

Thr Glu Gly Gly Gln Pro Gly Arg Lys Arg Arg Trp Gly Ala Ser Thr
                85                  90                  95

Ala Thr Thr Gln Lys Lys Pro Ser Ile Ser Ile Thr Thr Glu Ser Leu
            100                 105                 110

Lys Ser Leu Ile Pro Asp Ile Lys Pro Leu Ala Gly Gln Glu Ala Val
        115                 120                 125

Val Asp Leu His Ala Asp Asp Ser Arg Ile Ser Glu Asp Glu Thr Glu
    130                 135                 140

Arg Asn Gly Asp Asp Gly Thr His Asp Lys Gly Leu Lys Ile Cys Arg
```

145 150 155 160

Thr Val Thr Gln Val Val Pro Ala Glu Gly Gln Glu Asn Gly Gln Arg
165 170 175

Glu Glu Glu Glu Glu Glu Lys Glu Pro Glu Ala Glu Pro Pro Val Pro
180 185 190

Pro Gln Val Ser Val Glu Val Ala Leu Pro Pro Pro Ala Glu His Glu
195 200 205

Val Lys Lys Val Thr Leu Gly Asp Thr Leu Thr Arg Arg Ser Ile Ser
210 215 220

Gln Gln Lys Ser Gly Val Ser Ile Thr Ile Asp Asp Pro Val Arg Thr
225 230 235 240

Ala Gln Val Pro Ser Pro Pro Arg Gly Lys Ile Ser Asn Ile Val His
245 250 255

Ile Ser Asn Leu Val Arg Pro Phe Thr Leu Gly Gln Leu Lys Glu Leu
260 265 270

Leu Gly Arg Thr Gly Thr Leu Val Glu Glu Ala Phe Trp Ile Asp Lys
275 280 285

Ile Lys Ser His Cys Phe Val Thr Tyr Ser Thr Val Glu Glu Ala Val
290 295 300

Ala Thr Arg Thr Ala Leu His Gly Val Lys Trp Pro Gln Ser Asn Pro
305 310 315 320

Lys Phe Leu Cys Ala Asp Tyr Ala Glu Gln Asp Glu Leu Asp Tyr His
325 330 335

Arg Gly Leu Leu Val Asp Arg Pro Ser Glu Thr Lys Thr Glu Glu Gln
340 345 350

Gly Ile Pro Arg Pro Leu His Pro Pro Pro Pro Pro Pro Val Gln Pro
355 360 365

Pro Gln His Pro Arg Ala Glu Gln Arg Glu Gln Glu Arg Ala Val Arg
370 375 380

```
Glu Gln Trp Ala Glu Arg Glu Arg Glu Met Glu Arg Arg Glu Arg Thr
385                 390                 395                 400

Arg Ser Glu Arg Glu Trp Asp Arg Asp Lys Val Arg Glu Gly Pro Arg
                405                 410                 415

Ser Arg Ser Arg Ser Arg Asp Arg Arg Arg Lys Glu Arg Ala Lys Ser
            420                 425                 430

Lys Glu Lys Lys Ser Glu Lys Lys Glu Lys Ala Gln Glu Glu Pro Pro
        435                 440                 445

Ala Lys Leu Leu Asp Asp Leu Phe Arg Lys Thr Lys Ala Ala Pro Cys
    450                 455                 460

Ile Tyr Trp Leu Pro Leu Thr Asp Ser Gln Ile Val Gln Lys Glu Ala
465                 470                 475                 480

Glu Arg Ala Glu Arg Ala Lys Glu Arg Glu Lys Arg Arg Lys Glu Gln
                485                 490                 495

Glu Glu Glu Glu Gln Lys Glu Arg Glu Lys Glu Ala Glu Arg Glu Arg
            500                 505                 510

Asn Arg Gln Leu Glu Arg Glu Lys Arg Arg Glu His Ser Arg Glu Arg
        515                 520                 525

Asp Arg Glu Arg Glu Arg Glu Arg Glu Arg Asp Arg Gly Asp Arg Asp
    530                 535                 540

Arg Asp Arg Glu Arg Asp Arg Glu Arg Gly Arg Glu Arg Asp Arg Arg
545                 550                 555                 560

Asp Thr Lys Arg His Ser Arg Ser Arg Ser Arg Ser Thr Pro Val Arg
                565                 570                 575

Asp Arg Gly Gly Arg Arg
            580
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<210> 5890
<211> 1328
<212> PRT

<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
apoptotic chromatin condensation inducer 1; "

<220>
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<223> /note="Uniprot ID: Q9UKV3; "

<220>
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<223> /note="ENSP ID: ENSP00000451328"

<400> 5890

Met	Trp	Arg	Arg	Lys	His	Pro	Arg	Thr	Ser	Gly	Gly	Thr	Arg	Gly	Val
1				5				10						15	
Leu	Ser	Gly	Asn	Arg	Gly	Val	Glu	Tyr	Gly	Ser	Gly	Arg	Gly	His	Leu
			20					25					30		
Gly	Thr	Phe	Glu	Gly	Arg	Trp	Arg	Lys	Leu	Pro	Lys	Met	Pro	Glu	Ala
		35					40					45			
Val	Gly	Thr	Asp	Pro	Ser	Thr	Ser	Arg	Lys	Met	Ala	Glu	Leu	Glu	Glu
	50					55					60				
Val	Thr	Leu	Asp	Gly	Lys	Pro	Leu	Gln	Ala	Leu	Arg	Val	Thr	Asp	Leu
65					70					75					80
Lys	Ala	Ala	Leu	Glu	Gln	Arg	Gly	Leu	Ala	Lys	Ser	Gly	Gln	Lys	Ser
				85					90					95	
Ala	Leu	Val	Lys	Arg	Leu	Lys	Gly	Ala	Leu	Met	Leu	Glu	Asn	Leu	Gln
			100					105					110		
Lys	His	Ser	Thr	Pro	His	Ala	Ala	Phe	Gln	Pro	Asn	Ser	Gln	Ile	Gly
		115					120					125			
Glu	Glu	Met	Ser	Gln	Asn	Ser	Phe	Ile	Lys	Gln	Tyr	Leu	Glu	Lys	Gln

```
    130                 135                 140

Gln Glu Leu Leu Arg Gln Arg Leu Glu Arg Glu Ala Arg Glu Ala Ala
145                 150                 155                 160

Glu Leu Glu Glu Ala Ser Ala Glu Ser Glu Asp Glu Met Ile His Pro
                165                 170                 175

Glu Gly Val Ala Ser Leu Leu Pro Pro Asp Phe Gln Ser Ser Leu Glu
            180                 185                 190

Arg Pro Glu Leu Glu Leu Ser Arg His Ser Pro Arg Lys Ser Ser Ser
        195                 200                 205

Ile Ser Glu Glu Lys Gly Asp Ser Asp Asp Glu Lys Pro Arg Lys Gly
    210                 215                 220

Glu Arg Arg Ser Ser Arg Val Arg Gln Ala Arg Ala Ala Lys Leu Ser
225                 230                 235                 240

Glu Gly Ser Gln Pro Ala Glu Glu Glu Glu Asp Gln Glu Thr Pro Ser
                245                 250                 255

Arg Asn Leu Arg Val Arg Ala Asp Arg Asn Leu Lys Thr Glu Glu Glu
            260                 265                 270

Glu Glu Glu Glu Glu Glu Glu Glu Glu Asp Asp Glu Glu Glu Glu Gly
        275                 280                 285

Asp Asp Glu Gly Gln Lys Ser Arg Glu Ala Pro Ile Leu Lys Glu Phe
    290                 295                 300

Lys Glu Glu Gly Glu Glu Ile Pro Arg Val Lys Pro Glu Glu Met Met
305                 310                 315                 320

Asp Glu Arg Pro Lys Thr Arg Ser Gln Glu Gln Glu Val Leu Glu Arg
                325                 330                 335

Gly Gly Arg Phe Thr Arg Ser Gln Glu Glu Ala Arg Lys Ser His Leu
            340                 345                 350

Ala Arg Gln Gln Gln Glu Lys Glu Met Lys Thr Thr Ser Pro Leu Glu
        355                 360                 365
```

```
Glu Glu Glu Arg Glu Ile Lys Ser Ser Gln Gly Leu Lys Glu Lys Ser
    370                 375                 380

Lys Ser Pro Ser Pro Pro Arg Leu Thr Glu Asp Arg Lys Lys Ala Ser
385                 390                 395                 400

Leu Val Ala Leu Pro Glu Gln Thr Ala Ser Glu Glu Glu Thr Pro Pro
                405                 410                 415

Pro Leu Leu Thr Lys Glu Ala Ser Ser Pro Pro Pro His Pro Gln Leu
            420                 425                 430

His Ser Glu Glu Glu Ile Glu Pro Met Glu Gly Pro Ala Pro Ala Val
        435                 440                 445

Leu Ile Gln Leu Ser Pro Pro Asn Thr Asp Ala Asp Thr Arg Glu Leu
    450                 455                 460

Leu Val Ser Gln His Thr Val Gln Leu Val Gly Gly Leu Ser Pro Leu
465                 470                 475                 480

Ser Ser Pro Ser Asp Thr Lys Ala Glu Ser Pro Ala Glu Lys Val Pro
                485                 490                 495

Glu Glu Ser Val Leu Pro Leu Val Gln Lys Ser Thr Leu Ala Asp Tyr
            500                 505                 510

Ser Ala Gln Lys Asp Leu Glu Pro Glu Ser Asp Arg Ser Ala Gln Pro
        515                 520                 525

Leu Pro Leu Lys Ile Glu Glu Leu Ala Leu Ala Lys Gly Ile Thr Glu
    530                 535                 540

Glu Cys Leu Lys Gln Pro Ser Leu Glu Gln Lys Glu Gly Arg Arg Ala
545                 550                 555                 560

Ser His Thr Leu Leu Pro Ser His Arg Leu Lys Gln Ser Ala Asp Ser
                565                 570                 575

Ser Ser Ser Arg Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Arg Ser Arg
            580                 585                 590
```

```
Ser Arg Ser Pro Asp Ser Ser Gly Ser Arg Ser His Ser Pro Leu Arg
        595                 600                 605

Ser Lys Gln Arg Asp Val Ala Gln Ala Arg Thr His Ala Asn Pro Arg
    610                 615                 620

Gly Arg Pro Lys Met Gly Ser Arg Ser Thr Ser Glu Ser Arg Ser Arg
625                 630                 635                 640

Ser Arg Ser Arg Ser Arg Ser Ala Ser Ser Asn Ser Arg Lys Ser Leu
                645                 650                 655

Ser Pro Gly Val Ser Arg Asp Ser Ser Thr Ser Tyr Thr Glu Thr Lys
            660                 665                 670

Asp Pro Ser Ser Gly Gln Glu Val Ala Thr Pro Pro Val Pro Gln Leu
        675                 680                 685

Gln Val Cys Glu Pro Lys Glu Arg Thr Ser Thr Ser Ser Ser Ser Val
    690                 695                 700

Gln Ala Arg Arg Leu Ser Gln Pro Glu Ser Ala Glu Lys His Val Thr
705                 710                 715                 720

Gln Arg Leu Gln Pro Glu Arg Gly Ser Pro Lys Lys Cys Glu Ala Glu
                725                 730                 735

Glu Ala Glu Pro Pro Ala Ala Thr Gln Pro Gln Thr Ser Glu Thr Gln
            740                 745                 750

Thr Ser His Leu Pro Glu Ser Glu Arg Ile His His Thr Val Glu Glu
        755                 760                 765

Lys Glu Glu Val Thr Met Asp Thr Ser Glu Asn Arg Pro Glu Asn Asp
    770                 775                 780

Val Pro Glu Pro Pro Met Pro Ile Ala Asp Gln Val Ser Asn Asp Asp
785                 790                 795                 800

Arg Pro Glu Gly Ser Val Glu Asp Glu Glu Lys Lys Glu Ser Ser Leu
                805                 810                 815
```

```
Pro Lys Ser Phe Lys Arg Lys Ile Ser Val Val Ser Thr Lys Gly Val
            820                 825                 830

Pro Ala Gly Asn Ser Asp Thr Glu Gly Gly Gln Pro Gly Arg Lys Arg
        835                 840                 845

Arg Trp Gly Ala Ser Thr Ala Thr Thr Gln Lys Lys Pro Ser Ile Ser
    850                 855                 860

Ile Thr Thr Glu Ser Leu Lys Glu Ala Val Val Asp Leu His Ala Asp
865                 870                 875                 880

Asp Ser Arg Ile Ser Glu Asp Glu Thr Glu Arg Asn Gly Asp Asp Gly
                885                 890                 895

Thr His Asp Lys Gly Leu Lys Ile Cys Arg Thr Val Thr Gln Val Val
            900                 905                 910

Pro Ala Glu Gly Gln Glu Asn Gly Gln Arg Glu Glu Glu Glu Glu Glu
        915                 920                 925

Lys Glu Pro Glu Ala Glu Pro Pro Val Pro Pro Gln Val Ser Val Glu
    930                 935                 940

Val Ala Leu Pro Pro Pro Ala Glu His Glu Val Lys Lys Val Thr Leu
945                 950                 955                 960

Gly Asp Thr Leu Thr Arg Arg Ser Ile Ser Gln Gln Lys Ser Gly Val
                965                 970                 975

Ser Ile Thr Ile Asp Asp Pro Val Arg Thr Ala Gln Val Pro Ser Pro
            980                 985                 990

Pro Arg Gly Lys Ile Ser Asn Ile  Val His Ile Ser Asn  Leu Val
Arg
        995                 1000                1005

Pro Phe  Thr Leu Gly Gln Leu  Lys Glu Leu Leu Gly  Arg Thr Gly
    1010                1015                1020

Thr Leu  Val Glu Glu Ala Phe  Trp Ile Asp Lys Ile  Lys Ser His
    1025                1030                1035
```

Cys Phe Val Thr Tyr Ser Thr Val Glu Glu Ala Val Ala Thr Arg
1040 1045 1050

Thr Ala Leu His Gly Val Lys Trp Pro Gln Ser Asn Pro Lys Phe
1055 1060 1065

Leu Cys Ala Asp Tyr Ala Glu Gln Asp Glu Leu Asp Tyr His Arg
1070 1075 1080

Gly Leu Leu Val Asp Arg Pro Ser Glu Thr Lys Thr Glu Glu Gln
1085 1090 1095

Gly Ile Pro Arg Pro Leu His Pro Pro Pro Pro Pro Pro Val Gln
1100 1105 1110

Pro Pro Gln His Pro Arg Ala Glu Gln Arg Glu Gln Glu Arg Ala
1115 1120 1125

Val Arg Glu Gln Trp Ala Glu Arg Glu Arg Glu Met Glu Arg Arg
1130 1135 1140

Glu Arg Thr Arg Ser Glu Arg Glu Trp Asp Arg Asp Lys Val Arg
1145 1150 1155

Glu Gly Pro Arg Ser Arg Ser Arg Ser Arg Asp Arg Arg Arg Lys
1160 1165 1170

Glu Arg Ala Lys Ser Lys Glu Lys Lys Ser Glu Lys Lys Glu Lys
1175 1180 1185

Ala Gln Glu Glu Pro Pro Ala Lys Leu Leu Asp Asp Leu Phe Arg
1190 1195 1200

Lys Thr Lys Ala Ala Pro Cys Ile Tyr Trp Leu Pro Leu Thr Asp
1205 1210 1215

Ser Gln Ile Val Gln Lys Glu Ala Glu Arg Ala Glu Arg Ala Lys
1220 1225 1230

Glu Arg Glu Lys Arg Arg Lys Glu Gln Glu Glu Glu Glu Gln Lys
1235 1240 1245

Glu Arg Glu Lys Glu Ala Glu Arg Glu Arg Asn Arg Gln Leu Glu

```
    1250                1255                1260

Arg Glu  Lys Arg Arg Glu His  Ser Arg Glu Arg Asp  Arg Glu Arg
    1265                1270                1275

Glu Arg  Glu Arg Glu Arg Asp  Arg Gly Asp Arg Asp  Arg Asp Arg
    1280                1285                1290

Glu Arg  Asp Arg Glu Arg Gly  Arg Glu Arg Asp Arg  Arg Asp Thr
    1295                1300                1305

Lys Arg  His Ser Arg Ser Arg  Ser Arg Ser Thr Pro  Val Arg Asp
    1310                1315                1320

Arg Gly  Gly Arg Arg
    1325


<210> 5891
<211> 194
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1288; "

<220>
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<220>
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<223> /note="Gene Name:
      apoptotic chromatin condensation inducer 1; "

<220>
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<223> /note="ENSP ID: ENSP00000451410"

<400> 5891
Met Leu Ser Glu Ser Lys Glu Gly Glu Glu Lys Glu Glu Val Thr Met
1               5                  10                  15

Asp Thr Ser Glu Asn Arg Pro Glu Asn Asp Val Pro Glu Pro Pro Met
            20                  25                  30

Pro Ile Ala Asp Gln Val Ser Asn Asp Asp Arg Pro Glu Gly Ser Val
        35                  40                  45
```

```
Glu Asp Glu Glu Lys Lys Glu Ser Ser Leu Pro Lys Ser Phe Lys Arg
    50                  55                  60

Lys Ile Ser Val Val Ser Ala Thr Lys Gly Val Pro Ala Gly Asn Ser
65                  70                  75                  80

Asp Thr Glu Gly Gly Gln Pro Gly Arg Lys Arg Arg Trp Gly Ala Ser
                85                  90                  95

Thr Ala Thr Thr Gln Lys Lys Pro Ser Ile Ser Ile Thr Thr Glu Ser
            100                 105                 110

Leu Lys Glu Ala Val Val Asp Leu His Ala Asp Asp Ser Arg Ile Ser
        115                 120                 125

Glu Asp Glu Thr Glu Arg Asn Gly Asp Asp Gly Thr His Asp Lys Gly
    130                 135                 140

Leu Lys Ile Cys Arg Thr Val Thr Gln Val Val Pro Ala Glu Gly Gln
145                 150                 155                 160

Glu Asn Gly Gln Arg Glu Glu Glu Glu Glu Glu Lys Glu Pro Glu Ala
                165                 170                 175

Glu Pro Pro Val Pro Pro Gln Val Ser Val Glu Val Ala Leu Pro Pro
            180                 185                 190

Pro Ala
```

<210> 5892
<211> 1283
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1288; "

<220>
<221> source
<223> /note="Gene Symbol: ACIN1; "

<220>
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<223> /note="Gene Name:

apoptotic chromatin condensation inducer 1; "

<220>
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<223> /note="ENSP ID: ENSP00000474349"

<400> 5892

```
Met Ala Glu Leu Glu Glu Val Thr Leu Asp Gly Lys Pro Leu Gln Ala
1               5                  10                  15

Leu Arg Val Thr Asp Leu Lys Ala Ala Leu Glu Gln Arg Gly Leu Ala
            20                  25                  30

Lys Ser Gly Gln Lys Ser Ala Leu Val Lys Arg Leu Lys Gly Ala Leu
        35                  40                  45

Met Leu Glu Asn Leu Gln Lys His Ser Thr Pro His Ala Ala Phe Gln
    50                  55                  60

Pro Asn Ser Gln Ile Gly Glu Glu Met Ser Gln Asn Ser Phe Ile Lys
65                  70                  75                  80

Gln Tyr Leu Glu Lys Gln Gln Glu Leu Leu Arg Gln Arg Leu Glu Arg
                85                  90                  95

Glu Ala Arg Glu Ala Ala Glu Leu Glu Glu Ala Ser Ala Glu Ser Glu
            100                 105                 110

Asp Glu Met Ile His Pro Glu Gly Val Ala Ser Leu Leu Pro Pro Asp
        115                 120                 125

Phe Gln Ser Ser Leu Glu Arg Pro Glu Leu Glu Leu Ser Arg His Ser
    130                 135                 140

Pro Arg Lys Ser Ser Ser Ile Ser Glu Glu Lys Gly Asp Ser Asp Asp
145                 150                 155                 160

Glu Lys Pro Arg Lys Gly Glu Arg Arg Ser Ser Arg Val Arg Gln Ala
                165                 170                 175

Arg Ala Ala Lys Leu Ser Glu Gly Ser Gln Pro Ala Glu Glu Glu Glu
            180                 185                 190

Asp Gln Glu Thr Pro Ser Arg Asn Leu Arg Val Arg Ala Asp Arg Asn
        195                 200                 205
```

```
Leu Lys Thr Glu Glu Glu Glu Glu Glu Glu Glu Glu Glu Glu Asp
    210                 215                 220

Asp Glu Glu Glu Glu Gly Asp Asp Glu Gly Gln Lys Ser Arg Glu Ala
225                 230                 235                 240

Pro Ile Leu Lys Glu Phe Lys Glu Glu Gly Glu Glu Ile Pro Arg Val
                245                 250                 255

Lys Pro Glu Glu Met Met Asp Glu Arg Pro Lys Thr Arg Ser Gln Glu
            260                 265                 270

Gln Glu Val Leu Glu Arg Gly Gly Arg Phe Thr Arg Ser Gln Glu Glu
        275                 280                 285

Ala Arg Lys Ser His Leu Ala Arg Gln Gln Gln Glu Lys Glu Met Lys
    290                 295                 300

Thr Thr Ser Pro Leu Glu Glu Glu Glu Arg Glu Ile Lys Ser Ser Gln
305                 310                 315                 320

Gly Leu Lys Glu Lys Ser Lys Ser Pro Ser Pro Pro Arg Leu Thr Glu
                325                 330                 335

Asp Arg Lys Lys Ala Ser Leu Val Ala Leu Pro Glu Gln Thr Ala Ser
            340                 345                 350

Glu Glu Glu Thr Pro Pro Pro Leu Leu Thr Lys Glu Ala Ser Ser Pro
        355                 360                 365

Pro Pro His Pro Gln Leu His Ser Glu Glu Glu Ile Glu Pro Met Glu
    370                 375                 380

Gly Pro Ala Pro Ala Val Leu Ile Gln Leu Ser Pro Pro Asn Thr Asp
385                 390                 395                 400

Ala Asp Thr Arg Glu Leu Leu Val Ser Gln His Thr Val Gln Leu Val
                405                 410                 415

Gly Gly Leu Ser Pro Leu Ser Ser Pro Ser Asp Thr Lys Ala Glu Ser
            420                 425                 430
```

```
Pro Ala Glu Lys Val Pro Glu Glu Ser Val Leu Pro Leu Val Gln Lys
        435                 440                 445

Ser Thr Leu Ala Asp Tyr Ser Ala Gln Lys Asp Leu Glu Pro Glu Ser
    450                 455                 460

Asp Arg Ser Ala Gln Pro Leu Pro Leu Lys Ile Glu Glu Leu Ala Leu
465                 470                 475                 480

Ala Lys Gly Ile Thr Glu Glu Cys Leu Lys Gln Pro Ser Leu Glu Gln
                485                 490                 495

Lys Glu Gly Arg Arg Ala Ser His Thr Leu Leu Pro Ser His Arg Leu
            500                 505                 510

Lys Gln Ser Ala Asp Ser Ser Ser Ser Arg Ser Ser Ser Ser Ser Ser
        515                 520                 525

Ser Ser Ser Arg Ser Arg Ser Arg Ser Pro Asp Ser Ser Gly Ser Arg
    530                 535                 540

Ser His Ser Pro Leu Arg Ser Lys Gln Arg Asp Val Ala Gln Ala Arg
545                 550                 555                 560

Thr His Ala Asn Pro Arg Gly Arg Pro Lys Met Gly Ser Arg Ser Thr
                565                 570                 575

Ser Glu Ser Arg Ser Arg Ser Arg Ser Arg Ser Arg Ser Ala Ser Ser
            580                 585                 590

Asn Ser Arg Lys Ser Leu Ser Pro Gly Val Ser Arg Asp Ser Ser Thr
        595                 600                 605

Ser Tyr Thr Glu Thr Lys Asp Pro Ser Ser Gly Gln Glu Val Ala Thr
    610                 615                 620

Pro Pro Val Pro Gln Leu Gln Val Cys Glu Pro Lys Glu Arg Thr Ser
625                 630                 635                 640

Thr Ser Ser Ser Ser Val Gln Ala Arg Arg Leu Ser Gln Pro Glu Ser
                645                 650                 655
```

```
Ala Glu Lys His Val Thr Gln Arg Leu Gln Pro Glu Arg Gly Ser Pro
            660                 665                 670

Lys Lys Cys Glu Ala Glu Glu Ala Glu Pro Pro Ala Ala Thr Gln Pro
        675                 680                 685

Gln Thr Ser Glu Thr Gln Thr Ser His Leu Pro Glu Ser Glu Arg Ile
    690                 695                 700

His His Thr Val Glu Glu Lys Glu Glu Val Thr Met Asp Thr Ser Glu
705                 710                 715                 720

Asn Arg Pro Glu Asn Asp Val Pro Glu Pro Pro Met Pro Ile Ala Asp
                725                 730                 735

Gln Val Ser Asn Asp Asp Arg Pro Glu Gly Ser Val Glu Asp Glu Glu
            740                 745                 750

Lys Lys Glu Ser Ser Leu Pro Lys Ser Phe Lys Arg Lys Ile Ser Val
        755                 760                 765

Val Ser Ala Thr Lys Gly Val Pro Ala Gly Asn Ser Asp Thr Glu Gly
    770                 775                 780

Gly Gln Pro Gly Arg Lys Arg Arg Trp Gly Ala Ser Thr Ala Thr Thr
785                 790                 795                 800

Gln Lys Lys Pro Ser Ile Ser Ile Thr Thr Glu Ser Leu Lys Ser Leu
                805                 810                 815

Ile Pro Asp Ile Lys Pro Leu Ala Gly Gln Glu Ala Val Val Asp Leu
            820                 825                 830

His Ala Asp Asp Ser Arg Ile Ser Glu Asp Glu Thr Glu Arg Asn Gly
        835                 840                 845

Asp Asp Gly Thr His Asp Lys Gly Leu Lys Ile Cys Arg Thr Val Thr
    850                 855                 860

Gln Val Val Pro Ala Glu Gly Gln Glu Asn Gly Gln Arg Glu Glu Glu
865                 870                 875                 880

Glu Glu Glu Lys Glu Pro Glu Ala Glu Pro Pro Val Pro Pro Gln Val
```

885 890 895

Ser Val Glu Val Ala Leu Pro Pro Pro Ala Glu His Glu Val Lys Lys
900 905 910

Val Thr Leu Gly Asp Thr Leu Thr Arg Arg Ser Ile Ser Gln Gln Lys
915 920 925

Ser Gly Val Ser Ile Thr Ile Asp Asp Pro Val Arg Thr Ala Gln Val
930 935 940

Pro Ser Pro Pro Arg Gly Lys Ile Ser Asn Ile Val His Ile Ser Asn
945 950 955 960

Leu Val Arg Pro Phe Thr Leu Gly Gln Leu Lys Glu Leu Leu Gly Arg
965 970 975

Thr Gly Thr Leu Val Glu Glu Ala Phe Trp Ile Asp Lys Ile Lys Ser
980 985 990

His Cys Phe Val Thr Tyr Ser Thr Val Glu Glu Ala Val Ala Thr
Arg
995 1000 1005

Thr Ala Leu His Gly Val Lys Trp Pro Gln Ser Asn Pro Lys Phe
1010 1015 1020

Leu Cys Ala Asp Tyr Ala Glu Gln Asp Glu Leu Asp Tyr His Arg
1025 1030 1035

Gly Leu Leu Val Asp Arg Pro Ser Glu Thr Lys Thr Glu Glu Gln
1040 1045 1050

Gly Ile Pro Arg Pro Leu His Pro Pro Pro Pro Pro Pro Val Gln
1055 1060 1065

Pro Pro Gln His Pro Arg Ala Glu Gln Arg Glu Gln Glu Arg Ala
1070 1075 1080

Val Arg Glu Gln Trp Ala Glu Arg Glu Arg Glu Met Glu Arg Arg
1085 1090 1095

Glu Arg Thr Arg Ser Glu Arg Glu Trp Asp Arg Asp Lys Val Arg

1100 1105 1110

Glu Gly Pro Arg Ser Arg Ser Arg Ser Arg Asp Arg Arg Arg Lys
1115 1120 1125

Glu Arg Ala Lys Ser Lys Glu Lys Lys Ser Glu Lys Lys Glu Lys
1130 1135 1140

Ala Gln Glu Glu Pro Pro Ala Lys Leu Leu Asp Asp Leu Phe Arg
1145 1150 1155

Lys Thr Lys Ala Ala Pro Cys Ile Tyr Trp Leu Pro Leu Thr Asp
1160 1165 1170

Ser Gln Ile Val Gln Lys Glu Ala Glu Arg Ala Glu Arg Ala Lys
1175 1180 1185

Glu Arg Glu Lys Arg Arg Lys Glu Gln Glu Glu Glu Glu Gln Lys
1190 1195 1200

Glu Arg Glu Lys Glu Ala Glu Arg Glu Arg Asn Arg Gln Leu Glu
1205 1210 1215

Arg Glu Lys Arg Arg Glu His Ser Arg Glu Arg Asp Arg Glu Arg
1220 1225 1230

Glu Arg Glu Arg Glu Arg Asp Arg Gly Asp Arg Asp Arg Asp Arg
1235 1240 1245

Glu Arg Asp Arg Glu Arg Gly Arg Glu Arg Asp Arg Arg Asp Thr
1250 1255 1260

Lys Arg His Ser Arg Ser Arg Ser Arg Ser Thr Pro Val Arg Asp
1265 1270 1275

Arg Gly Gly Arg Arg
1280

<210> 5893
<211> 82
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1288; "

<220>
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<223> /note="Gene Symbol: ACIN1; "

<220>
<221> source
<223> /note="Gene Name:
apoptotic chromatin condensation inducer 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000481955"

<400> 5893
Gln Pro Glu Ser Ala Glu Lys His Val Thr Gln Arg Leu Gln Pro Glu
1 5 10 15

Arg Gly Ser Pro Lys Lys Cys Glu Ala Glu Glu Ala Glu Pro Pro Ala
20 25 30

Ala Thr Gln Pro Gln Thr Ser Glu Thr Gln Thr Ser His Leu Pro Glu
35 40 45

Ser Glu Arg Ile His His Thr Val Phe Phe Ser Gly His Ser His Ala
50 55 60

Ser Pro Gly His Met Lys Leu Gly Val Ile Glu Phe Pro Val Pro Pro
65 70 75 80

Leu Gln

<210> 5894
<211> 36
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<223> /note="Gene Symbol: ACIN1; "

<220>
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<223> /note="Gene Name:

apoptotic chromatin condensation inducer 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000483298"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5894
Xaa Asn Asp Asp Arg Pro Glu Gly Ser Val Glu Asp Glu Glu Lys Lys
1 5 10 15

Glu Tyr Leu Met Tyr Gly Asn Pro Pro Val Lys Tyr Asn Pro Ala Gln
20 25 30

Leu Ala Asn Arg
35

<210> 5895
<211> 338
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1289; "

<220>
<221> source
<223> /note="Gene Symbol: APAF1; "

<220>
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<223> /note="Gene Name:
apoptotic peptidase activating factor
1; "

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<400> 5895
Met Asp Ala Lys Ala Arg Asn Cys Leu Leu Gln His Arg Glu Ala Leu
1 5 10 15

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Glu Lys Asp Ile Lys Thr Ser Tyr Ile Met Asp His Met Ile Ser Asp
            20                  25                  30

Gly Phe Leu Thr Ile Ser Glu Glu Glu Lys Val Arg Asn Glu Pro Thr
        35                  40                  45

Gln Gln Gln Arg Ala Ala Met Leu Ile Lys Met Ile Leu Lys Lys Asp
    50                  55                  60

Asn Asp Ser Tyr Val Ser Phe Tyr Asn Ala Leu Leu His Glu Gly Tyr
65                  70                  75                  80

Lys Asp Leu Ala Ala Leu Leu His Asp Gly Ile Pro Val Val Ser Ser
                85                  90                  95

Ser Ser Gly Lys Asp Ser Val Ser Gly Ile Thr Ser Tyr Val Arg Thr
            100                 105                 110

Val Leu Cys Glu Gly Gly Val Pro Gln Arg Pro Val Val Phe Val Thr
        115                 120                 125

Arg Lys Lys Leu Val Asn Ala Ile Gln Gln Lys Leu Ser Lys Leu Lys
    130                 135                 140

Gly Glu Pro Gly Trp Val Thr Ile His Gly Met Ala Gly Cys Gly Lys
145                 150                 155                 160

Ser Val Leu Ala Ala Glu Ala Val Arg Asp His Ser Leu Leu Glu Gly
                165                 170                 175

Cys Phe Pro Gly Gly Val His Trp Val Ser Val Gly Lys Gln Asp Lys
            180                 185                 190

Ser Gly Leu Leu Met Lys Leu Gln Asn Leu Cys Thr Arg Leu Asp Gln
        195                 200                 205

Asp Glu Ser Phe Ser Gln Arg Leu Pro Leu Asn Ile Glu Glu Ala Lys
    210                 215                 220

Asp Arg Leu Arg Ile Leu Met Leu Arg Lys His Pro Arg Ser Leu Leu
225                 230                 235                 240

Ile Leu Asp Asp Val Trp Asp Ser Trp Val Leu Lys Ala Phe Asp Ser
```

245 250 255

Gln Cys Gln Ile Leu Leu Thr Thr Arg Asp Lys Ser Val Thr Asp Ser
260 265 270

Val Met Gly Pro Lys Tyr Val Val Pro Val Glu Ser Ser Leu Gly Lys
275 280 285

Glu Lys Gly Leu Glu Ile Leu Ser Leu Phe Val Asn Met Lys Lys Ala
290 295 300

Asp Leu Pro Glu Gln Ala His Ser Ile Ile Lys Glu Cys Lys Val Val
305 310 315 320

Glu Arg Cys His Trp Gly Ile Leu Thr Asp Leu Leu His Lys Trp Asn
325 330 335

Gln Ser

<210> 5896
<211> 1205
<212> PRT
<213> Homo sapiens

<220>
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Met Asp Ala Lys Ala Arg Asn Cys Leu Leu Gln His Arg Glu Ala Leu
1 5 10 15

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Glu Lys Asp Ile Lys Thr Ser Tyr Ile Met Asp His Met Ile Ser Asp
            20                  25                  30

Gly Phe Leu Thr Ile Ser Glu Glu Glu Lys Val Arg Asn Glu Pro Thr
        35                  40                  45

Gln Gln Gln Arg Ala Ala Met Leu Ile Lys Met Ile Leu Lys Lys Asp
    50                  55                  60

Asn Asp Ser Tyr Val Ser Phe Tyr Asn Ala Leu Leu His Glu Gly Tyr
65                  70                  75                  80

Lys Asp Leu Ala Ala Leu Leu His Asp Gly Ile Pro Val Val Ser Ser
                85                  90                  95

Ser Ser Gly Lys Asp Ser Val Ser Gly Ile Thr Ser Tyr Val Arg Thr
            100                 105                 110

Val Leu Cys Glu Gly Gly Val Pro Gln Arg Pro Val Val Phe Val Thr
        115                 120                 125

Arg Lys Lys Leu Val Asn Ala Ile Gln Gln Lys Leu Ser Lys Leu Lys
    130                 135                 140

Gly Glu Pro Gly Trp Val Thr Ile His Gly Met Ala Gly Cys Gly Lys
145                 150                 155                 160

Ser Val Leu Ala Ala Glu Ala Val Arg Asp His Ser Leu Leu Glu Gly
                165                 170                 175

Cys Phe Pro Gly Gly Val His Trp Val Ser Val Gly Lys Gln Asp Lys
            180                 185                 190

Ser Gly Leu Leu Met Lys Leu Gln Asn Leu Cys Thr Arg Leu Asp Gln
        195                 200                 205

Asp Glu Ser Phe Ser Gln Arg Leu Pro Leu Asn Ile Glu Glu Ala Lys
    210                 215                 220

Asp Arg Leu Arg Ile Leu Met Leu Arg Lys His Pro Arg Ser Leu Leu
225                 230                 235                 240
```

```
Ile Leu Asp Asp Val Trp Asp Ser Trp Val Leu Lys Ala Phe Asp Ser
                245                 250                 255

Gln Cys Gln Ile Leu Leu Thr Thr Arg Asp Lys Ser Val Thr Asp Ser
            260                 265                 270

Val Met Gly Pro Lys Tyr Val Val Pro Val Glu Ser Ser Leu Gly Lys
        275                 280                 285

Glu Lys Gly Leu Glu Ile Leu Ser Leu Phe Val Asn Met Lys Lys Ala
    290                 295                 300

Asp Leu Pro Glu Gln Ala His Ser Ile Ile Lys Glu Cys Lys Gly Ser
305                 310                 315                 320

Pro Leu Val Val Ser Leu Ile Gly Ala Leu Leu Arg Asp Phe Pro Asn
                325                 330                 335

Arg Trp Glu Tyr Tyr Leu Lys Gln Leu Gln Asn Lys Gln Phe Lys Arg
            340                 345                 350

Ile Arg Lys Ser Ser Ser Tyr Asp Tyr Glu Ala Leu Asp Glu Ala Met
        355                 360                 365

Ser Ile Ser Val Glu Met Leu Arg Glu Asp Ile Lys Asp Tyr Tyr Thr
    370                 375                 380

Asp Leu Ser Ile Leu Gln Lys Asp Val Lys Val Pro Thr Lys Val Leu
385                 390                 395                 400

Cys Ile Leu Trp Asp Met Glu Thr Glu Glu Val Glu Asp Ile Leu Gln
                405                 410                 415

Glu Phe Val Asn Lys Ser Leu Leu Phe Cys Asp Arg Asn Gly Lys Ser
            420                 425                 430

Phe Arg Tyr Tyr Leu His Asp Leu Gln Val Asp Phe Leu Thr Glu Lys
        435                 440                 445

Asn Cys Ser Gln Leu Gln Asp Leu His Lys Lys Ile Ile Thr Gln Phe
    450                 455                 460
```

```
Gln Arg Tyr His Gln Pro His Thr Leu Ser Pro Asp Gln Glu Asp Cys
465                 470                 475                 480

Met Tyr Trp Tyr Asn Phe Leu Ala Tyr His Met Ala Ser Ala Lys Met
                485                 490                 495

His Lys Glu Leu Cys Ala Leu Met Phe Ser Leu Asp Trp Ile Lys Ala
            500                 505                 510

Lys Thr Glu Leu Val Gly Pro Ala His Leu Ile His Glu Phe Val Glu
        515                 520                 525

Tyr Arg His Ile Leu Asp Glu Lys Asp Cys Ala Val Ser Glu Asn Phe
    530                 535                 540

Gln Glu Phe Leu Ser Leu Asn Gly His Leu Leu Gly Arg Gln Pro Phe
545                 550                 555                 560

Pro Asn Ile Val Gln Leu Gly Leu Cys Glu Pro Glu Thr Ser Glu Val
                565                 570                 575

Tyr Gln Gln Ala Lys Leu Gln Ala Lys Gln Glu Val Asp Asn Gly Met
            580                 585                 590

Leu Tyr Leu Glu Trp Ile Asn Lys Lys Asn Ile Thr Asn Leu Ser Arg
        595                 600                 605

Leu Val Val Arg Pro His Thr Asp Ala Val Tyr His Ala Cys Phe Ser
    610                 615                 620

Glu Asp Gly Gln Arg Ile Ala Ser Cys Gly Ala Asp Lys Thr Leu Gln
625                 630                 635                 640

Val Phe Lys Ala Glu Thr Gly Glu Lys Leu Leu Glu Ile Lys Ala His
                645                 650                 655

Glu Asp Glu Val Leu Cys Cys Ala Phe Ser Thr Asp Asp Arg Phe Ile
            660                 665                 670

Ala Thr Cys Ser Val Asp Lys Lys Val Lys Ile Trp Asn Ser Met Thr
        675                 680                 685

Gly Glu Leu Val His Thr Tyr Asp Glu His Ser Glu Gln Val Asn Cys
```

690 695 700

Cys His Phe Thr Asn Ser Ser His His Leu Leu Leu Ala Thr Gly Ser
705 710 715 720

Ser Asp Cys Phe Leu Lys Leu Trp Asp Leu Asn Gln Lys Glu Cys Arg
725 730 735

Asn Thr Met Phe Gly His Thr Asn Ser Val Asn His Cys Arg Phe Ser
740 745 750

Pro Asp Asp Lys Leu Leu Ala Ser Cys Ser Ala Asp Gly Thr Leu Lys
755 760 765

Leu Trp Asp Ala Thr Ser Ala Asn Glu Arg Lys Ser Ile Asn Val Lys
770 775 780

Gln Phe Phe Leu Asn Leu Glu Asp Pro Gln Glu Asp Met Glu Val Ile
785 790 795 800

Val Lys Cys Cys Ser Trp Ser Ala Asp Gly Ala Arg Ile Met Val Ala
805 810 815

Ala Lys Asn Lys Ile Phe Leu Trp Asn Thr Asp Ser Arg Ser Lys Val
820 825 830

Ala Asp Cys Arg Gly His Leu Ser Trp Val His Gly Val Met Phe Ser
835 840 845

Pro Asp Gly Ser Ser Phe Leu Thr Ser Ser Asp Asp Gln Thr Ile Arg
850 855 860

Leu Trp Glu Thr Lys Lys Val Cys Lys Asn Ser Ala Val Met Leu Lys
865 870 875 880

Gln Glu Val Asp Val Val Phe Gln Glu Asn Glu Val Met Val Leu Ala
885 890 895

Val Asp His Ile Arg Arg Leu Gln Leu Ile Asn Gly Arg Thr Gly Gln
900 905 910

Ile Asp Tyr Leu Thr Glu Ala Gln Val Ser Cys Cys Cys Leu Ser Pro
915 920 925

```
His Leu Gln Tyr Ile Ala Phe Gly Asp Glu Asn Gly Ala Ile Glu Ile
    930                 935                 940

Leu Glu Leu Val Asn Asn Arg Ile Phe Gln Ser Arg Phe Gln His Lys
945                 950                 955                 960

Lys Thr Val Trp His Ile Gln Phe Thr Ala Asp Glu Lys Thr Leu Ile
                965                 970                 975

Ser Ser Ser Asp Asp Ala Glu Ile Gln Val Trp Asn Trp Gln Leu Asp
            980                 985                 990

Lys Cys Ile Phe Leu Arg Gly His  Gln Glu Thr Val Lys  Asp Phe
Arg
        995                 1000                1005

Leu Leu  Lys Asn Ser Arg Leu  Leu Ser Trp Ser Phe  Asp Gly Thr
    1010                1015                1020

Val Lys  Val Trp Asn Ile Ile  Thr Gly Asn Lys Glu  Lys Asp Phe
    1025                1030                1035

Val Cys  His Gln Gly Thr Val  Leu Ser Cys Asp Ile  Ser His Asp
    1040                1045                1050

Ala Thr  Lys Phe Ser Ser Thr  Ser Ala Asp Lys Thr  Ala Lys Ile
    1055                1060                1065

Trp Ser  Phe Asp Leu Leu Leu  Pro Leu His Glu Leu  Arg Gly His
    1070                1075                1080

Asn Gly  Cys Val Arg Cys Ser  Ala Phe Ser Val Asp  Ser Thr Leu
    1085                1090                1095

Leu Ala  Thr Gly Asp Asp Asn  Gly Glu Ile Arg Ile  Trp Asn Val
    1100                1105                1110

Ser Asn  Gly Glu Leu Leu His  Leu Cys Ala Pro Leu  Ser Glu Glu
    1115                1120                1125

Gly Ala  Ala Thr His Gly Gly  Trp Val Thr Asp Leu  Cys Phe Ser
    1130                1135                1140
```

```
Pro Asp  Gly Lys Met Leu Ile  Ser Ala Gly Gly Tyr  Ile Lys Trp
    1145                1150                1155


Trp Asn  Val Val Thr Gly Glu  Ser Ser Gln Thr Phe  Tyr Thr Asn
    1160                1165                1170


Gly Thr  Asn Leu Lys Lys Ile  His Val Ser Pro Asp  Phe Lys Thr
    1175                1180                1185


Tyr Val  Thr Val Asp Asn Leu  Gly Ile Leu Tyr Ile  Leu Gln Thr
    1190                1195                1200


Leu Glu
    1205


<210> 5897
<211> 1194
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Met Asp Ala Lys Ala Arg Asn Cys Leu Leu Gln His Arg Glu Ala Leu
1               5                  10                  15


Glu Lys Asp Ile Lys Thr Ser Tyr Ile Met Asp His Met Ile Ser Asp
            20                  25                  30
```

```
Gly Phe Leu Thr Ile Ser Glu Glu Glu Lys Val Arg Asn Glu Pro Thr
        35                  40                  45

Gln Gln Gln Arg Ala Ala Met Leu Ile Lys Met Ile Leu Lys Lys Asp
    50                  55                  60

Asn Asp Ser Tyr Val Ser Phe Tyr Asn Ala Leu Leu His Glu Gly Tyr
65                  70                  75                  80

Lys Asp Leu Ala Ala Leu Leu His Asp Gly Ile Pro Val Val Ser Ser
                85                  90                  95

Ser Ser Val Arg Thr Val Leu Cys Glu Gly Gly Val Pro Gln Arg Pro
            100                 105                 110

Val Val Phe Val Thr Arg Lys Lys Leu Val Asn Ala Ile Gln Gln Lys
        115                 120                 125

Leu Ser Lys Leu Lys Gly Glu Pro Gly Trp Val Thr Ile His Gly Met
    130                 135                 140

Ala Gly Cys Gly Lys Ser Val Leu Ala Ala Glu Ala Val Arg Asp His
145                 150                 155                 160

Ser Leu Leu Glu Gly Cys Phe Pro Gly Gly Val His Trp Val Ser Val
                165                 170                 175

Gly Lys Gln Asp Lys Ser Gly Leu Leu Met Lys Leu Gln Asn Leu Cys
            180                 185                 190

Thr Arg Leu Asp Gln Asp Glu Ser Phe Ser Gln Arg Leu Pro Leu Asn
        195                 200                 205

Ile Glu Glu Ala Lys Asp Arg Leu Arg Ile Leu Met Leu Arg Lys His
    210                 215                 220

Pro Arg Ser Leu Leu Ile Leu Asp Asp Val Trp Asp Ser Trp Val Leu
225                 230                 235                 240

Lys Ala Phe Asp Ser Gln Cys Gln Ile Leu Leu Thr Thr Arg Asp Lys
                245                 250                 255
```

```
Ser Val Thr Asp Ser Val Met Gly Pro Lys Tyr Val Val Pro Val Glu
            260                 265                 270

Ser Ser Leu Gly Lys Glu Lys Gly Leu Glu Ile Leu Ser Leu Phe Val
        275                 280                 285

Asn Met Lys Lys Ala Asp Leu Pro Glu Gln Ala His Ser Ile Ile Lys
    290                 295                 300

Glu Cys Lys Gly Ser Pro Leu Val Val Ser Leu Ile Gly Ala Leu Leu
305                 310                 315                 320

Arg Asp Phe Pro Asn Arg Trp Glu Tyr Tyr Leu Lys Gln Leu Gln Asn
                325                 330                 335

Lys Gln Phe Lys Arg Ile Arg Lys Ser Ser Ser Tyr Asp Tyr Glu Ala
            340                 345                 350

Leu Asp Glu Ala Met Ser Ile Ser Val Glu Met Leu Arg Glu Asp Ile
        355                 360                 365

Lys Asp Tyr Tyr Thr Asp Leu Ser Ile Leu Gln Lys Asp Val Lys Val
    370                 375                 380

Pro Thr Lys Val Leu Cys Ile Leu Trp Asp Met Glu Thr Glu Glu Val
385                 390                 395                 400

Glu Asp Ile Leu Gln Glu Phe Val Asn Lys Ser Leu Leu Phe Cys Asp
                405                 410                 415

Arg Asn Gly Lys Ser Phe Arg Tyr Tyr Leu His Asp Leu Gln Val Asp
            420                 425                 430

Phe Leu Thr Glu Lys Asn Cys Ser Gln Leu Gln Asp Leu His Lys Lys
        435                 440                 445

Ile Ile Thr Gln Phe Gln Arg Tyr His Gln Pro His Thr Leu Ser Pro
    450                 455                 460

Asp Gln Glu Asp Cys Met Tyr Trp Tyr Asn Phe Leu Ala Tyr His Met
465                 470                 475                 480

Ala Ser Ala Lys Met His Lys Glu Leu Cys Ala Leu Met Phe Ser Leu
```

485 490 495

Asp Trp Ile Lys Ala Lys Thr Glu Leu Val Gly Pro Ala His Leu Ile
500 505 510

His Glu Phe Val Glu Tyr Arg His Ile Leu Asp Glu Lys Asp Cys Ala
515 520 525

Val Ser Glu Asn Phe Gln Glu Phe Leu Ser Leu Asn Gly His Leu Leu
530 535 540

Gly Arg Gln Pro Phe Pro Asn Ile Val Gln Leu Gly Leu Cys Glu Pro
545 550 555 560

Glu Thr Ser Glu Val Tyr Gln Gln Ala Lys Leu Gln Ala Lys Gln Glu
565 570 575

Val Asp Asn Gly Met Leu Tyr Leu Glu Trp Ile Asn Lys Lys Asn Ile
580 585 590

Thr Asn Leu Ser Arg Leu Val Val Arg Pro His Thr Asp Ala Val Tyr
595 600 605

His Ala Cys Phe Ser Glu Asp Gly Gln Arg Ile Ala Ser Cys Gly Ala
610 615 620

Asp Lys Thr Leu Gln Val Phe Lys Ala Glu Thr Gly Glu Lys Leu Leu
625 630 635 640

Glu Ile Lys Ala His Glu Asp Glu Val Leu Cys Cys Ala Phe Ser Thr
645 650 655

Asp Asp Arg Phe Ile Ala Thr Cys Ser Val Asp Lys Lys Val Lys Ile
660 665 670

Trp Asn Ser Met Thr Gly Glu Leu Val His Thr Tyr Asp Glu His Ser
675 680 685

Glu Gln Val Asn Cys Cys His Phe Thr Asn Ser Ser His His Leu Leu
690 695 700

Leu Ala Thr Gly Ser Ser Asp Cys Phe Leu Lys Leu Trp Asp Leu Asn
705 710 715 720

```
Gln Lys Glu Cys Arg Asn Thr Met Phe Gly His Thr Asn Ser Val Asn
                725                 730                 735

His Cys Arg Phe Ser Pro Asp Asp Lys Leu Leu Ala Ser Cys Ser Ala
            740                 745                 750

Asp Gly Thr Leu Lys Leu Trp Asp Ala Thr Ser Ala Asn Glu Arg Lys
        755                 760                 765

Ser Ile Asn Val Lys Gln Phe Phe Leu Asn Leu Glu Asp Pro Gln Glu
    770                 775                 780

Asp Met Glu Val Ile Val Lys Cys Cys Ser Trp Ser Ala Asp Gly Ala
785                 790                 795                 800

Arg Ile Met Val Ala Ala Lys Asn Lys Ile Phe Leu Trp Asn Thr Asp
                805                 810                 815

Ser Arg Ser Lys Val Ala Asp Cys Arg Gly His Leu Ser Trp Val His
            820                 825                 830

Gly Val Met Phe Ser Pro Asp Gly Ser Ser Phe Leu Thr Ser Ser Asp
        835                 840                 845

Asp Gln Thr Ile Arg Leu Trp Glu Thr Lys Lys Val Cys Lys Asn Ser
    850                 855                 860

Ala Val Met Leu Lys Gln Glu Val Asp Val Val Phe Gln Glu Asn Glu
865                 870                 875                 880

Val Met Val Leu Ala Val Asp His Ile Arg Arg Leu Gln Leu Ile Asn
                885                 890                 895

Gly Arg Thr Gly Gln Ile Asp Tyr Leu Thr Glu Ala Gln Val Ser Cys
            900                 905                 910

Cys Cys Leu Ser Pro His Leu Gln Tyr Ile Ala Phe Gly Asp Glu Asn
        915                 920                 925

Gly Ala Ile Glu Ile Leu Glu Leu Val Asn Asn Arg Ile Phe Gln Ser
    930                 935                 940
```

```
Arg Phe Gln His Lys Lys Thr Val Trp His Ile Gln Phe Thr Ala Asp
945                 950                 955                 960

Glu Lys Thr Leu Ile Ser Ser Ser Asp Asp Ala Glu Ile Gln Val Trp
                965                 970                 975

Asn Trp Gln Leu Asp Lys Cys Ile Phe Leu Arg Gly His Gln Glu Thr
            980                 985                 990

Val Lys Asp Phe Arg Leu Leu Lys  Asn Ser Arg Leu Leu  Ser Trp
Ser
        995                 1000                1005

Phe Asp  Gly Thr Val Lys Val  Trp Asn Ile Ile Thr  Gly Asn Lys
    1010                1015                1020

Glu Lys  Asp Phe Val Cys His  Gln Gly Thr Val Leu  Ser Cys Asp
    1025                1030                1035

Ile Ser  His Asp Ala Thr Lys  Phe Ser Ser Thr Ser  Ala Asp Lys
    1040                1045                1050

Thr Ala  Lys Ile Trp Ser Phe  Asp Leu Leu Leu Pro  Leu His Glu
    1055                1060                1065

Leu Arg  Gly His Asn Gly Cys  Val Arg Cys Ser Ala  Phe Ser Val
    1070                1075                1080

Asp Ser  Thr Leu Leu Ala Thr  Gly Asp Asp Asn Gly  Glu Ile Arg
    1085                1090                1095

Ile Trp  Asn Val Ser Asn Gly  Glu Leu Leu His Leu  Cys Ala Pro
    1100                1105                1110

Leu Ser  Glu Glu Gly Ala Ala  Thr His Gly Gly Trp  Val Thr Asp
    1115                1120                1125

Leu Cys  Phe Ser Pro Asp Gly  Lys Met Leu Ile Ser  Ala Gly Gly
    1130                1135                1140

Tyr Ile  Lys Trp Trp Asn Val  Val Thr Gly Glu Ser  Ser Gln Thr
    1145                1150                1155
```

```
Phe Tyr  Thr Asn Gly Thr Asn  Leu Lys Lys Ile His  Val Ser Pro
    1160                1165                1170


Asp Phe  Lys Thr Tyr Val Thr  Val Asp Asn Leu Gly  Ile Leu Tyr
    1175                1180                1185


Ile Leu  Gln Thr Leu Glu
    1190


<210> 5898
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Met Asp Ala Lys Ala Arg Asn Cys Leu Leu Gln His Arg Glu Ala Leu
1               5                  10                  15


Glu Lys Asp Ile Lys Thr Ser Tyr Ile Met Asp His Met Ile Ser Asp
            20                  25                  30


Gly Phe Leu Thr Ile Ser Glu Glu Glu Lys Val Arg Asn Glu Pro Thr
        35                  40                  45


Gln Gln Gln Arg Ala Ala Met Leu Ile Lys Met Ile Leu Lys Lys Asp
    50                  55                  60


Asn Asp Ser Tyr Val Ser Phe Tyr Asn Ala Leu Leu His Glu Gly Tyr
65                  70                  75                  80
```

```
Lys Asp Leu Ala Ala Leu Leu His Asp Gly Ile Pro Val Val Ser Ser
                85                  90                  95

Ser Ser Gly Lys Asp Ser Val Ser Gly Ile Thr Ser Tyr Val Arg Thr
            100                 105                 110

Val Leu Cys Glu Gly Gly Val Pro Gln Arg Pro Val Val Phe Val Thr
        115                 120                 125

Arg Lys Lys Leu Val Asn Ala Ile Gln Gln Lys Leu Ser Lys Leu Lys
    130                 135                 140

Gly Glu Pro Gly Trp Val Thr Ile His Gly Met Ala Gly Cys Gly Lys
145                 150                 155                 160

Ser Val Leu Ala Ala Glu Ala Val Arg Asp His Ser Leu Leu Glu Gly
                165                 170                 175

Cys Phe Pro Gly Gly Val His Trp Val Ser Val Gly Lys Gln Asp Lys
            180                 185                 190

Ser Gly Leu Leu Met Lys Leu Gln Asn Leu Cys Thr Arg Leu Asp Gln
        195                 200                 205

Asp Glu Ser Phe Ser Gln Arg Leu Pro Leu Asn Ile Glu Glu Ala Lys
    210                 215                 220

Asp Arg Leu Arg Ile Leu Met Leu Arg Lys His Pro Arg Ser Leu Leu
225                 230                 235                 240

Ile Leu Asp Asp Val Trp Asp Ser Trp Val Leu Lys Ala Phe Asp Ser
                245                 250                 255

Gln Cys Gln Ile Leu Leu Thr Thr Arg Asp Lys Ser Val Thr Asp Ser
            260                 265                 270

Val Met Gly Pro Lys Tyr Val Val Pro Val Glu Ser Ser Leu Gly Lys
        275                 280                 285

Glu Lys Gly Leu Glu Ile Leu Ser Leu Phe Val Asn Met Lys Lys Ala
    290                 295                 300

Asp Leu Pro Glu Gln Ala His Ser Ile Ile Lys Glu Cys Lys Gly Ser
```

305 310 315 320

Pro Leu Val Val Ser Leu Ile Gly Ala Leu Leu Arg Asp Phe Pro Asn
325 330 335

Arg Trp Glu Tyr Tyr Leu Lys Gln Leu Gln Asn Lys Gln Phe Lys Arg
340 345 350

Ile Arg Lys Ser Ser Ser Tyr Asp Tyr Glu Ala Leu Asp Glu Ala Met
355 360 365

Ser Ile Ser Val Glu Met Leu Arg Glu Asp Ile Lys Asp Tyr Tyr Thr
370 375 380

Asp Leu Ser Ile Leu Gln Lys Asp Val Lys Val Pro Thr Lys Val Leu
385 390 395 400

Cys Ile Leu Trp Asp Met Glu Thr Glu Glu Val Glu Asp Ile Leu Gln
405 410 415

Glu Phe Val Asn Lys Ser Leu Leu Phe Cys Asp Arg Asn Gly Lys Ser
420 425 430

Phe Arg Tyr Tyr Leu His Asp Leu Gln Val Asp Phe Leu Thr Glu Lys
435 440 445

Asn Cys Ser Gln Leu Gln Asp Leu His Lys Lys Ile Ile Thr Gln Phe
450 455 460

Gln Arg Tyr His Gln Pro His Thr Leu Ser Pro Asp Gln Glu Asp Cys
465 470 475 480

Met Tyr Trp Tyr Asn Phe Leu Ala Tyr His Met Ala Ser Ala Lys Met
485 490 495

His Lys Glu Leu Cys Ala Leu Met Phe Ser Leu Asp Trp Ile Lys Ala
500 505 510

Lys Thr Glu Leu Val Gly Pro Ala His Leu Ile His Glu Phe Val Glu
515 520 525

Tyr Arg His Ile Leu Asp Glu Lys Asp Cys Ala Val Ser Glu Asn Phe
530 535 540

```
Gln Glu Phe Leu Ser Leu Asn Gly His Leu Leu Gly Arg Gln Pro Phe
545                 550                 555                 560

Pro Asn Ile Val Gln Leu Gly Leu Cys Glu Pro Glu Thr Ser Glu Val
                565                 570                 575

Tyr Gln Gln Ala Lys Leu Gln Ala Lys Gln Glu Val Asp Asn Gly Met
            580                 585                 590

Leu Tyr Leu Glu Trp Ile Asn Lys Lys Asn Ile Thr Asn Leu Ser Arg
        595                 600                 605

Leu Val Val Arg Pro His Thr Asp Ala Val Tyr His Ala Cys Phe Ser
    610                 615                 620

Glu Asp Gly Gln Arg Ile Ala Ser Cys Gly Ala Asp Lys Thr Leu Gln
625                 630                 635                 640

Val Phe Lys Ala Glu Thr Gly Glu Lys Leu Leu Glu Ile Lys Ala His
                645                 650                 655

Glu Asp Glu Val Leu Cys Cys Ala Phe Ser Thr Asp Asp Arg Phe Ile
            660                 665                 670

Ala Thr Cys Ser Val Asp Lys Lys Val Lys Ile Trp Asn Ser Met Thr
        675                 680                 685

Gly Glu Leu Val His Thr Tyr Asp Glu His Ser Glu Gln Val Asn Cys
    690                 695                 700

Cys His Phe Thr Asn Ser Ser His His Leu Leu Leu Ala Thr Gly Ser
705                 710                 715                 720

Ser Asp Cys Phe Leu Lys Leu Trp Asp Leu Asn Gln Lys Glu Cys Arg
                725                 730                 735

Asn Thr Met Phe Gly His Thr Asn Ser Val Asn His Cys Arg Phe Ser
            740                 745                 750

Pro Asp Asp Lys Leu Leu Ala Ser Cys Ser Ala Asp Gly Thr Leu Lys
        755                 760                 765
```

```
Leu Trp Asp Ala Thr Ser Ala Asn Glu Arg Lys Ser Ile Asn Val Lys
    770                 775                 780

Gln Phe Phe Leu Asn Leu Glu Asp Pro Gln Glu Asp Met Glu Val Ile
785                 790                 795                 800

Val Lys Cys Cys Ser Trp Ser Ala Asp Gly Ala Arg Ile Met Val Ala
                805                 810                 815

Ala Lys Asn Lys Ile Phe Leu Trp Asn Thr Asp Ser Arg Ser Lys Val
            820                 825                 830

Ala Asp Cys Arg Gly His Leu Ser Trp Val His Gly Val Met Phe Ser
        835                 840                 845

Pro Asp Gly Ser Ser Phe Leu Thr Ser Ser Asp Asp Gln Thr Ile Arg
    850                 855                 860

Leu Trp Glu Thr Lys Lys Val Cys Lys Asn Ser Ala Val Met Leu Lys
865                 870                 875                 880

Gln Glu Val Asp Val Val Phe Gln Glu Asn Glu Val Met Val Leu Ala
                885                 890                 895

Val Asp His Ile Arg Arg Leu Gln Leu Ile Asn Gly Arg Thr Gly Gln
            900                 905                 910

Ile Asp Tyr Leu Thr Glu Ala Gln Val Ser Cys Cys Cys Leu Ser Pro
        915                 920                 925

His Leu Gln Tyr Ile Ala Phe Gly Asp Glu Asn Gly Ala Ile Glu Ile
    930                 935                 940

Leu Glu Leu Val Asn Asn Arg Ile Phe Gln Ser Arg Phe Gln His Lys
945                 950                 955                 960

Lys Thr Val Trp His Ile Gln Phe Thr Ala Asp Glu Lys Thr Leu Ile
                965                 970                 975

Ser Ser Ser Asp Asp Ala Glu Ile Gln Val Trp Asn Trp Gln Leu Asp
            980                 985                 990
```

```
Lys Cys Ile Phe Leu Arg Gly His  Gln Glu Thr Val Lys  Asp Phe
Arg
        995                 1000                1005


Leu Leu  Lys Asn Ser Arg Leu  Leu Ser Trp Ser Phe  Asp Gly Thr
    1010                1015                1020


Val Lys  Val Trp Asn Ile Ile  Thr Gly Asn Lys Glu  Lys Asp Phe
    1025                1030                1035


Val Cys  His Gln Gly Thr Val  Leu Ser Cys Asp Ile  Ser His Asp
    1040                1045                1050


Ala Thr  Lys Phe Ser Ser Thr  Ser Ala Asp Lys Thr  Ala Lys Ile
    1055                1060                1065


Trp Asn  Val Ser Asn Gly Glu  Leu Leu His Leu Cys  Ala Pro Leu
    1070                1075                1080


Ser Glu  Glu Gly Ala Ala Thr  His Gly Gly Trp Val  Thr Asp Leu
    1085                1090                1095


Cys Phe  Ser Pro Asp Gly Lys  Met Leu Ile Ser Ala  Gly Gly Tyr
    1100                1105                1110


Ile Lys  Trp Trp Asn Val Val  Thr Gly Glu Ser Ser  Gln Thr Phe
    1115                1120                1125


Tyr Thr  Asn Gly Thr Asn Leu  Lys Lys Ile His Val  Ser Pro Asp
    1130                1135                1140


Phe Lys  Thr Tyr Val Thr Val  Asp Asn Leu Gly Ile  Leu Tyr Ile
    1145                1150                1155


Leu Gln  Thr Leu Glu
    1160


<210> 5899
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<212> PRT
<213> Homo sapiens

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apoptotic peptidase activating factor
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<400> 5899
Met Asp Ala Lys Ala Arg Asn Cys Leu Leu Gln His Arg Glu Ala Leu
1 5 10 15

Glu Lys Asp Ile Lys Thr Ser Tyr Ile Met Asp His Met Ile Ser Asp
20 25 30

Gly Phe Leu Thr Ile Ser Glu Glu Glu Lys Val Arg Asn Glu Pro Thr
35 40 45

Gln Gln Gln Arg Ala Ala Met Leu Ile Lys Met Ile Leu Lys Lys Asp
50 55 60

Asn Asp Ser Tyr Val Ser Phe Tyr Asn Ala Leu Leu His Glu Gly Tyr
65 70 75 80

Lys Asp Leu Ala Ala Leu Leu His Asp Gly Ile Pro Val Val Ser Ser
85 90 95

Ser Ser Gly Lys Asp Ser Val Ser Gly Ile Thr Ser Tyr Val Arg Thr
100 105 110

Val Leu Cys Glu Gly Gly Val Pro Gln Arg Pro Val Val Phe Val Thr
115 120 125

Arg Lys Lys Leu Val Asn Ala Ile Gln Gln Lys Leu Ser Lys Leu Lys
130 135 140

Gly Glu Pro Gly Trp Val Thr Ile His Gly Met Ala Gly Cys Gly Lys

```
145                 150                 155                 160

Ser Val Leu Ala Ala Glu Ala Val Arg Asp His Ser Leu Leu Glu Gly
                165                 170                 175

Cys Phe Pro Gly Gly Val His Trp Val Ser Val Gly Lys Gln Asp Lys
            180                 185                 190

Ser Gly Leu Leu Met Lys Leu Gln Asn Leu Cys Thr Arg Leu Asp Gln
        195                 200                 205

Asp Glu Ser Phe Ser Gln Arg Leu Pro Leu Asn Ile Glu Glu Ala Lys
    210                 215                 220

Asp Arg Leu Arg Ile Leu Met Leu Arg Lys His Pro Arg Ser Leu Leu
225                 230                 235                 240

Ile Leu Asp Asp Val Trp Asp Ser Trp Val Leu Lys Ala Phe Asp Ser
                245                 250                 255

Gln Cys Gln Ile Leu Leu Thr Thr Arg Asp Lys Ser Val Thr Asp Ser
            260                 265                 270

Val Met Gly Pro Lys Tyr Val Val Pro Val Glu Ser Ser Leu Gly Lys
        275                 280                 285

Glu Lys Gly Leu Glu Ile Leu Ser Leu Phe Val Asn Met Lys Lys Ala
    290                 295                 300

Asp Leu Pro Glu Gln Ala His Ser Ile Ile Lys Glu Cys Lys Gly Ser
305                 310                 315                 320

Pro Leu Val Val Ser Leu Ile Gly Ala Leu Leu Arg Asp Phe Pro Asn
                325                 330                 335

Arg Trp Glu Tyr Tyr Leu Lys Gln Leu Gln Asn Lys Gln Phe Lys Arg
            340                 345                 350

Ile Arg Lys Ser Ser Ser Tyr Asp Tyr Glu Ala Leu Asp Glu Ala Met
        355                 360                 365

Ser Ile Ser Val Glu Met Leu Arg Glu Asp Ile Lys Asp Tyr Tyr Thr
    370                 375                 380
```

```
Asp Leu Ser Ile Leu Gln Lys Asp Val Lys Val Pro Thr Lys Val Leu
385                 390                 395                 400

Cys Ile Leu Trp Asp Met Glu Thr Glu Glu Val Glu Asp Ile Leu Gln
                405                 410                 415

Glu Phe Val Asn Lys Ser Leu Leu Phe Cys Asp Arg Asn Gly Lys Ser
            420                 425                 430

Phe Arg Tyr Tyr Leu His Asp Leu Gln Val Asp Phe Leu Thr Glu Lys
        435                 440                 445

Asn Cys Ser Gln Leu Gln Asp Leu His Lys Lys Ile Ile Thr Gln Phe
    450                 455                 460

Gln Arg Tyr His Gln Pro His Thr Leu Ser Pro Asp Gln Glu Asp Cys
465                 470                 475                 480

Met Tyr Trp Tyr Asn Phe Leu Ala Tyr His Met Ala Ser Ala Lys Met
                485                 490                 495

His Lys Glu Leu Cys Ala Leu Met Phe Ser Leu Asp Trp Ile Lys Ala
            500                 505                 510

Lys Thr Glu Leu Val Gly Pro Ala His Leu Ile His Glu Phe Val Glu
        515                 520                 525

Tyr Arg His Ile Leu Asp Glu Lys Asp Cys Ala Val Ser Glu Asn Phe
    530                 535                 540

Gln Glu Phe Leu Ser Leu Asn Gly His Leu Leu Gly Arg Gln Pro Phe
545                 550                 555                 560

Pro Asn Ile Val Gln Leu Gly Leu Cys Glu Pro Glu Thr Ser Glu Val
                565                 570                 575

Tyr Gln Gln Ala Lys Leu Gln Ala Lys Gln Glu Val Asp Asn Gly Met
            580                 585                 590

Leu Tyr Leu Glu Trp Ile Asn Lys Lys Asn Ile Thr Asn Leu Ser Arg
        595                 600                 605
```

```
Leu Val Val Arg Pro His Thr Asp Ala Val Tyr His Ala Cys Phe Ser
    610                 615                 620

Glu Asp Gly Gln Arg Ile Ala Ser Cys Gly Ala Asp Lys Thr Leu Gln
625                 630                 635                 640

Val Phe Lys Ala Glu Thr Gly Glu Lys Leu Leu Glu Ile Lys Ala His
                645                 650                 655

Glu Asp Glu Val Leu Cys Cys Ala Phe Ser Thr Asp Asp Arg Phe Ile
            660                 665                 670

Ala Thr Cys Ser Val Asp Lys Lys Val Lys Ile Trp Asn Ser Met Thr
        675                 680                 685

Gly Glu Leu Val His Thr Tyr Asp Glu His Ser Glu Gln Val Asn Cys
    690                 695                 700

Cys His Phe Thr Asn Ser Ser His His Leu Leu Leu Ala Thr Gly Ser
705                 710                 715                 720

Ser Asp Cys Phe Leu Lys Leu Trp Asp Leu Asn Gln Lys Glu Cys Arg
                725                 730                 735

Asn Thr Met Phe Gly His Thr Asn Ser Val Asn His Cys Arg Phe Ser
            740                 745                 750

Pro Asp Asp Lys Leu Leu Ala Ser Cys Ser Ala Asp Gly Thr Leu Lys
        755                 760                 765

Leu Trp Asp Ala Thr Ser Ala Asn Glu Arg Lys Ser Ile Asn Val Lys
    770                 775                 780

Gln Phe Phe Leu Asn Leu Glu Asp Pro Gln Glu Asp Met Glu Val Ile
785                 790                 795                 800

Val Lys Cys Cys Ser Trp Ser Ala Asp Gly Ala Arg Ile Met Val Ala
                805                 810                 815

Ala Lys Asn Lys Ile Phe Leu Phe Asp Ile His Thr Ser Gly Leu Leu
            820                 825                 830
```

```
Gly Glu Ile His Thr Gly His His Ser Thr Ile Gln Tyr Cys Asp Phe
        835                 840                 845

Ser Pro Gln Asn His Leu Ala Val Val Ala Leu Ser Gln Tyr Cys Val
    850                 855                 860

Glu Leu Trp Asn Thr Asp Ser Arg Ser Lys Val Ala Asp Cys Arg Gly
865                 870                 875                 880

His Leu Ser Trp Val His Gly Val Met Phe Ser Pro Asp Gly Ser Ser
                885                 890                 895

Phe Leu Thr Ser Ser Asp Asp Gln Thr Ile Arg Leu Trp Glu Thr Lys
            900                 905                 910

Lys Val Cys Lys Asn Ser Ala Val Met Leu Lys Gln Glu Val Asp Val
        915                 920                 925

Val Phe Gln Glu Asn Glu Val Met Val Leu Ala Val Asp His Ile Arg
    930                 935                 940

Arg Leu Gln Leu Ile Asn Gly Arg Thr Gly Gln Ile Asp Tyr Leu Thr
945                 950                 955                 960

Glu Ala Gln Val Ser Cys Cys Cys Leu Ser Pro His Leu Gln Tyr Ile
                965                 970                 975

Ala Phe Gly Asp Glu Asn Gly Ala Ile Glu Ile Leu Glu Leu Val Asn
            980                 985                 990

Asn Arg Ile Phe Gln Ser Arg Phe  Gln His Lys Lys Thr  Val Trp
His
        995                 1000                1005

Ile Gln  Phe Thr Ala Asp Glu  Lys Thr Leu Ile Ser  Ser Ser Asp
    1010                1015                1020

Asp Ala  Glu Ile Gln Val Trp  Asn Trp Gln Leu Asp  Lys Cys Ile
    1025                1030                1035

Phe Leu  Arg Gly His Gln Glu  Thr Val Lys Asp Phe  Arg Leu Leu
    1040                1045                1050
```

```
Lys Asn  Ser Arg Leu Leu Ser  Trp Ser Phe Asp Gly  Thr Val Lys
    1055                1060                1065

Val Trp  Asn Ile Ile Thr Gly  Asn Lys Glu Lys Asp  Phe Val Cys
    1070                1075                1080

His Gln  Gly Thr Val Leu Ser  Cys Asp Ile Ser His  Asp Ala Thr
    1085                1090                1095

Lys Phe  Ser Ser Thr Ser Ala  Asp Lys Thr Ala Lys  Ile Trp Ser
    1100                1105                1110

Phe Asp  Leu Leu Leu Pro Leu  His Glu Leu Arg Gly  His Asn Gly
    1115                1120                1125

Cys Val  Arg Cys Ser Ala Phe  Ser Val Asp Ser Thr  Leu Leu Ala
    1130                1135                1140

Thr Gly  Asp Asp Asn Gly Glu  Ile Arg Ile Trp Asn  Val Ser Asn
    1145                1150                1155

Gly Glu  Leu Leu His Leu Cys  Ala Pro Leu Ser Glu  Glu Gly Ala
    1160                1165                1170

Ala Thr  His Gly Gly Trp Val  Thr Asp Leu Cys Phe  Ser Pro Asp
    1175                1180                1185

Gly Lys  Met Leu Ile Ser Ala  Gly Gly Tyr Ile Lys  Trp Trp Asn
    1190                1195                1200

Val Val  Thr Gly Glu Ser Ser  Gln Thr Phe Tyr Thr  Asn Gly Thr
    1205                1210                1215

Asn Leu  Lys Lys Ile His Val  Ser Pro Asp Phe Lys  Thr Tyr Val
    1220                1225                1230

Thr Val  Asp Asn Leu Gly Ile  Leu Tyr Ile Leu Gln  Thr Leu Glu
    1235                1240                1245
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apoptotic peptidase activating factor
1; "

<220>
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<400> 5900

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Met Asp Ala Lys Ala Arg Asn Cys Leu Leu Gln His Arg Glu Ala Leu
1               5                  10                  15

Glu Lys Asp Ile Lys Thr Ser Tyr Ile Met Asp His Met Ile Ser Asp
            20                  25                  30

Gly Phe Leu Thr Ile Ser Glu Glu Glu Lys Val Arg Asn Glu Pro Thr
        35                  40                  45

Gln Gln Gln Arg Ala Ala Met Leu Ile Lys Met Ile Leu Lys Lys Asp
    50                  55                  60

Asn Asp Ser Tyr Val Ser Phe Tyr Asn Ala Leu Leu His Glu Gly Tyr
65                  70                  75                  80

Lys Asp Leu Ala Ala Leu Leu His Asp Gly Ile Pro Val Val Ser Ser
                85                  90                  95

Ser Ser Val Arg Thr Val Leu Cys Glu Gly Gly Val Pro Gln Arg Pro
            100                 105                 110

Val Val Phe Val Thr Arg Lys Lys Leu Val Asn Ala Ile Gln Gln Lys
        115                 120                 125

Leu Ser Lys Leu Lys Gly Glu Pro Gly Trp Val Thr Ile His Gly Met
    130                 135                 140
```

```
Ala Gly Cys Gly Lys Ser Val Leu Ala Ala Glu Ala Val Arg Asp His
145                 150                 155                 160

Ser Leu Leu Glu Gly Cys Phe Pro Gly Gly Val His Trp Val Ser Val
                165                 170                 175

Gly Lys Gln Asp Lys Ser Gly Leu Leu Met Lys Leu Gln Asn Leu Cys
            180                 185                 190

Thr Arg Leu Asp Gln Asp Glu Ser Phe Ser Gln Arg Leu Pro Leu Asn
        195                 200                 205

Ile Glu Glu Ala Lys Asp Arg Leu Arg Ile Leu Met Leu Arg Lys His
    210                 215                 220

Pro Arg Ser Leu Leu Ile Leu Asp Asp Val Trp Asp Ser Trp Val Leu
225                 230                 235                 240

Lys Ala Phe Asp Ser Gln Cys Gln Ile Leu Leu Thr Thr Arg Asp Lys
                245                 250                 255

Ser Val Thr Asp Ser Val Met Gly Pro Lys Tyr Val Val Pro Val Glu
            260                 265                 270

Ser Ser Leu Gly Lys Glu Lys Gly Leu Glu Ile Leu Ser Leu Phe Val
        275                 280                 285

Asn Met Lys Lys Ala Asp Leu Pro Glu Gln Ala His Ser Ile Ile Lys
    290                 295                 300

Glu Cys Lys Gly Ser Pro Leu Val Val Ser Leu Ile Gly Ala Leu Leu
305                 310                 315                 320

Arg Asp Phe Pro Asn Arg Trp Glu Tyr Tyr Leu Lys Gln Leu Gln Asn
                325                 330                 335

Lys Gln Phe Lys Arg Ile Arg Lys Ser Ser Ser Tyr Asp Tyr Glu Ala
            340                 345                 350

Leu Asp Glu Ala Met Ser Ile Ser Val Glu Met Leu Arg Glu Asp Ile
        355                 360                 365
```

```
Lys Asp Tyr Tyr Thr Asp Leu Ser Ile Leu Gln Lys Asp Val Lys Val
    370                 375                 380

Pro Thr Lys Val Leu Cys Ile Leu Trp Asp Met Glu Thr Glu Glu Val
385                 390                 395                 400

Glu Asp Ile Leu Gln Glu Phe Val Asn Lys Ser Leu Leu Phe Cys Asp
                405                 410                 415

Arg Asn Gly Lys Ser Phe Arg Tyr Tyr Leu His Asp Leu Gln Val Asp
            420                 425                 430

Phe Leu Thr Glu Lys Asn Cys Ser Gln Leu Gln Asp Leu His Lys Lys
        435                 440                 445

Ile Ile Thr Gln Phe Gln Arg Tyr His Gln Pro His Thr Leu Ser Pro
    450                 455                 460

Asp Gln Glu Asp Cys Met Tyr Trp Tyr Asn Phe Leu Ala Tyr His Met
465                 470                 475                 480

Ala Ser Ala Lys Met His Lys Glu Leu Cys Ala Leu Met Phe Ser Leu
                485                 490                 495

Asp Trp Ile Lys Ala Lys Thr Glu Leu Val Gly Pro Ala His Leu Ile
            500                 505                 510

His Glu Phe Val Glu Tyr Arg His Ile Leu Asp Glu Lys Asp Cys Ala
        515                 520                 525

Val Ser Glu Asn Phe Gln Glu Phe Leu Ser Leu Asn Gly His Leu Leu
    530                 535                 540

Gly Arg Gln Pro Phe Pro Asn Ile Val Gln Leu Gly Leu Cys Glu Pro
545                 550                 555                 560

Glu Thr Ser Glu Val Tyr Gln Gln Ala Lys Leu Gln Ala Lys Gln Glu
                565                 570                 575

Val Asp Asn Gly Met Leu Tyr Leu Glu Trp Ile Asn Lys Lys Asn Ile
            580                 585                 590
```

```
Thr Asn Leu Ser Arg Leu Val Val Arg Pro His Thr Asp Ala Val Tyr
        595                 600                 605

His Ala Cys Phe Ser Glu Asp Gly Gln Arg Ile Ala Ser Cys Gly Ala
    610                 615                 620

Asp Lys Thr Leu Gln Val Phe Lys Ala Glu Thr Gly Glu Lys Leu Leu
625                 630                 635                 640

Glu Ile Lys Ala His Glu Asp Glu Val Leu Cys Cys Ala Phe Ser Thr
                645                 650                 655

Asp Asp Arg Phe Ile Ala Thr Cys Ser Val Asp Lys Lys Val Lys Ile
            660                 665                 670

Trp Asn Ser Met Thr Gly Glu Leu Val His Thr Tyr Asp Glu His Ser
        675                 680                 685

Glu Gln Val Asn Cys Cys His Phe Thr Asn Ser Ser His His Leu Leu
    690                 695                 700

Leu Ala Thr Gly Ser Ser Asp Cys Phe Leu Lys Leu Trp Asp Leu Asn
705                 710                 715                 720

Gln Lys Glu Cys Arg Asn Thr Met Phe Gly His Thr Asn Ser Val Asn
                725                 730                 735

His Cys Arg Phe Ser Pro Asp Asp Lys Leu Leu Ala Ser Cys Ser Ala
            740                 745                 750

Asp Gly Thr Leu Lys Leu Trp Asp Ala Thr Ser Ala Asn Glu Arg Lys
        755                 760                 765

Ser Ile Asn Val Lys Gln Phe Phe Leu Asn Leu Glu Asp Pro Gln Glu
    770                 775                 780

Asp Met Glu Val Ile Val Lys Cys Cys Ser Trp Ser Ala Asp Gly Ala
785                 790                 795                 800

Arg Ile Met Val Ala Ala Lys Asn Lys Ile Phe Leu Phe Asp Ile His
                805                 810                 815

Thr Ser Gly Leu Leu Gly Glu Ile His Thr Gly His His Ser Thr Ile
```

```
            820                 825                 830

Gln Tyr Cys Asp Phe Ser Pro Gln Asn His Leu Ala Val Val Ala Leu
        835                 840                 845

Ser Gln Tyr Cys Val Glu Leu Trp Asn Thr Asp Ser Arg Ser Lys Val
    850                 855                 860

Ala Asp Cys Arg Gly His Leu Ser Trp Val His Gly Val Met Phe Ser
865                 870                 875                 880

Pro Asp Gly Ser Ser Phe Leu Thr Ser Ser Asp Asp Gln Thr Ile Arg
                885                 890                 895

Leu Trp Glu Thr Lys Lys Val Cys Lys Asn Ser Ala Val Met Leu Lys
            900                 905                 910

Gln Glu Val Asp Val Val Phe Gln Glu Asn Glu Val Met Val Leu Ala
        915                 920                 925

Val Asp His Ile Arg Arg Leu Gln Leu Ile Asn Gly Arg Thr Gly Gln
    930                 935                 940

Ile Asp Tyr Leu Thr Glu Ala Gln Val Ser Cys Cys Cys Leu Ser Pro
945                 950                 955                 960

His Leu Gln Tyr Ile Ala Phe Gly Asp Glu Asn Gly Ala Ile Glu Ile
                965                 970                 975

Leu Glu Leu Val Asn Asn Arg Ile Phe Gln Ser Arg Phe Gln His Lys
            980                 985                 990

Lys Thr Val Trp His Ile Gln Phe  Thr Ala Asp Glu Lys  Thr Leu
Ile
        995                 1000                1005

Ser Ser  Ser Asp Asp Ala Glu  Ile Gln Val Trp Asn  Trp Gln Leu
    1010                1015                1020

Asp Lys  Cys Ile Phe Leu Arg  Gly His Gln Glu Thr  Val Lys Asp
    1025                1030                1035

Phe Arg  Leu Leu Lys Asn Ser  Arg Leu Leu Ser Trp  Ser Phe Asp
```

1040 1045 1050

Gly Thr Val Lys Val Trp Asn Ile Ile Thr Gly Asn Lys Glu Lys
1055 1060 1065

Asp Phe Val Cys His Gln Gly Thr Val Leu Ser Cys Asp Ile Ser
1070 1075 1080

His Asp Ala Thr Lys Phe Ser Ser Thr Ser Ala Asp Lys Thr Ala
1085 1090 1095

Lys Ile Trp Ser Phe Asp Leu Leu Leu Pro Leu His Glu Leu Arg
1100 1105 1110

Gly His Asn Gly Cys Val Arg Cys Ser Ala Phe Ser Val Asp Ser
1115 1120 1125

Thr Leu Leu Ala Thr Gly Asp Asp Asn Gly Glu Ile Arg Ile Trp
1130 1135 1140

Asn Val Ser Asn Gly Glu Leu Leu His Leu Cys Ala Pro Leu Ser
1145 1150 1155

Glu Glu Gly Ala Ala Thr His Gly Gly Trp Val Thr Asp Leu Cys
1160 1165 1170

Phe Ser Pro Asp Gly Lys Met Leu Ile Ser Ala Gly Gly Tyr Ile
1175 1180 1185

Lys Trp Trp Asn Val Val Thr Gly Glu Ser Ser Gln Thr Phe Tyr
1190 1195 1200

Thr Asn Gly Thr Asn Leu Lys Lys Ile His Val Ser Pro Asp Phe
1205 1210 1215

Lys Thr Tyr Val Thr Val Asp Asn Leu Gly Ile Leu Tyr Ile Leu
1220 1225 1230

Gln Thr Leu Glu
1235

<210> 5901
<211> 338

<212> PRT
<213> Homo sapiens

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<223> /note="Gene Name:
apoptotic peptidase activating factor
1; "

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<400> 5901

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Met Asp Ala Lys Ala Arg Asn Cys Leu Leu Gln His Arg Glu Ala Leu
1               5                  10                  15

Glu Lys Asp Ile Lys Thr Ser Tyr Ile Met Asp His Met Ile Ser Asp
            20                  25                  30

Gly Phe Leu Thr Ile Ser Glu Glu Glu Lys Val Arg Asn Glu Pro Thr
        35                  40                  45

Gln Gln Gln Arg Ala Ala Met Leu Ile Lys Met Ile Leu Lys Lys Asp
    50                  55                  60

Asn Asp Ser Tyr Val Ser Phe Tyr Asn Ala Leu Leu His Glu Gly Tyr
65                  70                  75                  80

Lys Asp Leu Ala Ala Leu Leu His Asp Gly Ile Pro Val Val Ser Ser
                85                  90                  95

Ser Ser Gly Lys Asp Ser Val Ser Gly Ile Thr Ser Tyr Val Arg Thr
            100                 105                 110

Val Leu Cys Glu Gly Gly Val Pro Gln Arg Pro Val Val Phe Val Thr
        115                 120                 125
```

```
Arg Lys Lys Leu Val Asn Ala Ile Gln Gln Lys Leu Ser Lys Leu Lys
    130                 135                 140

Gly Glu Pro Gly Trp Val Thr Ile His Gly Met Ala Gly Cys Gly Lys
145                 150                 155                 160

Ser Val Leu Ala Ala Glu Ala Val Arg Asp His Ser Leu Leu Glu Gly
                165                 170                 175

Cys Phe Pro Gly Gly Val His Trp Val Ser Val Gly Lys Gln Asp Lys
            180                 185                 190

Ser Gly Leu Leu Met Lys Leu Gln Asn Leu Cys Thr Arg Leu Asp Gln
        195                 200                 205

Asp Glu Ser Phe Ser Gln Arg Leu Pro Leu Asn Ile Glu Glu Ala Lys
    210                 215                 220

Asp Arg Leu Arg Ile Leu Met Leu Arg Lys His Pro Arg Ser Leu Leu
225                 230                 235                 240

Ile Leu Asp Asp Val Trp Asp Ser Trp Val Leu Lys Ala Phe Asp Ser
                245                 250                 255

Gln Cys Gln Ile Leu Leu Thr Thr Arg Asp Lys Ser Val Thr Asp Ser
            260                 265                 270

Val Met Gly Pro Lys Tyr Val Val Pro Val Glu Ser Ser Leu Gly Lys
        275                 280                 285

Glu Lys Gly Leu Glu Ile Leu Ser Leu Phe Val Asn Met Lys Lys Ala
    290                 295                 300

Asp Leu Pro Glu Gln Ala His Ser Ile Ile Lys Glu Cys Lys Val Val
305                 310                 315                 320

Glu Arg Cys His Trp Gly Ile Leu Thr Asp Leu Leu His Lys Trp Asn
                325                 330                 335

Gln Ser
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<212> PRT
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1; "

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<220>
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Met Asp Ala Lys Ala Arg Asn Cys Leu Leu Gln His Arg Glu Ala Leu
1 5 10 15

Glu Lys Asp Ile Lys Thr Ser Tyr Ile Met Asp His Met Ile Ser Asp
20 25 30

Gly Phe Leu Thr Ile Ser Glu Glu Glu Lys Val Arg Asn Glu Pro Thr
35 40 45

Gln Gln Gln Arg Ala Ala Met Leu Ile Lys Met Ile Leu Lys Lys Asp
50 55 60

Asn Asp Ser Tyr Val Ser Phe Tyr Asn Ala Leu Leu His Glu Gly Tyr
65 70 75 80

Lys Asp Leu Ala Ala Leu Leu His Asp Gly Ile Pro Val Val Ser Ser
85 90 95

Ser Ser Gly Lys Asp Ser Val Ser Gly Ile Thr Ser Tyr Val Arg Thr
100 105 110

Val Leu Cys Glu Gly Gly Val Pro Gln Arg Pro Val Val Phe Val Thr

```
        115                 120                 125

Arg Lys Lys Leu Val Asn Ala Ile Gln Gln Lys Leu Ser Lys Leu Lys
    130                 135                 140

Gly Glu Pro Gly Trp Val Thr Ile His Gly Met Ala Gly Cys Gly Lys
145                 150                 155                 160

Ser Val Leu Ala Ala Glu Ala Val Arg Asp His Ser Leu Leu Glu Gly
                165                 170                 175

Cys Phe Pro Gly Gly Val His Trp Val Ser Val Gly Lys Gln Asp Lys
            180                 185                 190

Ser Gly Leu Leu Met Lys Leu Gln Asn Leu Cys Thr Arg Leu Asp Gln
        195                 200                 205

Asp Glu Ser Phe Ser Gln Arg Leu Pro Leu Asn Ile Glu Glu Ala Lys
    210                 215                 220

Asp Arg Leu Arg Ile Leu Met Leu Arg Lys His Pro Arg Ser Leu Leu
225                 230                 235                 240

Ile Leu Asp Asp Val Trp Asp Ser Trp Val Leu Lys Ala Phe Asp Ser
                245                 250                 255

Gln Cys Gln Ile Leu Leu Thr Thr Arg Asp Lys Ser Val Thr Asp Ser
            260                 265                 270

Val Met Gly Pro Lys Tyr Val Val Pro Val Glu Ser Ser Leu Gly Lys
        275                 280                 285

Glu Lys Gly Leu Glu Ile Leu Ser Leu Phe Val Asn Met Lys Lys Ala
    290                 295                 300

Asp Leu Pro Glu Gln Ala His Ser Ile Ile Lys Glu Cys Lys Gly Ser
305                 310                 315                 320

Pro Leu Val Val Ser Leu Ile Gly Ala Leu Leu Arg Asp Phe Pro Asn
                325                 330                 335

Arg Trp Glu Tyr Tyr Leu Lys Gln Leu Gln Asn Lys Gln Phe Lys Arg
            340                 345                 350
```

```
Ile Arg Lys Ser Ser Ser Tyr Asp Tyr Glu Ala Leu Asp Glu Ala Met
        355                 360                 365

Ser Ile Ser Val Glu Met Leu Arg Glu Asp Ile Lys Asp Tyr Tyr Thr
    370                 375                 380

Asp Leu Ser Ile Leu Gln Lys Asp Val Lys Val Pro Thr Lys Val Leu
385                 390                 395                 400

Cys Ile Leu Trp Asp Met Glu Thr Glu Glu Val Glu Asp Ile Leu Gln
                405                 410                 415

Glu Phe Val Asn Lys Ser Leu Leu Phe Cys Asp Arg Asn Gly Lys Ser
            420                 425                 430

Phe Arg Tyr Tyr Leu His Asp Leu Gln Val Asp Phe Leu Thr Glu Lys
        435                 440                 445

Asn Cys Ser Gln Leu Gln Asp Leu His Lys Lys Ile Ile Thr Gln Phe
    450                 455                 460

Gln Arg Tyr His Gln Pro His Thr Leu Ser Pro Asp Gln Glu Asp Cys
465                 470                 475                 480

Met Tyr Trp Tyr Asn Phe Leu Ala Tyr His Met Ala Ser Ala Lys Met
                485                 490                 495

His Lys Glu Leu Cys Ala Leu Met Phe Ser Leu Asp Trp Ile Lys Ala
            500                 505                 510

Lys Thr Glu Leu Val Gly Pro Ala His Leu Ile His Glu Phe Val Glu
        515                 520                 525

Tyr Arg His Ile Leu Asp Glu Lys Asp Cys Ala Val Ser Glu Asn Phe
    530                 535                 540

Gln Glu Phe Leu Ser Leu Asn Gly His Leu Leu Gly Arg Gln Pro Phe
545                 550                 555                 560

Pro Asn Ile Val Gln Leu Gly Leu Cys Glu Pro Glu Thr Ser Glu Val
                565                 570                 575
```

```
Tyr Gln Gln Ala Lys Leu Gln Ala Lys Gln Glu Val Asp Asn Gly Met
            580                 585                 590

Leu Tyr Leu Glu Trp Ile Asn Lys Lys Asn Ile Thr Asn Leu Ser Arg
        595                 600                 605

Leu Val Val Arg Pro His Thr Asp Ala Val Tyr His Ala Cys Phe Ser
    610                 615                 620

Glu Asp Gly Gln Arg Ile Ala Ser Cys Gly Ala Asp Lys Thr Leu Gln
625                 630                 635                 640

Val Phe Lys Ala Glu Thr Gly Glu Lys Leu Leu Glu Ile Lys Ala His
                645                 650                 655

Glu Asp Glu Val Leu Cys Cys Ala Phe Ser Thr Asp Asp Arg Phe Ile
            660                 665                 670

Ala Thr Cys Ser Val Asp Lys Lys Val Lys Ile Trp Asn Ser Met Thr
        675                 680                 685

Gly Glu Leu Val His Thr Tyr Asp Glu His Ser Glu Gln Val Asn Cys
    690                 695                 700

Cys His Phe Thr Asn Ser Ser His His Leu Leu Leu Ala Thr Gly Ser
705                 710                 715                 720

Ser Asp Cys Phe Leu Lys Leu Trp Asp Leu Asn Gln Lys Glu Cys Arg
                725                 730                 735

Asn Thr Met Phe Gly His Thr Asn Ser Val Asn His Cys Arg Phe Ser
            740                 745                 750

Pro Asp Asp Lys Leu Leu Ala Ser Cys Ser Ala Asp Gly Thr Leu Lys
        755                 760                 765

Leu Trp Asp Ala Thr Ser Ala Asn Glu Arg Lys Ser Ile Asn Val Lys
    770                 775                 780

Gln Phe Phe Leu Asn Leu Glu Asp Pro Gln Glu Asp Met Glu Val Ile
785                 790                 795                 800
```

```
Val Lys Cys Cys Ser Trp Ser Ala Asp Gly Ala Arg Ile Met Val Ala
                805                 810                 815

Ala Lys Asn Lys Ile Phe Leu Trp Asn Thr Asp Ser Arg Ser Lys Val
            820                 825                 830

Ala Asp Cys Arg Gly His Leu Ser Trp Val His Gly Val Met Phe Ser
        835                 840                 845

Pro Asp Gly Ser Ser Phe Leu Thr Ser Ser Asp Asp Gln Thr Ile Arg
    850                 855                 860

Leu Trp Glu Thr Lys Lys Val Cys Lys Asn Ser Ala Val Met Leu Lys
865                 870                 875                 880

Gln Glu Val Asp Val Val Phe Gln Glu Asn Glu Val Met Val Leu Ala
                885                 890                 895

Val Asp His Ile Arg Arg Leu Gln Leu Ile Asn Gly Arg Thr Gly Gln
            900                 905                 910

Ile Asp Tyr Leu Thr Glu Ala Gln Val Ser Cys Cys Cys Leu Ser Pro
        915                 920                 925

His Leu Gln Tyr Ile Ala Phe Gly Asp Glu Asn Gly Ala Ile Glu Ile
    930                 935                 940

Leu Glu Leu Val Asn Asn Arg Ile Phe Gln Ser Arg Phe Gln His Lys
945                 950                 955                 960

Lys Thr Val Trp His Ile Gln Phe Thr Ala Asp Glu Lys Thr Leu Ile
                965                 970                 975

Ser Ser Ser Asp Asp Ala Glu Ile Gln Val Trp Asn Trp Gln Leu Asp
            980                 985                 990

Lys Cys Ile Phe Leu Arg Gly His  Gln Glu Thr Val Lys  Asp Phe
Arg
        995                 1000                1005

Leu Leu  Lys Asn Ser Arg Leu  Leu Ser Trp Ser Phe  Asp Gly Thr
    1010                1015                1020
```

```
Val Lys  Val Trp Asn Ile Ile  Thr Gly Asn Lys Glu  Lys Asp Phe
    1025                1030                1035

Val Cys  His Gln Gly Thr Val  Leu Ser Cys Asp Ile  Ser His Asp
    1040                1045                1050

Ala Thr  Lys Phe Ser Ser Thr  Ser Ala Asp Lys Thr  Ala Lys Ile
    1055                1060                1065

Trp Ser  Phe Asp Leu Leu Leu  Pro Leu His Glu Leu  Arg Gly His
    1070                1075                1080

Asn Gly  Cys Val Arg Cys Ser  Ala Phe Ser Val Asp  Ser Thr Leu
    1085                1090                1095

Leu Ala  Thr Gly Asp Asp Asn  Gly Glu Ile Arg Ile  Trp Asn Val
    1100                1105                1110

Ser Asn  Gly Glu Leu Leu His  Leu Cys Ala Pro Leu  Ser Glu Glu
    1115                1120                1125

Gly Ala  Ala Thr His Gly Gly  Trp Val Thr Asp Leu  Cys Phe Ser
    1130                1135                1140

Pro Asp  Gly Lys Met Leu Ile  Ser Ala Gly Gly Tyr  Ile Lys Trp
    1145                1150                1155

Trp Asn  Val Val Thr Gly Glu  Ser Ser Gln Thr Phe  Tyr Thr Asn
    1160                1165                1170

Gly Thr  Asn Leu Lys Lys Ile  His Val Ser Pro Asp  Phe Lys Thr
    1175                1180                1185

Tyr Val  Thr Val Asp Asn Leu  Gly Ile Leu Tyr Ile  Leu Gln Thr
    1190                1195                1200

Leu Glu
    1205
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<210> 5903
<211> 130
<212> PRT
<213> Homo sapiens

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<220>
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<223> /note="Gene Symbol: APAF1; "

<220>
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<223> /note="Gene Name:
apoptotic peptidase activating factor
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<220>
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<400> 5903
Met Asp Ala Lys Ala Arg Asn Cys Leu Leu Gln His Arg Glu Ala Leu
1 5 10 15

Glu Lys Asp Ile Lys Thr Ser Tyr Ile Met Asp His Met Ile Ser Asp
20 25 30

Gly Phe Leu Thr Ile Ser Glu Glu Glu Lys Val Arg Asn Glu Pro Thr
35 40 45

Gln Gln Gln Arg Ala Ala Met Leu Ile Lys Met Ile Leu Lys Lys Asp
50 55 60

Asn Asp Ser Tyr Val Ser Phe Tyr Asn Ala Leu Leu His Glu Gly Tyr
65 70 75 80

Lys Asp Leu Ala Ala Leu Leu His Asp Gly Ile Pro Val Val Ser Ser
85 90 95

Ser Ser Gly Lys Asp Ser Val Ser Gly Ile Thr Ser Tyr Gly Leu Tyr
100 105 110

Pro Leu Tyr Leu Leu Ser Leu Cys Tyr Gln Asn Cys Phe Gly Phe Val
115 120 125

Leu Leu
130

<210> 5904
<211> 288

<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: APTX; "

<220>
<221> source
<223> /note="Gene Name:
aprataxin; "

<220>
<221> source
<223> /note="Uniprot ID: Q7Z2E3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000311547"

<400> 5904

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Met Met Arg Val Cys Trp Leu Val Arg Gln Asp Ser Arg His Gln Arg
1               5                  10                  15

Ile Arg Leu Pro His Leu Glu Ala Val Val Ile Gly Arg Gly Pro Glu
            20                  25                  30

Thr Lys Ile Thr Asp Lys Lys Cys Ser Arg Gln Gln Glu Phe Glu Glu
        35                  40                  45

Glu Ala Lys Asn Pro Gly Leu Glu Thr His Arg Lys Arg Lys Arg Ser
    50                  55                  60

Gly Asn Ser Asp Ser Ile Glu Arg Asp Ala Ala Gln Glu Ala Glu Ala
65                  70                  75                  80

Gly Thr Gly Leu Glu Pro Gly Ser Asn Ser Gly Gln Cys Ser Val Pro
                85                  90                  95

Leu Lys Lys Gly Lys Asp Ala Pro Ile Lys Lys Glu Ser Leu Gly His
            100                 105                 110

Trp Ser Gln Gly Leu Lys Ile Ser Met Gln Asp Pro Lys Met Gln Val
        115                 120                 125
```

```
Tyr Lys Asp Glu Gln Val Val Val Ile Lys Asp Lys Tyr Pro Lys Ala
    130                 135                 140

Arg Tyr His Trp Leu Val Leu Pro Trp Thr Ser Ile Ser Ser Leu Lys
145                 150                 155                 160

Ala Val Ala Arg Glu His Leu Glu Leu Leu Lys His Met His Thr Val
                165                 170                 175

Gly Glu Lys Val Ile Val Asp Phe Ala Gly Ser Ser Lys Leu Arg Phe
            180                 185                 190

Arg Leu Gly Tyr His Ala Ile Pro Ser Met Ser His Val His Leu His
        195                 200                 205

Val Ile Ser Gln Asp Phe Asp Ser Pro Cys Leu Lys Asn Lys Lys His
    210                 215                 220

Trp Asn Ser Phe Asn Thr Glu Tyr Phe Leu Glu Ser Gln Ala Val Ile
225                 230                 235                 240

Glu Met Val Gln Glu Ala Gly Arg Val Thr Val Arg Asp Gly Met Pro
                245                 250                 255

Glu Leu Leu Lys Leu Pro Leu Arg Cys His Glu Cys Gln Gln Leu Leu
            260                 265                 270

Pro Ser Ile Pro Gln Leu Lys Glu His Leu Arg Lys His Trp Thr Gln
        275                 280                 285
```

<210> 5905
<211> 198
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
aprataxin; "

<220>
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<400> 5905
Met Ser Asn Val Asn Leu Ser Val Ser Asp Phe Trp Arg Val Met Met
1 5 10 15

Arg Val Cys Trp Leu Val Arg Gln Asp Ser Arg His Gln Arg Ile Arg
20 25 30

Leu Pro His Leu Glu Ala Val Val Ile Gly Arg Gly Pro Glu Thr Lys
35 40 45

Ile Thr Asp Lys Lys Cys Ser Arg Gln Gln Val Gln Leu Lys Ala Glu
50 55 60

Cys Asn Lys Gly Tyr Val Lys Val Lys Gln Val Gly Val Asn Pro Thr
65 70 75 80

Ser Ile Asp Ser Val Val Ile Gly Lys Asp Gln Glu Val Lys Leu Gln
85 90 95

Pro Gly Gln Val Leu His Met Glu Ser Leu Gly His Trp Ser Gln Gly
100 105 110

Leu Lys Ile Ser Met Gln Asp Pro Lys Met Gln Val Tyr Lys Asp Glu
115 120 125

Gln Val Val Val Ile Lys Asp Lys Tyr Pro Lys Ala Arg Tyr His Trp
130 135 140

Leu Val Leu Pro Trp Thr Ser Ile Ser Ser Leu Lys Ala Val Ala Arg
145 150 155 160

Glu His Leu Glu Leu Leu Lys His Met His Thr Val Gly Glu Lys Val
165 170 175

Ile Val Asp Phe Ala Gly Ser Ser Lys Leu Arg Phe Arg Leu Gly Tyr
180 185 190

His Ala Ile Pro Ser Met
195

<210> 5906
<211> 336
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: APTX; "

<220>
<221> source
<223> /note="Gene Name:
aprataxin; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000369141"

<400> 5906
Met Ser Asn Val Asn Leu Ser Val Ser Asp Phe Trp Arg Val Met Met
1 5 10 15

Arg Val Cys Trp Leu Val Arg Gln Asp Ser Arg His Gln Arg Ile Arg
20 25 30

Leu Pro His Leu Glu Ala Val Val Ile Gly Arg Gly Pro Glu Thr Lys
35 40 45

Ile Thr Asp Lys Lys Cys Ser Arg Gln Gln Val Gln Leu Lys Ala Glu
50 55 60

Cys Asn Lys Gly Tyr Val Lys Val Lys Gln Val Gly Val Asn Pro Thr
65 70 75 80

Ser Ile Asp Ser Val Val Ile Gly Lys Asp Gln Glu Val Lys Leu Gln
85 90 95

Pro Gly Gln Val Leu His Met Val Asn Glu Leu Tyr Pro Tyr Ile Val
100 105 110

Glu Phe Glu Glu Glu Ala Lys Asn Pro Gly Leu Glu Thr His Arg Lys
115 120 125

Arg Lys Arg Ser Gly Asn Ser Asp Ser Ile Glu Arg Asp Ala Ala Gln

```
    130                 135                 140

Glu Ala Glu Ala Gly Thr Gly Leu Glu Pro Gly Ser Asn Ser Gly Gln
145                 150                 155                 160

Cys Ser Val Pro Leu Lys Lys Gly Lys Asp Ala Pro Ile Lys Lys Val
                165                 170                 175

Tyr Lys Asp Glu Gln Val Val Val Ile Lys Asp Lys Tyr Pro Lys Ala
            180                 185                 190

Arg Tyr His Trp Leu Val Leu Pro Trp Thr Ser Ile Ser Ser Leu Lys
        195                 200                 205

Ala Val Ala Arg Glu His Leu Glu Leu Leu Lys His Met His Thr Val
    210                 215                 220

Gly Glu Lys Val Ile Val Asp Phe Ala Gly Ser Ser Lys Leu Arg Phe
225                 230                 235                 240

Arg Leu Gly Tyr His Ala Ile Pro Ser Met Ser His Val His Leu His
                245                 250                 255

Val Ile Ser Gln Asp Phe Asp Ser Pro Cys Leu Lys Asn Lys Lys His
            260                 265                 270

Trp Asn Ser Phe Asn Thr Glu Tyr Phe Leu Glu Ser Gln Ala Val Ile
        275                 280                 285

Glu Met Val Gln Glu Ala Gly Arg Val Thr Val Arg Asp Gly Met Pro
    290                 295                 300

Glu Leu Leu Lys Leu Pro Leu Arg Cys His Glu Cys Gln Gln Leu Leu
305                 310                 315                 320

Pro Ser Ile Pro Gln Leu Lys Glu His Leu Arg Lys His Trp Thr Gln
                325                 330                 335
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<210> 5907
<211> 342
<212> PRT
<213> Homo sapiens

<220>

<221> source
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<220>
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<220>
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<223> /note="Gene Name:
aprataxin; "

<220>
<221> source
<223> /note="Uniprot ID: Q7Z2E3; "

<220>
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<223> /note="ENSP ID: ENSP00000369145"

<400> 5907

Met	Met	Arg	Val	Cys	Trp	Leu	Val	Arg	Gln	Asp	Ser	Arg	His	Gln	Arg
1				5				10						15	

Ile	Arg	Leu	Pro	His	Leu	Glu	Ala	Val	Val	Ile	Gly	Arg	Gly	Pro	Glu
			20					25					30		

Thr	Lys	Ile	Thr	Asp	Lys	Lys	Cys	Ser	Arg	Gln	Gln	Val	Gln	Leu	Lys
		35					40					45			

Ala	Glu	Cys	Asn	Lys	Gly	Tyr	Val	Lys	Val	Lys	Gln	Val	Gly	Val	Asn
	50					55					60				

Pro	Thr	Ser	Ile	Asp	Ser	Val	Val	Ile	Gly	Lys	Asp	Gln	Glu	Val	Lys
65					70					75					80

Leu	Gln	Pro	Gly	Gln	Val	Leu	His	Met	Val	Asn	Glu	Leu	Tyr	Pro	Tyr
				85					90					95	

Ile	Val	Glu	Phe	Glu	Glu	Glu	Ala	Lys	Asn	Pro	Gly	Leu	Glu	Thr	His
			100					105					110		

Arg	Lys	Arg	Lys	Arg	Ser	Gly	Asn	Ser	Asp	Ser	Ile	Glu	Arg	Asp	Ala
		115					120					125			

Ala	Gln	Glu	Ala	Glu	Ala	Gly	Thr	Gly	Leu	Glu	Pro	Gly	Ser	Asn	Ser
	130					135					140				

```
Gly Gln Cys Ser Val Pro Leu Lys Lys Gly Lys Asp Ala Pro Ile Lys
145                 150                 155                 160

Lys Glu Ser Leu Gly His Trp Ser Gln Gly Leu Lys Ile Ser Met Gln
                165                 170                 175

Asp Pro Lys Met Gln Val Tyr Lys Asp Glu Gln Val Val Val Ile Lys
            180                 185                 190

Asp Lys Tyr Pro Lys Ala Arg Tyr His Trp Leu Val Leu Pro Trp Thr
        195                 200                 205

Ser Ile Ser Ser Leu Lys Ala Val Ala Arg Glu His Leu Glu Leu Leu
    210                 215                 220

Lys His Met His Thr Val Gly Glu Lys Val Ile Val Asp Phe Ala Gly
225                 230                 235                 240

Ser Ser Lys Leu Arg Phe Arg Leu Gly Tyr His Ala Ile Pro Ser Met
                245                 250                 255

Ser His Val His Leu His Val Ile Ser Gln Asp Phe Asp Ser Pro Cys
            260                 265                 270

Leu Lys Asn Lys Lys His Trp Asn Ser Phe Asn Thr Glu Tyr Phe Leu
        275                 280                 285

Glu Ser Gln Ala Val Ile Glu Met Val Gln Glu Ala Gly Arg Val Thr
    290                 295                 300

Val Arg Asp Gly Met Pro Glu Leu Leu Lys Leu Pro Leu Arg Cys His
305                 310                 315                 320

Glu Cys Gln Gln Leu Leu Pro Ser Ile Pro Gln Leu Lys Glu His Leu
                325                 330                 335

Arg Lys His Trp Thr Gln
            340
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<210> 5908
<211> 356
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1290; "

<220>
<221> source
<223> /note="Gene Symbol: APTX; "

<220>
<221> source
<223> /note="Gene Name:
aprataxin; "

<220>
<221> source
<223> /note="Uniprot ID: Q7Z2E3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000369147"

<400> 5908
Met Ser Asn Val Asn Leu Ser Val Ser Asp Phe Trp Arg Val Met Met
1   5   10   15

Arg Val Cys Trp Leu Val Arg Gln Asp Ser Arg His Gln Arg Ile Arg
            20   25   30

Leu Pro His Leu Glu Ala Val Val Ile Gly Arg Gly Pro Glu Thr Lys
        35   40   45

Ile Thr Asp Lys Lys Cys Ser Arg Gln Gln Val Gln Leu Lys Ala Glu
    50   55   60

Cys Asn Lys Gly Tyr Val Lys Val Lys Gln Val Gly Val Asn Pro Thr
65   70   75   80

Ser Ile Asp Ser Val Val Ile Gly Lys Asp Gln Glu Val Lys Leu Gln
                85   90   95

Pro Gly Gln Val Leu His Met Val Asn Glu Leu Tyr Pro Tyr Ile Val
            100   105   110

Glu Phe Glu Glu Glu Ala Lys Asn Pro Gly Leu Glu Thr His Arg Lys
        115   120   125

Arg Lys Arg Ser Gly Asn Ser Asp Ser Ile Glu Arg Asp Ala Ala Gln
    130   135   140

```
Glu Ala Glu Ala Gly Thr Gly Leu Glu Pro Gly Ser Asn Ser Gly Gln
145                 150                 155                 160

Cys Ser Val Pro Leu Lys Lys Gly Lys Asp Ala Pro Ile Lys Lys Glu
                165                 170                 175

Ser Leu Gly His Trp Ser Gln Gly Leu Lys Ile Ser Met Gln Asp Pro
            180                 185                 190

Lys Met Gln Val Tyr Lys Asp Glu Gln Val Val Val Ile Lys Asp Lys
        195                 200                 205

Tyr Pro Lys Ala Arg Tyr His Trp Leu Val Leu Pro Trp Thr Ser Ile
    210                 215                 220

Ser Ser Leu Lys Ala Val Ala Arg Glu His Leu Glu Leu Leu Lys His
225                 230                 235                 240

Met His Thr Val Gly Glu Lys Val Ile Val Asp Phe Ala Gly Ser Ser
                245                 250                 255

Lys Leu Arg Phe Arg Leu Gly Tyr His Ala Ile Pro Ser Met Ser His
            260                 265                 270

Val His Leu His Val Ile Ser Gln Asp Phe Asp Ser Pro Cys Leu Lys
        275                 280                 285

Asn Lys Lys His Trp Asn Ser Phe Asn Thr Glu Tyr Phe Leu Glu Ser
    290                 295                 300

Gln Ala Val Ile Glu Met Val Gln Glu Ala Gly Arg Val Thr Val Arg
305                 310                 315                 320

Asp Gly Met Pro Glu Leu Leu Lys Leu Pro Leu Arg Cys His Glu Cys
                325                 330                 335

Gln Gln Leu Leu Pro Ser Ile Pro Gln Leu Lys Glu His Leu Arg Lys
            340                 345                 350

His Trp Thr Gln
        355
```

<210> 5909
<211> 306
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1290; "

<220>
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<223> /note="Gene Name:
aprataxin; "

<220>
<221> source
<223> /note="Uniprot ID: Q7Z2E3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000369153"

<400> 5909
Met Ser Asn Val Asn Leu Ser Val Ser Asp Phe Trp Arg Val Met Met
1   5   10   15

Arg Val Cys Trp Leu Val Arg Gln Asp Ser Arg His Gln Arg Ile Arg
            20   25   30

Leu Pro His Leu Glu Ala Val Val Ile Gly Arg Gly Pro Glu Thr Lys
        35   40   45

Ile Thr Asp Lys Lys Cys Ser Arg Gln Gln Val Gln Leu Lys Ala Glu
    50   55   60

Cys Asn Lys Gly Tyr Val Lys Val Lys Gln Val Gly Val Asn Pro Thr
65   70   75   80

Ser Ile Asp Ser Val Val Ile Gly Lys Asp Gln Glu Val Lys Leu Gln
                85   90   95

Pro Gly Gln Val Leu His Met Val Asn Glu Leu Tyr Pro Tyr Ile Val
            100   105   110

Glu Phe Glu Glu Glu Ala Lys Asn Pro Gly Leu Glu Thr His Arg Lys
        115   120   125

```
Arg Lys Arg Ser Gly Asn Ser Asp Ser Ile Glu Arg Asp Ala Ala Gln
    130                 135                 140

Glu Ala Glu Ala Gly Thr Gly Leu Glu Pro Gly Ser Asn Ser Gly Gln
145                 150                 155                 160

Cys Ser Val Pro Leu Lys Lys Gly Lys Asp Ala Pro Ile Lys Lys Glu
                165                 170                 175

Ser Leu Gly His Trp Ser Gln Gly Leu Lys Ile Ser Met Gln Asp Pro
            180                 185                 190

Lys Met Gln Val Tyr Lys Asp Glu Gln Val Val Val Ile Lys Asp Lys
        195                 200                 205

Tyr Pro Lys Ala Arg Tyr His Trp Leu Val Leu Pro Trp Thr Ser Ile
    210                 215                 220

Ser Ser Leu Lys Ala Val Ala Arg Glu His Leu Glu Leu Leu Lys His
225                 230                 235                 240

Met His Thr Val Gly Glu Lys Val Ile Val Asp Phe Ala Gly Ser Ser
                245                 250                 255

Lys Leu Arg Phe Arg Leu Gly Tyr His Ala Ile Pro Ser Met Ser His
            260                 265                 270

Val His Leu His Val Ile Ser Gln Asp Phe Asp Ser Pro Cys Leu Lys
        275                 280                 285

Asn Lys Lys His Trp Asn Ser Phe Asn Thr Glu Tyr Phe Leu Glu Ser
    290                 295                 300

Gln Glu
305
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<210> 5910
<211> 284
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1290; "

<220>
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<220>
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apraxin; "

<220>
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<220>
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<223> /note="ENSP ID: ENSP00000380357"

<400> 5910

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Met Ser Asn Val Asn Leu Ser Val Ser Asp Phe Trp Arg Val Met Met
1               5                  10                  15

Arg Val Cys Trp Leu Val Arg Gln Asp Ser Arg His Gln Arg Ile Arg
            20                  25                  30

Leu Pro His Leu Glu Ala Val Val Ile Gly Arg Gly Pro Glu Thr Lys
        35                  40                  45

Ile Thr Asp Lys Lys Cys Ser Arg Gln Gln Val Gln Leu Lys Ala Glu
    50                  55                  60

Cys Asn Lys Gly Tyr Val Lys Val Lys Gln Val Gly Val Asn Pro Thr
65                  70                  75                  80

Ser Ile Asp Ser Val Val Ile Gly Lys Asp Gln Glu Val Lys Leu Gln
                85                  90                  95

Pro Gly Gln Val Leu His Met Glu Ser Leu Gly His Trp Ser Gln Gly
            100                 105                 110

Leu Lys Ile Ser Met Gln Asp Pro Lys Met Gln Val Tyr Lys Asp Glu
        115                 120                 125

Gln Val Val Val Ile Lys Asp Lys Tyr Pro Lys Ala Arg Tyr His Trp
    130                 135                 140

Leu Val Leu Pro Trp Thr Ser Ile Ser Ser Leu Lys Ala Val Ala Arg
```

```
145                 150                 155                 160

Glu His Leu Glu Leu Leu Lys His Met His Thr Val Gly Glu Lys Val
                165                 170                 175

Ile Val Asp Phe Ala Gly Ser Ser Lys Leu Arg Phe Arg Leu Gly Tyr
            180                 185                 190

His Ala Ile Pro Ser Met Ser His Val His Leu His Val Ile Ser Gln
        195                 200                 205

Asp Phe Asp Ser Pro Cys Leu Lys Asn Lys Lys His Trp Asn Ser Phe
    210                 215                 220

Asn Thr Glu Tyr Phe Leu Glu Ser Gln Ala Val Ile Glu Met Val Gln
225                 230                 235                 240

Glu Ala Gly Arg Val Thr Val Arg Asp Gly Met Pro Glu Leu Leu Lys
                245                 250                 255

Leu Pro Leu Arg Cys His Glu Cys Gln Gln Leu Leu Pro Ser Ile Pro
            260                 265                 270

Gln Leu Lys Glu His Leu Arg Lys His Trp Thr Gln
        275                 280


<210> 5911
<211> 342
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: APTX; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID:  Q7Z2E3; "
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<220>
<221> source
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<400> 5911
Met Met Arg Val Cys Trp Leu Val Arg Gln Asp Ser Arg His Gln Arg
1   5   10   15

Ile Arg Leu Pro His Leu Glu Ala Val Val Ile Gly Arg Gly Pro Glu
            20   25   30

Thr Lys Ile Thr Asp Lys Lys Cys Ser Arg Gln Gln Val Gln Leu Lys
        35   40   45

Ala Glu Cys Asn Lys Gly Tyr Val Lys Val Lys Gln Val Gly Val Asn
    50   55   60

Pro Thr Ser Ile Asp Ser Val Val Ile Gly Lys Asp Gln Glu Val Lys
65   70   75   80

Leu Gln Pro Gly Gln Val Leu His Met Val Asn Glu Leu Tyr Pro Tyr
                85   90   95

Ile Val Glu Phe Glu Glu Glu Ala Lys Asn Pro Gly Leu Glu Thr His
            100   105   110

Arg Lys Arg Lys Arg Ser Gly Asn Ser Asp Ser Ile Glu Arg Asp Ala
        115   120   125

Ala Gln Glu Ala Glu Ala Gly Thr Gly Leu Glu Pro Gly Ser Asn Ser
    130   135   140

Gly Gln Cys Ser Val Pro Leu Lys Lys Gly Lys Asp Ala Pro Ile Lys
145   150   155   160

Lys Glu Ser Leu Gly His Trp Ser Gln Gly Leu Lys Ile Ser Met Gln
                165   170   175

Asp Pro Lys Met Gln Val Tyr Lys Asp Glu Gln Val Val Val Ile Lys
            180   185   190

Asp Lys Tyr Pro Lys Ala Arg Tyr His Trp Leu Val Leu Pro Trp Thr
        195   200   205

```
Ser Ile Ser Ser Leu Lys Ala Val Ala Arg Glu His Leu Glu Leu Leu
    210                 215                 220

Lys His Met His Thr Val Gly Glu Lys Val Ile Val Asp Phe Ala Gly
225                 230                 235                 240

Ser Ser Lys Leu Arg Phe Arg Leu Gly Tyr His Ala Ile Pro Ser Met
                245                 250                 255

Ser His Val His Leu His Val Ile Ser Gln Asp Phe Asp Ser Pro Cys
            260                 265                 270

Leu Lys Asn Lys Lys His Trp Asn Ser Phe Asn Thr Glu Tyr Phe Leu
        275                 280                 285

Glu Ser Gln Ala Val Ile Glu Met Val Gln Glu Ala Gly Arg Val Thr
    290                 295                 300

Val Arg Asp Gly Met Pro Glu Leu Leu Lys Leu Pro Leu Arg Cys His
305                 310                 315                 320

Glu Cys Gln Gln Leu Leu Pro Ser Ile Pro Gln Leu Lys Glu His Leu
                325                 330                 335

Arg Lys His Trp Thr Gln
            340


<210> 5912
<211> 49
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
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<223> /note="Gene Name:
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<223> /note="Uniprot ID:  Q7Z2E3; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000417634"

<400> 5912
Met Met Arg Val Cys Trp Leu Val Arg Gln Asp Ser Arg His Gln Arg
1   5   10   15

Ile Arg Leu Pro His Leu Glu Ala Val Val Ile Gly Arg Gly Pro Glu
            20   25   30

Thr Lys Ile Thr Asp Lys Lys Cys Ser Arg Gln Gln Val Glu Ser Arg
        35   40   45

Val

<210> 5913
<211> 155
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1290; "

<220>
<221> source
<223> /note="Gene Symbol: APTX; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000417649"

<400> 5913
Met Met Arg Val Cys Trp Leu Val Arg Gln Asp Ser Arg His Gln Arg
1   5   10   15

Ile Arg Leu Pro His Leu Glu Ala Val Val Ile Gly Arg Gly Pro Glu
            20   25   30

Thr Lys Ile Thr Asp Lys Lys Cys Ser Arg Gln Gln Glu Phe Glu Glu
        35   40   45

```
Glu Ala Lys Asn Pro Gly Leu Glu Thr His Arg Lys Arg Lys Arg Ser
    50                  55                  60

Gly Asn Ser Asp Ser Ile Glu Arg Asp Ala Ala Gln Glu Ala Glu Ala
65                  70                  75                  80

Gly Thr Gly Leu Glu Pro Gly Ser Asn Ser Gly Gln Cys Ser Val Pro
                85                  90                  95

Leu Lys Lys Gly Lys Asp Ala Pro Ile Lys Lys Glu Ser Leu Gly His
            100                 105                 110

Trp Ser Gln Gly Leu Lys Ile Ser Met Gln Asp Pro Lys Met Gln Val
        115                 120                 125

Tyr Lys Asp Glu Gln Val Val Val Ile Lys Asp Lys Tyr Pro Lys Ala
    130                 135                 140

Arg Tyr His Trp Leu Val Leu Pro Trp Thr Ser
145                 150                 155


<210> 5914
<211> 52
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000417684"

<400> 5914
Met Met Arg Val Cys Trp Leu Val Arg Gln Asp Ser Arg His Gln Arg
1               5                   10                  15

Ile Arg Leu Pro His Leu Glu Ala Val Val Ile Gly Arg Gly Pro Glu
            20                  25                  30
```

Thr Lys Ile Thr Asp Lys Lys Cys Ser Arg Gln Gln Gly Arg Ser Gln
35 40 45

Ser His Gln His
50

<210> 5915
<211> 74
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 5915
Xaa Asp Phe Trp Arg Val Met Met Arg Val Cys Trp Leu Val Arg Gln
1 5 10 15

Asp Ser Arg His Gln Arg Ile Arg Leu Pro His Leu Glu Ala Val Val
20 25 30

Ile Gly Arg Gly Pro Glu Thr Lys Ile Thr Asp Lys Lys Cys Ser Arg
35 40 45

Gln Gln Gly Ile Pro Gly Pro Leu Glu Ser Arg Leu Glu Asp Phe Tyr
50 55 60

Ala Gly Pro Gln Asn Ala Gly Leu Gln Arg
65 70

<210> 5916
<211> 49
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Uniprot ID: Q7Z2E3; "

<220>
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<223> /note="ENSP ID: ENSP00000417804"

<400> 5916
Met Met Arg Val Cys Trp Leu Val Arg Gln Asp Ser Arg His Gln Arg
1   5   10   15

Ile Arg Leu Pro His Leu Glu Ala Val Val Ile Gly Arg Gly Pro Glu
            20   25   30

Thr Lys Ile Thr Asp Lys Lys Cys Ser Arg Gln Gln Val Glu Ser Arg
        35   40   45

Val

<210> 5917
<211> 63
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000418069"

<400> 5917
Met Ser Asn Val Asn Leu Ser Val Ser Asp Phe Trp Arg Val Met Met
1 5 10 15

Arg Val Cys Trp Leu Val Arg Gln Asp Ser Arg His Gln Arg Ile Arg
20 25 30

Leu Pro His Leu Glu Ala Val Val Ile Gly Arg Gly Pro Glu Thr Lys
35 40 45

Ile Thr Asp Lys Lys Cys Ser Arg Gln Gln Val Glu Ser Arg Val
50 55 60

<210> 5918
<211> 49
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: APTX; "

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<220>
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000418144"

<400> 5918
Met Met Arg Val Cys Trp Leu Val Arg Gln Asp Ser Arg His Gln Arg
1 5 10 15

Ile Arg Leu Pro His Leu Glu Ala Val Val Ile Gly Arg Gly Pro Glu
            20   25   30

Thr Lys Ile Thr Asp Lys Lys Cys Ser Arg Gln Gln Val Glu Ser Arg
        35   40   45

Val

<210> 5919
<211> 49
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: APTX; "

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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID: Q7Z2E3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000418311"

<400> 5919
Met Met Arg Val Cys Trp Leu Val Arg Gln Asp Ser Arg His Gln Arg
1   5   10   15

Ile Arg Leu Pro His Leu Glu Ala Val Val Ile Gly Arg Gly Pro Glu
            20   25   30

Thr Lys Ile Thr Asp Lys Lys Cys Ser Arg Gln Gln Val Glu Ser Arg
        35   40   45

Val

<210> 5920

<211> 49
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: APTX; "

<220>
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<223> /note="Gene Name:
apratаxin; "

<220>
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<223> /note="Uniprot ID: Q7Z2E3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000418733"

<400> 5920
Met Met Arg Val Cys Trp Leu Val Arg Gln Asp Ser Arg His Gln Arg
1   5   10   15

Ile Arg Leu Pro His Leu Glu Ala Val Val Ile Gly Arg Gly Pro Glu
            20   25   30

Thr Lys Ile Thr Asp Lys Lys Cys Ser Arg Gln Gln Val Glu Ser Arg
        35   40   45

Val

<210> 5921
<211> 216
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: APTX; "

<220>
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<223> /note="Gene Name:
apraxin; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419020"

<400> 5921

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Met Ser Asn Val Asn Leu Ser Val Ser Asp Phe Trp Arg Val Met Met
1               5                  10                  15

Arg Val Cys Trp Leu Val Arg Gln Asp Ser Arg His Gln Arg Ile Arg
            20                  25                  30

Leu Pro His Leu Glu Ala Val Val Ile Gly Arg Gly Pro Glu Thr Lys
        35                  40                  45

Ile Thr Asp Lys Lys Cys Ser Arg Gln Gln Glu Phe Glu Glu Glu Ala
    50                  55                  60

Lys Asn Pro Gly Leu Glu Thr His Arg Lys Arg Lys Arg Ser Gly Asn
65                  70                  75                  80

Ser Asp Ser Ile Glu Arg Asp Ala Ala Gln Glu Ala Glu Ala Gly Thr
                85                  90                  95

Gly Leu Glu Pro Gly Ser Asn Ser Gly Gln Cys Ser Val Pro Leu Lys
            100                 105                 110

Lys Gly Lys Asp Ala Pro Ile Lys Lys Glu Ser Leu Gly His Trp Ser
        115                 120                 125

Gln Gly Leu Lys Ile Ser Met Gln Asp Pro Lys Met Gln Val Tyr Lys
    130                 135                 140

Asp Glu Gln Val Val Val Ile Lys Asp Lys Tyr Pro Lys Ala Arg Tyr
145                 150                 155                 160

His Trp Leu Val Leu Pro Trp Thr Ser Ile Ser Ser Leu Lys Ala Val
                165                 170                 175

Ala Arg Glu His Leu Glu Leu Leu Lys His Met His Thr Val Gly Glu
            180                 185                 190

Lys Val Ile Val Asp Phe Ala Gly Ser Ser Lys Leu Arg Phe Arg Leu
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195 200 205

Gly Tyr His Ala Ile Pro Ser Met
210 215

<210> 5922
<211> 302
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1290; "

<220>
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<223> /note="Gene Symbol: APTX; "

<220>
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aprataxin; "

<220>
<221> source
<223> /note="Uniprot ID: Q7Z2E3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419042"

<400> 5922
Met Ser Asn Val Asn Leu Ser Val Ser Asp Phe Trp Arg Val Met Met
1 5 10 15

Arg Val Cys Trp Leu Val Arg Gln Asp Ser Arg His Gln Arg Ile Arg
20 25 30

Leu Pro His Leu Glu Ala Val Val Ile Gly Arg Gly Pro Glu Thr Lys
35 40 45

Ile Thr Asp Lys Lys Cys Ser Arg Gln Gln Glu Phe Glu Glu Glu Ala
50 55 60

Lys Asn Pro Gly Leu Glu Thr His Arg Lys Arg Lys Arg Ser Gly Asn
65 70 75 80

Ser Asp Ser Ile Glu Arg Asp Ala Ala Gln Glu Ala Glu Ala Gly Thr
85 90 95

```
Gly Leu Glu Pro Gly Ser Asn Ser Gly Gln Cys Ser Val Pro Leu Lys
            100                 105                 110

Lys Gly Lys Asp Ala Pro Ile Lys Lys Glu Ser Leu Gly His Trp Ser
        115                 120                 125

Gln Gly Leu Lys Ile Ser Met Gln Asp Pro Lys Met Gln Val Tyr Lys
    130                 135                 140

Asp Glu Gln Val Val Val Ile Lys Asp Lys Tyr Pro Lys Ala Arg Tyr
145                 150                 155                 160

His Trp Leu Val Leu Pro Trp Thr Ser Ile Ser Ser Leu Lys Ala Val
                165                 170                 175

Ala Arg Glu His Leu Glu Leu Leu Lys His Met His Thr Val Gly Glu
            180                 185                 190

Lys Val Ile Val Asp Phe Ala Gly Ser Ser Lys Leu Arg Phe Arg Leu
        195                 200                 205

Gly Tyr His Ala Ile Pro Ser Met Ser His Val His Leu His Val Ile
    210                 215                 220

Ser Gln Asp Phe Asp Ser Pro Cys Leu Lys Asn Lys Lys His Trp Asn
225                 230                 235                 240

Ser Phe Asn Thr Glu Tyr Phe Leu Glu Ser Gln Ala Val Ile Glu Met
                245                 250                 255

Val Gln Glu Ala Gly Arg Val Thr Val Arg Asp Gly Met Pro Glu Leu
            260                 265                 270

Leu Lys Leu Pro Leu Arg Cys His Glu Cys Gln Gln Leu Leu Pro Ser
        275                 280                 285

Ile Pro Gln Leu Lys Glu His Leu Arg Lys His Trp Thr Gln
    290                 295                 300
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<210> 5923
<211> 192
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1290; "

<220>
<221> source
<223> /note="Gene Symbol: APTX; "

<220>
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<223> /note="Gene Name:
aprataxin; "

<220>
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<223> /note="Uniprot ID: Q7Z2E3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419289"

<400> 5923

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Met Met Arg Val Cys Trp Leu Val Arg Gln Asp Ser Arg His Gln Arg
1               5                  10                  15

Ile Arg Leu Pro His Leu Glu Ala Val Val Ile Gly Arg Gly Pro Glu
            20                  25                  30

Thr Lys Ile Thr Asp Lys Lys Cys Ser Arg Gln Gln Val Gln Leu Lys
        35                  40                  45

Ala Glu Cys Asn Lys Gly Tyr Val Lys Val Lys Gln Val Gly Val Asn
    50                  55                  60

Pro Thr Ser Ile Asp Ser Val Val Ile Gly Lys Asp Gln Glu Val Lys
65                  70                  75                  80

Leu Gln Pro Gly Gln Val Leu His Met Val Asn Glu Leu Tyr Pro Tyr
                85                  90                  95

Ile Val Glu Phe Glu Glu Glu Ala Lys Asn Pro Gly Leu Glu Thr His
            100                 105                 110

Arg Lys Arg Lys Arg Ser Gly Asn Ser Asp Ser Ile Glu Arg Asp Ala
        115                 120                 125

Ala Gln Glu Ala Glu Ala Gly Thr Gly Leu Glu Pro Gly Ser Asn Ser
    130                 135                 140
```

```
Gly Gln Cys Ser Val Pro Leu Lys Lys Gly Lys Asp Ala Pro Ile Lys
145                 150                 155                 160

Lys Glu Ser Leu Gly His Trp Ser Gln Gly Leu Lys Ile Ser Met Gln
                165                 170                 175

Asp Pro Lys Met Gln Pro Cys Thr Ser Ser Cys Asp Gln Pro Gly Phe
            180                 185                 190
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<210> 5924
<211> 85
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1290; "

<220>
<221> source
<223> /note="Gene Symbol: APTX; "

<220>
<221> source
<223> /note="Gene Name:
apratаxin; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419430"

<400> 5924

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Met Met Arg Val Cys Trp Leu Val Arg Gln Asp Ser Arg His Gln Arg
1               5                   10                  15

Ile Arg Leu Pro His Leu Glu Ala Val Val Ile Gly Arg Gly Pro Glu
            20                  25                  30

Thr Lys Ile Thr Asp Lys Lys Cys Ser Arg Gln Gln Val Gln Leu Lys
        35                  40                  45

Ala Glu Cys Asn Lys Gly Tyr Val Lys Val Lys Gln Ser Leu Arg Lys
    50                  55                  60

Arg Gln Arg Thr Leu Ala Trp Lys His Thr Gly Arg Glu Arg Asp Gln
65                  70                  75                  80
```

Ala Thr Val Ile Leu
85

<210> 5925
<211> 99
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1290; "

<220>
<221> source
<223> /note="Gene Symbol: APTX; "

<220>
<221> source
<223> /note="Gene Name:
aprataxin; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419597"

<400> 5925
Met Ser Asn Val Asn Leu Ser Val Ser Asp Phe Trp Arg Val Met Met
1 5 10 15

Arg Val Cys Trp Leu Val Arg Gln Asp Ser Arg His Gln Arg Ile Arg
20 25 30

Leu Pro His Leu Glu Ala Val Val Ile Gly Arg Gly Pro Glu Thr Lys
35 40 45

Ile Thr Asp Lys Lys Cys Ser Arg Gln Gln Val Gln Leu Lys Ala Glu
50 55 60

Cys Asn Lys Gly Tyr Val Lys Val Lys Gln Ser Leu Arg Lys Arg Gln
65 70 75 80

Arg Thr Leu Ala Trp Lys His Thr Gly Arg Glu Arg Asp Gln Ala Thr
85 90 95

Val Ile Leu

<210> 5926
<211> 49

<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1290; "

<220>
<221> source
<223> /note="Gene Symbol: APTX; "

<220>
<221> source
<223> /note="Gene Name:
aprataxin; "

<220>
<221> source
<223> /note="Uniprot ID: Q7Z2E3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419623"

<400> 5926
Met Met Arg Val Cys Trp Leu Val Arg Gln Asp Ser Arg His Gln Arg
1   5   10   15

Ile Arg Leu Pro His Leu Glu Ala Val Val Ile Gly Arg Gly Pro Glu
            20   25   30

Thr Lys Ile Thr Asp Lys Lys Cys Ser Arg Gln Gln Val Glu Ser Arg
        35   40   45

Val

<210> 5927
<211> 85
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1290; "

<220>
<221> source
<223> /note="Gene Symbol: APTX; "

<220>
<221> source
<223> /note="Gene Name:

aprataxin; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419723"

<400> 5927
Met Met Arg Val Cys Trp Leu Val Arg Gln Asp Ser Arg His Gln Arg
1   5   10   15

Ile Arg Leu Pro His Leu Glu Ala Val Val Ile Gly Arg Gly Pro Glu
            20   25   30

Thr Lys Ile Thr Asp Lys Lys Cys Ser Arg Gln Gln Val Gln Leu Lys
        35   40   45

Ala Glu Cys Asn Lys Gly Tyr Val Lys Val Lys Gln Ser Leu Arg Lys
    50   55   60

Arg Gln Arg Thr Leu Ala Trp Lys His Thr Gly Arg Glu Arg Asp Gln
65   70   75   80

Ala Thr Val Ile Leu
                85

<210> 5928
<211> 342
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1290; "

<220>
<221> source
<223> /note="Gene Symbol: APTX; "

<220>
<221> source
<223> /note="Gene Name:
aprataxin; "

<220>
<221> source
<223> /note="Uniprot ID: Q7Z2E3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419846"

<400> 5928
Met Met Arg Val Cys Trp Leu Val Arg Gln Asp Ser Arg His Gln Arg
1 5 10 15

Ile Arg Leu Pro His Leu Glu Ala Val Val Ile Gly Arg Gly Pro Glu
20 25 30

Thr Lys Ile Thr Asp Lys Lys Cys Ser Arg Gln Gln Val Gln Leu Lys
35 40 45

Ala Glu Cys Asn Lys Gly Tyr Val Lys Val Lys Gln Val Gly Val Asn
50 55 60

Pro Thr Ser Ile Asp Ser Val Val Ile Gly Lys Asp Gln Glu Val Lys
65 70 75 80

Leu Gln Pro Gly Gln Val Leu His Met Val Asn Glu Leu Tyr Pro Tyr
85 90 95

Ile Val Glu Phe Glu Glu Glu Ala Lys Asn Pro Gly Leu Glu Thr His
100 105 110

Arg Lys Arg Lys Arg Ser Gly Asn Ser Asp Ser Ile Glu Arg Asp Ala
115 120 125

Ala Gln Glu Ala Glu Ala Gly Thr Gly Leu Glu Pro Gly Ser Asn Ser
130 135 140

Gly Gln Cys Ser Val Pro Leu Lys Lys Gly Lys Asp Ala Pro Ile Lys
145 150 155 160

Lys Glu Ser Leu Gly His Trp Ser Gln Gly Leu Lys Ile Ser Met Gln
165 170 175

Asp Pro Lys Met Gln Val Tyr Lys Asp Glu Gln Val Val Val Ile Lys
180 185 190

Asp Lys Tyr Pro Lys Ala Arg Tyr His Trp Leu Val Leu Pro Trp Thr
195 200 205

Ser Ile Ser Ser Leu Lys Ala Val Ala Arg Glu His Leu Glu Leu Leu
210 215 220

```
Lys His Met His Thr Val Gly Glu Lys Val Ile Val Asp Phe Ala Gly
225                 230                 235                 240

Ser Ser Lys Leu Arg Phe Arg Leu Gly Tyr His Ala Ile Pro Ser Met
                245                 250                 255

Ser His Val His Leu His Val Ile Ser Gln Asp Phe Asp Ser Pro Cys
            260                 265                 270

Leu Lys Asn Lys Lys His Trp Asn Ser Phe Asn Thr Glu Tyr Phe Leu
        275                 280                 285

Glu Ser Gln Ala Val Ile Glu Met Val Gln Glu Ala Gly Arg Val Thr
    290                 295                 300

Val Arg Asp Gly Met Pro Glu Leu Leu Lys Leu Pro Leu Arg Cys His
305                 310                 315                 320

Glu Cys Gln Gln Leu Leu Pro Ser Ile Pro Gln Leu Lys Glu His Leu
                325                 330                 335

Arg Lys His Trp Thr Gln
            340


<210> 5929
<211> 49
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1290; "

<220>
<221> source
<223> /note="Gene Symbol: APTX; "

<220>
<221> source
<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID:  Q7Z2E3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420071"
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<400> 5929
Met Met Arg Val Cys Trp Leu Val Arg Gln Asp Ser Arg His Gln Arg
1   5   10   15

Ile Arg Leu Pro His Leu Glu Ala Val Val Ile Gly Arg Gly Pro Glu
            20   25   30

Thr Lys Ile Thr Asp Lys Lys Cys Ser Arg Gln Gln Val Glu Ser Arg
        35   40   45

Val

<210> 5930
<211> 342
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1290; "

<220>
<221> source
<223> /note="Gene Symbol: APTX; "

<220>
<221> source
<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID: Q7Z2E3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420263"

<400> 5930
Met Met Arg Val Cys Trp Leu Val Arg Gln Asp Ser Arg His Gln Arg
1   5   10   15

Ile Arg Leu Pro His Leu Glu Ala Val Val Ile Gly Arg Gly Pro Glu
            20   25   30

Thr Lys Ile Thr Asp Lys Lys Cys Ser Arg Gln Gln Val Gln Leu Lys
        35   40   45

```
Ala Glu Cys Asn Lys Gly Tyr Val Lys Val Lys Gln Val Gly Val Asn
    50                  55                  60

Pro Thr Ser Ile Asp Ser Val Val Ile Gly Lys Asp Gln Glu Val Lys
65                  70                  75                  80

Leu Gln Pro Gly Gln Val Leu His Met Val Asn Glu Leu Tyr Pro Tyr
                85                  90                  95

Ile Val Glu Phe Glu Glu Glu Ala Lys Asn Pro Gly Leu Glu Thr His
            100                 105                 110

Arg Lys Arg Lys Arg Ser Gly Asn Ser Asp Ser Ile Glu Arg Asp Ala
        115                 120                 125

Ala Gln Glu Ala Glu Ala Gly Thr Gly Leu Glu Pro Gly Ser Asn Ser
    130                 135                 140

Gly Gln Cys Ser Val Pro Leu Lys Lys Gly Lys Asp Ala Pro Ile Lys
145                 150                 155                 160

Lys Glu Ser Leu Gly His Trp Ser Gln Gly Leu Lys Ile Ser Met Gln
                165                 170                 175

Asp Pro Lys Met Gln Val Tyr Lys Asp Glu Gln Val Val Val Ile Lys
            180                 185                 190

Asp Lys Tyr Pro Lys Ala Arg Tyr His Trp Leu Val Leu Pro Trp Thr
        195                 200                 205

Ser Ile Ser Ser Leu Lys Ala Val Ala Arg Glu His Leu Glu Leu Leu
    210                 215                 220

Lys His Met His Thr Val Gly Glu Lys Val Ile Val Asp Phe Ala Gly
225                 230                 235                 240

Ser Ser Lys Leu Arg Phe Arg Leu Gly Tyr His Ala Ile Pro Ser Met
                245                 250                 255

Ser His Val His Leu His Val Ile Ser Gln Asp Phe Asp Ser Pro Cys
            260                 265                 270

Leu Lys Asn Lys Lys His Trp Asn Ser Phe Asn Thr Glu Tyr Phe Leu
```

```
        275                 280                 285

Glu Ser Gln Ala Val Ile Glu Met Val Gln Glu Ala Gly Arg Val Thr
    290                 295                 300

Val Arg Asp Gly Met Pro Glu Leu Leu Lys Leu Pro Leu Arg Cys His
305                 310                 315                 320

Glu Cys Gln Gln Leu Leu Pro Ser Ile Pro Gln Leu Lys Glu His Leu
                325                 330                 335

Arg Lys His Trp Thr Gln
            340


<210> 5931
<211> 511
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1291; "

<220>
<221> source
<223> /note="Gene Symbol: APLF; "

<220>
<221> source
<223> /note="Gene Name:
      aprataxin and PNKP like
      factor; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8IW19; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000307004"

<400> 5931
Met Ser Gly Gly Phe Glu Leu Gln Pro Arg Asp Gly Gly Pro Arg Val
1               5                   10                  15

Ala Leu Ala Pro Gly Glu Thr Val Ile Gly Arg Gly Pro Leu Leu Gly
            20                  25                  30

Ile Thr Asp Lys Arg Val Ser Arg Arg His Ala Ile Leu Glu Val Ala
        35                  40                  45
```

```
Gly Gly Gln Leu Arg Ile Lys Pro Ile His Thr Asn Pro Cys Phe Tyr
    50                  55                  60

Gln Ser Ser Glu Lys Ser Gln Leu Leu Pro Leu Lys Pro Asn Leu Trp
65                  70                  75                  80

Cys Tyr Leu Asn Pro Gly Asp Ser Phe Ser Leu Leu Val Asp Lys Tyr
                85                  90                  95

Ile Phe Arg Ile Leu Ser Ile Pro Ser Glu Val Glu Met Gln Cys Thr
            100                 105                 110

Leu Arg Asn Ser Gln Val Leu Asp Glu Asp Asn Ile Leu Asn Glu Thr
        115                 120                 125

Pro Lys Ser Pro Val Ile Asn Leu Pro His Glu Thr Thr Gly Ala Ser
    130                 135                 140

Gln Leu Glu Gly Ser Thr Glu Ile Ala Lys Thr Gln Met Thr Pro Thr
145                 150                 155                 160

Asn Ser Val Ser Phe Leu Gly Glu Asn Arg Asp Cys Asn Lys Gln Gln
                165                 170                 175

Pro Ile Leu Ala Glu Arg Lys Arg Ile Leu Pro Thr Trp Met Leu Ala
            180                 185                 190

Glu His Leu Ser Asp Gln Asn Leu Ser Val Pro Ala Ile Ser Gly Gly
        195                 200                 205

Asn Val Ile Gln Gly Ser Gly Lys Glu Glu Ile Cys Lys Asp Lys Ser
    210                 215                 220

Gln Leu Asn Thr Thr Gln Gln Gly Arg Arg Gln Leu Ile Ser Ser Gly
225                 230                 235                 240

Ser Ser Glu Asn Thr Ser Ala Glu Gln Asp Thr Gly Glu Glu Cys Lys
                245                 250                 255

Asn Thr Asp Gln Glu Glu Ser Thr Ile Ser Ser Lys Glu Met Pro Gln
            260                 265                 270
```

```
Ser Phe Ser Ala Ile Thr Leu Ser Asn Thr Glu Met Asn Asn Ile Lys
        275                 280                 285

Thr Asn Ala Gln Arg Asn Lys Leu Pro Ile Glu Glu Leu Gly Lys Val
    290                 295                 300

Ser Lys His Lys Ile Ala Thr Lys Arg Thr Pro His Lys Glu Asp Glu
305                 310                 315                 320

Ala Met Ser Cys Ser Glu Asn Cys Ser Ser Ala Gln Gly Asp Ser Leu
                325                 330                 335

Gln Asp Glu Ser Gln Gly Ser His Ser Glu Ser Ser Ser Asn Pro Ser
            340                 345                 350

Asn Pro Glu Thr Leu His Ala Lys Ala Thr Asp Ser Val Leu Gln Gly
        355                 360                 365

Ser Glu Gly Asn Lys Val Lys Arg Thr Ser Cys Met Tyr Gly Ala Asn
    370                 375                 380

Cys Tyr Arg Lys Asn Pro Val His Phe Gln His Phe Ser His Pro Gly
385                 390                 395                 400

Asp Ser Asp Tyr Gly Gly Val Gln Ile Val Gly Gln Asp Glu Thr Asp
                405                 410                 415

Asp Arg Pro Glu Cys Pro Tyr Gly Pro Ser Cys Tyr Arg Lys Asn Pro
            420                 425                 430

Gln His Lys Ile Glu Tyr Arg His Asn Thr Leu Pro Val Arg Asn Val
        435                 440                 445

Leu Asp Glu Asp Asn Asp Asn Val Gly Gln Pro Asn Glu Tyr Asp Leu
    450                 455                 460

Asn Asp Ser Phe Leu Asp Asp Glu Glu Glu Asp Tyr Glu Pro Thr Asp
465                 470                 475                 480

Glu Asp Ser Asp Trp Glu Pro Gly Lys Glu Asp Glu Glu Lys Glu Asp
                485                 490                 495
```

Val Glu Glu Leu Leu Lys Glu Ala Lys Arg Phe Met Lys Arg Lys
500 505 510

<210> 5932
<211> 393
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1291; "

<220>
<221> source
<223> /note="Gene Symbol: APLF; "

<220>
<221> source
<223> /note="Gene Name:
apratаxin and PNKP like
factor; "

<220>
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<223> /note="ENSP ID: ENSP00000377874"

<400> 5932
Met Glu Thr Thr Met Gly Phe Met Asp Asp Asn Ala Thr Asn Thr Ser
1 5 10 15

Thr Ser Phe Leu Ser Val Leu Asn Pro His Gly Ala His Ala Thr Ser
20 25 30

Phe Pro Phe Asn Phe Ser Tyr Ser Asp Tyr Asp Met Pro Leu Asp Glu
35 40 45

Asp Glu Asp Val Thr Asn Ser Arg Thr Phe Phe Ala Ala Lys Ile Val
50 55 60

Ile Gly Met Ala Leu Val Gly Ile Met Leu Val Cys Gly Ile Gly Asn
65 70 75 80

Phe Ile Phe Ile Ala Ala Leu Val Arg Tyr Lys Lys Leu Arg Asn Leu
85 90 95

Thr Asn Leu Leu Ile Ala Asn Leu Ala Ile Ser Asp Phe Leu Val Ala
100 105 110

Ile Val Cys Cys Pro Phe Glu Met Asp Tyr Tyr Val Val Arg Gln Leu

```
        115                 120                 125

Ser Trp Glu His Gly His Val Leu Cys Thr Ser Val Asn Tyr Leu Arg
    130                 135                 140

Thr Val Ser Leu Tyr Val Ser Thr Asn Ala Leu Leu Ala Ile Ala Ile
145                 150                 155                 160

Asp Arg Tyr Leu Ala Ile Val His Pro Leu Arg Pro Arg Met Lys Cys
                165                 170                 175

Gln Thr Ala Thr Gly Leu Ile Ala Leu Val Trp Thr Val Ser Ile Leu
            180                 185                 190

Ile Ala Ile Pro Ser Ala Tyr Phe Thr Thr Glu Thr Val Leu Val Ile
        195                 200                 205

Val Lys Ser Gln Glu Lys Ile Phe Cys Gly Gln Ile Trp Pro Val Asp
    210                 215                 220

Gln Gln Leu Tyr Tyr Lys Ser Tyr Phe Leu Phe Ile Phe Gly Ile Glu
225                 230                 235                 240

Phe Val Gly Pro Val Val Thr Met Thr Leu Cys Tyr Ala Arg Ile Ser
                245                 250                 255

Arg Glu Leu Trp Phe Lys Ala Val Pro Gly Phe Gln Thr Glu Gln Ile
            260                 265                 270

Arg Lys Arg Leu Arg Cys Arg Arg Lys Thr Val Leu Val Leu Met Cys
        275                 280                 285

Ile Leu Thr Ala Tyr Val Leu Cys Trp Ala Pro Phe Tyr Gly Phe Thr
    290                 295                 300

Ile Val Arg Asp Phe Phe Pro Thr Val Phe Val Lys Glu Lys His Tyr
305                 310                 315                 320

Leu Thr Ala Phe Tyr Ile Val Glu Cys Ile Ala Met Ser Asn Ser Met
                325                 330                 335

Ile Asn Thr Leu Cys Phe Val Thr Val Lys Asn Asp Thr Val Lys Tyr
            340                 345                 350
```

```
Phe Lys Lys Ile Met Leu Leu His Trp Lys Ala Ser Tyr Asn Gly Gly
        355                 360                 365

Lys Ser Ser Ala Asp Leu Asp Leu Lys Thr Ile Gly Met Pro Ala Thr
    370                 375                 380

Glu Glu Val Asp Cys Ile Arg Leu Lys
385                 390


<210> 5933
<211> 280
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1291; "

<220>
<221> source
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<220>
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<223> /note="Gene Name:
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      factor; "

<220>
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<223> /note="ENSP ID: ENSP00000393403"

<400> 5933
Met Ser Gly Gly Phe Glu Leu Gln Pro Arg Asp Gly Gly Pro Arg Val
1               5                   10                  15

Ala Leu Ala Pro Gly Glu Thr Val Ile Gly Arg Gly Pro Leu Leu Gly
            20                  25                  30

Ile Thr Asp Lys Arg Val Ser Arg Arg His Ala Ile Leu Glu Val Ala
        35                  40                  45

Gly Gly Gln Leu Arg Ile Lys Pro Ile His Thr Asn Pro Cys Phe Tyr
    50                  55                  60

Gln Ser Ser Glu Lys Ser Gln Leu Leu Pro Leu Lys Pro Asn Leu Trp
65                  70                  75                  80
```

```
Cys Tyr Leu Asn Pro Gly Asp Ser Phe Ser Leu Leu Val Asp Lys Tyr
                85                  90                  95

Ile Phe Arg Ile Leu Ser Ile Pro Ser Glu Val Glu Met Gln Cys Thr
            100                 105                 110

Leu Arg Asn Ser Gln Val Leu Asp Glu Asp Asn Ile Leu Asn Glu Thr
        115                 120                 125

Pro Lys Ser Pro Val Ile Asn Leu Pro His Glu Thr Thr Gly Ala Ser
    130                 135                 140

Gln Leu Glu Gly Ser Thr Glu Ile Ala Lys Thr Gln Met Thr Pro Thr
145                 150                 155                 160

Asn Ser Val Ser Phe Leu Gly Glu Asn Arg Asp Cys Asn Lys Gln Gln
                165                 170                 175

Pro Ile Leu Ala Glu Arg Lys Arg Ile Leu Pro Thr Trp Met Leu Ala
            180                 185                 190

Glu His Leu Ser Asp Gln Asn Leu Ser Val Pro Ala Ile Ser Gly Gly
        195                 200                 205

Asn Val Ile Gln Gly Ser Gly Lys Glu Glu Ile Cys Lys Asp Lys Ser
    210                 215                 220

Gln Leu Asn Thr Thr Gln Gln Gly Arg Arg Gln Leu Ile Ser Ser Gly
225                 230                 235                 240

Ser Ser Glu Asn Thr Ser Ala Glu Gln Asp Thr Gly Glu Glu Cys Lys
                245                 250                 255

Asn Thr Asp Gln Glu Glu Ser Thr Ile Ser Ser Lys Met Leu Ile Val
            260                 265                 270

Lys Asn Gly Ser Ile Arg Ser Ile
        275                 280
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<210> 5934
<211> 185
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1291; "

<220>
<221> source
<223> /note="Gene Symbol: APLF; "

<220>
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<223> /note="Gene Name:
apratаxin and PNKP like
factor; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000432297"

<400> 5934
Met Ser Gly Gly Phe Glu Leu Gln Pro Arg Asp Gly Gly Pro Arg Val
1 5 10 15

Ala Leu Ala Pro Gly Glu Thr Val Ile Gly Arg Gly Pro Leu Leu Gly
20 25 30

Ile His Thr Asn Pro Cys Phe Tyr Gln Ser Ser Glu Lys Ser Gln Leu
35 40 45

Leu Pro Leu Lys Pro Asn Leu Trp Cys Tyr Leu Asn Pro Gly Asp Ser
50 55 60

Phe Ser Leu Leu Val Asp Lys Tyr Ile Phe Arg Ile Leu Ser Ile Pro
65 70 75 80

Ser Glu Val Glu Met Gln Cys Thr Leu Arg Asn Ser Gln Val Leu Asp
85 90 95

Glu Asp Asn Ile Leu Asn Glu Thr Pro Lys Ser Pro Val Ile Asn Leu
100 105 110

Pro His Glu Thr Thr Gly Ala Ser Gln Leu Glu Gly Ser Thr Glu Ile
115 120 125

Ala Lys Thr Gln Met Thr Pro Thr Asn Ser Val Ser Phe Leu Gly Glu
130 135 140

Asn Arg Asp Cys Asn Lys Gln Gln Pro Ile Leu Ala Glu Arg Lys Arg

```
145                 150                 155                 160

Ile Leu Pro Thr Trp Met Leu Ala Glu His Leu Ser Asp Gln Asn Leu
                165                 170                 175

Ser Val Pro Ala Ile Ser Gly Gly Arg
            180                 185


<210> 5935
<211> 269
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1292; "

<220>
<221> source
<223> /note="Gene Symbol: AQP1; "

<220>
<221> source
<223> /note="Gene Name:
      aquaporin 1 (Colton
      blood group); "

<220>
<221> source
<223> /note="Uniprot ID:  P29972; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000311165"

<400> 5935
Met Ala Ser Glu Phe Lys Lys Lys Leu Phe Trp Arg Ala Val Val Ala
1               5                   10                  15

Glu Phe Leu Ala Thr Thr Leu Phe Val Phe Ile Ser Ile Gly Ser Ala
            20                  25                  30

Leu Gly Phe Lys Tyr Pro Val Gly Asn Asn Gln Thr Ala Val Gln Asp
        35                  40                  45

Asn Val Lys Val Ser Leu Ala Phe Gly Leu Ser Ile Ala Thr Leu Ala
    50                  55                  60

Gln Ser Val Gly His Ile Ser Gly Ala His Leu Asn Pro Ala Val Thr
65                  70                  75                  80
```

```
Leu Gly Leu Leu Leu Ser Cys Gln Ile Ser Ile Phe Arg Ala Leu Met
                85                  90                  95

Tyr Ile Ile Ala Gln Cys Val Gly Ala Ile Val Ala Thr Ala Ile Leu
            100                 105                 110

Ser Gly Ile Thr Ser Ser Leu Thr Gly Asn Ser Leu Gly Arg Asn Asp
        115                 120                 125

Leu Ala Asp Gly Val Asn Ser Gly Gln Gly Leu Gly Ile Glu Ile Ile
    130                 135                 140

Gly Thr Leu Gln Leu Val Leu Cys Val Leu Ala Thr Thr Asp Arg Arg
145                 150                 155                 160

Arg Arg Asp Leu Gly Gly Ser Ala Pro Leu Ala Ile Gly Leu Ser Val
                165                 170                 175

Ala Leu Gly His Leu Leu Ala Ile Asp Tyr Thr Gly Cys Gly Ile Asn
            180                 185                 190

Pro Ala Arg Ser Phe Gly Ser Ala Val Ile Thr His Asn Phe Ser Asn
        195                 200                 205

His Trp Ile Phe Trp Val Gly Pro Phe Ile Gly Gly Ala Leu Ala Val
    210                 215                 220

Leu Ile Tyr Asp Phe Ile Leu Ala Pro Arg Ser Ser Asp Leu Thr Asp
225                 230                 235                 240

Arg Val Lys Val Trp Thr Ser Gly Gln Val Glu Glu Tyr Asp Leu Asp
                245                 250                 255

Ala Asp Asp Ile Asn Ser Arg Val Glu Met Lys Pro Lys
            260                 265
```

<210> 5936
<211> 154
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1292; "

<220>
<221> source
<223> /note="Gene Symbol: AQP1; "

<220>
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<223> /note="Gene Name:
aquaporin 1 (Colton
blood group); "

<220>
<221> source
<223> /note="Uniprot ID: P29972; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000386712"

<400> 5936

```
Met Gln Ser Gly Met Gly Trp Asn Val Leu Asp Phe Trp Leu Ala Asp
1               5                  10                  15

Gly Val Asn Ser Gly Gln Gly Leu Gly Ile Glu Ile Ile Gly Thr Leu
            20                  25                  30

Gln Leu Val Leu Cys Val Leu Ala Thr Thr Asp Arg Arg Arg Arg Asp
        35                  40                  45

Leu Gly Gly Ser Ala Pro Leu Ala Ile Gly Leu Ser Val Ala Leu Gly
    50                  55                  60

His Leu Leu Ala Ile Asp Tyr Thr Gly Cys Gly Ile Asn Pro Ala Arg
65                  70                  75                  80

Ser Phe Gly Ser Ala Val Ile Thr His Asn Phe Ser Asn His Trp Ile
                85                  90                  95

Phe Trp Val Gly Pro Phe Ile Gly Gly Ala Leu Ala Val Leu Ile Tyr
            100                 105                 110

Asp Phe Ile Leu Ala Pro Arg Ser Ser Asp Leu Thr Asp Arg Val Lys
        115                 120                 125

Val Trp Thr Ser Gly Gln Val Glu Glu Tyr Asp Leu Asp Ala Asp Asp
    130                 135                 140
```

```
Ile Asn Ser Arg Val Glu Met Lys Pro Lys
145                 150


<210> 5937
<211> 218
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1292; "

<220>
<221> source
<223> /note="Gene Symbol: AQP1; "

<220>
<221> source
<223> /note="Gene Name:
      aquaporin 1 (Colton
      blood group); "

<220>
<221> source
<223> /note="Uniprot ID:  P29972; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000387178"

<400> 5937
Met Phe Trp Thr Phe Gly Tyr Glu Ala Val Ser Pro Ala Gly Pro Ser
1               5                   10                  15


His Leu Phe Ala Ser Leu Leu Leu Gly Val Leu Leu Thr Ile Thr Phe
            20                  25                  30


Met Pro Gly Ala Arg Pro Leu Pro Leu Val Leu Val Pro Gln Asn Thr
        35                  40                  45


Leu Ala Trp Met Gln Leu Asp Ala Lys Ala Pro Ala His Pro Arg Pro
    50                  55                  60


Leu Gln Leu Leu Gly Arg Val Gly Pro Gly Ser Arg Gln Leu Ala Asp
65                  70                  75                  80


Gly Val Asn Ser Gly Gln Gly Leu Gly Ile Glu Ile Ile Gly Thr Leu
                85                  90                  95


Gln Leu Val Leu Cys Val Leu Ala Thr Thr Asp Arg Arg Arg Arg Asp
```

```
            100                 105                 110

Leu Gly Gly Ser Ala Pro Leu Ala Ile Gly Leu Ser Val Ala Leu Gly
        115                 120                 125

His Leu Leu Ala Ile Asp Tyr Thr Gly Cys Gly Ile Asn Pro Ala Arg
    130                 135                 140

Ser Phe Gly Ser Ala Val Ile Thr His Asn Phe Ser Asn His Trp Ile
145                 150                 155                 160

Phe Trp Val Gly Pro Phe Ile Gly Gly Ala Leu Ala Val Leu Ile Tyr
                165                 170                 175

Asp Phe Ile Leu Ala Pro Arg Ser Ser Asp Leu Thr Asp Arg Val Lys
            180                 185                 190

Val Trp Thr Ser Gly Gln Val Glu Glu Tyr Asp Leu Asp Ala Asp Asp
        195                 200                 205

Ile Asn Ser Arg Val Glu Met Lys Pro Lys
    210                 215


<210> 5938
<211> 186
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1292; "

<220>
<221> source
<223> /note="Gene Symbol: AQP1; "

<220>
<221> source
<223> /note="Gene Name:
      aquaporin 1 (Colton
      blood group); "

<220>
<221> source
<223> /note="Uniprot ID:  P29972; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000405698"
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<400> 5938
Met Pro Gly Ala Arg Pro Leu Pro Leu Val Leu Val Pro Gln Asn Thr
1 5 10 15

Leu Ala Trp Met Gln Leu Asp Ala Lys Ala Pro Ala His Pro Arg Pro
20 25 30

Leu Gln Leu Leu Gly Arg Val Gly Pro Gly Ser Arg Gln Leu Ala Asp
35 40 45

Gly Val Asn Ser Gly Gln Gly Leu Gly Ile Glu Ile Ile Gly Thr Leu
50 55 60

Gln Leu Val Leu Cys Val Leu Ala Thr Thr Asp Arg Arg Arg Arg Asp
65 70 75 80

Leu Gly Gly Ser Ala Pro Leu Ala Ile Gly Leu Ser Val Ala Leu Gly
85 90 95

His Leu Leu Ala Ile Asp Tyr Thr Gly Cys Gly Ile Asn Pro Ala Arg
100 105 110

Ser Phe Gly Ser Ala Val Ile Thr His Asn Phe Ser Asn His Trp Ile
115 120 125

Phe Trp Val Gly Pro Phe Ile Gly Gly Ala Leu Ala Val Leu Ile Tyr
130 135 140

Asp Phe Ile Leu Ala Pro Arg Ser Ser Asp Leu Thr Asp Arg Val Lys
145 150 155 160

Val Trp Thr Ser Gly Gln Val Glu Glu Tyr Asp Leu Asp Ala Asp Asp
165 170 175

Ile Asn Ser Arg Val Glu Met Lys Pro Lys
180 185

<210> 5939
<211> 301
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1293; "

<220>
<221> source
<223> /note="Gene Symbol: AQP10; "

<220>
<221> source
<223> /note="Gene Name:
aquaporin 10; "

<220>
<221> source
<223> /note="Uniprot ID: Q96PS8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000318355"

<400> 5939

```
Met Val Phe Thr Gln Ala Pro Ala Glu Ile Met Gly His Leu Arg Ile
1               5                  10                  15

Arg Ser Leu Leu Ala Arg Gln Cys Leu Ala Glu Phe Leu Gly Val Phe
            20                  25                  30

Val Leu Met Leu Leu Thr Gln Gly Ala Val Ala Gln Ala Val Thr Ser
        35                  40                  45

Gly Glu Thr Lys Gly Asn Phe Phe Thr Met Phe Leu Ala Gly Ser Leu
    50                  55                  60

Ala Val Thr Ile Ala Ile Tyr Val Gly Gly Asn Val Ser Gly Ala His
65                  70                  75                  80

Leu Asn Pro Ala Phe Ser Leu Ala Met Cys Ile Val Gly Arg Leu Pro
                85                  90                  95

Trp Val Lys Leu Pro Ile Tyr Ile Leu Val Gln Leu Leu Ser Ala Phe
            100                 105                 110

Cys Ala Ser Gly Ala Thr Tyr Val Leu Tyr His Asp Ala Leu Gln Asn
        115                 120                 125

Tyr Thr Gly Gly Asn Leu Thr Val Thr Gly Pro Lys Glu Thr Ala Ser
    130                 135                 140

Ile Phe Ala Thr Tyr Pro Ala Pro Tyr Leu Ser Leu Asn Asn Gly Phe
```

```
145                 150                 155                 160

Leu Asp Gln Val Leu Gly Thr Gly Met Leu Ile Val Gly Leu Leu Ala
                165                 170                 175

Ile Leu Asp Arg Arg Asn Lys Gly Val Pro Ala Gly Leu Glu Pro Val
            180                 185                 190

Val Val Gly Met Leu Ile Leu Ala Leu Gly Leu Ser Met Gly Ala Asn
        195                 200                 205

Cys Gly Ile Pro Leu Asn Pro Ala Arg Asp Leu Gly Pro Arg Leu Phe
    210                 215                 220

Thr Tyr Val Ala Gly Trp Gly Pro Glu Val Phe Ser Ala Gly Asn Gly
225                 230                 235                 240

Trp Trp Trp Val Pro Val Val Ala Pro Leu Val Gly Ala Thr Val Gly
                245                 250                 255

Thr Ala Thr Tyr Gln Leu Leu Val Ala Leu His His Pro Glu Gly Pro
            260                 265                 270

Glu Pro Ala Gln Asp Leu Val Ser Ala Gln His Lys Ala Ser Glu Leu
        275                 280                 285

Glu Thr Pro Ala Ser Ala Gln Met Leu Glu Cys Lys Leu
    290                 295                 300


<210> 5940
<211> 264
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1293; "

<220>
<221> source
<223> /note="Gene Symbol: AQP10; "

<220>
<221> source
<223> /note="Gene Name:
      aquaporin 10; "
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<220>
<221> source
<223> /note="Uniprot ID: Q96PS8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420341"

<400> 5940
Met Val Phe Thr Gln Ala Pro Ala Glu Ile Met Gly His Leu Arg Ile
1   5   10   15

Arg Ser Leu Leu Ala Arg Gln Cys Leu Ala Glu Phe Leu Gly Val Phe
            20   25   30

Val Leu Met Leu Leu Thr Gln Gly Ala Val Ala Gln Ala Val Thr Ser
        35   40   45

Gly Glu Thr Lys Gly Asn Phe Phe Thr Met Phe Leu Ala Gly Ser Leu
    50   55   60

Ala Val Thr Ile Ala Ile Tyr Val Gly Gly Asn Val Ser Gly Ala His
65   70   75   80

Leu Asn Pro Ala Phe Ser Leu Ala Met Cys Ile Val Gly Arg Leu Pro
                85   90   95

Trp Val Lys Leu Pro Ile Tyr Ile Leu Val Gln Leu Leu Ser Ala Phe
            100   105   110

Cys Ala Ser Gly Ala Thr Tyr Val Leu Tyr His Asp Ala Leu Gln Asn
        115   120   125

Tyr Thr Gly Gly Asn Leu Thr Val Thr Gly Pro Lys Glu Thr Ala Ser
    130   135   140

Ile Phe Ala Thr Tyr Pro Ala Pro Tyr Leu Ser Leu Asn Asn Gly Phe
145   150   155   160

Leu Asp Gln Val Leu Gly Thr Gly Met Leu Ile Val Gly Leu Leu Ala
                165   170   175

Ile Leu Asp Arg Arg Asn Lys Gly Val Pro Ala Gly Leu Glu Pro Val
            180   185   190

```
Val Val Gly Met Leu Ile Leu Ala Leu Gly Leu Ser Met Gly Ala Asn
        195                 200                 205


Cys Gly Ile Pro Leu Asn Pro Ala Arg Asp Leu Gly Pro Arg Leu Phe
    210                 215                 220


Thr Tyr Val Ala Gly Trp Gly Pro Glu Val Phe Arg Trp Glu Thr Asp
225                 230                 235                 240


Ser Pro Gly Ala Gly Leu His Ser Pro Ser Ser Ala Lys Gly Ser Val
                245                 250                 255


Pro Gly Ser Thr Ala Leu Cys Leu
            260


<210> 5941
<211> 271
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1294; "

<220>
<221> source
<223> /note="Gene Symbol: AQP11; "

<220>
<221> source
<223> /note="Gene Name:
      aquaporin 11; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8NBQ7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000318770"

<400> 5941
Met Ser Pro Leu Leu Gly Leu Arg Ser Glu Leu Gln Asp Thr Cys Thr
1               5                   10                  15


Ser Leu Gly Leu Met Leu Ser Val Val Leu Leu Met Gly Leu Ala Arg
            20                  25                  30


Val Val Ala Arg Gln Gln Leu His Arg Pro Val Ala His Ala Phe Val
        35                  40                  45
```

```
Leu Glu Phe Leu Ala Thr Phe Gln Leu Cys Cys Cys Thr His Glu Leu
    50                  55                  60

Gln Leu Leu Ser Glu Gln His Pro Ala His Pro Thr Trp Thr Leu Thr
65                  70                  75                  80

Leu Val Tyr Phe Phe Ser Leu Val His Gly Leu Thr Leu Val Gly Thr
                85                  90                  95

Ser Ser Asn Pro Cys Gly Val Met Met Gln Met Met Leu Gly Gly Met
            100                 105                 110

Ser Pro Glu Thr Gly Ala Val Arg Leu Leu Ala Gln Leu Val Ser Ala
        115                 120                 125

Leu Cys Ser Arg Tyr Cys Thr Ser Ala Leu Trp Ser Leu Gly Leu Thr
    130                 135                 140

Gln Tyr His Val Ser Glu Arg Ser Phe Ala Cys Lys Asn Pro Ile Arg
145                 150                 155                 160

Val Asp Leu Leu Lys Ala Val Ile Thr Glu Ala Val Cys Ser Phe Leu
                165                 170                 175

Phe His Ser Ala Leu Leu His Phe Gln Glu Val Arg Thr Lys Leu Arg
            180                 185                 190

Ile His Leu Leu Ala Ala Leu Ile Thr Phe Leu Val Tyr Ala Gly Gly
        195                 200                 205

Ser Leu Thr Gly Ala Val Phe Asn Pro Ala Leu Ala Leu Ser Leu His
    210                 215                 220

Phe Met Cys Phe Asp Glu Ala Phe Pro Gln Phe Phe Ile Val Tyr Trp
225                 230                 235                 240

Leu Ala Pro Ser Leu Gly Ile Leu Leu Met Ile Leu Met Phe Ser Phe
                245                 250                 255

Phe Leu Pro Trp Leu His Asn Asn His Thr Ile Asn Lys Lys Glu
            260                 265                 270
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<210> 5942
<211> 295
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1295; "

<220>
<221> source
<223> /note="Gene Symbol: AQP12A; "

<220>
<221> source
<223> /note="Gene Name:
aquaporin 12A; "

<220>
<221> source
<223> /note="Uniprot ID: Q8IXF9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000337144"

<400> 5942
Met Ala Gly Leu Asn Val Ser Leu Ser Phe Phe Phe Ala Thr Phe Ala
1   5   10   15

Leu Cys Glu Ala Ala Arg Arg Ala Ser Lys Ala Leu Leu Pro Val Gly
            20   25   30

Ala Tyr Glu Val Phe Ala Arg Glu Ala Met Arg Thr Leu Val Glu Leu
        35   40   45

Gly Pro Trp Ala Gly Asp Phe Gly Pro Asp Leu Leu Leu Thr Leu Leu
    50   55   60

Phe Leu Leu Phe Leu Ala His Gly Val Thr Leu Asp Gly Ala Ser Ala
65   70   75   80

Asn Pro Thr Val Ser Leu Gln Glu Phe Leu Met Ala Glu Gln Ser Leu
                85   90   95

Pro Gly Thr Leu Leu Lys Leu Ala Ala Gln Gly Leu Gly Met Gln Ala
            100   105   110

Ala Cys Thr Leu Met Arg Leu Cys Trp Ala Trp Glu Leu Ser Asp Leu

```
        115                 120                 125

His Leu Leu Gln Ser Leu Met Ala Gln Ser Cys Ser Ser Ala Leu Arg
    130                 135                 140

Thr Ser Val Pro His Gly Ala Leu Val Glu Ala Ala Cys Ala Phe Cys
145                 150                 155                 160

Phe His Leu Thr Leu Leu His Leu Arg His Ser Pro Pro Ala Tyr Ser
                165                 170                 175

Gly Pro Ala Val Ala Leu Leu Val Thr Val Thr Ala Tyr Thr Ala Gly
            180                 185                 190

Pro Phe Thr Ser Ala Phe Phe Asn Pro Ala Leu Ala Ala Ser Val Thr
        195                 200                 205

Phe Ala Cys Ser Gly His Thr Leu Leu Glu Tyr Val Gln Val Tyr Trp
    210                 215                 220

Leu Gly Pro Leu Thr Gly Met Val Leu Ala Val Leu Leu His Gln Gly
225                 230                 235                 240

Arg Leu Pro His Leu Phe Gln Arg Asn Leu Phe Tyr Gly Gln Lys Asn
                245                 250                 255

Lys Tyr Arg Ala Pro Arg Gly Lys Pro Ala Pro Ala Ser Gly Asp Thr
            260                 265                 270

Gln Thr Pro Ala Lys Gly Ser Ser Val Arg Glu Pro Gly Arg Ser Gly
        275                 280                 285

Val Glu Gly Pro His Ser Ser
    290                 295


<210> 5943
<211> 307
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1295; "

<220>
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<221> source
<223> /note="Gene Symbol: AQP12A; "

<220>
<221> source
<223> /note="Gene Name:
aquaporin 12A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000405899"

<400> 5943

```
Met Ala Gly Leu Asn Val Ser Leu Ser Phe Phe Phe Ala Thr Phe Ala
1               5                  10                  15

Leu Cys Glu Ala Ala Arg Arg Ala Ser Lys Ala Leu Leu Pro Val Gly
            20                  25                  30

Ala Tyr Glu Val Phe Ala Arg Glu Ala Val Gly Ala Val Gln Leu Gly
        35                  40                  45

Pro Cys Cys Leu Glu Met Arg Thr Leu Val Glu Leu Gly Pro Trp Ala
    50                  55                  60

Gly Asp Phe Gly Pro Asp Leu Leu Leu Thr Leu Leu Phe Leu Leu Phe
65                  70                  75                  80

Leu Ala His Gly Val Thr Leu Asp Gly Ala Ser Ala Asn Pro Thr Val
                85                  90                  95

Ser Leu Gln Glu Phe Leu Met Ala Glu Gln Ser Leu Pro Gly Thr Leu
            100                 105                 110

Leu Lys Leu Ala Ala Gln Gly Leu Gly Met Gln Ala Ala Cys Thr Leu
        115                 120                 125

Met Arg Leu Cys Trp Ala Trp Glu Leu Ser Asp Leu His Leu Leu Gln
    130                 135                 140

Ser Leu Met Ala Gln Ser Cys Ser Ser Ala Leu Arg Thr Ser Val Pro
145                 150                 155                 160

His Gly Ala Leu Val Glu Ala Ala Cys Ala Phe Cys Phe His Leu Thr
                165                 170                 175
```

```
Leu Leu His Leu Arg His Ser Pro Pro Ala Tyr Ser Gly Pro Ala Val
            180                 185                 190

Ala Leu Leu Val Thr Val Thr Ala Tyr Thr Ala Gly Pro Phe Thr Ser
        195                 200                 205

Ala Phe Phe Asn Pro Ala Leu Ala Ala Ser Val Thr Phe Ala Cys Ser
    210                 215                 220

Gly His Thr Leu Leu Glu Tyr Val Gln Val Tyr Trp Leu Gly Pro Leu
225                 230                 235                 240

Thr Gly Met Val Leu Ala Val Leu Leu His Gln Gly Arg Leu Pro His
                245                 250                 255

Leu Phe Gln Arg Asn Leu Phe Tyr Gly Gln Lys Asn Lys Tyr Arg Ala
            260                 265                 270

Pro Arg Gly Lys Pro Ala Pro Ala Ser Gly Asp Thr Gln Thr Pro Ala
        275                 280                 285

Lys Gly Ser Ser Val Arg Glu Pro Gly Arg Ser Gly Val Glu Gly Pro
    290                 295                 300

His Ser Ser
305
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<210> 5944
<211> 307
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1296; "

<220>
<221> source
<223> /note="Gene Symbol: AQP12B; "

<220>
<221> source
<223> /note="Gene Name:
aquaporin 12B; "

<220>
<221> source
<223> /note="Uniprot ID: A6NM10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000384894"

<400> 5944
Met Ala Gly Leu Asn Val Ser Leu Ser Phe Phe Phe Ala Thr Phe Thr
1   5   10   15

Leu Cys Glu Ala Ala Arg Arg Ala Ser Lys Ala Leu Leu Pro Val Gly
            20   25   30

Ala Tyr Glu Val Phe Ala Arg Glu Ala Val Gly Ala Val Gln Leu Gly
        35   40   45

Ala Cys Phe Leu Glu Met Arg Thr Leu Val Glu Leu Gly Pro Trp Ala
    50   55   60

Gly Asp Phe Gly Pro Asp Leu Leu Leu Thr Leu Leu Phe Leu Leu Phe
65   70   75   80

Leu Ala His Gly Val Thr Leu Asp Gly Ala Ser Ala Asn Pro Thr Val
                85   90   95

Ser Leu Gln Glu Phe Leu Met Ala Glu Glu Ser Leu Pro Gly Thr Leu
            100   105   110

Leu Lys Leu Ala Ala Gln Gly Leu Gly Met Gln Ala Ala Cys Thr Leu
        115   120   125

Thr Arg Leu Cys Trp Ala Trp Glu Leu Ser Asp Leu His Leu Leu Gln
    130   135   140

Ser Leu Met Ala Gln Ser Cys Ser Ser Ala Leu Arg Thr Ser Val Pro
145   150   155   160

His Gly Ala Leu Val Glu Ala Ala Cys Ala Phe Cys Phe His Leu Thr
                165   170   175

Leu Leu His Leu Arg His Ser Pro Pro Ala Tyr Ser Gly Pro Ala Val
            180   185   190

Ala Leu Leu Val Thr Val Thr Ala Tyr Thr Ala Gly Pro Phe Thr Ser
        195   200   205

```
Ala Phe Phe Asn Pro Ala Leu Ala Ala Ser Val Thr Phe Ala Cys Ser
    210                 215                 220

Gly His Thr Leu Leu Glu Tyr Val Gln Val Tyr Trp Leu Gly Pro Leu
225                 230                 235                 240

Thr Gly Met Val Leu Ala Val Leu Leu His Gln Gly Arg Leu Pro His
                245                 250                 255

Leu Phe Gln Arg Asn Leu Phe Tyr Gly Gln Lys Asn Lys Tyr Arg Ala
            260                 265                 270

Pro Arg Gly Lys Pro Ala Pro Ala Ser Gly Asp Thr Gln Thr Pro Ala
        275                 280                 285

Lys Gly Ser Ser Val Arg Glu Pro Gly Arg Ser Gly Val Glu Gly Pro
    290                 295                 300

His Ser Ser
305
```

<210> 5945
<211> 41
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1296; "

<220>
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<223> /note="Gene Symbol: AQP12B; "

<220>
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<223> /note="Gene Name:
aquaporin 12B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000391528"

<400> 5945

```
Met Ala Gly Val Pro His Gly Arg Gly Val Ser Ala Trp His Ala Ala
1               5                   10                  15

Glu Ala Gly Gly Thr Gly Ala Gly His Ala Gly Arg Leu His Pro Asp
```

```
            20                  25                  30

Ala Pro Leu Leu Gly Leu Gly Ala Gln
        35                  40


<210> 5946
<211> 41
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1296; "

<220>
<221> source
<223> /note="Gene Symbol: AQP12B; "

<220>
<221> source
<223> /note="Gene Name:
      aquaporin 12B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000395897"

<400> 5946
Met Ala Gly Val Pro His Gly Arg Gly Val Ser Ala Trp His Ala Ala
1               5                   10                  15


Glu Ala Gly Gly Thr Gly Ala Gly His Ala Gly Arg Leu His Pro Asp
            20                  25                  30


Ala Pro Leu Leu Gly Leu Gly Ala Gln
        35                  40


<210> 5947
<211> 41
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1296; "

<220>
<221> source
<223> /note="Gene Symbol: AQP12B; "

<220>
<221> source
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<223> /note="Gene Name:
aquaporin 12B; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000407457"

<400> 5947
Met Ala Gly Val Pro His Gly Arg Gly Val Ser Ala Trp His Ala Ala
1 5 10 15

Glu Ala Gly Gly Thr Gly Ala Gly His Ala Gly Arg Leu His Pro Asp
20 25 30

Ala Pro Leu Leu Gly Leu Gly Ala Gln
35 40

<210> 5948
<211> 295
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: AQP12B; "

<220>
<221> source
<223> /note="Gene Name:
aquaporin 12B; "

<220>
<221> source
<223> /note="Uniprot ID: A6NM10; "

<220>
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<223> /note="ENSP ID: ENSP00000481577"

<400> 5948
Met Ala Gly Leu Asn Val Ser Leu Ser Phe Phe Phe Ala Thr Phe Thr
1 5 10 15

Leu Cys Glu Ala Ala Arg Arg Ala Ser Lys Ala Leu Leu Pro Val Gly
20 25 30

Ala Tyr Glu Val Phe Ala Arg Glu Ala Met Arg Thr Leu Val Glu Leu
35 40 45

```
Gly Pro Trp Ala Gly Asp Phe Gly Pro Asp Leu Leu Leu Thr Leu Leu
    50                  55                  60

Phe Leu Leu Phe Leu Ala His Gly Val Thr Leu Asp Gly Ala Ser Ala
65                  70                  75                  80

Asn Pro Thr Val Ser Leu Gln Glu Phe Leu Met Ala Glu Glu Ser Leu
                85                  90                  95

Pro Gly Thr Leu Leu Lys Leu Ala Ala Gln Gly Leu Gly Met Gln Ala
            100                 105                 110

Ala Cys Thr Leu Thr Arg Leu Cys Trp Ala Trp Glu Leu Ser Asp Leu
        115                 120                 125

His Leu Leu Gln Ser Leu Met Ala Gln Ser Cys Ser Ser Ala Leu Arg
    130                 135                 140

Thr Ser Val Pro His Gly Ala Leu Val Glu Ala Ala Cys Ala Phe Cys
145                 150                 155                 160

Phe His Leu Thr Leu Leu His Leu Arg His Ser Pro Pro Ala Tyr Ser
                165                 170                 175

Gly Pro Ala Val Ala Leu Leu Val Thr Val Thr Ala Tyr Thr Ala Gly
            180                 185                 190

Pro Phe Thr Ser Ala Phe Phe Asn Pro Ala Leu Ala Ala Ser Val Thr
        195                 200                 205

Phe Ala Cys Ser Gly His Thr Leu Leu Glu Tyr Val Gln Val Tyr Trp
    210                 215                 220

Leu Gly Pro Leu Thr Gly Met Val Leu Ala Val Leu Leu His Gln Gly
225                 230                 235                 240

Arg Leu Pro His Leu Phe Gln Arg Asn Leu Phe Tyr Gly Gln Lys Asn
                245                 250                 255

Lys Tyr Arg Ala Pro Arg Gly Lys Pro Ala Pro Ala Ser Gly Asp Thr
            260                 265                 270
```

```
Gln Thr Pro Ala Lys Gly Ser Ser Val Arg Glu Pro Gly Arg Ser Gly
        275                 280                 285


Val Glu Gly Pro His Ser Ser
    290                 295


<210> 5949
<211> 271
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1297; "

<220>
<221> source
<223> /note="Gene Symbol: AQP2; "

<220>
<221> source
<223> /note="Gene Name:
      aquaporin 2 (collecting duct); "

<220>
<221> source
<223> /note="Uniprot ID:  P41181; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000199280"

<400> 5949
Met Trp Glu Leu Arg Ser Ile Ala Phe Ser Arg Ala Val Phe Ala Glu
1               5                   10                  15


Phe Leu Ala Thr Leu Leu Phe Val Phe Phe Gly Leu Gly Ser Ala Leu
            20                  25                  30


Asn Trp Pro Gln Ala Leu Pro Ser Val Leu Gln Ile Ala Met Ala Phe
        35                  40                  45


Gly Leu Gly Ile Gly Thr Leu Val Gln Ala Leu Gly His Ile Ser Gly
    50                  55                  60


Ala His Ile Asn Pro Ala Val Thr Val Ala Cys Leu Val Gly Cys His
65                  70                  75                  80


Val Ser Val Leu Arg Ala Ala Phe Tyr Val Ala Ala Gln Leu Leu Gly
```

```
                85                  90                  95

Ala Val Ala Gly Ala Ala Leu Leu His Glu Ile Thr Pro Ala Asp Ile
            100                 105                 110

Arg Gly Asp Leu Ala Val Asn Ala Leu Ser Asn Ser Thr Thr Ala Gly
        115                 120                 125

Gln Ala Val Thr Val Glu Leu Phe Leu Thr Leu Gln Leu Val Leu Cys
    130                 135                 140

Ile Phe Ala Ser Thr Asp Glu Arg Arg Gly Glu Asn Pro Gly Thr Pro
145                 150                 155                 160

Ala Leu Ser Ile Gly Phe Ser Val Ala Leu Gly His Leu Leu Gly Ile
                165                 170                 175

His Tyr Thr Gly Cys Ser Met Asn Pro Ala Arg Ser Leu Ala Pro Ala
            180                 185                 190

Val Val Thr Gly Lys Phe Asp Asp His Trp Val Phe Trp Ile Gly Pro
        195                 200                 205

Leu Val Gly Ala Ile Leu Gly Ser Leu Leu Tyr Asn Tyr Val Leu Phe
    210                 215                 220

Pro Pro Ala Lys Ser Leu Ser Glu Arg Leu Ala Val Leu Lys Gly Leu
225                 230                 235                 240

Glu Pro Asp Thr Asp Trp Glu Glu Arg Glu Val Arg Arg Arg Gln Ser
                245                 250                 255

Val Glu Leu His Ser Pro Gln Ser Leu Pro Arg Gly Thr Lys Ala
            260                 265                 270


<210> 5950
<211> 223
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1297; "

<220>
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<221> source
<223> /note="Gene Symbol: AQP2; "

<220>
<221> source
<223> /note="Gene Name:
aquaporin 2 (collecting duct); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000447148"

<400> 5950

```
Met Trp Glu Leu Arg Ser Ile Ala Phe Ser Arg Ala Val Phe Ala Glu
1               5                  10                  15

Phe Leu Ala Thr Leu Leu Phe Val Phe Phe Gly Leu Gly Ser Ala Leu
            20                  25                  30

Asn Trp Pro Gln Ala Leu Pro Ser Val Leu Gln Ile Ala Met Ala Phe
        35                  40                  45

Gly Leu Gly Ile Gly Thr Leu Val Gln Ala Leu Gly His Ile Ser Gly
    50                  55                  60

Ala His Ile Asn Pro Ala Val Thr Val Ala Cys Leu Val Gly Cys His
65                  70                  75                  80

Val Ser Val Leu Arg Ala Ala Phe Tyr Val Ala Ala Gln Leu Leu Gly
                85                  90                  95

Ala Val Ala Gly Ala Ala Leu Leu His Glu Ile Thr Pro Ala Asp Ile
            100                 105                 110

Arg Gly Asp Leu Ala Val Asn Ala Leu Ser Asn Ser Thr Thr Ala Gly
        115                 120                 125

Gln Ala Val Thr Val Glu Leu Phe Leu Thr Leu Gln Leu Val Leu Cys
    130                 135                 140

Ile Phe Ala Ser Thr Asp Glu Arg Arg Gly Glu Asn Pro Gly Thr Pro
145                 150                 155                 160

Ala Leu Ser Ile Gly Phe Ser Val Ala Leu Gly His Leu Leu Gly Ile
                165                 170                 175
```

```
His Tyr Thr Gly Cys Ser Met Asn Pro Ala Arg Ser Leu Ala Pro Ala
            180                 185                 190

Val Val Thr Gly Lys Phe Asp Asp His Trp Val Phe Trp Ile Gly Pro
        195                 200                 205

Leu Val Gly Ser Pro Glu Pro Gly Arg Ser Pro Ala Leu Arg Leu
    210                 215                 220


<210> 5951
<211> 244
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1297; "

<220>
<221> source
<223> /note="Gene Symbol: AQP2; "

<220>
<221> source
<223> /note="Gene Name:
      aquaporin 2 (collecting duct); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000450022"

<400> 5951
Met Trp Glu Leu Arg Ser Ile Ala Phe Ser Arg Ala Val Phe Ala Glu
1               5                   10                  15

Phe Leu Ala Thr Leu Leu Phe Val Phe Phe Gly Leu Gly Ser Ala Leu
            20                  25                  30

Asn Trp Pro Gln Ala Leu Pro Ser Val Leu Gln Ile Ala Met Ala Phe
        35                  40                  45

Gly Leu Gly Ile Gly Thr Leu Val Gln Ala Leu Gly His Ile Ser Gly
    50                  55                  60

Ala His Ile Asn Pro Ala Val Thr Val Ala Cys Leu Val Gly Cys His
65                  70                  75                  80

Val Ser Val Leu Arg Ala Ala Phe Tyr Val Ala Ala Gln Leu Leu Gly
                85                  90                  95
```

```
Ala Val Ala Gly Ala Ala Leu Leu His Glu Ile Thr Pro Ala Asp Ile
            100                 105                 110

Arg Gly Asp Leu Ala Val Asn Ala Leu Ser Asn Ser Thr Thr Ala Gly
        115                 120                 125

Gln Ala Val Thr Val Glu Leu Phe Leu Thr Leu Gln Leu Val Leu Cys
    130                 135                 140

Ile Phe Ala Ser Thr Asp Glu Arg Arg Gly Glu Asn Pro Gly Thr Pro
145                 150                 155                 160

Ala Leu Ser Ile Gly Phe Ser Val Ala Leu Gly His Leu Leu Gly Val
                165                 170                 175

Gly His Gly His Gly Phe Gln Pro Pro Trp Arg Asn Arg His Thr Asp
            180                 185                 190

His Ser Arg Asp Arg His Arg Asp Pro Lys Arg Asp Thr Tyr Thr Glu
        195                 200                 205

Leu Ser Arg Gly Thr Asp Thr Pro Glu Ile His Tyr Thr Gly Cys Ser
    210                 215                 220

Met Asn Pro Ala Arg Ser Leu Ala Pro Ala Val Val Thr Gly Lys Phe
225                 230                 235                 240

Asp Asp His Trp
```

<210> 5952
<211> 292
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1298; "

<220>
<221> source
<223> /note="Gene Symbol: AQP3; "

<220>
<221> source

<223> /note="Gene Name:
aquaporin 3 (Gill
blood group); "

<220>
<221> source
<223> /note="Uniprot ID: Q92482; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000297991"

<400> 5952

```
Met Gly Arg Gln Lys Glu Leu Val Ser Arg Cys Gly Glu Met Leu His
1               5                  10                  15

Ile Arg Tyr Arg Leu Leu Arg Gln Ala Leu Ala Glu Cys Leu Gly Thr
            20                  25                  30

Leu Ile Leu Val Met Phe Gly Cys Gly Ser Val Ala Gln Val Val Leu
        35                  40                  45

Ser Arg Gly Thr His Gly Gly Phe Leu Thr Ile Asn Leu Ala Phe Gly
    50                  55                  60

Phe Ala Val Thr Leu Gly Ile Leu Ile Ala Gly Gln Val Ser Gly Ala
65                  70                  75                  80

His Leu Asn Pro Ala Val Thr Phe Ala Met Cys Phe Leu Ala Arg Glu
                85                  90                  95

Pro Trp Ile Lys Leu Pro Ile Tyr Thr Leu Ala Gln Thr Leu Gly Ala
            100                 105                 110

Phe Leu Gly Ala Gly Ile Val Phe Gly Leu Tyr Tyr Asp Ala Ile Trp
        115                 120                 125

His Phe Ala Asp Asn Gln Leu Phe Val Ser Gly Pro Asn Gly Thr Ala
    130                 135                 140

Gly Ile Phe Ala Thr Tyr Pro Ser Gly His Leu Asp Met Ile Asn Gly
145                 150                 155                 160

Phe Phe Asp Gln Phe Ile Gly Thr Ala Ser Leu Ile Val Cys Val Leu
                165                 170                 175
```

```
Ala Ile Val Asp Pro Tyr Asn Asn Pro Val Pro Arg Gly Leu Glu Ala
            180                 185                 190

Phe Thr Val Gly Leu Val Val Leu Val Ile Gly Thr Ser Met Gly Phe
        195                 200                 205

Asn Ser Gly Tyr Ala Val Asn Pro Ala Arg Asp Phe Gly Pro Arg Leu
    210                 215                 220

Phe Thr Ala Leu Ala Gly Trp Gly Ser Ala Val Phe Thr Thr Gly Gln
225                 230                 235                 240

His Trp Trp Trp Val Pro Ile Val Ser Pro Leu Leu Gly Ser Ile Ala
                245                 250                 255

Gly Val Phe Val Tyr Gln Leu Met Ile Gly Cys His Leu Glu Gln Pro
            260                 265                 270

Pro Pro Ser Asn Glu Glu Glu Asn Val Lys Leu Ala His Val Lys His
        275                 280                 285

Lys Glu Gln Ile
    290


<210> 5953
<211> 323
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1299; "

<220>
<221> source
<223> /note="Gene Symbol: AQP4; "

<220>
<221> source
<223> /note="Gene Name:
      aquaporin 4; "

<220>
<221> source
<223> /note="Uniprot ID:  P55087; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000372654"
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<400> 5953
Met Ser Asp Arg Pro Thr Ala Arg Arg Trp Gly Lys Cys Gly Pro Leu
1 5 10 15

Cys Thr Arg Glu Asn Ile Met Val Ala Phe Lys Gly Val Trp Thr Gln
20 25 30

Ala Phe Trp Lys Ala Val Thr Ala Glu Phe Leu Ala Met Leu Ile Phe
35 40 45

Val Leu Leu Ser Leu Gly Ser Thr Ile Asn Trp Gly Gly Thr Glu Lys
50 55 60

Pro Leu Pro Val Asp Met Val Leu Ile Ser Leu Cys Phe Gly Leu Ser
65 70 75 80

Ile Ala Thr Met Val Gln Cys Phe Gly His Ile Ser Gly Gly His Ile
85 90 95

Asn Pro Ala Val Thr Val Ala Met Val Cys Thr Arg Lys Ile Ser Ile
100 105 110

Ala Lys Ser Val Phe Tyr Ile Ala Ala Gln Cys Leu Gly Ala Ile Ile
115 120 125

Gly Ala Gly Ile Leu Tyr Leu Val Thr Pro Pro Ser Val Val Gly Gly
130 135 140

Leu Gly Val Thr Met Val His Gly Asn Leu Thr Ala Gly His Gly Leu
145 150 155 160

Leu Val Glu Leu Ile Ile Thr Phe Gln Leu Val Phe Thr Ile Phe Ala
165 170 175

Ser Cys Asp Ser Lys Arg Thr Asp Val Thr Gly Ser Ile Ala Leu Ala
180 185 190

Ile Gly Phe Ser Val Ala Ile Gly His Leu Phe Ala Ile Asn Tyr Thr
195 200 205

Gly Ala Ser Met Asn Pro Ala Arg Ser Phe Gly Pro Ala Val Ile Met
210 215 220

```
Gly Asn Trp Glu Asn His Trp Ile Tyr Trp Val Gly Pro Ile Ile Gly
225                 230                 235                 240

Ala Val Leu Ala Gly Gly Leu Tyr Glu Tyr Val Phe Cys Pro Asp Val
                245                 250                 255

Glu Phe Lys Arg Arg Phe Lys Glu Ala Phe Ser Lys Ala Ala Gln Gln
            260                 265                 270

Thr Lys Gly Ser Tyr Met Glu Val Glu Asp Asn Arg Ser Gln Val Glu
        275                 280                 285

Thr Asp Asp Leu Ile Leu Lys Pro Gly Val Val His Val Ile Asp Val
    290                 295                 300

Asp Arg Gly Glu Glu Lys Lys Gly Lys Asp Gln Ser Gly Glu Val Leu
305                 310                 315                 320

Ser Ser Val
```

<210> 5954
<211> 98
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1299; "

<220>
<221> source
<223> /note="Gene Symbol: AQP4; "

<220>
<221> source
<223> /note="Gene Name:
aquaporin 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000372656"

<400> 5954

```
Met Ser Asp Arg Pro Thr Ala Arg Arg Trp Gly Val Asp Leu Cys Val
1               5                   10                  15

Pro Glu Arg Thr Ser Trp Trp Leu Ser Lys Gly Ser Gly Leu Lys Leu
```

```
            20                  25                  30

Ser Gly Lys Gln Ser Gln Arg Asn Phe Trp Pro Cys Leu Phe Leu Phe
        35                  40                  45

Ser Ser Ala Trp Asp Pro Pro Ser Thr Gly Val Glu Gln Lys Ser Leu
    50                  55                  60

Tyr Arg Ser Thr Trp Phe Ser Ser Pro Phe Ala Leu Asp Ser Ala Leu
65                  70                  75                  80

Gln Pro Trp Cys Ser Ala Leu Ala Ile Ser Ala Val Ala Thr Ser Thr
                85                  90                  95

Leu Gln



<210> 5955
<211> 301
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1299; "

<220>
<221> source
<223> /note="Gene Symbol: AQP4; "

<220>
<221> source
<223> /note="Gene Name:
      aquaporin 4; "

<220>
<221> source
<223> /note="Uniprot ID:  P55087; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000393121"

<400> 5955
Met Val Ala Phe Lys Gly Val Trp Thr Gln Ala Phe Trp Lys Ala Val
1               5                   10                  15

Thr Ala Glu Phe Leu Ala Met Leu Ile Phe Val Leu Leu Ser Leu Gly
            20                  25                  30
```

```
Ser Thr Ile Asn Trp Gly Gly Thr Glu Lys Pro Leu Pro Val Asp Met
        35                  40                  45

Val Leu Ile Ser Leu Cys Phe Gly Leu Ser Ile Ala Thr Met Val Gln
    50                  55                  60

Cys Phe Gly His Ile Ser Gly Gly His Ile Asn Pro Ala Val Thr Val
65                  70                  75                  80

Ala Met Val Cys Thr Arg Lys Ile Ser Ile Ala Lys Ser Val Phe Tyr
                85                  90                  95

Ile Ala Ala Gln Cys Leu Gly Ala Ile Ile Gly Ala Gly Ile Leu Tyr
            100                 105                 110

Leu Val Thr Pro Pro Ser Val Val Gly Gly Leu Gly Val Thr Met Val
        115                 120                 125

His Gly Asn Leu Thr Ala Gly His Gly Leu Leu Val Glu Leu Ile Ile
    130                 135                 140

Thr Phe Gln Leu Val Phe Thr Ile Phe Ala Ser Cys Asp Ser Lys Arg
145                 150                 155                 160

Thr Asp Val Thr Gly Ser Ile Ala Leu Ala Ile Gly Phe Ser Val Ala
                165                 170                 175

Ile Gly His Leu Phe Ala Ile Asn Tyr Thr Gly Ala Ser Met Asn Pro
            180                 185                 190

Ala Arg Ser Phe Gly Pro Ala Val Ile Met Gly Asn Trp Glu Asn His
        195                 200                 205

Trp Ile Tyr Trp Val Gly Pro Ile Ile Gly Ala Val Leu Ala Gly Gly
    210                 215                 220

Leu Tyr Glu Tyr Val Phe Cys Pro Asp Val Glu Phe Lys Arg Arg Phe
225                 230                 235                 240

Lys Glu Ala Phe Ser Lys Ala Ala Gln Gln Thr Lys Gly Ser Tyr Met
                245                 250                 255
```

```
Glu Val Glu Asp Asn Arg Ser Gln Val Glu Thr Asp Asp Leu Ile Leu
            260                 265                 270

Lys Pro Gly Val Val His Val Ile Asp Val Asp Arg Gly Glu Glu Lys
        275                 280                 285

Lys Gly Lys Asp Gln Ser Gly Glu Val Leu Ser Ser Val
    290                 295                 300
```

<210> 5956
<211> 185
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1299; "

<220>
<221> source
<223> /note="Gene Symbol: AQP4; "

<220>
<221> source
<223> /note="Gene Name:
aquaporin 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000462075"

<400> 5956

```
Met Ser Asp Arg Pro Thr Ala Arg Arg Trp Gly Leu Gly Ser Thr Ile
1               5                   10                  15

Asn Trp Gly Gly Thr Glu Lys Pro Leu Pro Val Asp Met Val Leu Ile
            20                  25                  30

Ser Leu Cys Phe Gly Leu Ser Ile Ala Thr Met Val Gln Cys Phe Gly
        35                  40                  45

His Ile Ser Gly Gly His Ile Asn Pro Ala Val Thr Val Ala Met Val
    50                  55                  60

Cys Thr Arg Lys Ile Ser Ile Ala Lys Ser Val Phe Tyr Ile Ala Ala
65                  70                  75                  80

Gln Cys Leu Gly Ala Ile Ile Gly Ala Gly Ile Leu Tyr Leu Val Thr
                85                  90                  95
```

```
Pro Pro Ser Val Val Gly Gly Leu Gly Val Thr Met Val His Gly Asn
            100                 105                 110

Leu Thr Ala Gly His Gly Leu Leu Val Glu Leu Ile Ile Thr Phe Gln
        115                 120                 125

Leu Val Phe Thr Ile Phe Ala Ser Cys Asp Ser Lys Arg Thr Asp Val
    130                 135                 140

Thr Gly Ser Ile Ala Leu Ala Ile Gly Phe Ser Val Ala Ile Gly His
145                 150                 155                 160

Leu Phe Ala Ile Asn Tyr Thr Gly Ala Ser Met Asn Pro Ala Arg Ser
                165                 170                 175

Phe Gly Pro Ala Val Ile Met Gly Asn
            180                 185


<210> 5957
<211> 301
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1299; "

<220>
<221> source
<223> /note="Gene Symbol: AQP4; "

<220>
<221> source
<223> /note="Gene Name:
      aquaporin 4; "

<220>
<221> source
<223> /note="Uniprot ID:  P55087; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000462597"

<400> 5957
Met Val Ala Phe Lys Gly Val Trp Thr Gln Ala Phe Trp Lys Ala Val
1               5                   10                  15
```

```
Thr Ala Glu Phe Leu Ala Met Leu Ile Phe Val Leu Leu Ser Leu Gly
            20                  25                  30

Ser Thr Ile Asn Trp Gly Gly Thr Glu Lys Pro Leu Pro Val Asp Met
        35                  40                  45

Val Leu Ile Ser Leu Cys Phe Gly Leu Ser Ile Ala Thr Met Val Gln
    50                  55                  60

Cys Phe Gly His Ile Ser Gly Gly His Ile Asn Pro Ala Val Thr Val
65                  70                  75                  80

Ala Met Val Cys Thr Arg Lys Ile Ser Ile Ala Lys Ser Val Phe Tyr
                85                  90                  95

Ile Ala Ala Gln Cys Leu Gly Ala Ile Ile Gly Ala Gly Ile Leu Tyr
            100                 105                 110

Leu Val Thr Pro Pro Ser Val Val Gly Gly Leu Gly Val Thr Met Val
        115                 120                 125

His Gly Asn Leu Thr Ala Gly His Gly Leu Leu Val Glu Leu Ile Ile
    130                 135                 140

Thr Phe Gln Leu Val Phe Thr Ile Phe Ala Ser Cys Asp Ser Lys Arg
145                 150                 155                 160

Thr Asp Val Thr Gly Ser Ile Ala Leu Ala Ile Gly Phe Ser Val Ala
                165                 170                 175

Ile Gly His Leu Phe Ala Ile Asn Tyr Thr Gly Ala Ser Met Asn Pro
            180                 185                 190

Ala Arg Ser Phe Gly Pro Ala Val Ile Met Gly Asn Trp Glu Asn His
        195                 200                 205

Trp Ile Tyr Trp Val Gly Pro Ile Ile Gly Ala Val Leu Ala Gly Gly
    210                 215                 220

Leu Tyr Glu Tyr Val Phe Cys Pro Asp Val Glu Phe Lys Arg Arg Phe
225                 230                 235                 240

Lys Glu Ala Phe Ser Lys Ala Ala Gln Gln Thr Lys Gly Ser Tyr Met
```

245 250 255

Glu Val Glu Asp Asn Arg Ser Gln Val Glu Thr Asp Asp Leu Ile Leu
260 265 270

Lys Pro Gly Val Val His Val Ile Asp Val Asp Arg Gly Glu Glu Lys
275 280 285

Lys Gly Lys Asp Gln Ser Gly Glu Val Leu Ser Ser Val
290 295 300

<210> 5958
<211> 296
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1299; "

<220>
<221> source
<223> /note="Gene Symbol: AQP4; "

<220>
<221> source
<223> /note="Gene Name:
aquaporin 4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000484446"

<400> 5958
Met Ser Asp Arg Pro Thr Ala Arg Arg Trp Gly Lys Cys Gly Pro Leu
1 5 10 15

Cys Thr Arg Glu Asn Ile Met Val Ala Phe Lys Gly Val Trp Thr Gln
20 25 30

Ala Phe Trp Lys Ala Val Thr Ala Glu Phe Leu Ala Met Leu Ile Phe
35 40 45

Val Leu Leu Ser Leu Gly Ser Thr Ile Asn Trp Gly Gly Thr Glu Lys
50 55 60

Pro Leu Pro Val Asp Met Val Leu Ile Ser Leu Cys Phe Gly Leu Ser
65 70 75 80

```
Ile Ala Thr Met Val Gln Cys Phe Gly His Ile Ser Gly Gly His Ile
                85                  90                  95

Asn Pro Ala Val Thr Val Ala Met Val Cys Thr Arg Lys Ile Ser Ile
            100                 105                 110

Ala Lys Ser Val Phe Tyr Ile Ala Ala Gln Cys Leu Gly Ala Ile Ile
        115                 120                 125

Gly Ala Gly Ile Leu Tyr Leu Val Thr Pro Pro Ser Val Val Gly Gly
    130                 135                 140

Leu Gly Val Thr Met Val His Gly Asn Leu Thr Ala Gly His Gly Leu
145                 150                 155                 160

Leu Val Glu Leu Ile Ile Thr Phe Gln Leu Val Phe Thr Ile Phe Ala
                165                 170                 175

Ser Cys Asp Ser Lys Arg Thr Asp Val Thr Gly Ser Ile Ala Leu Ala
            180                 185                 190

Ile Gly Phe Ser Val Ala Ile Gly His Leu Phe Ala Ile Tyr Trp Val
        195                 200                 205

Gly Pro Ile Ile Gly Ala Val Leu Ala Gly Gly Leu Tyr Glu Tyr Val
    210                 215                 220

Phe Cys Pro Asp Val Glu Phe Lys Arg Arg Phe Lys Glu Ala Phe Ser
225                 230                 235                 240

Lys Ala Ala Gln Gln Thr Lys Gly Ser Tyr Met Glu Val Glu Asp Asn
                245                 250                 255

Arg Ser Gln Val Glu Thr Asp Asp Leu Ile Leu Lys Pro Gly Val Val
            260                 265                 270

His Val Ile Asp Val Asp Arg Gly Glu Glu Lys Lys Gly Lys Asp Gln
        275                 280                 285

Ser Gly Glu Val Leu Ser Ser Val
    290                 295
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<210> 5959
<211> 265
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1300; "

<220>
<221> source
<223> /note="Gene Symbol: AQP5; "

<220>
<221> source
<223> /note="Gene Name:
aquaporin 5; "

<220>
<221> source
<223> /note="Uniprot ID: P55064; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000293599"

<400> 5959
Met Lys Lys Glu Val Cys Ser Val Ala Phe Leu Lys Ala Val Phe Ala
1   5   10   15

Glu Phe Leu Ala Thr Leu Ile Phe Val Phe Phe Gly Leu Gly Ser Ala
            20   25   30

Leu Lys Trp Pro Ser Ala Leu Pro Thr Ile Leu Gln Ile Ala Leu Ala
        35   40   45

Phe Gly Leu Ala Ile Gly Thr Leu Ala Gln Ala Leu Gly Pro Val Ser
    50   55   60

Gly Gly His Ile Asn Pro Ala Ile Thr Leu Ala Leu Leu Val Gly Asn
65   70   75   80

Gln Ile Ser Leu Leu Arg Ala Phe Phe Tyr Val Ala Ala Gln Leu Val
                85   90   95

Gly Ala Ile Ala Gly Ala Gly Ile Leu Tyr Gly Val Ala Pro Leu Asn
            100   105   110

Ala Arg Gly Asn Leu Ala Val Asn Ala Leu Asn Asn Asn Thr Thr Gln
        115   120   125

```
Gly Gln Ala Met Val Val Glu Leu Ile Leu Thr Phe Gln Leu Ala Leu
    130                 135                 140

Cys Ile Phe Ala Ser Thr Asp Ser Arg Arg Thr Ser Pro Val Gly Ser
145                 150                 155                 160

Pro Ala Leu Ser Ile Gly Leu Ser Val Thr Leu Gly His Leu Val Gly
                165                 170                 175

Ile Tyr Phe Thr Gly Cys Ser Met Asn Pro Ala Arg Ser Phe Gly Pro
            180                 185                 190

Ala Val Val Met Asn Arg Phe Ser Pro Ala His Trp Val Phe Trp Val
        195                 200                 205

Gly Pro Ile Val Gly Ala Val Leu Ala Ala Ile Leu Tyr Phe Tyr Leu
    210                 215                 220

Leu Phe Pro Asn Ser Leu Ser Leu Ser Glu Arg Val Ala Ile Ile Lys
225                 230                 235                 240

Gly Thr Tyr Glu Pro Asp Glu Asp Trp Glu Glu Gln Arg Glu Glu Arg
                245                 250                 255

Lys Lys Thr Met Glu Leu Thr Thr Arg
            260                 265


<210> 5960
<211> 282
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1301; "

<220>
<221> source
<223> /note="Gene Symbol: AQP6; "

<220>
<221> source
<223> /note="Gene Name:
      aquaporin 6, kidney specific; "

<220>
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<221> source
<223> /note="Uniprot ID: Q13520; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000320247"

<400> 5960
Met Asp Ala Val Glu Pro Gly Gly Arg Gly Trp Ala Ser Met Leu Ala
1   5   10   15

Cys Arg Leu Trp Lys Ala Ile Ser Arg Ala Leu Phe Ala Glu Phe Leu
            20   25   30

Ala Thr Gly Leu Tyr Val Phe Phe Gly Val Gly Ser Val Met Arg Trp
        35   40   45

Pro Thr Ala Leu Pro Ser Val Leu Gln Ile Ala Ile Thr Phe Asn Leu
    50   55   60

Val Thr Ala Met Ala Val Gln Val Thr Trp Lys Ala Ser Gly Ala His
65   70   75   80

Ala Asn Pro Ala Val Thr Leu Ala Phe Leu Val Gly Ser His Ile Ser
                85   90   95

Leu Pro Arg Ala Val Ala Tyr Val Ala Ala Gln Leu Val Gly Ala Thr
            100   105   110

Val Gly Ala Ala Leu Leu Tyr Gly Val Met Pro Gly Asp Ile Arg Glu
        115   120   125

Thr Leu Gly Ile Asn Val Val Arg Asn Ser Val Ser Thr Gly Gln Ala
    130   135   140

Val Ala Val Glu Leu Leu Leu Thr Leu Gln Leu Val Leu Cys Val Phe
145   150   155   160

Ala Ser Thr Asp Ser Arg Gln Thr Ser Gly Ser Pro Ala Thr Met Ile
                165   170   175

Gly Ile Ser Val Ala Leu Gly His Leu Ile Gly Ile His Phe Thr Gly
            180   185   190

Cys Ser Met Asn Pro Ala Arg Ser Phe Gly Pro Ala Ile Ile Ile Gly

```
        195                 200                 205

Lys Phe Thr Val His Trp Val Phe Trp Val Gly Pro Leu Met Gly Ala
    210                 215                 220

Leu Leu Ala Ser Leu Ile Tyr Asn Phe Val Leu Phe Pro Asp Thr Lys
225                 230                 235                 240

Thr Leu Ala Gln Arg Leu Ala Ile Leu Thr Gly Thr Val Glu Val Gly
                245                 250                 255

Thr Gly Ala Gly Ala Gly Ala Glu Pro Leu Lys Lys Glu Ser Gln Pro
            260                 265                 270

Gly Ser Gly Ala Val Glu Met Glu Ser Val
        275                 280


<210> 5961
<211> 108
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1301; "

<220>
<221> source
<223> /note="Gene Symbol: AQP6; "

<220>
<221> source
<223> /note="Gene Name:
      aquaporin 6, kidney specific; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000449830"

<400> 5961
Met Ile Gly Ile Ser Val Ala Leu Gly His Leu Ile Gly Ile His Phe
1               5                   10                  15

Thr Gly Cys Ser Met Asn Pro Ala Arg Ser Phe Gly Pro Ala Ile Ile
            20                  25                  30

Ile Gly Lys Phe Thr Val His Trp Val Phe Trp Val Gly Pro Leu Met
        35                  40                  45
```

```
Gly Ala Leu Leu Ala Ser Leu Ile Tyr Asn Phe Val Leu Phe Pro Asp
    50                  55                  60

Thr Lys Thr Leu Ala Gln Arg Leu Ala Ile Leu Thr Gly Thr Val Glu
65                  70                  75                  80

Val Gly Thr Gly Ala Gly Ala Gly Ala Glu Pro Leu Lys Lys Glu Ser
                85                  90                  95

Gln Pro Gly Ser Gly Ala Val Glu Met Glu Ser Val
            100                 105


<210> 5962
<211> 282
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1301; "

<220>
<221> source
<223> /note="Gene Symbol: AQP6; "

<220>
<221> source
<223> /note="Gene Name:
      aquaporin 6, kidney specific; "

<220>
<221> source
<223> /note="Uniprot ID:  Q13520; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000477688"

<400> 5962
Met Asp Ala Val Glu Pro Gly Gly Arg Gly Trp Ala Ser Met Leu Ala
1               5                   10                  15

Cys Arg Leu Trp Lys Ala Ile Ser Arg Ala Leu Phe Ala Glu Phe Leu
            20                  25                  30

Ala Thr Gly Leu Tyr Val Phe Phe Gly Val Gly Ser Val Met Arg Trp
        35                  40                  45

Pro Thr Ala Leu Pro Ser Val Leu Gln Ile Ala Ile Thr Phe Asn Leu
```

```
    50                  55                  60

Val Thr Ala Met Ala Val Gln Val Thr Trp Lys Ala Ser Gly Ala His
65                  70                  75                  80

Ala Asn Pro Ala Val Thr Leu Ala Phe Leu Val Gly Ser His Ile Ser
                85                  90                  95

Leu Pro Arg Ala Val Ala Tyr Val Ala Ala Gln Leu Val Gly Ala Thr
            100                 105                 110

Val Gly Ala Ala Leu Leu Tyr Gly Val Met Pro Gly Asp Ile Arg Glu
        115                 120                 125

Thr Leu Gly Ile Asn Val Val Arg Asn Ser Val Ser Thr Gly Gln Ala
    130                 135                 140

Val Ala Val Glu Leu Leu Leu Thr Leu Gln Leu Val Leu Cys Val Phe
145                 150                 155                 160

Ala Ser Thr Asp Ser Arg Gln Thr Ser Gly Ser Pro Ala Thr Met Ile
                165                 170                 175

Gly Ile Ser Val Ala Leu Gly His Leu Ile Gly Ile His Phe Thr Gly
            180                 185                 190

Cys Ser Met Asn Pro Ala Arg Ser Phe Gly Pro Ala Ile Ile Ile Gly
        195                 200                 205

Lys Phe Thr Val His Trp Val Phe Trp Val Gly Pro Leu Met Gly Ala
    210                 215                 220

Leu Leu Ala Ser Leu Ile Tyr Asn Phe Val Leu Phe Pro Asp Thr Lys
225                 230                 235                 240

Thr Leu Ala Gln Arg Leu Ala Ile Leu Thr Gly Thr Val Glu Val Gly
                245                 250                 255

Thr Gly Ala Gly Ala Gly Ala Glu Pro Leu Lys Lys Glu Ser Gln Pro
            260                 265                 270

Gly Ser Gly Ala Val Glu Met Glu Ser Val
        275                 280
```

<210> 5963
<211> 163
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1301; "

<220>
<221> source
<223> /note="Gene Symbol: AQP6; "

<220>
<221> source
<223> /note="Gene Name:
aquaporin 6, kidney specific; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000477759"

<400> 5963
Met Asp Ala Val Glu Pro Gly Gly Arg Gly Trp Ala Ser Met Leu Ala
1 5 10 15

Cys Arg Leu Trp Lys Ala Ile Ser Arg Ala Leu Phe Ala Glu Phe Leu
20 25 30

Ala Thr Gly Leu Tyr Val Phe Phe Gly Val Gly Ser Val Met Arg Trp
35 40 45

Pro Thr Ala Leu Pro Ser Val Leu Gln Ile Ala Ile Thr Phe Asn Leu
50 55 60

Val Thr Ala Met Ala Val Gln Val Thr Trp Lys Ala Ser Gly Ala His
65 70 75 80

Ala Asn Pro Ala Val Thr Leu Ala Phe Leu Val Gly Ser His Ile Ser
85 90 95

Leu Pro Arg Ala Val Ala Tyr Val Ala Ala Gln Leu Val Gly Ala Thr
100 105 110

Val Gly Ala Ala Leu Leu Tyr Gly Val Met Pro Gly Asp Ile Arg Glu
115 120 125

```
Thr Leu Gly Ile Asn Val Ala Pro Pro Thr Ser Ser Ala Leu Arg Leu
    130                 135                 140

Phe Pro Ser Ser Ser Leu His Leu Glu Ala Cys Leu Thr Arg Pro Phe
145                 150                 155                 160

Ser Ile Ser



<210> 5964
<211> 342
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1302; "

<220>
<221> source
<223> /note="Gene Symbol: AQP7; "

<220>
<221> source
<223> /note="Gene Name:
      aquaporin 7; "

<220>
<221> source
<223> /note="Uniprot ID:  O14520; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000297988"

<400> 5964
Met Val Gln Ala Ser Gly His Arg Arg Ser Thr Arg Gly Ser Lys Met
1               5                   10                  15

Val Ser Trp Ser Val Ile Ala Lys Ile Gln Glu Ile Leu Gln Arg Lys
            20                  25                  30

Met Val Arg Glu Phe Leu Ala Glu Phe Met Ser Thr Tyr Val Met Met
        35                  40                  45

Val Phe Gly Leu Gly Ser Val Ala His Met Val Leu Asn Lys Lys Tyr
    50                  55                  60

Gly Ser Tyr Leu Gly Val Asn Leu Gly Phe Gly Phe Gly Val Thr Met
65                  70                  75                  80
```

```
Gly Val His Val Ala Gly Arg Ile Ser Gly Ala His Met Asn Ala Ala
                85                  90                  95

Val Thr Phe Ala Asn Cys Ala Leu Gly Arg Val Pro Trp Arg Lys Phe
            100                 105                 110

Pro Val Tyr Val Leu Gly Gln Phe Leu Gly Ser Phe Leu Ala Ala Ala
        115                 120                 125

Thr Ile Tyr Ser Leu Phe Tyr Thr Ala Ile Leu His Phe Ser Gly Gly
    130                 135                 140

Gln Leu Met Val Thr Gly Pro Val Ala Thr Ala Gly Ile Phe Ala Thr
145                 150                 155                 160

Tyr Leu Pro Asp His Met Thr Leu Trp Arg Gly Phe Leu Asn Glu Ala
                165                 170                 175

Trp Leu Thr Gly Met Leu Gln Leu Cys Leu Phe Ala Ile Thr Asp Gln
            180                 185                 190

Glu Asn Asn Pro Ala Leu Pro Gly Thr Glu Ala Leu Val Ile Gly Ile
        195                 200                 205

Leu Val Val Ile Ile Gly Val Ser Leu Gly Met Asn Thr Gly Tyr Ala
    210                 215                 220

Ile Asn Pro Ser Arg Asp Leu Pro Pro Arg Ile Phe Thr Phe Ile Ala
225                 230                 235                 240

Gly Trp Gly Lys Gln Val Phe Ser Asn Gly Glu Asn Trp Trp Trp Val
                245                 250                 255

Pro Val Val Ala Pro Leu Leu Gly Ala Tyr Leu Gly Gly Ile Ile Tyr
            260                 265                 270

Leu Val Phe Ile Gly Ser Thr Ile Pro Arg Glu Pro Leu Lys Leu Glu
        275                 280                 285

Asp Ser Val Ala Tyr Glu Asp His Gly Ile Thr Val Leu Pro Lys Met
    290                 295                 300
```

```
Gly Ser His Glu Pro Thr Ile Ser Pro Leu Thr Pro Val Ser Val Ser
305                 310                 315                 320


Pro Ala Asn Arg Ser Ser Val His Pro Ala Pro Pro Leu His Glu Ser
                325                 330                 335


Met Ala Leu Glu His Phe
            340


<210> 5965
<211> 256
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1302; "

<220>
<221> source
<223> /note="Gene Symbol: AQP7; "

<220>
<221> source
<223> /note="Gene Name:
      aquaporin 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000368820"

<400> 5965
Met Gly Ser Gly His Cys Leu Arg Ser Thr Arg Gly Ser Lys Met Val
1               5                   10                  15


Ser Trp Ser Val Ile Ala Lys Ile Gln Glu Ile Leu Gln Arg Lys Met
            20                  25                  30


Val Arg Glu Phe Leu Ala Glu Phe Met Ser Thr Tyr Val Met Met Val
        35                  40                  45


Phe Gly Leu Gly Ser Val Ala His Met Val Leu Asn Lys Lys Tyr Gly
    50                  55                  60


Ser Tyr Leu Gly Val Asn Leu Gly Phe Gly Phe Gly Val Thr Met Gly
65                  70                  75                  80


Val His Val Ala Gly Arg Ile Ser Gly Ala His Met Asn Ala Ala Val
```

```
                85                  90                  95

Thr Phe Ala Asn Cys Ala Leu Gly Arg Val Pro Trp Arg Lys Phe Pro
            100                 105                 110

Val Tyr Val Leu Gly Gln Phe Leu Gly Ser Phe Leu Ala Ala Ala Thr
        115                 120                 125

Ile Tyr Ser Leu Phe Tyr Thr Ala Ile Leu His Phe Ser Gly Gly Gln
    130                 135                 140

Leu Met Val Thr Gly Pro Val Ala Thr Ala Gly Ile Phe Ala Thr Tyr
145                 150                 155                 160

Leu Pro Asp His Met Thr Leu Trp Arg Gly Phe Leu Asn Glu Ala Trp
                165                 170                 175

Leu Thr Gly Met Leu Gln Leu Cys Leu Phe Ala Ile Thr Asp Gln Glu
            180                 185                 190

Asn Asn Pro Ala Leu Pro Gly Thr Glu Ala Leu Val Ile Gly Ile Leu
        195                 200                 205

Val Val Ile Ile Gly Val Ser Leu Gly Met Asn Thr Gly Tyr Ala Ile
    210                 215                 220

Asn Pro Ser Arg Asp Leu Pro Pro Arg Ile Phe Thr Phe Ile Ala Gly
225                 230                 235                 240

Trp Gly Lys Gln Val Phe Arg Tyr Cys Pro Cys Pro Gly Pro Phe Leu
                245                 250                 255


<210> 5966
<211> 341
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1302; "

<220>
<221> source
<223> /note="Gene Symbol: AQP7; "

<220>
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<221> source
<223> /note="Gene Name:
aquaporin 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000368821"

<400> 5966

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Met Gly Ser Gly His Cys Leu Arg Ser Thr Arg Gly Ser Lys Met Val
1               5                  10                  15

Ser Trp Ser Val Ile Ala Lys Ile Gln Glu Ile Leu Gln Arg Lys Met
            20                  25                  30

Val Arg Glu Phe Leu Ala Glu Phe Met Ser Thr Tyr Val Met Met Val
        35                  40                  45

Phe Gly Leu Gly Ser Val Ala His Met Val Leu Asn Lys Lys Tyr Gly
    50                  55                  60

Ser Tyr Leu Gly Val Asn Leu Gly Phe Gly Phe Gly Val Thr Met Gly
65                  70                  75                  80

Val His Val Ala Gly Arg Ile Ser Gly Ala His Met Asn Ala Ala Val
                85                  90                  95

Thr Phe Ala Asn Cys Ala Leu Gly Arg Val Pro Trp Arg Lys Phe Pro
            100                 105                 110

Val Tyr Val Leu Gly Gln Phe Leu Gly Ser Phe Leu Ala Ala Ala Thr
        115                 120                 125

Ile Tyr Ser Leu Phe Tyr Thr Ala Ile Leu His Phe Ser Gly Gly Gln
    130                 135                 140

Leu Met Val Thr Gly Pro Val Ala Thr Ala Gly Ile Phe Ala Thr Tyr
145                 150                 155                 160

Leu Pro Asp His Met Thr Leu Trp Arg Gly Phe Leu Asn Glu Ala Trp
                165                 170                 175

Leu Thr Gly Met Leu Gln Leu Cys Leu Phe Ala Ile Thr Asp Gln Glu
            180                 185                 190
```

```
Asn Asn Pro Ala Leu Pro Gly Thr Glu Ala Leu Val Ile Gly Ile Leu
        195                 200                 205

Val Val Ile Ile Gly Val Ser Leu Gly Met Asn Thr Gly Tyr Ala Ile
    210                 215                 220

Asn Pro Ser Arg Asp Leu Pro Pro Arg Ile Phe Thr Phe Ile Ala Gly
225                 230                 235                 240

Trp Gly Lys Gln Val Phe Ser Asn Gly Glu Asn Trp Trp Trp Val Pro
                245                 250                 255

Val Val Ala Pro Leu Leu Gly Ala Tyr Leu Gly Gly Ile Ile Tyr Leu
            260                 265                 270

Val Phe Ile Gly Ser Thr Ile Pro Arg Glu Pro Leu Lys Leu Glu Asp
        275                 280                 285

Ser Val Ala Tyr Glu Asp His Gly Ile Thr Val Leu Pro Lys Met Gly
    290                 295                 300

Ser His Glu Pro Thr Ile Ser Pro Leu Thr Pro Val Ser Val Ser Pro
305                 310                 315                 320

Ala Asn Arg Ser Ser Val His Pro Ala Pro Pro Leu His Glu Ser Met
                325                 330                 335

Ala Leu Glu His Phe
            340


<210> 5967
<211> 216
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1302; "

<220>
<221> source
<223> /note="Gene Symbol: AQP7; "

<220>
<221> source
<223> /note="Gene Name:
      aquaporin 7; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000396111"

<400> 5967
Met Val Leu Asn Lys Lys Tyr Gly Ser Tyr Leu Gly Val Asn Leu Gly
1   5   10   15

Phe Gly Phe Gly Val Thr Met Gly Val His Val Ala Gly Arg Ile Ser
            20   25   30

Gly Ala His Met Asn Ala Ala Val Thr Phe Ala Asn Cys Ala Leu Gly
        35   40   45

Arg Val Pro Trp Arg Lys Phe Pro Val Tyr Val Leu Gly Gln Phe Leu
    50   55   60

Gly Ser Phe Leu Ala Ala Ala Thr Ile Tyr Ser Leu Phe Tyr Thr Ala
65   70   75   80

Ile Leu His Phe Ser Gly Gly Gln Leu Met Val Thr Gly Pro Val Ala
                85   90   95

Thr Ala Gly Ile Phe Ala Thr Tyr Leu Pro Asp His Met Thr Leu Trp
            100   105   110

Arg Gly Phe Leu Asn Glu Ala Trp Leu Thr Gly Met Leu Gln Leu Cys
        115   120   125

Leu Phe Ala Ile Thr Asp Gln Glu Asn Asn Pro Ala Leu Pro Gly Thr
    130   135   140

Glu Ala Leu Val Ile Gly Ile Leu Val Val Ile Ile Gly Val Ser Leu
145   150   155   160

Gly Met Asn Thr Gly Tyr Ala Ile Asn Pro Ser Arg Asp Leu Pro Pro
                165   170   175

Arg Ile Phe Thr Phe Ile Ala Gly Trp Gly Lys Gln Val Phe Arg Trp
            180   185   190

His His Leu Pro Gly Leu His Trp Leu His His Pro Thr Gly Ala Pro
        195   200   205

Glu Ile Gly Gly Phe Cys Gly Val
210 215

<210> 5968
<211> 169
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1302; "

<220>
<221> source
<223> /note="Gene Symbol: AQP7; "

<220>
<221> source
<223> /note="Gene Name:
aquaporin 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000410138"

<400> 5968
Met Asn Ala Ala Val Thr Phe Ala Asn Cys Ala Leu Gly Arg Val Pro
1 5 10 15

Trp Arg Lys Phe Pro Val Tyr Val Leu Gly Gln Phe Leu Gly Ser Phe
20 25 30

Leu Ala Ala Ala Thr Ile Tyr Ser Leu Phe Tyr Thr Ala Ile Leu His
35 40 45

Phe Ser Gly Gly Gln Leu Met Val Thr Gly Pro Val Ala Thr Ala Gly
50 55 60

Ile Phe Ala Thr Tyr Leu Pro Asp His Met Thr Leu Trp Arg Gly Phe
65 70 75 80

Leu Asn Glu Ala Trp Leu Thr Gly Met Leu Gln Leu Cys Leu Phe Ala
85 90 95

Ile Thr Asp Gln Glu Asn Asn Pro Ala Leu Pro Gly Thr Glu Ala Leu
100 105 110

Val Ile Gly Ile Leu Val Val Ile Ile Gly Val Ser Leu Gly Met Asn

```
        115                 120                 125

Thr Gly Tyr Ala Ile Asn Pro Ser Arg Asp Leu Pro Pro Arg Ile Phe
    130                 135                 140

Thr Phe Ile Ala Gly Trp Gly Lys Gln Val Phe Ser Asn Gly Glu Asn
145                 150                 155                 160

Trp Trp Trp Val Pro Val Val Ala Pro
                165

<210> 5969
<211> 165
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1302; "

<220>
<221> source
<223> /note="Gene Symbol: AQP7; "

<220>
<221> source
<223> /note="Gene Name:
      aquaporin 7; "

<220>
<221> source
<223> /note="Uniprot ID:  O14520; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000412868"

<400> 5969
Met Asn Ala Ala Val Thr Phe Ala Asn Cys Ala Leu Gly Arg Val Pro
1               5                   10                  15

Trp Arg Lys Phe Pro Val Tyr Val Leu Gly Gln Phe Leu Gly Ser Phe
            20                  25                  30

Leu Ala Ala Ala Thr Ile Tyr Ser Leu Phe Tyr Thr Ala Ile Leu His
        35                  40                  45

Phe Ser Gly Gly Gln Leu Met Val Thr Gly Pro Val Ala Thr Ala Gly
    50                  55                  60
```

```
Ile Phe Ala Thr Tyr Leu Pro Asp His Met Thr Leu Trp Arg Gly Phe
65                  70                  75                  80

Leu Asn Glu Ala Trp Leu Thr Gly Met Leu Gln Leu Cys Leu Phe Ala
                85                  90                  95

Ile Thr Asp Gln Glu Asn Asn Pro Ala Leu Pro Gly Thr Glu Ala Leu
            100                 105                 110

Val Ile Gly Ile Leu Val Val Ile Ile Gly Val Ser Leu Gly Met Asn
        115                 120                 125

Thr Gly Tyr Ala Ile Asn Pro Ser Arg Asp Leu Pro Pro Arg Ile Phe
    130                 135                 140

Thr Phe Ile Ala Gly Trp Gly Lys Gln Val Phe Arg Tyr Cys Pro Cys
145                 150                 155                 160

Pro Gly Pro Phe Leu
                165


<210> 5970
<211> 51
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1302; "

<220>
<221> source
<223> /note="Gene Symbol: AQP7; "

<220>
<221> source
<223> /note="Gene Name:
      aquaporin 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000441619"

<400> 5970
Met Val Gln Ala Ser Gly His Arg Arg Ser Thr Arg Gly Ser Lys Met
1               5                   10                  15

Val Ser Trp Ser Val Ile Ala Lys Ile Gln Glu Ile Leu Gln Arg Lys
```

20 25 30

Met Val Arg Glu Phe Leu Ala Glu Phe Met Ser Thr Tyr Val Met Met
35 40 45

Glu Pro Thr
50

<210> 5971
<211> 80
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1302; "

<220>
<221> source
<223> /note="Gene Symbol: AQP7; "

<220>
<221> source
<223> /note="Gene Name:
aquaporin 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000485081"

<400> 5971
Met Val Gln Ala Ser Gly His Arg Arg Ser Thr Arg Gly Ser Lys Met
1 5 10 15

Val Ser Trp Ser Val Ile Ala Lys Ile Gln Glu Ile Leu Gln Arg Lys
20 25 30

Met Val Arg Glu Phe Leu Ala Glu Phe Met Ser Thr Tyr Val Met Met
35 40 45

Ala Trp Leu Thr Gly Met Leu Gln Leu Cys Leu Phe Ala Ile Thr Asp
50 55 60

Gln Glu Asn Asn Pro Ala Leu Pro Gly Thr Glu Ala Leu Val Ile Gly
65 70 75 80

<210> 5972
<211> 41
<212> PRT

<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1302; "

<220>
<221> source
<223> /note="Gene Symbol: AQP7; "

<220>
<221> source
<223> /note="Gene Name:
aquaporin 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000485131"

<400> 5972
Met Val Gln Ala Ser Gly His Arg Arg Gly Leu Leu Ala Pro Trp Ile
1 5 10 15

Ala Leu Ser Ala Pro His Pro Pro Ile Cys Lys Val Ala Ser Leu Val
20 25 30

Cys His Phe Tyr Trp Ser Ser Pro Asn
35 40

<210> 5973
<211> 51
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1302; "

<220>
<221> source
<223> /note="Gene Symbol: AQP7; "

<220>
<221> source
<223> /note="Gene Name:
aquaporin 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000485224"

<400> 5973
Met Val Gln Ala Ser Gly His Arg Arg Ser Thr Arg Gly Ser Lys Met
1 5 10 15

Val Ser Trp Ser Val Ile Ala Lys Ile Gln Glu Ile Leu Gln Arg Lys
            20   25   30

Met Val Arg Glu Phe Leu Ala Glu Phe Met Ser Thr Tyr Val Met Met
        35   40   45

Glu Pro Thr
    50

<210> 5974
<211> 50
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1302; "

<220>
<221> source
<223> /note="Gene Symbol: AQP7; "

<220>
<221> source
<223> /note="Gene Name:
      aquaporin 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000485246"

<400> 5974
Met Val Gln Ala Ser Gly His Arg Arg Ser Thr Arg Gly Ser Lys Met
1   5   10   15

Val Ser Trp Ser Val Ile Ala Lys Ile Gln Glu Ile Leu Gln Arg Lys
            20   25   30

Met Val Arg Glu Phe Leu Ala Glu Phe Met Ser Thr Tyr Val Met Met
        35   40   45

Arg Glu
    50

<210> 5975
<211> 257
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1302; "

<220>
<221> source
<223> /note="Gene Symbol: AQP7; "

<220>
<221> source
<223> /note="Gene Name:
aquaporin 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000485332"

<400> 5975
Met Val Gln Ala Ser Gly His Arg Arg Ser Thr Arg Gly Ser Lys Met
1 5 10 15

Val Ser Trp Ser Val Ile Ala Lys Ile Gln Glu Ile Leu Gln Arg Lys
20 25 30

Met Val Arg Glu Phe Leu Ala Glu Phe Met Ser Thr Tyr Val Met Met
35 40 45

Val Phe Gly Leu Gly Ser Val Ala His Met Val Leu Asn Lys Lys Tyr
50 55 60

Gly Ser Tyr Leu Gly Val Asn Leu Gly Phe Gly Phe Gly Val Thr Met
65 70 75 80

Gly Val His Val Ala Gly Arg Ile Ser Gly Ala His Met Asn Ala Ala
85 90 95

Val Thr Phe Ala Asn Cys Ala Leu Gly Arg Val Pro Trp Arg Lys Phe
100 105 110

Pro Val Tyr Val Leu Gly Gln Phe Leu Gly Ser Phe Leu Ala Ala Ala
115 120 125

Thr Ile Tyr Ser Leu Phe Tyr Thr Ala Ile Leu His Phe Ser Gly Gly
130 135 140

Gln Leu Met Val Thr Gly Pro Val Ala Thr Ala Gly Ile Phe Ala Thr
145 150 155 160

```
Tyr Leu Pro Asp His Met Thr Leu Trp Arg Gly Phe Leu Asn Glu Ala
                165                 170                 175

Trp Leu Thr Gly Met Leu Gln Leu Cys Leu Phe Ala Ile Thr Asp Gln
            180                 185                 190

Glu Asn Asn Pro Ala Leu Pro Gly Thr Glu Ala Leu Val Ile Gly Ile
        195                 200                 205

Leu Val Val Ile Ile Gly Val Ser Leu Gly Met Asn Thr Gly Tyr Ala
    210                 215                 220

Ile Asn Pro Ser Arg Asp Leu Pro Pro Arg Ile Phe Thr Phe Ile Ala
225                 230                 235                 240

Gly Trp Gly Lys Gln Val Phe Arg Tyr Cys Pro Cys Pro Gly Pro Phe
                245                 250                 255

Leu
```

<210> 5976
<211> 85
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1302; "

<220>
<221> source
<223> /note="Gene Symbol: AQP7; "

<220>
<221> source
<223> /note="Gene Name:
aquaporin 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000485348"

```
<400> 5976
Met Val Gln Ala Ser Gly His Arg Arg Ser Thr Arg Gly Ser Lys Met
1               5                   10                  15
```

```
Val Ser Trp Ser Val Ile Ala Lys Ile Gln Glu Ile Leu Gln Arg Lys
            20                  25                  30

Met Val Arg Glu Phe Leu Ala Glu Phe Met Ser Thr Tyr Val Met Met
        35                  40                  45

Arg Glu Gly Asp Asp Trp Phe Gly Val Gly Glu Glu Ser Thr Cys Leu
    50                  55                  60

Arg Gly Leu Trp Lys Thr Glu Ser Gly Arg Leu Cys Gln Gln Lys Met
65                  70                  75                  80

Trp Ala Lys Arg Arg
                85


<210> 5977
<211> 84
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1302; "

<220>
<221> source
<223> /note="Gene Symbol: AQP7; "

<220>
<221> source
<223> /note="Gene Name:
      aquaporin 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000485419"

<400> 5977
Met Gly Ser Gly His Cys Leu Arg Ser Thr Arg Gly Ser Lys Met Val
1               5                   10                  15

Ser Trp Ser Val Ile Ala Lys Ile Gln Glu Ile Leu Gln Arg Lys Met
            20                  25                  30

Val Arg Glu Phe Leu Ala Glu Phe Met Ser Thr Tyr Val Met Met Arg
        35                  40                  45

Glu Gly Asp Asp Trp Phe Gly Val Gly Glu Glu Ser Thr Cys Leu Arg
    50                  55                  60
```

Gly Leu Trp Lys Thr Glu Ser Gly Arg Leu Cys Gln Gln Lys Met Trp
65 70 75 80

Ala Lys Arg Arg

<210> 5978
<211> 261
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1303; "

<220>
<221> source
<223> /note="Gene Symbol: AQP8; "

<220>
<221> source
<223> /note="Gene Name:
aquaporin 8; "

<220>
<221> source
<223> /note="Uniprot ID: O94778; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000219660"

<400> 5978
Met Ser Gly Glu Ile Ala Met Cys Glu Pro Glu Phe Gly Asn Asp Lys
1 5 10 15

Ala Arg Glu Pro Ser Val Gly Gly Arg Trp Arg Val Ser Trp Tyr Glu
20 25 30

Arg Phe Val Gln Pro Cys Leu Val Glu Leu Leu Gly Ser Ala Leu Phe
35 40 45

Ile Phe Ile Gly Cys Leu Ser Val Ile Glu Asn Gly Thr Asp Thr Gly
50 55 60

Leu Leu Gln Pro Ala Leu Ala His Gly Leu Ala Leu Gly Leu Val Ile
65 70 75 80

```
Ala Thr Leu Gly Asn Ile Ser Gly Gly His Phe Asn Pro Ala Val Ser
                85                  90                  95

Leu Ala Ala Met Leu Ile Gly Gly Leu Asn Leu Val Met Leu Leu Pro
            100                 105                 110

Tyr Trp Val Ser Gln Leu Leu Gly Gly Met Leu Gly Ala Ala Leu Ala
        115                 120                 125

Lys Ala Val Ser Pro Glu Glu Arg Phe Trp Asn Ala Ser Gly Ala Ala
    130                 135                 140

Phe Val Thr Val Gln Glu Gln Gly Gln Val Ala Gly Ala Leu Val Ala
145                 150                 155                 160

Glu Ile Ile Leu Thr Thr Leu Leu Ala Leu Ala Val Cys Met Gly Ala
                165                 170                 175

Ile Asn Glu Lys Thr Lys Gly Pro Leu Ala Pro Phe Ser Ile Gly Phe
            180                 185                 190

Ala Val Thr Val Asp Ile Leu Ala Gly Gly Pro Val Ser Gly Gly Cys
        195                 200                 205

Met Asn Pro Ala Arg Ala Phe Gly Pro Ala Val Val Ala Asn His Trp
    210                 215                 220

Asn Phe His Trp Ile Tyr Trp Leu Gly Pro Leu Leu Ala Gly Leu Leu
225                 230                 235                 240

Val Gly Leu Leu Ile Arg Cys Phe Ile Gly Asp Gly Lys Thr Arg Leu
                245                 250                 255

Ile Leu Lys Ala Arg
            260
```

<210> 5979
<211> 255
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1303; "

<220>
<221> source
<223> /note="Gene Symbol: AQP8; "

<220>
<221> source
<223> /note="Gene Name:
aquaporin 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000454457"

<400> 5979

```
Met Cys Glu Pro Glu Phe Gly Asn Asp Lys Ala Arg Glu Pro Ser Val
1               5                  10                  15

Gly Gly Arg Trp Arg Val Ser Trp Tyr Glu Arg Phe Val Gln Pro Cys
            20                  25                  30

Leu Val Glu Leu Leu Gly Ser Ala Leu Phe Ile Phe Ile Gly Cys Leu
        35                  40                  45

Ser Val Ile Glu Asn Gly Thr Asp Thr Gly Leu Leu Gln Pro Ala Leu
    50                  55                  60

Ala His Gly Leu Ala Leu Gly Leu Val Ile Ala Thr Leu Gly Asn Ile
65                  70                  75                  80

Ser Gly Gly His Phe Asn Pro Ala Val Ser Leu Ala Ala Met Leu Ile
                85                  90                  95

Gly Gly Leu Asn Leu Val Met Leu Leu Pro Tyr Trp Val Ser Gln Leu
            100                 105                 110

Leu Gly Gly Met Leu Gly Ala Ala Leu Ala Lys Ala Val Ser Pro Glu
        115                 120                 125

Glu Arg Phe Trp Asn Ala Ser Gly Ala Ala Phe Val Thr Val Gln Glu
    130                 135                 140

Gln Gly Gln Val Ala Gly Ala Leu Val Ala Glu Ile Ile Leu Thr Thr
145                 150                 155                 160

Leu Leu Ala Leu Ala Val Cys Met Gly Ala Ile Asn Glu Lys Thr Lys
                165                 170                 175
```

```
Gly Pro Leu Ala Pro Phe Ser Ile Gly Phe Ala Val Thr Val Asp Ile
            180                 185                 190

Leu Ala Gly Gly Pro Val Ser Gly Gly Cys Met Asn Pro Ala Arg Ala
        195                 200                 205

Phe Gly Pro Ala Val Val Ala Asn His Trp Asn Phe His Trp Ile Tyr
    210                 215                 220

Trp Leu Gly Pro Leu Leu Ala Gly Leu Leu Val Gly Leu Leu Ile Arg
225                 230                 235                 240

Cys Phe Ile Gly Asp Gly Lys Thr Arg Leu Ile Leu Lys Ala Arg
                245                 250                 255


<210> 5980
<211> 295
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1304; "

<220>
<221> source
<223> /note="Gene Symbol: AQP9; "

<220>
<221> source
<223> /note="Gene Name:
      aquaporin 9; "

<220>
<221> source
<223> /note="Uniprot ID:  O43315; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000219919"

<400> 5980
Met Gln Pro Glu Gly Ala Glu Lys Gly Lys Ser Phe Lys Gln Arg Leu
1               5                   10                  15

Val Leu Lys Ser Ser Leu Ala Lys Glu Thr Leu Ser Glu Phe Leu Gly
            20                  25                  30

Thr Phe Ile Leu Ile Val Leu Gly Cys Gly Cys Val Ala Gln Ala Ile
```

```
        35                  40                  45

Leu Ser Arg Gly Arg Phe Gly Gly Val Ile Thr Ile Asn Val Gly Phe
    50                  55                  60

Ser Met Ala Val Ala Met Ala Ile Tyr Val Ala Gly Gly Val Ser Gly
65                  70                  75                  80

Gly His Ile Asn Pro Ala Val Ser Leu Ala Met Cys Leu Phe Gly Arg
                85                  90                  95

Met Lys Trp Phe Lys Leu Pro Phe Tyr Val Gly Ala Gln Phe Leu Gly
            100                 105                 110

Ala Phe Val Gly Ala Ala Thr Val Phe Gly Ile Tyr Tyr Asp Gly Leu
        115                 120                 125

Met Ser Phe Ala Gly Gly Lys Leu Leu Ile Val Gly Glu Asn Ala Thr
    130                 135                 140

Ala His Ile Phe Ala Thr Tyr Pro Ala Pro Tyr Leu Ser Leu Ala Asn
145                 150                 155                 160

Ala Phe Ala Asp Gln Val Val Ala Thr Met Ile Leu Leu Ile Ile Val
                165                 170                 175

Phe Ala Ile Phe Asp Ser Arg Asn Leu Gly Ala Pro Arg Gly Leu Glu
            180                 185                 190

Pro Ile Ala Ile Gly Leu Leu Ile Ile Val Ile Ala Ser Ser Leu Gly
        195                 200                 205

Leu Asn Ser Gly Cys Ala Met Asn Pro Ala Arg Asp Leu Ser Pro Arg
    210                 215                 220

Leu Phe Thr Ala Leu Ala Gly Trp Gly Phe Glu Val Phe Arg Ala Gly
225                 230                 235                 240

Asn Asn Phe Trp Trp Ile Pro Val Val Gly Pro Leu Val Gly Ala Val
                245                 250                 255

Ile Gly Gly Leu Ile Tyr Val Leu Val Ile Glu Ile His His Pro Glu
            260                 265                 270
```

```
Pro Asp Ser Val Phe Lys Thr Glu Gln Ser Glu Asp Lys Pro Glu Lys
        275                 280                 285


Tyr Glu Leu Ser Val Ile Met
    290                 295


<210> 5981
<211> 295
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1304; "

<220>
<221> source
<223> /note="Gene Symbol: AQP9; "

<220>
<221> source
<223> /note="Gene Name:
      aquaporin 9; "

<220>
<221> source
<223> /note="Uniprot ID:  O43315; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000441390"

<400> 5981
Met Gln Pro Glu Gly Ala Glu Lys Gly Lys Ser Phe Lys Gln Arg Leu
1               5                   10                  15


Val Leu Lys Ser Ser Leu Ala Lys Glu Thr Leu Ser Glu Phe Leu Gly
            20                  25                  30


Thr Phe Ile Leu Ile Val Leu Gly Cys Gly Cys Val Ala Gln Ala Ile
        35                  40                  45


Leu Ser Arg Gly Arg Phe Gly Gly Val Ile Thr Ile Asn Val Gly Phe
    50                  55                  60


Ser Met Ala Val Ala Met Ala Ile Tyr Val Ala Gly Gly Val Ser Gly
65                  70                  75                  80
```

```
Gly His Ile Asn Pro Ala Val Ser Leu Ala Met Cys Leu Phe Gly Arg
                85                  90                  95

Met Lys Trp Phe Lys Leu Pro Phe Tyr Val Gly Ala Gln Phe Leu Gly
            100                 105                 110

Ala Phe Val Gly Ala Ala Thr Val Phe Gly Ile Tyr Tyr Asp Gly Leu
        115                 120                 125

Met Ser Phe Ala Gly Gly Lys Leu Leu Ile Val Gly Glu Asn Ala Thr
    130                 135                 140

Ala His Ile Phe Ala Thr Tyr Pro Ala Pro Tyr Leu Ser Leu Ala Asn
145                 150                 155                 160

Ala Phe Ala Asp Gln Val Val Ala Thr Met Ile Leu Leu Ile Ile Val
                165                 170                 175

Phe Ala Ile Phe Asp Ser Arg Asn Leu Gly Ala Pro Arg Gly Leu Glu
            180                 185                 190

Pro Ile Ala Ile Gly Leu Leu Ile Ile Val Ile Ala Ser Ser Leu Gly
        195                 200                 205

Leu Asn Ser Gly Cys Ala Met Asn Pro Ala Arg Asp Leu Ser Pro Arg
    210                 215                 220

Leu Phe Thr Ala Leu Ala Gly Trp Gly Phe Glu Val Phe Arg Ala Gly
225                 230                 235                 240

Asn Asn Phe Trp Trp Ile Pro Val Val Gly Pro Leu Val Gly Ala Val
                245                 250                 255

Ile Gly Gly Leu Ile Tyr Val Leu Val Ile Glu Ile His His Pro Glu
            260                 265                 270

Pro Asp Ser Val Phe Lys Thr Glu Gln Ser Glu Asp Lys Pro Glu Lys
        275                 280                 285

Tyr Glu Leu Ser Val Ile Met
    290                 295
```

<210> 5982

<211> 230
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1304; "

<220>
<221> source
<223> /note="Gene Symbol: AQP9; "

<220>
<221> source
<223> /note="Gene Name:
aquaporin 9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000452673"

<400> 5982
Met Ala Val Ala Met Ala Ile Tyr Val Ala Gly Gly Val Ser Gly Gly
1 5 10 15

His Ile Asn Pro Ala Val Ser Leu Ala Met Cys Leu Phe Gly Arg Met
20 25 30

Lys Trp Phe Lys Leu Pro Phe Tyr Val Gly Ala Gln Phe Leu Gly Ala
35 40 45

Phe Val Gly Ala Ala Thr Val Phe Gly Ile Tyr Tyr Asp Gly Leu Met
50 55 60

Ser Phe Ala Gly Gly Lys Leu Leu Ile Val Gly Glu Asn Ala Thr Ala
65 70 75 80

His Ile Phe Ala Thr Tyr Pro Ala Pro Tyr Leu Ser Leu Ala Asn Ala
85 90 95

Phe Ala Asp Gln Val Val Ala Thr Met Ile Leu Leu Ile Ile Val Phe
100 105 110

Ala Ile Phe Asp Ser Arg Asn Leu Gly Ala Pro Arg Gly Leu Glu Pro
115 120 125

Ile Ala Ile Gly Leu Leu Ile Ile Val Ile Ala Ser Ser Leu Gly Leu
130 135 140

```
Asn Ser Gly Cys Ala Met Asn Pro Ala Arg Asp Leu Ser Pro Arg Leu
145                 150                 155                 160

Phe Thr Ala Leu Ala Gly Trp Gly Phe Glu Val Phe Arg Ala Gly Asn
                165                 170                 175

Asn Phe Trp Trp Ile Pro Val Val Gly Pro Leu Val Gly Ala Val Ile
            180                 185                 190

Gly Gly Leu Ile Tyr Val Leu Val Ile Glu Ile His His Pro Glu Pro
        195                 200                 205

Asp Ser Val Phe Lys Thr Glu Gln Ser Glu Asp Lys Pro Glu Lys Tyr
    210                 215                 220

Glu Leu Ser Val Ile Met
225                 230


<210> 5983
<211> 1485
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1305; "

<220>
<221> source
<223> /note="Gene Symbol: AQR; "

<220>
<221> source
<223> /note="Gene Name:
      aquarius intron-binding spliceosomal
      factor; "

<220>
<221> source
<223> /note="Uniprot ID:  O60306; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000156471"

<400> 5983
Met Ala Ala Pro Ala Gln Pro Lys Lys Ile Val Ala Pro Thr Val Ser
1               5                   10                  15
```

```
Gln Ile Asn Ala Glu Phe Val Thr Gln Leu Ala Cys Lys Tyr Trp Ala
            20                  25                  30

Pro His Ile Lys Lys Lys Ser Pro Phe Asp Ile Lys Val Ile Glu Asp
        35                  40                  45

Ile Tyr Glu Lys Glu Ile Val Lys Ser Arg Phe Ala Ile Arg Lys Ile
    50                  55                  60

Met Leu Leu Glu Phe Ser Gln Tyr Leu Glu Asn Tyr Leu Trp Met Asn
65                  70                  75                  80

Tyr Ser Pro Glu Val Ser Ser Lys Ala Tyr Leu Met Ser Ile Cys Cys
                85                  90                  95

Met Val Asn Glu Lys Phe Arg Glu Asn Val Pro Ala Trp Glu Ile Phe
            100                 105                 110

Lys Lys Lys Pro Asp His Phe Pro Phe Phe Phe Lys His Ile Leu Lys
        115                 120                 125

Ala Ala Leu Ala Glu Thr Asp Gly Glu Phe Ser Leu His Glu Gln Thr
    130                 135                 140

Val Leu Leu Leu Phe Leu Asp His Cys Phe Asn Ser Leu Glu Val Asp
145                 150                 155                 160

Leu Ile Arg Ser Gln Val Gln Gln Leu Ile Ser Leu Pro Met Trp Met
                165                 170                 175

Gly Leu Gln Leu Ala Arg Leu Glu Leu Glu Leu Lys Lys Thr Pro Lys
            180                 185                 190

Leu Arg Lys Phe Trp Asn Leu Ile Lys Lys Asn Asp Glu Lys Met Asp
        195                 200                 205

Pro Glu Ala Arg Glu Gln Ala Tyr Gln Glu Arg Arg Phe Leu Ser Gln
    210                 215                 220

Leu Ile Gln Lys Phe Ile Ser Val Leu Lys Ser Val Pro Leu Ser Glu
225                 230                 235                 240

Pro Val Thr Met Asp Lys Val His Tyr Cys Glu Arg Phe Ile Glu Leu
```

```
                245                 250                 255

Met Ile Asp Leu Glu Ala Leu Leu Pro Thr Arg Arg Trp Phe Asn Thr
            260                 265                 270

Ile Leu Asp Asp Ser His Leu Leu Val His Cys Tyr Leu Ser Asn Leu
        275                 280                 285

Val Arg Arg Glu Glu Asp Gly His Leu Phe Ser Gln Leu Leu Asp Met
    290                 295                 300

Leu Lys Phe Tyr Thr Gly Phe Glu Ile Asn Asp Gln Thr Gly Asn Ala
305                 310                 315                 320

Leu Thr Glu Asn Glu Met Thr Thr Ile His Tyr Asp Arg Ile Thr Ser
                325                 330                 335

Leu Gln Arg Ala Ala Phe Ala His Phe Pro Glu Leu Tyr Asp Phe Ala
            340                 345                 350

Leu Ser Asn Val Ala Glu Val Asp Thr Arg Glu Ser Leu Val Lys Phe
        355                 360                 365

Phe Gly Pro Leu Ser Ser Asn Thr Leu His Gln Val Ala Ser Tyr Leu
    370                 375                 380

Cys Leu Leu Pro Thr Leu Pro Lys Asn Glu Asp Thr Thr Phe Asp Lys
385                 390                 395                 400

Glu Phe Leu Leu Glu Leu Leu Val Ser Arg His Glu Arg Arg Ile Ser
                405                 410                 415

Gln Ile Gln Gln Leu Asn Gln Met Pro Leu Tyr Pro Thr Glu Lys Ile
            420                 425                 430

Ile Trp Asp Glu Asn Ile Val Pro Thr Glu Tyr Tyr Ser Gly Glu Gly
        435                 440                 445

Cys Leu Ala Leu Pro Lys Leu Asn Leu Gln Phe Leu Thr Leu His Asp
    450                 455                 460

Tyr Leu Leu Arg Asn Phe Asn Leu Phe Arg Leu Glu Ser Thr Tyr Glu
465                 470                 475                 480
```

```
Ile Arg Gln Asp Ile Glu Asp Ser Val Ser Arg Met Lys Pro Trp Gln
                485                 490                 495

Ser Glu Tyr Gly Gly Val Val Phe Gly Gly Trp Ala Arg Met Ala Gln
            500                 505                 510

Pro Ile Val Ala Phe Thr Val Val Glu Val Ala Lys Pro Asn Ile Gly
        515                 520                 525

Glu Asn Trp Pro Thr Arg Val Arg Ala Asp Val Thr Ile Asn Leu Asn
    530                 535                 540

Val Arg Asp His Ile Lys Asp Glu Trp Glu Gly Leu Arg Lys His Asp
545                 550                 555                 560

Val Cys Phe Leu Ile Thr Val Arg Pro Thr Lys Pro Tyr Gly Thr Lys
                565                 570                 575

Phe Asp Arg Arg Arg Pro Phe Ile Glu Gln Val Gly Leu Val Tyr Val
            580                 585                 590

Arg Gly Cys Glu Ile Gln Gly Met Leu Asp Asp Lys Gly Arg Val Ile
        595                 600                 605

Glu Asp Gly Pro Glu Pro Arg Pro Asn Leu Arg Gly Glu Ser Arg Thr
    610                 615                 620

Phe Arg Val Phe Leu Asp Pro Asn Gln Tyr Gln Gln Asp Met Thr Asn
625                 630                 635                 640

Thr Ile Gln Asn Gly Ala Glu Asp Val Tyr Glu Thr Phe Asn Ile Ile
                645                 650                 655

Met Arg Arg Lys Pro Lys Glu Asn Asn Phe Lys Ala Val Leu Glu Thr
            660                 665                 670

Ile Arg Asn Leu Met Asn Thr Asp Cys Val Val Pro Asp Trp Leu His
        675                 680                 685

Asp Ile Ile Leu Gly Tyr Gly Asp Pro Ser Ser Ala His Tyr Ser Lys
    690                 695                 700
```

```
Met Pro Asn Gln Ile Ala Thr Leu Asp Phe Asn Asp Thr Phe Leu Ser
705                 710                 715                 720

Ile Glu His Leu Lys Ala Ser Phe Pro Gly His Asn Val Lys Val Thr
                725                 730                 735

Val Glu Asp Pro Ala Leu Gln Ile Pro Pro Phe Arg Ile Thr Phe Pro
            740                 745                 750

Val Arg Ser Gly Lys Gly Lys Lys Arg Lys Asp Ala Asp Val Glu Asp
        755                 760                 765

Glu Asp Thr Glu Glu Ala Lys Thr Leu Ile Val Glu Pro His Val Ile
    770                 775                 780

Pro Asn Arg Gly Pro Tyr Pro Tyr Asn Gln Pro Lys Arg Asn Thr Ile
785                 790                 795                 800

Gln Phe Thr His Thr Gln Ile Glu Ala Ile Arg Ala Gly Met Gln Pro
                805                 810                 815

Gly Leu Thr Met Val Val Gly Pro Pro Gly Thr Gly Lys Thr Asp Val
            820                 825                 830

Ala Val Gln Ile Ile Ser Asn Ile Tyr His Asn Phe Pro Glu Gln Arg
        835                 840                 845

Thr Leu Ile Val Thr His Ser Asn Gln Ala Leu Asn Gln Leu Phe Glu
    850                 855                 860

Lys Ile Met Ala Leu Asp Ile Asp Glu Arg His Leu Leu Arg Leu Gly
865                 870                 875                 880

His Gly Glu Glu Glu Leu Glu Thr Glu Lys Asp Phe Ser Arg Tyr Gly
                885                 890                 895

Arg Val Asn Tyr Val Leu Ala Arg Arg Ile Glu Leu Leu Glu Glu Val
            900                 905                 910

Lys Arg Leu Gln Lys Ser Leu Gly Val Pro Gly Asp Ala Ser Tyr Thr
        915                 920                 925
```

```
Cys Glu Thr Ala Gly Tyr Phe Phe Leu Tyr Gln Val Met Ser Arg Trp
    930                 935                 940

Glu Glu Tyr Ile Ser Lys Val Lys Asn Lys Gly Ser Thr Leu Pro Asp
945                 950                 955                 960

Val Thr Glu Val Ser Thr Phe Phe Pro Phe His Glu Tyr Phe Ala Asn
                965                 970                 975

Ala Pro Gln Pro Ile Phe Lys Gly Arg Ser Tyr Glu Glu Asp Met Glu
            980                 985                 990

Ile Ala Glu Gly Cys Phe Arg His  Ile Lys Lys Ile Phe  Thr Gln
Leu
        995                 1000                1005

Glu Glu  Phe Arg Ala Ser Glu  Leu Leu Arg Ser Gly  Leu Asp Arg
    1010                1015                1020

Ser Lys  Tyr Leu Leu Val Lys  Glu Ala Lys Ile Ile  Ala Met Thr
    1025                1030                1035

Cys Thr  His Ala Ala Leu Lys  Arg His Asp Leu Val  Lys Leu Gly
    1040                1045                1050

Phe Lys  Tyr Asp Asn Ile Leu  Met Glu Glu Ala Ala  Gln Ile Leu
    1055                1060                1065

Glu Ile  Glu Thr Phe Ile Pro  Leu Leu Leu Gln Asn  Pro Gln Asp
    1070                1075                1080

Gly Phe  Ser Arg Leu Lys Arg  Trp Ile Met Ile Gly  Asp His His
    1085                1090                1095

Gln Leu  Pro Pro Val Ile Lys  Asn Met Ala Phe Gln  Lys Tyr Ser
    1100                1105                1110

Asn Met  Glu Gln Ser Leu Phe  Thr Arg Phe Val Arg  Val Gly Val
    1115                1120                1125

Pro Thr  Val Asp Leu Asp Ala  Gln Gly Arg Ala Arg  Ala Ser Leu
    1130                1135                1140
```

```
Cys Asn  Leu Tyr Asn Trp Arg  Tyr Lys Asn Leu Gly  Asn Leu Pro
    1145                1150                1155

His Val  Gln Leu Leu Pro Glu  Phe Ser Thr Ala Asn  Ala Gly Leu
    1160                1165                1170

Leu Tyr  Asp Phe Gln Leu Ile  Asn Val Glu Asp Phe  Gln Gly Val
    1175                1180                1185

Gly Glu  Ser Glu Pro Asn Pro  Tyr Phe Tyr Gln Asn  Leu Gly Glu
    1190                1195                1200

Ala Glu  Tyr Val Val Ala Leu  Phe Met Tyr Met Cys  Leu Leu Gly
    1205                1210                1215

Tyr Pro  Ala Asp Lys Ile Ser  Ile Leu Thr Thr Tyr  Asn Gly Gln
    1220                1225                1230

Lys His  Leu Ile Arg Asp Ile  Ile Asn Arg Arg Cys  Gly Asn Asn
    1235                1240                1245

Pro Leu  Ile Gly Arg Pro Asn  Lys Val Thr Thr Val  Asp Arg Phe
    1250                1255                1260

Gln Gly  Gln Gln Asn Asp Tyr  Ile Leu Leu Ser Leu  Val Arg Thr
    1265                1270                1275

Arg Ala  Val Gly His Leu Arg  Asp Val Arg Arg Leu  Val Val Ala
    1280                1285                1290

Met Ser  Arg Ala Arg Leu Gly  Leu Tyr Ile Phe Ala  Arg Val Ser
    1295                1300                1305

Leu Phe  Gln Asn Cys Phe Glu  Leu Thr Pro Ala Phe  Ser Gln Leu
    1310                1315                1320

Thr Ala  Arg Pro Leu His Leu  His Ile Ile Pro Thr  Glu Pro Phe
    1325                1330                1335

Pro Thr  Thr Arg Lys Asn Gly  Glu Arg Pro Ser His  Glu Val Gln
    1340                1345                1350

Ile Ile  Lys Asn Met Pro Gln  Met Ala Asn Phe Val  Tyr Asn Met
```

```
    1355                1360                1365

Tyr Met  His Leu Ile Gln Thr  Thr His His Tyr His  Gln Thr Leu
    1370                1375                1380

Leu Gln  Leu Pro Pro Ala Met  Val Glu Glu Gly Glu  Glu Val Gln
    1385                1390                1395

Asn Gln  Glu Thr Glu Leu Glu  Thr Glu Glu Glu Ala  Met Thr Val
    1400                1405                1410

Gln Ala  Asp Ile Ile Pro Ser  Pro Thr Asp Thr Ser  Cys Arg Gln
    1415                1420                1425

Glu Thr  Pro Ala Phe Gln Thr  Asp Thr Thr Pro Ser  Glu Thr Gly
    1430                1435                1440

Ala Thr  Ser Thr Pro Glu Ala  Ile Pro Ala Leu Ser  Glu Thr Thr
    1445                1450                1455

Pro Thr  Val Val Gly Ala Val  Ser Ala Pro Ala Glu  Ala Asn Thr
    1460                1465                1470

Pro Gln  Asp Ala Thr Ser Ala  Pro Glu Glu Thr Lys
    1475                1480                1485


<210> 5984
<211> 646
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1305; "

<220>
<221> source
<223> /note="Gene Symbol: AQR; "

<220>
<221> source
<223> /note="Gene Name:
      aquarius intron-binding spliceosomal
      factor; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000445700"
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<400> 5984
Met Ala Ala Pro Ala Gln Pro Lys Lys Ile Val Ala Pro Thr Val Ser
1 5 10 15

Gln Ile Asn Ala Glu Phe Val Thr Gln Leu Ala Cys Lys Tyr Trp Ala
20 25 30

Pro His Ile Lys Lys Lys Ser Pro Phe Asp Ile Lys Val Ile Glu Asp
35 40 45

Ile Tyr Glu Lys Glu Ile Val Lys Ser Arg Phe Ala Ile Arg Lys Ile
50 55 60

Met Leu Leu Glu Phe Ser Gln Tyr Leu Glu Asn Tyr Leu Trp Met Asn
65 70 75 80

Tyr Ser Pro Glu Val Ser Ser Lys Ala Tyr Leu Met Ser Ile Cys Cys
85 90 95

Met Val Asn Glu Lys Phe Arg Glu Asn Val Pro Ala Trp Glu Ile Phe
100 105 110

Lys Lys Lys Pro Asp His Phe Pro Phe Phe Phe Lys His Ile Leu Lys
115 120 125

Ala Ala Leu Ala Glu Thr Asp Gly Glu Phe Ser Leu His Glu Gln Thr
130 135 140

Val Leu Leu Leu Phe Leu Asp His Cys Phe Asn Ser Leu Glu Val Asp
145 150 155 160

Leu Ile Arg Ser Gln Val Gln Gln Leu Ile Ser Leu Pro Met Trp Met
165 170 175

Gly Leu Gln Leu Ala Arg Leu Glu Leu Glu Leu Lys Lys Thr Pro Lys
180 185 190

Leu Arg Lys Phe Trp Asn Leu Ile Lys Lys Asn Asp Glu Lys Met Asp
195 200 205

Pro Glu Ala Arg Glu Gln Ala Tyr Gln Glu Arg Arg Phe Leu Ser Gln
210 215 220

```
Leu Ile Gln Lys Phe Ile Ser Val Leu Lys Ser Val Pro Leu Ser Glu
225                 230                 235                 240

Pro Val Thr Met Asp Lys Val His Tyr Cys Glu Arg Phe Ile Glu Leu
                245                 250                 255

Met Ile Asp Leu Glu Ala Leu Leu Pro Thr Arg Arg Trp Phe Asn Thr
            260                 265                 270

Ile Leu Asp Asp Ser His Leu Leu Val His Cys Tyr Leu Ser Asn Leu
        275                 280                 285

Val Arg Arg Glu Glu Asp Gly His Leu Phe Ser Gln Leu Leu Asp Met
    290                 295                 300

Leu Lys Phe Tyr Thr Gly Phe Glu Ile Asn Asp Gln Thr Gly Asn Ala
305                 310                 315                 320

Leu Thr Glu Asn Glu Met Thr Thr Ile His Tyr Asp Arg Ile Thr Ser
                325                 330                 335

Leu Gln Arg Ala Ala Phe Ala His Phe Pro Glu Leu Tyr Asp Phe Ala
            340                 345                 350

Leu Ser Asn Val Ala Glu Val Asp Thr Arg Glu Ser Leu Val Lys Phe
        355                 360                 365

Phe Gly Pro Leu Ser Ser Asn Thr Leu His Gln Val Ala Ser Tyr Leu
    370                 375                 380

Cys Leu Leu Pro Thr Leu Pro Lys Asn Glu Asp Thr Thr Phe Asp Lys
385                 390                 395                 400

Glu Phe Leu Leu Glu Leu Leu Val Ser Arg His Glu Arg Arg Ile Ser
                405                 410                 415

Gln Ile Gln Gln Leu Asn Gln Met Pro Leu Tyr Pro Thr Glu Lys Ile
            420                 425                 430

Ile Trp Asp Glu Asn Ile Val Pro Thr Glu Tyr Tyr Ser Gly Glu Gly
        435                 440                 445
```

```
Cys Leu Ala Leu Pro Lys Leu Asn Leu Gln Phe Leu Thr Leu His Asp
    450                 455                 460

Tyr Leu Leu Arg Asn Phe Asn Leu Phe Arg Leu Glu Ser Thr Tyr Glu
465                 470                 475                 480

Ile Arg Gln Asp Ile Glu Asp Ser Val Ser Arg Met Lys Pro Trp Gln
                485                 490                 495

Ser Glu Tyr Gly Gly Val Val Phe Gly Gly Trp Ala Arg Met Ala Gln
            500                 505                 510

Pro Ile Val Ala Phe Thr Val Val Glu Val Ala Lys Pro Asn Ile Gly
        515                 520                 525

Glu Asn Trp Pro Thr Arg Val Arg Ala Asp Val Thr Ile Asn Leu Asn
    530                 535                 540

Val Arg Asp His Ile Lys Asp Glu Trp Glu Gly Leu Arg Lys His Asp
545                 550                 555                 560

Val Cys Phe Leu Ile Thr Val Arg Pro Thr Lys Pro Tyr Gly Thr Lys
                565                 570                 575

Phe Asp Arg Arg Arg Pro Phe Ile Glu Gln Val Gly Leu Val Tyr Val
            580                 585                 590

Arg Gly Cys Glu Ile Gln Gly Met Leu Asp Asp Lys Gly Arg Val Ile
        595                 600                 605

Glu Asp Gly Met Val Thr Tyr Ile Phe Glu Arg Asp Leu Asn Pro Asp
    610                 615                 620

Pro Ile Leu Glu Glu Asn Gln Gly His Leu Glu Cys Phe Trp Ile Gln
625                 630                 635                 640

Thr Ser Ile Asn Lys Ile
                645
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<210> 5985
<211> 180
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1305; "

<220>
<221> source
<223> /note="Gene Symbol: AQR; "

<220>
<221> source
<223> /note="Gene Name:
aquarius intron-binding spliceosomal
factor; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453278"

<400> 5985
Met Pro Thr Gly Leu His Ala Cys Val Val Pro Ser Asp Ile Leu Cys
1 5 10 15

Pro Pro Val Pro Ser Arg Ala Leu Leu Arg Asn Arg Leu Ser Leu Asn
20 25 30

Asp Leu Ser Ser Ser Ser Thr Met Ala Arg Ile Trp Asp Leu Leu Phe
35 40 45

Ile Leu Phe Thr Leu Gln Leu Ala Cys Lys Tyr Trp Ala Pro His Ile
50 55 60

Lys Lys Lys Ser Pro Phe Asp Ile Lys Val Ile Glu Asp Ile Tyr Glu
65 70 75 80

Lys Glu Ile Val Lys Ser Arg Phe Ala Ile Arg Lys Ile Met Leu Leu
85 90 95

Glu Phe Ser Gln Tyr Leu Glu Asn Tyr Leu Trp Met Asn Tyr Ser Pro
100 105 110

Glu Val Ser Ser Lys Ala Tyr Leu Met Ser Ile Cys Cys Met Val Asn
115 120 125

Glu Lys Phe Arg Glu Asn Val Pro Ala Trp Glu Ile Phe Lys Lys Lys
130 135 140

Pro Asp His Phe Pro Phe Phe Phe Lys His Ile Leu Lys Ala Ala Leu
145 150 155 160

```
Ala Glu Thr Asp Gly Glu Phe Ser Leu His Glu Gln Thr Val Leu Leu
                165                 170                 175

Leu Phe Leu Asp
            180


<210> 5986
<211> 663
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1306; "

<220>
<221> source
<223> /note="Gene Symbol: ALOX12; "

<220>
<221> source
<223> /note="Gene Name:
      arachidonate 12-lipoxygenase; "

<220>
<221> source
<223> /note="Uniprot ID:  P18054; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000251535"

<400> 5986
Met Gly Arg Tyr Arg Ile Arg Val Ala Thr Gly Ala Trp Leu Phe Ser
1               5                   10                  15

Gly Ser Tyr Asn Arg Val Gln Leu Trp Leu Val Gly Thr Arg Gly Glu
            20                  25                  30

Ala Glu Leu Glu Leu Gln Leu Arg Pro Ala Arg Gly Glu Glu Glu Glu
        35                  40                  45

Phe Asp His Asp Val Ala Glu Asp Leu Gly Leu Leu Gln Phe Val Arg
    50                  55                  60

Leu Arg Lys His His Trp Leu Val Asp Asp Ala Trp Phe Cys Asp Arg
65                  70                  75                  80
```

```
Ile Thr Val Gln Gly Pro Gly Ala Cys Ala Glu Val Ala Phe Pro Cys
                85                  90                  95

Tyr Arg Trp Val Gln Gly Glu Asp Ile Leu Ser Leu Pro Glu Gly Thr
            100                 105                 110

Ala Arg Leu Pro Gly Asp Asn Ala Leu Asp Met Phe Gln Lys His Arg
        115                 120                 125

Glu Lys Glu Leu Lys Asp Arg Gln Gln Ile Tyr Cys Trp Ala Thr Trp
    130                 135                 140

Lys Glu Gly Leu Pro Leu Thr Ile Ala Ala Asp Arg Lys Asp Asp Leu
145                 150                 155                 160

Pro Pro Asn Met Arg Phe His Glu Glu Lys Arg Leu Asp Phe Glu Trp
                165                 170                 175

Thr Leu Lys Ala Gly Ala Leu Glu Met Ala Leu Lys Arg Val Tyr Thr
            180                 185                 190

Leu Leu Ser Ser Trp Asn Cys Leu Glu Asp Phe Asp Gln Ile Phe Trp
        195                 200                 205

Gly Gln Lys Ser Ala Leu Ala Glu Lys Val Arg Gln Cys Trp Gln Asp
    210                 215                 220

Asp Glu Leu Phe Ser Tyr Gln Phe Leu Asn Gly Ala Asn Pro Met Leu
225                 230                 235                 240

Leu Arg Arg Ser Thr Ser Leu Pro Ser Arg Leu Val Leu Pro Ser Gly
                245                 250                 255

Met Glu Glu Leu Gln Ala Gln Leu Glu Lys Glu Leu Gln Asn Gly Ser
            260                 265                 270

Leu Phe Glu Ala Asp Phe Ile Leu Leu Asp Gly Ile Pro Ala Asn Val
        275                 280                 285

Ile Arg Gly Glu Lys Gln Tyr Leu Ala Ala Pro Leu Val Met Leu Lys
    290                 295                 300

Met Glu Pro Asn Gly Lys Leu Gln Pro Met Val Ile Gln Ile Gln Pro
```

305 310 315 320

Pro Asn Pro Ser Ser Pro Thr Pro Thr Leu Phe Leu Pro Ser Asp Pro
325 330 335

Pro Leu Ala Trp Leu Leu Ala Lys Ser Trp Val Arg Asn Ser Asp Phe
340 345 350

Gln Leu His Glu Ile Gln Tyr His Leu Leu Asn Thr His Leu Val Ala
355 360 365

Glu Val Ile Ala Val Ala Thr Met Arg Cys Leu Pro Gly Leu His Pro
370 375 380

Ile Phe Lys Phe Leu Ile Pro His Ile Arg Tyr Thr Met Glu Ile Asn
385 390 395 400

Thr Arg Ala Arg Thr Gln Leu Ile Ser Asp Gly Gly Ile Phe Asp Lys
405 410 415

Ala Val Ser Thr Gly Gly Gly Gly His Val Gln Leu Leu Arg Arg Ala
420 425 430

Ala Ala Gln Leu Thr Tyr Cys Ser Leu Cys Pro Pro Asp Asp Leu Ala
435 440 445

Asp Arg Gly Leu Leu Gly Leu Pro Gly Ala Leu Tyr Ala His Asp Ala
450 455 460

Leu Arg Leu Trp Glu Ile Ile Ala Arg Tyr Val Glu Gly Ile Val His
465 470 475 480

Leu Phe Tyr Gln Arg Asp Asp Ile Val Lys Gly Asp Pro Glu Leu Gln
485 490 495

Ala Trp Cys Arg Glu Ile Thr Glu Val Gly Leu Cys Gln Ala Gln Asp
500 505 510

Arg Gly Phe Pro Val Ser Phe Gln Ser Gln Ser Gln Leu Cys His Phe
515 520 525

Leu Thr Met Cys Val Phe Thr Cys Thr Ala Gln His Ala Ala Ile Asn
530 535 540

```
Gln Gly Gln Leu Asp Trp Tyr Ala Trp Val Pro Asn Ala Pro Cys Thr
545                 550                 555                 560

Met Arg Met Pro Pro Pro Thr Thr Lys Glu Asp Val Thr Met Ala Thr
                565                 570                 575

Val Met Gly Ser Leu Pro Asp Val Arg Gln Ala Cys Leu Gln Met Ala
            580                 585                 590

Ile Ser Trp His Leu Ser Arg Arg Gln Pro Asp Met Val Pro Leu Gly
        595                 600                 605

His His Lys Glu Lys Tyr Phe Ser Gly Pro Lys Pro Lys Ala Val Leu
    610                 615                 620

Asn Gln Phe Arg Thr Asp Leu Glu Lys Leu Glu Lys Glu Ile Thr Ala
625                 630                 635                 640

Arg Asn Glu Gln Leu Asp Trp Pro Tyr Glu Tyr Leu Lys Pro Ser Cys
                645                 650                 655

Ile Glu Asn Ser Val Thr Ile
            660


<210> 5987
<211> 147
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1306; "

<220>
<221> source
<223> /note="Gene Symbol: ALOX12; "

<220>
<221> source
<223> /note="Gene Name:
      arachidonate 12-lipoxygenase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467033"

<400> 5987
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```
Arg Trp Val Gln Gly Glu Asp Ile Leu Ser Leu Pro Glu Gly Thr Ala
1               5                  10                  15

Arg Leu Pro Gly Asp Asn Ala Leu Asp Met Phe Gln Lys His Arg Glu
            20                  25                  30

Lys Glu Leu Lys Asp Arg Gln Gln Ile Tyr Cys Trp Ala Thr Trp Lys
        35                  40                  45

Glu Gly Leu Pro Leu Thr Ile Ala Ala Asp Arg Lys Asp Asp Leu Pro
    50                  55                  60

Pro Asn Met Arg Phe His Glu Glu Lys Arg Leu Asp Phe Glu Trp Thr
65                  70                  75                  80

Leu Lys Ala Gly Leu Val Leu Pro Ser Gly Met Glu Glu Leu Gln Ala
                85                  90                  95

Gln Leu Glu Lys Glu Leu Gln Asn Gly Ser Leu Phe Glu Ala Asp Phe
            100                 105                 110

Ile Leu Leu Asp Gly Ile Pro Ala Asn Val Ile Arg Gly Glu Lys Gln
        115                 120                 125

Tyr Leu Ala Ala Pro Leu Val Met Leu Lys Met Glu Pro Asn Gly Lys
    130                 135                 140

Leu Gln Pro
145
```

<210> 5988
<211> 701
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1307; "

<220>
<221> source
<223> /note="Gene Symbol: ALOX12B; "

<220>
<221> source
<223> /note="Gene Name:
arachidonate 12-lipoxygenase, 12R type; "

<220>
<221> source
<223> /note="Uniprot ID: O75342; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000315167"

<400> 5988
Met Ala Thr Tyr Lys Val Arg Val Ala Thr Gly Thr Asp Leu Leu Ser
1   5   10   15

Gly Thr Arg Asp Ser Ile Ser Leu Thr Ile Val Gly Thr Gln Gly Glu
            20   25   30

Ser His Lys Gln Leu Leu Asn His Phe Gly Arg Asp Phe Ala Thr Gly
        35   40   45

Ala Val Gly Gln Tyr Thr Val Gln Cys Pro Gln Asp Leu Gly Glu Leu
    50   55   60

Ile Ile Ile Arg Leu His Lys Glu Arg Tyr Ala Phe Phe Pro Lys Asp
65   70   75   80

Pro Trp Tyr Cys Asn Tyr Val Gln Ile Cys Ala Pro Asn Gly Arg Ile
                85   90   95

Tyr His Phe Pro Ala Tyr Gln Trp Met Asp Gly Tyr Glu Thr Leu Ala
            100   105   110

Leu Arg Glu Ala Thr Gly Lys Thr Thr Ala Asp Asp Ser Leu Pro Val
        115   120   125

Leu Leu Glu His Arg Lys Glu Glu Ile Arg Ala Lys Gln Asp Phe Tyr
    130   135   140

His Trp Arg Val Phe Leu Pro Gly Leu Pro Ser Tyr Val His Ile Pro
145   150   155   160

Ser Tyr Arg Pro Pro Val Arg Arg His Arg Asn Pro Asn Arg Pro Glu
                165   170   175

Trp Asn Gly Tyr Ile Pro Gly Phe Pro Ile Leu Ile Asn Phe Lys Ala
            180   185   190

```
Thr Lys Phe Leu Asn Leu Asn Leu Arg Tyr Ser Phe Leu Lys Thr Ala
        195                 200                 205

Ser Phe Phe Val Arg Leu Gly Pro Met Ala Leu Ala Phe Lys Val Arg
    210                 215                 220

Gly Leu Leu Asp Cys Lys His Ser Trp Lys Arg Leu Lys Asp Ile Arg
225                 230                 235                 240

Lys Ile Phe Pro Gly Lys Lys Ser Val Val Ser Glu Tyr Val Ala Glu
                245                 250                 255

His Trp Ala Glu Asp Thr Phe Phe Gly Tyr Gln Tyr Leu Asn Gly Val
            260                 265                 270

Asn Pro Gly Leu Ile Arg Arg Cys Thr Arg Ile Pro Asp Lys Phe Pro
        275                 280                 285

Val Thr Asp Asp Met Val Ala Pro Phe Leu Gly Glu Gly Thr Cys Leu
    290                 295                 300

Gln Ala Glu Leu Glu Lys Gly Asn Ile Tyr Leu Ala Asp Tyr Arg Ile
305                 310                 315                 320

Met Glu Gly Ile Pro Thr Val Glu Leu Ser Gly Arg Lys Gln His His
                325                 330                 335

Cys Ala Pro Leu Cys Leu Leu His Phe Gly Pro Glu Gly Lys Met Met
            340                 345                 350

Pro Ile Ala Ile Gln Leu Ser Gln Thr Pro Gly Pro Asp Cys Pro Ile
        355                 360                 365

Phe Leu Pro Ser Asp Ser Glu Trp Asp Trp Leu Leu Ala Lys Thr Trp
    370                 375                 380

Val Arg Tyr Ala Glu Phe Tyr Ser His Glu Ala Ile Ala His Leu Leu
385                 390                 395                 400

Glu Thr His Leu Ile Ala Glu Ala Phe Cys Leu Ala Leu Leu Arg Asn
                405                 410                 415
```

```
Leu Pro Met Cys His Pro Leu Tyr Lys Leu Leu Ile Pro His Thr Arg
            420                 425                 430

Tyr Thr Val Gln Ile Asn Ser Ile Gly Arg Ala Val Leu Leu Asn Glu
        435                 440                 445

Gly Gly Leu Ser Ala Lys Gly Met Ser Leu Gly Val Glu Gly Phe Ala
    450                 455                 460

Gly Val Met Val Arg Ala Leu Ser Glu Leu Thr Tyr Asp Ser Leu Tyr
465                 470                 475                 480

Leu Pro Asn Asp Phe Val Glu Arg Gly Val Gln Asp Leu Pro Gly Tyr
                485                 490                 495

Tyr Tyr Arg Asp Asp Ser Leu Ala Val Trp Asn Ala Leu Glu Lys Tyr
            500                 505                 510

Val Thr Glu Ile Ile Thr Tyr Tyr Tyr Pro Ser Asp Ala Ala Val Glu
        515                 520                 525

Gly Asp Pro Glu Leu Gln Ser Trp Val Gln Glu Ile Phe Lys Glu Cys
    530                 535                 540

Leu Leu Gly Arg Glu Ser Ser Gly Phe Pro Arg Cys Leu Arg Thr Val
545                 550                 555                 560

Pro Glu Leu Ile Arg Tyr Val Thr Ile Val Ile Tyr Thr Cys Ser Ala
                565                 570                 575

Lys His Ala Ala Val Asn Thr Gly Gln Met Glu Phe Thr Ala Trp Met
            580                 585                 590

Pro Asn Phe Pro Ala Ser Met Arg Asn Pro Pro Ile Gln Thr Lys Gly
        595                 600                 605

Leu Thr Thr Leu Glu Thr Phe Met Asp Thr Leu Pro Asp Val Lys Thr
    610                 615                 620

Thr Cys Ile Thr Leu Leu Val Leu Trp Thr Leu Ser Arg Glu Pro Asp
625                 630                 635                 640

Asp Arg Arg Pro Leu Gly His Phe Pro Asp Ile His Phe Val Glu Glu
```

645 650 655

Ala Pro Arg Arg Ser Ile Glu Ala Phe Arg Gln Arg Leu Asn Gln Ile
660 665 670

Ser His Asp Ile Arg Gln Arg Asn Lys Cys Leu Pro Ile Pro Tyr Tyr
675 680 685

Tyr Leu Asp Pro Val Leu Ile Glu Asn Ser Ile Ser Ile
690 695 700

<210> 5989
<211> 662
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1308; "

<220>
<221> source
<223> /note="Gene Symbol: ALOX15; "

<220>
<221> source
<223> /note="Gene Name:
arachidonate 15-lipoxygenase; "

<220>
<221> source
<223> /note="Uniprot ID: P16050; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000293761"

<400> 5989
Met Gly Leu Tyr Arg Ile Arg Val Ser Thr Gly Ala Ser Leu Tyr Ala
1 5 10 15

Gly Ser Asn Asn Gln Val Gln Leu Trp Leu Val Gly Gln His Gly Glu
20 25 30

Ala Ala Leu Gly Lys Arg Leu Trp Pro Ala Arg Gly Lys Glu Thr Glu
35 40 45

Leu Lys Val Glu Val Pro Glu Tyr Leu Gly Pro Leu Leu Phe Val Lys
50 55 60

```
Leu Arg Lys Arg His Leu Leu Lys Asp Asp Ala Trp Phe Cys Asn Trp
65                  70                  75                  80

Ile Ser Val Gln Gly Pro Gly Ala Gly Asp Glu Val Arg Phe Pro Cys
                85                  90                  95

Tyr Arg Trp Val Glu Gly Asn Gly Val Leu Ser Leu Pro Glu Gly Thr
            100                 105                 110

Gly Arg Thr Val Gly Glu Asp Pro Gln Gly Leu Phe Gln Lys His Arg
        115                 120                 125

Glu Glu Glu Leu Glu Glu Arg Arg Lys Leu Tyr Arg Trp Gly Asn Trp
    130                 135                 140

Lys Asp Gly Leu Ile Leu Asn Met Ala Gly Ala Lys Leu Tyr Asp Leu
145                 150                 155                 160

Pro Val Asp Glu Arg Phe Leu Glu Asp Lys Arg Val Asp Phe Glu Val
                165                 170                 175

Ser Leu Ala Lys Gly Leu Ala Asp Leu Ala Ile Lys Asp Ser Leu Asn
            180                 185                 190

Val Leu Thr Cys Trp Lys Asp Leu Asp Asp Phe Asn Arg Ile Phe Trp
        195                 200                 205

Cys Gly Gln Ser Lys Leu Ala Glu Arg Val Arg Asp Ser Trp Lys Glu
    210                 215                 220

Asp Ala Leu Phe Gly Tyr Gln Phe Leu Asn Gly Ala Asn Pro Val Val
225                 230                 235                 240

Leu Arg Arg Ser Ala His Leu Pro Ala Arg Leu Val Phe Pro Pro Gly
                245                 250                 255

Met Glu Glu Leu Gln Ala Gln Leu Glu Lys Glu Leu Glu Gly Gly Thr
            260                 265                 270

Leu Phe Glu Ala Asp Phe Ser Leu Leu Asp Gly Ile Lys Ala Asn Val
        275                 280                 285
```

```
Ile Leu Cys Ser Gln Gln His Leu Ala Ala Pro Leu Val Met Leu Lys
    290                 295                 300

Leu Gln Pro Asp Gly Lys Leu Leu Pro Met Val Ile Gln Leu Gln Leu
305                 310                 315                 320

Pro Arg Thr Gly Ser Pro Pro Pro Pro Leu Phe Leu Pro Thr Asp Pro
                325                 330                 335

Pro Met Ala Trp Leu Leu Ala Lys Cys Trp Val Arg Ser Ser Asp Phe
            340                 345                 350

Gln Leu His Glu Leu Gln Ser His Leu Leu Arg Gly His Leu Met Ala
        355                 360                 365

Glu Val Ile Val Val Ala Thr Met Arg Cys Leu Pro Ser Ile His Pro
    370                 375                 380

Ile Phe Lys Leu Ile Ile Pro His Leu Arg Tyr Thr Leu Glu Ile Asn
385                 390                 395                 400

Val Arg Ala Arg Thr Gly Leu Val Ser Asp Met Gly Ile Phe Asp Gln
                405                 410                 415

Ile Met Ser Thr Gly Gly Gly Gly His Val Gln Leu Leu Lys Gln Ala
            420                 425                 430

Gly Ala Phe Leu Thr Tyr Ser Ser Phe Cys Pro Pro Asp Asp Leu Ala
        435                 440                 445

Asp Arg Gly Leu Leu Gly Val Lys Ser Ser Phe Tyr Ala Gln Asp Ala
    450                 455                 460

Leu Arg Leu Trp Glu Ile Ile Tyr Arg Tyr Val Glu Gly Ile Val Ser
465                 470                 475                 480

Leu His Tyr Lys Thr Asp Val Ala Val Lys Asp Asp Pro Glu Leu Gln
                485                 490                 495

Thr Trp Cys Arg Glu Ile Thr Glu Ile Gly Leu Gln Gly Ala Gln Asp
            500                 505                 510

Arg Gly Phe Pro Val Ser Leu Gln Ala Arg Asp Gln Val Cys His Phe
```

```
        515                 520                 525

Val Thr Met Cys Ile Phe Thr Cys Thr Gly Gln His Ala Ser Val His
    530                 535                 540

Leu Gly Gln Leu Asp Trp Tyr Ser Trp Val Pro Asn Ala Pro Cys Thr
545                 550                 555                 560

Met Arg Leu Pro Pro Pro Thr Thr Lys Asp Ala Thr Leu Glu Thr Val
                565                 570                 575

Met Ala Thr Leu Pro Asn Phe His Gln Ala Ser Leu Gln Met Ser Ile
            580                 585                 590

Thr Trp Gln Leu Gly Arg Arg Gln Pro Val Met Val Ala Val Gly Gln
        595                 600                 605

His Glu Glu Glu Tyr Phe Ser Gly Pro Glu Pro Lys Ala Val Leu Lys
    610                 615                 620

Lys Phe Arg Glu Glu Leu Ala Ala Leu Asp Lys Glu Ile Glu Ile Arg
625                 630                 635                 640

Asn Ala Lys Leu Asp Met Pro Tyr Glu Tyr Leu Arg Pro Ser Val Val
                645                 650                 655

Glu Asn Ser Val Ala Ile
            660
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<210> 5990
<211> 109
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ALOX15; "

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<223> /note="Gene Name:
arachidonate 15-lipoxygenase; "

<220>
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<223> /note="ENSP ID: ENSP00000458630"

<400> 5990
Met Gly Leu Tyr Arg Ile Arg Val Ser Thr Gly Ala Ser Leu Tyr Ala
1   5   10   15

Gly Ser Asn Asn Gln Val Gln Leu Trp Leu Val Gly Gln His Gly Glu
            20   25   30

Ala Ala Leu Gly Lys Arg Leu Trp Pro Ala Arg Gly Lys Glu Thr Glu
        35   40   45

Leu Lys Val Glu Val Pro Glu Tyr Leu Gly Pro Leu Leu Phe Val Lys
    50   55   60

Leu Arg Lys Arg His Leu Leu Lys Asp Asp Ala Trp Phe Cys Asn Trp
65   70   75   80

Ile Ser Val Gln Gly Pro Gly Ala Gly Asp Glu Val Arg Phe Pro Cys
                85   90   95

Tyr Arg Trp Val Glu Gly Asn Gly Val Leu Ser Leu Pro
            100   105

<210> 5991
<211> 662
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
      arachidonate 15-lipoxygenase; "

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<223> /note="ENSP ID: ENSP00000458832"

<400> 5991

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Met Gly Leu Tyr Arg Ile Arg Val Ser Thr Gly Ala Ser Leu Tyr Ala
1               5                  10                  15

Gly Ser Asn Asn Gln Val Gln Leu Trp Leu Val Gly Gln His Gly Glu
            20                  25                  30

Ala Ala Leu Gly Lys Arg Leu Trp Pro Ala Arg Gly Lys Glu Thr Glu
        35                  40                  45

Leu Lys Val Glu Val Pro Glu Tyr Leu Gly Pro Leu Leu Phe Val Lys
    50                  55                  60

Leu Arg Lys Arg His Leu Leu Lys Asp Asp Ala Trp Phe Cys Asn Trp
65                  70                  75                  80

Ile Ser Val Gln Gly Pro Gly Ala Gly Asp Glu Val Arg Phe Pro Cys
                85                  90                  95

Tyr Arg Trp Val Glu Gly Asn Gly Val Leu Ser Leu Pro Glu Gly Thr
            100                 105                 110

Gly Arg Thr Val Gly Glu Asp Pro Gln Gly Leu Phe Gln Lys His Arg
        115                 120                 125

Glu Glu Glu Leu Glu Glu Arg Arg Lys Leu Tyr Arg Trp Gly Asn Trp
    130                 135                 140

Lys Asp Gly Leu Ile Leu Asn Met Ala Gly Ala Lys Leu Tyr Asp Leu
145                 150                 155                 160

Pro Val Asp Glu Arg Phe Leu Glu Asp Lys Arg Val Asp Phe Glu Val
                165                 170                 175

Ser Leu Ala Lys Gly Leu Ala Asp Leu Ala Ile Lys Asp Ser Leu Asn
            180                 185                 190

Val Leu Thr Cys Trp Lys Asp Leu Asp Asp Phe Asn Arg Ile Phe Trp
        195                 200                 205

Cys Gly Gln Ser Lys Leu Ala Glu Arg Val Arg Asp Ser Trp Lys Glu
    210                 215                 220
```

```
Asp Ala Leu Phe Gly Tyr Gln Phe Leu Asn Gly Ala Asn Pro Val Val
225                 230                 235                 240

Leu Arg Arg Ser Ala His Leu Pro Ala Arg Leu Val Phe Pro Pro Gly
                245                 250                 255

Met Glu Glu Leu Gln Ala Gln Leu Glu Lys Glu Leu Glu Gly Gly Thr
            260                 265                 270

Leu Phe Glu Ala Asp Phe Ser Leu Leu Asp Gly Ile Lys Ala Asn Val
        275                 280                 285

Ile Leu Cys Ser Gln Gln His Leu Ala Ala Pro Leu Val Met Leu Lys
    290                 295                 300

Leu Gln Pro Asp Gly Lys Leu Leu Pro Met Val Ile Gln Leu Gln Leu
305                 310                 315                 320

Pro Arg Thr Gly Ser Pro Pro Pro Pro Leu Phe Leu Pro Thr Asp Pro
                325                 330                 335

Pro Met Ala Trp Leu Leu Ala Lys Cys Trp Val Arg Ser Ser Asp Phe
            340                 345                 350

Gln Leu His Glu Leu Gln Ser His Leu Leu Arg Gly His Leu Met Ala
        355                 360                 365

Glu Val Ile Val Val Ala Thr Met Arg Cys Leu Pro Ser Ile His Pro
    370                 375                 380

Ile Phe Lys Leu Ile Ile Pro His Leu Arg Tyr Thr Leu Glu Ile Asn
385                 390                 395                 400

Val Arg Ala Arg Thr Gly Leu Val Ser Asp Met Gly Ile Phe Asp Gln
                405                 410                 415

Ile Met Ser Thr Gly Gly Gly Gly His Val Gln Leu Leu Lys Gln Ala
            420                 425                 430

Gly Ala Phe Leu Thr Tyr Ser Ser Phe Cys Pro Pro Asp Asp Leu Ala
        435                 440                 445
```

```
Asp Arg Gly Leu Leu Gly Val Lys Ser Ser Phe Tyr Ala Gln Asp Ala
     450                 455                 460

Leu Arg Leu Trp Glu Ile Ile Tyr Arg Tyr Val Glu Gly Ile Val Ser
465                 470                 475                 480

Leu His Tyr Lys Thr Asp Val Ala Val Lys Asp Asp Pro Glu Leu Gln
                485                 490                 495

Thr Trp Cys Arg Glu Ile Thr Glu Ile Gly Leu Gln Gly Ala Gln Asp
            500                 505                 510

Arg Gly Phe Pro Val Ser Leu Gln Ala Arg Asp Gln Val Cys His Phe
        515                 520                 525

Val Thr Met Cys Ile Phe Thr Cys Thr Gly Gln His Ala Ser Val His
    530                 535                 540

Leu Gly Gln Leu Asp Trp Tyr Ser Trp Val Pro Asn Ala Pro Cys Thr
545                 550                 555                 560

Met Arg Leu Pro Pro Pro Thr Thr Lys Asp Ala Thr Leu Glu Thr Val
                565                 570                 575

Met Ala Thr Leu Pro Asn Phe His Gln Ala Ser Leu Gln Met Ser Ile
            580                 585                 590

Thr Trp Gln Leu Gly Arg Arg Gln Pro Val Met Val Ala Val Gly Gln
        595                 600                 605

His Glu Glu Glu Tyr Phe Ser Gly Pro Glu Pro Lys Ala Val Leu Lys
    610                 615                 620

Lys Phe Arg Glu Glu Leu Ala Ala Leu Asp Lys Glu Ile Glu Ile Arg
625                 630                 635                 640

Asn Ala Lys Leu Asp Met Pro Tyr Glu Tyr Leu Arg Pro Ser Val Val
                645                 650                 655

Glu Asn Ser Val Ala Ile
            660
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<210> 5992
<211> 4
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<213> Homo sapiens

<220>
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<223> /note="Gene Name:
arachidonate 15-lipoxygenase; "

<220>
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<223> /note="ENSP ID: ENSP00000460430"

<400> 5992
Met Ala Gly Ala
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<210> 5993
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<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ALOX15; "

<220>
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<223> /note="Gene Name:
arachidonate 15-lipoxygenase; "

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<220>
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<223> /note="ENSP ID: ENSP00000460483"

<400> 5993
Met Gly Leu Tyr Arg Ile Arg Val Ser Thr Gly Ala Ser Leu Tyr Ala
1   5   10   15

```
Gly Ser Asn Asn Gln Val Gln Leu Trp Leu Val Gly Gln His Gly Glu
            20                  25                  30

Ala Ala Leu Gly Lys Arg Leu Trp Pro Ala Arg Gly Lys Gly Pro Gly
        35                  40                  45

Ala Gly Asp Glu Val Arg Phe Pro Cys Tyr Arg Trp Val Glu Gly Asn
    50                  55                  60

Gly Val Leu Ser Leu Pro Glu Gly Thr Gly Arg Thr Val Gly Glu Asp
65                  70                  75                  80

Pro Gln Gly Leu Phe Gln Lys His Arg Glu Glu Glu Leu Glu Glu Arg
                85                  90                  95

Arg Lys Leu Tyr Arg Trp Gly Asn Trp Lys Asp Gly Leu Ile Leu Asn
            100                 105                 110

Met Ala Gly Ala Lys Leu Tyr Asp Leu Pro Val Asp Glu Arg Phe Leu
        115                 120                 125

Glu Asp Lys Arg Val Asp Phe Glu Val Ser Leu Ala Lys Gly Leu Ala
    130                 135                 140

Asp Leu Ala Ile Lys Asp Ser Leu Asn Val Leu Thr Cys Trp Lys Asp
145                 150                 155                 160

Leu Asp Asp Phe Asn Arg Ile Phe Trp Cys Gly Gln Ser Lys Leu Ala
                165                 170                 175

Glu Arg Val Arg Asp Ser Trp Lys Glu Asp Ala Leu Phe Gly Tyr Gln
            180                 185                 190

Phe Leu Asn Gly Ala Asn Pro Val Val Leu Arg Arg Ser Ala His Leu
        195                 200                 205

Pro Ala Arg Leu Val Phe Pro Pro Gly Met Glu Glu Leu Gln Ala Gln
    210                 215                 220

Leu Glu Lys Glu Leu Glu Gly Gly Thr Leu Phe Glu Ala Asp Phe Ser
225                 230                 235                 240
```

```
Leu Leu Asp Gly Ile Lys Ala Asn Val Ile Leu Cys Ser Gln Gln His
                245                 250                 255

Leu Ala Ala Pro Leu Val Met Leu Lys Leu Gln Pro Asp Gly Lys Leu
            260                 265                 270

Leu Pro Met Val Ile Gln Leu Gln Leu Pro Arg Thr Gly Ser Pro Pro
        275                 280                 285

Pro Pro Leu Phe Leu Pro Thr Asp Pro Pro Met Ala Trp Leu Leu Ala
    290                 295                 300

Lys Cys Trp Val Arg Ser Ser Asp Phe Gln Leu His Glu Leu Gln Ser
305                 310                 315                 320

His Leu Leu Arg Gly His Leu Met Ala Glu Val Ile Val Val Ala Thr
                325                 330                 335

Met Arg Cys Leu Pro Ser Ile His Pro Ile Phe Lys Leu Ile Ile Pro
            340                 345                 350

His Leu Arg Tyr Thr Leu Glu Ile Asn Val Arg Ala Arg Thr Gly Leu
        355                 360                 365

Val Ser Asp Met Gly Ile Phe Asp Gln Ile Met Ser Thr Gly Gly Gly
    370                 375                 380

Gly His Val Gln Leu Leu Lys Gln Ala Gly Ala Phe Leu Thr Tyr Ser
385                 390                 395                 400

Ser Phe Cys Pro Pro Asp Asp Leu Ala Asp Arg Gly Leu Leu Gly Val
                405                 410                 415

Lys Ser Ser Phe Tyr Ala Gln Asp Ala Leu Arg Leu Trp Glu Ile Ile
            420                 425                 430

Tyr Arg Tyr Val Glu Gly Ile Val Ser Leu His Tyr Lys Thr Asp Val
        435                 440                 445

Ala Val Lys Asp Asp Pro Glu Leu Gln Thr Trp Cys Arg Glu Ile Thr
    450                 455                 460

Glu Ile Gly Leu Gln Gly Ala Gln Asp Arg Gly Phe Pro Val Ser Leu
```

```
465                 470                 475                 480

Gln Ala Arg Asp Gln Val Cys His Phe Val Thr Met Cys Ile Phe Thr
                485                 490                 495

Cys Thr Gly Gln His Ala Ser Val His Leu Gly Gln Leu Asp Trp Tyr
            500                 505                 510

Ser Trp Val Pro Asn Ala Pro Cys Thr Met Arg Leu Pro Pro Pro Thr
        515                 520                 525

Thr Lys Asp Ala Thr Leu Glu Thr Val Met Ala Thr Leu Pro Asn Phe
    530                 535                 540

His Gln Ala Ser Leu Gln Met Ser Ile Thr Trp Gln Leu Gly Arg Arg
545                 550                 555                 560

Gln Pro Val Met Val Ala Val Gly Gln His Glu Glu Glu Tyr Phe Ser
                565                 570                 575

Gly Pro Glu Pro Lys Ala Val Leu Lys Lys Phe Arg Glu Glu Leu Ala
            580                 585                 590

Ala Leu Asp Lys Glu Ile Glu Ile Arg Asn Ala Lys Leu Asp Met Pro
        595                 600                 605

Tyr Glu Tyr Leu Arg Pro Ser Val Val Glu Asn Ser Val Ala Ile
    610                 615                 620
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<210> 5994
<211> 647
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<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1309; "

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<221> source
<223> /note="Gene Symbol: ALOX15B; "

<220>
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<223> /note="Gene Name:
arachidonate 15-lipoxygenase, type B; "

<220>
<221> source
<223> /note="Uniprot ID: O15296; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000369520"

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Met Ala Glu Phe Arg Val Arg Val Ser Thr Gly Glu Ala Phe Gly Ala
1   5   10   15

Gly Thr Trp Asp Lys Val Ser Val Ser Ile Val Gly Thr Arg Gly Glu
            20   25   30

Ser Pro Pro Leu Pro Leu Asp Asn Leu Gly Lys Glu Phe Thr Ala Gly
        35   40   45

Ala Glu Glu Asp Phe Gln Val Thr Leu Pro Glu Asp Val Gly Arg Val
    50   55   60

Leu Leu Leu Arg Val His Lys Ala Pro Pro Val Leu Pro Leu Leu Gly
65   70   75   80

Pro Leu Ala Pro Asp Ala Trp Phe Cys Arg Trp Phe Gln Leu Thr Pro
                85   90   95

Pro Arg Gly Gly His Leu Leu Phe Pro Cys Tyr Gln Trp Leu Glu Gly
            100   105   110

Ala Gly Thr Leu Val Leu Gln Glu Gly Thr Ala Lys Val Ser Trp Ala
        115   120   125

Asp His His Pro Val Leu Gln Gln Gln Arg Gln Glu Glu Leu Gln Ala
    130   135   140

Arg Gln Glu Met Tyr Gln Trp Lys Ala Tyr Asn Pro Gly Trp Pro His
145   150   155   160

Cys Leu Asp Glu Lys Thr Val Glu Asp Leu Glu Leu Asn Ile Lys Tyr
                165   170   175

Ser Thr Ala Lys Asn Ala Asn Phe Tyr Leu Gln Ala Gly Ser Ala Phe
            180   185   190

```
Ala Glu Met Lys Ile Lys Gly Leu Leu Asp Arg Lys Gly Leu Trp Arg
        195                 200                 205

Ser Leu Asn Glu Met Lys Arg Ile Phe Asn Phe Arg Arg Thr Pro Ala
    210                 215                 220

Ala Glu His Ala Phe Glu His Trp Gln Glu Asp Ala Phe Phe Ala Ser
225                 230                 235                 240

Gln Phe Leu Asn Gly Leu Asn Pro Val Leu Ile Arg Arg Cys His Tyr
                245                 250                 255

Leu Pro Lys Asn Phe Pro Val Thr Asp Ala Met Val Ala Ser Val Leu
            260                 265                 270

Gly Pro Gly Thr Ser Leu Gln Ala Glu Leu Glu Lys Gly Ser Leu Phe
        275                 280                 285

Leu Val Asp His Gly Ile Leu Ser Gly Ile Gln Thr Asn Val Ile Asn
    290                 295                 300

Gly Lys Pro Gln Phe Ser Ala Ala Pro Met Thr Leu Leu Tyr Gln Ser
305                 310                 315                 320

Pro Gly Cys Gly Pro Leu Leu Pro Leu Ala Ile Gln Leu Ser Gln Thr
                325                 330                 335

Pro Gly Pro Asn Ser Pro Ile Phe Leu Pro Thr Asp Asp Lys Trp Asp
            340                 345                 350

Trp Leu Leu Ala Lys Thr Trp Val Arg Asn Ala Glu Phe Ser Phe His
        355                 360                 365

Glu Ala Leu Thr His Leu Leu His Ser His Leu Leu Pro Glu Val Phe
    370                 375                 380

Thr Leu Ala Thr Leu Arg Gln Leu Pro His Cys His Pro Leu Phe Lys
385                 390                 395                 400

Ser Thr Gly Ile Gly Ile Glu Gly Phe Ser Glu Leu Ile Gln Arg Asn
                405                 410                 415

Met Lys Gln Leu Asn Tyr Ser Leu Leu Cys Leu Pro Glu Asp Ile Arg
```

```
            420                 425                 430

Thr Arg Gly Val Glu Asp Ile Pro Gly Tyr Tyr Tyr Arg Asp Asp Gly
        435                 440                 445

Met Gln Ile Trp Gly Ala Val Glu Arg Phe Val Ser Glu Ile Ile Gly
    450                 455                 460

Ile Tyr Tyr Pro Ser Asp Glu Ser Val Gln Asp Asp Arg Glu Leu Gln
465                 470                 475                 480

Ala Trp Val Arg Glu Ile Phe Ser Lys Gly Phe Leu Asn Gln Glu Ser
                485                 490                 495

Ser Gly Ile Pro Ser Ser Leu Glu Thr Arg Glu Ala Leu Val Gln Tyr
            500                 505                 510

Val Thr Met Val Ile Phe Thr Cys Ser Ala Lys His Ala Ala Val Ser
        515                 520                 525

Ala Gly Gln Phe Asp Ser Cys Ala Trp Met Pro Asn Leu Pro Pro Ser
    530                 535                 540

Met Gln Leu Pro Pro Pro Thr Ser Lys Gly Leu Ala Thr Cys Glu Gly
545                 550                 555                 560

Phe Ile Ala Thr Leu Pro Pro Val Asn Ala Thr Cys Asp Val Ile Leu
                565                 570                 575

Ala Leu Trp Leu Leu Ser Lys Glu Pro Gly Asp Gln Arg Pro Leu Gly
            580                 585                 590

Thr Tyr Pro Asp Glu His Phe Thr Glu Glu Ala Pro Arg Arg Ser Ile
        595                 600                 605

Ala Thr Phe Gln Ser Arg Leu Ala Gln Ile Ser Arg Gly Ile Gln Glu
    610                 615                 620

Arg Asn Gln Gly Leu Val Leu Pro Tyr Thr Tyr Leu Asp Pro Pro Leu
625                 630                 635                 640

Ile Glu Asn Ser Val Ser Ile
                645
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<210> 5995
<211> 676
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1309; "

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<223> /note="Gene Symbol: ALOX15B; "

<220>
<221> source
<223> /note="Gene Name:
arachidonate 15-lipoxygenase, type B; "

<220>
<221> source
<223> /note="Uniprot ID: O15296; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000369530"

<400> 5995
Met Ala Glu Phe Arg Val Arg Val Ser Thr Gly Glu Ala Phe Gly Ala
1   5   10   15

Gly Thr Trp Asp Lys Val Ser Val Ser Ile Val Gly Thr Arg Gly Glu
            20   25   30

Ser Pro Pro Leu Pro Leu Asp Asn Leu Gly Lys Glu Phe Thr Ala Gly
        35   40   45

Ala Glu Glu Asp Phe Gln Val Thr Leu Pro Glu Asp Val Gly Arg Val
    50   55   60

Leu Leu Leu Arg Val His Lys Ala Pro Pro Val Leu Pro Leu Leu Gly
65   70   75   80

Pro Leu Ala Pro Asp Ala Trp Phe Cys Arg Trp Phe Gln Leu Thr Pro
                85   90   95

Pro Arg Gly Gly His Leu Leu Phe Pro Cys Tyr Gln Trp Leu Glu Gly
            100   105   110

```
Ala Gly Thr Leu Val Leu Gln Glu Gly Thr Ala Lys Val Ser Trp Ala
        115                 120                 125

Asp His His Pro Val Leu Gln Gln Arg Gln Glu Glu Leu Gln Ala
    130                 135                 140

Arg Gln Glu Met Tyr Gln Trp Lys Ala Tyr Asn Pro Gly Trp Pro His
145                 150                 155                 160

Cys Leu Asp Glu Lys Thr Val Glu Asp Leu Glu Leu Asn Ile Lys Tyr
                165                 170                 175

Ser Thr Ala Lys Asn Ala Asn Phe Tyr Leu Gln Ala Gly Ser Ala Phe
            180                 185                 190

Ala Glu Met Lys Ile Lys Gly Leu Leu Asp Arg Lys Gly Leu Trp Arg
        195                 200                 205

Ser Leu Asn Glu Met Lys Arg Ile Phe Asn Phe Arg Arg Thr Pro Ala
    210                 215                 220

Ala Glu His Ala Phe Glu His Trp Gln Glu Asp Ala Phe Phe Ala Ser
225                 230                 235                 240

Gln Phe Leu Asn Gly Leu Asn Pro Val Leu Ile Arg Arg Cys His Tyr
                245                 250                 255

Leu Pro Lys Asn Phe Pro Val Thr Asp Ala Met Val Ala Ser Val Leu
            260                 265                 270

Gly Pro Gly Thr Ser Leu Gln Ala Glu Leu Glu Lys Gly Ser Leu Phe
        275                 280                 285

Leu Val Asp His Gly Ile Leu Ser Gly Ile Gln Thr Asn Val Ile Asn
    290                 295                 300

Gly Lys Pro Gln Phe Ser Ala Ala Pro Met Thr Leu Leu Tyr Gln Ser
305                 310                 315                 320

Pro Gly Cys Gly Pro Leu Leu Pro Leu Ala Ile Gln Leu Ser Gln Thr
                325                 330                 335

Pro Gly Pro Asn Ser Pro Ile Phe Leu Pro Thr Asp Asp Lys Trp Asp
```

```
            340                 345                 350

Trp Leu Leu Ala Lys Thr Trp Val Arg Asn Ala Glu Phe Ser Phe His
        355                 360                 365

Glu Ala Leu Thr His Leu Leu His Ser His Leu Leu Pro Glu Val Phe
    370                 375                 380

Thr Leu Ala Thr Leu Arg Gln Leu Pro His Cys His Pro Leu Phe Lys
385                 390                 395                 400

Leu Leu Ile Pro His Thr Arg Tyr Thr Leu His Ile Asn Thr Leu Ala
                405                 410                 415

Arg Glu Leu Leu Ile Val Pro Gly Gln Val Val Asp Arg Ser Thr Gly
            420                 425                 430

Ile Gly Ile Glu Gly Phe Ser Glu Leu Ile Gln Arg Asn Met Lys Gln
        435                 440                 445

Leu Asn Tyr Ser Leu Leu Cys Leu Pro Glu Asp Ile Arg Thr Arg Gly
    450                 455                 460

Val Glu Asp Ile Pro Gly Tyr Tyr Tyr Arg Asp Asp Gly Met Gln Ile
465                 470                 475                 480

Trp Gly Ala Val Glu Arg Phe Val Ser Glu Ile Ile Gly Ile Tyr Tyr
                485                 490                 495

Pro Ser Asp Glu Ser Val Gln Asp Asp Arg Glu Leu Gln Ala Trp Val
            500                 505                 510

Arg Glu Ile Phe Ser Lys Gly Phe Leu Asn Gln Glu Ser Ser Gly Ile
        515                 520                 525

Pro Ser Ser Leu Glu Thr Arg Glu Ala Leu Val Gln Tyr Val Thr Met
    530                 535                 540

Val Ile Phe Thr Cys Ser Ala Lys His Ala Ala Val Ser Ala Gly Gln
545                 550                 555                 560

Phe Asp Ser Cys Ala Trp Met Pro Asn Leu Pro Pro Ser Met Gln Leu
                565                 570                 575
```

```
Pro Pro Pro Thr Ser Lys Gly Leu Ala Thr Cys Glu Gly Phe Ile Ala
            580                 585                 590

Thr Leu Pro Pro Val Asn Ala Thr Cys Asp Val Ile Leu Ala Leu Trp
        595                 600                 605

Leu Leu Ser Lys Glu Pro Gly Asp Gln Arg Pro Leu Gly Thr Tyr Pro
    610                 615                 620

Asp Glu His Phe Thr Glu Glu Ala Pro Arg Arg Ser Ile Ala Thr Phe
625                 630                 635                 640

Gln Ser Arg Leu Ala Gln Ile Ser Arg Gly Ile Gln Glu Arg Asn Gln
                645                 650                 655

Gly Leu Val Leu Pro Tyr Thr Tyr Leu Asp Pro Pro Leu Ile Glu Asn
            660                 665                 670

Ser Val Ser Ile
        675


<210> 5996
<211> 664
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1309; "

<220>
<221> source
<223> /note="Gene Symbol: ALOX15B; "

<220>
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<223> /note="Gene Name:
      arachidonate 15-lipoxygenase, type B; "

<220>
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<223> /note="ENSP ID: ENSP00000458749"

<400> 5996
Met Ala Glu Phe Arg Val Arg Val Ser Thr Gly Glu Ala Phe Gly Ala
1               5                   10                  15
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Gly Thr Trp Asp Lys Val Ser Val Ser Ile Val Gly Thr Arg Gly Glu
            20                  25                  30

Ser Pro Pro Leu Pro Leu Asp Asn Leu Gly Lys Glu Phe Thr Ala Gly
        35                  40                  45

Ala Glu Glu Asp Phe Gln Val Thr Leu Pro Glu Asp Val Gly Arg Val
    50                  55                  60

Leu Leu Leu Arg Val His Lys Ala Pro Pro Val Leu Pro Leu Leu Gly
65                  70                  75                  80

Pro Leu Ala Pro Asp Ala Trp Phe Cys Arg Trp Phe Gln Leu Thr Pro
                85                  90                  95

Pro Arg Gly Gly His Leu Leu Phe Pro Cys Tyr Gln Trp Leu Glu Gly
            100                 105                 110

Ala Gly Thr Leu Val Leu Gln Glu Gly Thr Ala Lys Val Ser Trp Ala
        115                 120                 125

Asp His His Pro Val Leu Gln Gln Gln Arg Gln Glu Glu Leu Gln Ala
    130                 135                 140

Arg Gln Glu Met Tyr Gln Trp Lys Ala Tyr Asn Pro Gly Trp Pro His
145                 150                 155                 160

Cys Leu Asp Glu Lys Thr Val Glu Asp Leu Glu Leu Asn Ile Lys Tyr
                165                 170                 175

Ser Thr Ala Lys Asn Ala Asn Phe Tyr Leu Gln Ala Gly Ser Ala Phe
            180                 185                 190

Ala Glu Met Lys Ile Lys Gly Leu Leu Asp Arg Lys Gly Leu Trp Arg
        195                 200                 205

Ser Leu Asn Glu Met Lys Arg Ile Phe Asn Phe Arg Arg Thr Pro Ala
    210                 215                 220

Ala Glu His Ala Phe Glu His Trp Gln Glu Asp Ala Phe Phe Ala Ser
225                 230                 235                 240

Gln Phe Leu Asn Gly Leu Asn Pro Val Leu Ile Arg Arg Cys His Tyr
```

```
                245                 250                 255

Leu Pro Lys Asn Phe Pro Val Thr Asp Ala Met Val Ala Ser Val Leu
            260                 265                 270

Gly Pro Gly Thr Ser Leu Gln Ala Glu Leu Glu Lys Gly Ser Leu Phe
        275                 280                 285

Leu Val Asp His Gly Ile Leu Ser Gly Ile Gln Thr Asn Val Ile Asn
    290                 295                 300

Gly Lys Pro Gln Phe Ser Ala Ala Pro Met Thr Leu Leu Tyr Gln Ser
305                 310                 315                 320

Pro Gly Cys Gly Pro Leu Leu Pro Leu Ala Ile Gln Leu Ser Gln Thr
                325                 330                 335

Pro Gly Pro Asn Ser Pro Ile Phe Leu Pro Thr Asp Asp Lys Trp Asp
            340                 345                 350

Trp Leu Leu Ala Lys Thr Trp Val Arg Asn Ala Glu Phe Ser Phe His
        355                 360                 365

Glu Ala Leu Thr His Leu Leu His Ser His Leu Leu Pro Glu Val Phe
    370                 375                 380

Thr Leu Ala Thr Leu Arg Gln Leu Pro His Cys His Pro Leu Phe Lys
385                 390                 395                 400

Leu Leu Ile Pro His Thr Arg Tyr Thr Leu His Ile Asn Thr Leu Ala
                405                 410                 415

Arg Glu Leu Leu Ile Val Pro Gly Gln Val Val Asp Arg Ser Thr Gly
            420                 425                 430

Ile Gly Ile Glu Gly Phe Ser Glu Leu Ile Gln Arg Asn Met Lys Gln
        435                 440                 445

Leu Asn Tyr Ser Leu Leu Cys Leu Pro Glu Asp Ile Arg Thr Arg Gly
    450                 455                 460

Val Glu Asp Ile Pro Gly Tyr Tyr Tyr Arg Asp Asp Gly Met Gln Ile
465                 470                 475                 480
```

```
Trp Gly Ala Val Glu Arg Asp Glu Ser Val Gln Asp Asp Arg Glu Leu
                485                 490                 495

Gln Ala Trp Val Arg Glu Ile Phe Ser Lys Gly Phe Leu Asn Gln Glu
            500                 505                 510

Ser Ser Gly Ile Pro Ser Ser Leu Glu Thr Arg Glu Ala Leu Val Gln
        515                 520                 525

Tyr Val Thr Met Val Ile Phe Thr Cys Ser Ala Lys His Ala Ala Val
    530                 535                 540

Ser Ala Gly Gln Phe Asp Ser Cys Ala Trp Met Pro Asn Leu Pro Pro
545                 550                 555                 560

Ser Met Gln Leu Pro Pro Pro Thr Ser Lys Gly Leu Ala Thr Cys Glu
                565                 570                 575

Gly Phe Ile Ala Thr Leu Pro Pro Val Asn Ala Thr Cys Asp Val Ile
            580                 585                 590

Leu Ala Leu Trp Leu Leu Ser Lys Glu Pro Gly Asp Gln Arg Pro Leu
        595                 600                 605

Gly Thr Tyr Pro Asp Glu His Phe Thr Glu Glu Ala Pro Arg Arg Ser
    610                 615                 620

Ile Ala Thr Phe Gln Ser Arg Leu Ala Gln Ile Ser Arg Gly Ile Gln
625                 630                 635                 640

Glu Arg Asn Gln Gly Leu Val Leu Pro Tyr Thr Tyr Leu Asp Pro Pro
                645                 650                 655

Leu Ile Glu Asn Ser Val Ser Ile
            660
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<210> 5997
<211> 602
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1309; "

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<223> /note="Gene Symbol: ALOX15B; "

<220>
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arachidonate 15-lipoxygenase, type B; "

<220>
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<223> /note="Uniprot ID: O15296; "

<220>
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<223> /note="ENSP ID: ENSP00000460332"

<400> 5997

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Met Ala Glu Phe Arg Val Arg Val Ser Thr Gly Glu Ala Phe Gly Ala
1               5                  10                  15

Gly Thr Trp Asp Lys Val Ser Val Ser Ile Val Gly Thr Arg Gly Glu
            20                  25                  30

Ser Pro Pro Leu Pro Leu Asp Asn Leu Gly Lys Glu Phe Thr Ala Gly
        35                  40                  45

Ala Glu Glu Asp Phe Gln Val Thr Leu Pro Glu Asp Val Gly Arg Val
    50                  55                  60

Leu Leu Leu Arg Val His Lys Ala Pro Pro Val Leu Pro Leu Leu Gly
65                  70                  75                  80

Pro Leu Ala Pro Asp Ala Trp Phe Cys Arg Trp Phe Gln Leu Thr Pro
                85                  90                  95

Pro Arg Gly Gly His Leu Leu Phe Pro Cys Tyr Gln Trp Leu Glu Gly
            100                 105                 110

Ala Gly Thr Leu Val Leu Gln Glu Gly Thr Ala Lys Val Ser Trp Ala
        115                 120                 125

Asp His His Pro Val Leu Gln Gln Gln Arg Gln Glu Glu Leu Gln Ala
    130                 135                 140

Arg Gln Glu Met Tyr Gln Trp Lys Ala Tyr Asn Pro Gly Trp Pro His
```

145 150 155 160

Cys Leu Asp Glu Lys Thr Val Glu Asp Leu Glu Leu Asn Ile Lys Tyr
165 170 175

Ser Thr Ala Lys Asn Ala Asn Phe Tyr Leu Gln Ala Gly Ser Ala Phe
180 185 190

Ala Glu Met Lys Ile Lys Gly Leu Leu Asp Arg Lys Gly Leu Trp Arg
195 200 205

Ser Leu Asn Glu Met Lys Arg Ile Phe Asn Phe Arg Arg Thr Pro Ala
210 215 220

Ala Glu His Ala Phe Glu His Trp Gln Glu Asp Ala Phe Phe Ala Ser
225 230 235 240

Gln Phe Leu Asn Gly Leu Asn Pro Val Leu Ile Arg Arg Cys His Tyr
245 250 255

Leu Pro Lys Asn Phe Pro Val Thr Asp Ala Met Val Ala Ser Val Leu
260 265 270

Gly Pro Gly Thr Ser Leu Gln Ala Glu Leu Glu Lys Gly Ser Leu Phe
275 280 285

Leu Val Asp His Gly Ile Leu Ser Gly Ile Gln Thr Asn Val Ile Asn
290 295 300

Gly Lys Pro Gln Phe Ser Ala Ala Pro Met Thr Leu Leu Tyr Gln Ser
305 310 315 320

Pro Gly Cys Gly Pro Leu Leu Pro Leu Ala Ile Gln Leu Ser Gln Thr
325 330 335

Pro Gly Pro Asn Ser Pro Ile Phe Leu Pro Thr Asp Asp Lys Trp Asp
340 345 350

Trp Leu Leu Ala Lys Thr Trp Val Arg Asn Ala Glu Phe Ser Phe His
355 360 365

Glu Ala Leu Thr His Leu Leu His Ser His Leu Leu Pro Glu Val Phe
370 375 380

```
Thr Leu Ala Thr Leu Arg Gln Leu Pro His Cys His Pro Leu Phe Lys
385                 390                 395                 400

Ser Thr Gly Ile Gly Ile Glu Gly Phe Ser Glu Leu Ile Gln Arg Asn
                405                 410                 415

Met Lys Gln Leu Asn Tyr Ser Leu Leu Cys Leu Pro Glu Asp Ile Arg
            420                 425                 430

Thr Arg Gly Val Glu Asp Ile Pro Gly Tyr Tyr Tyr Arg Asp Asp Gly
        435                 440                 445

Met Gln Ile Trp Gly Ile Pro Ser Ser Leu Glu Thr Arg Glu Ala Leu
    450                 455                 460

Val Gln Tyr Val Thr Met Val Ile Phe Thr Cys Ser Ala Lys His Ala
465                 470                 475                 480

Ala Val Ser Ala Gly Gln Phe Asp Ser Cys Ala Trp Met Pro Asn Leu
                485                 490                 495

Pro Pro Ser Met Gln Leu Pro Pro Pro Thr Ser Lys Gly Leu Ala Thr
            500                 505                 510

Cys Glu Gly Phe Ile Ala Thr Leu Pro Pro Val Asn Ala Thr Cys Asp
        515                 520                 525

Val Ile Leu Ala Leu Trp Leu Leu Ser Lys Glu Pro Gly Asp Gln Arg
    530                 535                 540

Pro Leu Gly Thr Tyr Pro Asp Glu His Phe Thr Glu Glu Ala Pro Arg
545                 550                 555                 560

Arg Ser Ile Ala Thr Phe Gln Ser Arg Leu Ala Gln Ile Ser Arg Gly
                565                 570                 575

Ile Gln Glu Arg Asn Gln Gly Leu Val Leu Pro Tyr Thr Tyr Leu Asp
            580                 585                 590

Pro Pro Leu Ile Glu Asn Ser Val Ser Ile
        595                 600
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<210> 5998
<211> 674
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<220>
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<223> /note="Gene Name:
arachidonate 5-lipoxygenase; "

<220>
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<220>
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<400> 5998
Met Pro Ser Tyr Thr Val Thr Val Ala Thr Gly Ser Gln Trp Phe Ala
1   5   10   15

Gly Thr Asp Asp Tyr Ile Tyr Leu Ser Leu Val Gly Ser Ala Gly Cys
            20   25   30

Ser Glu Lys His Leu Leu Asp Lys Pro Phe Tyr Asn Asp Phe Glu Arg
        35   40   45

Gly Ala Val Asp Ser Tyr Asp Val Thr Val Asp Glu Glu Leu Gly Glu
    50   55   60

Ile Gln Leu Val Arg Ile Glu Lys Arg Lys Tyr Trp Leu Asn Asp Asp
65   70   75   80

Trp Tyr Leu Lys Tyr Ile Thr Leu Lys Thr Pro His Gly Asp Tyr Ile
                85   90   95

Glu Phe Pro Cys Tyr Arg Trp Ile Thr Gly Asp Val Glu Val Val Leu
            100   105   110

Arg Asp Gly Arg Ala Lys Leu Ala Arg Asp Asp Gln Ile His Ile Leu

```
        115                 120                 125

Lys Gln His Arg Arg Lys Glu Leu Glu Thr Arg Gln Lys Gln Tyr Arg
    130                 135                 140

Trp Met Glu Trp Asn Pro Gly Phe Pro Leu Ser Ile Asp Ala Lys Cys
145                 150                 155                 160

His Lys Asp Leu Pro Arg Asp Ile Gln Phe Asp Ser Glu Lys Gly Val
                165                 170                 175

Asp Phe Val Leu Asn Tyr Ser Lys Ala Met Glu Asn Leu Phe Ile Asn
            180                 185                 190

Arg Phe Met His Met Phe Gln Ser Ser Trp Asn Asp Phe Ala Asp Phe
        195                 200                 205

Glu Lys Ile Phe Val Lys Ile Ser Asn Thr Ile Ser Glu Arg Val Met
    210                 215                 220

Asn His Trp Gln Glu Asp Leu Met Phe Gly Tyr Gln Phe Leu Asn Gly
225                 230                 235                 240

Cys Asn Pro Val Leu Ile Arg Arg Cys Thr Glu Leu Pro Glu Lys Leu
                245                 250                 255

Pro Val Thr Thr Glu Met Val Glu Cys Ser Leu Glu Arg Gln Leu Ser
            260                 265                 270

Leu Glu Gln Glu Val Gln Gln Gly Asn Ile Phe Ile Val Asp Phe Glu
        275                 280                 285

Leu Leu Asp Gly Ile Asp Ala Asn Lys Thr Asp Pro Cys Thr Leu Gln
    290                 295                 300

Phe Leu Ala Ala Pro Ile Cys Leu Leu Tyr Lys Asn Leu Ala Asn Lys
305                 310                 315                 320

Ile Val Pro Ile Ala Ile Gln Leu Asn Gln Ile Pro Gly Asp Glu Asn
                325                 330                 335

Pro Ile Phe Leu Pro Ser Asp Ala Lys Tyr Asp Trp Leu Leu Ala Lys
            340                 345                 350
```

```
Ile Trp Val Arg Ser Ser Asp Phe His Val His Gln Thr Ile Thr His
        355                 360                 365

Leu Leu Arg Thr His Leu Val Ser Glu Val Phe Gly Ile Ala Met Tyr
    370                 375                 380

Arg Gln Leu Pro Ala Val His Pro Ile Phe Lys Leu Leu Val Ala His
385                 390                 395                 400

Val Arg Phe Thr Ile Ala Ile Asn Thr Lys Ala Arg Glu Gln Leu Ile
                405                 410                 415

Cys Glu Cys Gly Leu Phe Asp Lys Ala Asn Ala Thr Gly Gly Gly Gly
            420                 425                 430

His Val Gln Met Val Gln Arg Ala Met Lys Asp Leu Thr Tyr Ala Ser
        435                 440                 445

Leu Cys Phe Pro Glu Ala Ile Lys Ala Arg Gly Met Glu Ser Lys Glu
    450                 455                 460

Asp Ile Pro Tyr Tyr Phe Tyr Arg Asp Asp Gly Leu Leu Val Trp Glu
465                 470                 475                 480

Ala Ile Arg Thr Phe Thr Ala Glu Val Val Asp Ile Tyr Tyr Glu Gly
                485                 490                 495

Asp Gln Val Val Glu Glu Asp Pro Glu Leu Gln Asp Phe Val Asn Asp
            500                 505                 510

Val Tyr Val Tyr Gly Met Arg Gly Arg Lys Ser Ser Gly Phe Pro Lys
        515                 520                 525

Ser Val Lys Ser Arg Glu Gln Leu Ser Glu Tyr Leu Thr Val Val Ile
    530                 535                 540

Phe Thr Ala Ser Ala Gln His Ala Ala Val Asn Phe Gly Gln Tyr Asp
545                 550                 555                 560

Trp Cys Ser Trp Ile Pro Asn Ala Pro Pro Thr Met Arg Ala Pro Pro
                565                 570                 575
```

```
Pro Thr Ala Lys Gly Val Val Thr Ile Glu Gln Ile Val Asp Thr Leu
            580                 585                 590

Pro Asp Arg Gly Arg Ser Cys Trp His Leu Gly Ala Val Trp Ala Leu
        595                 600                 605

Ser Gln Phe Gln Glu Asn Glu Leu Phe Leu Gly Met Tyr Pro Glu Glu
    610                 615                 620

His Phe Ile Glu Lys Pro Val Lys Glu Ala Met Ala Arg Phe Arg Lys
625                 630                 635                 640

Asn Leu Glu Ala Ile Val Ser Val Ile Ala Glu Arg Asn Lys Lys Lys
                645                 650                 655

Gln Leu Pro Tyr Tyr Tyr Leu Ser Pro Asp Arg Ile Pro Asn Ser Val
            660                 665                 670

Ala Ile
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<210> 5999
<211> 617
<212> PRT
<213> Homo sapiens

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<223> /note="Gene Symbol: ALOX5; "

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<223> /note="Gene Name:
arachidonate 5-lipoxygenase; "

<220>
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<223> /note="Uniprot ID: P09917; "

<220>
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<400> 5999

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Met Pro Ser Tyr Thr Val Thr Val Ala Thr Gly Ser Gln Trp Phe Ala
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1 5 10 15

Gly Thr Asp Asp Tyr Ile Tyr Leu Ser Leu Val Gly Ser Ala Gly Cys
20 25 30

Ser Glu Lys His Leu Leu Asp Lys Pro Phe Tyr Asn Asp Phe Glu Arg
35 40 45

Gly Ala Val Asp Ser Tyr Asp Val Thr Val Asp Glu Glu Leu Gly Glu
50 55 60

Ile Gln Leu Val Arg Ile Glu Lys Arg Lys Tyr Trp Leu Asn Asp Asp
65 70 75 80

Trp Tyr Leu Lys Tyr Ile Thr Leu Lys Thr Pro His Gly Asp Tyr Ile
85 90 95

Glu Phe Pro Cys Tyr Arg Trp Ile Thr Gly Asp Val Glu Val Val Leu
100 105 110

Arg Asp Gly Arg Ala Lys Leu Ala Arg Asp Asp Gln Ile His Ile Leu
115 120 125

Lys Gln His Arg Arg Lys Glu Leu Glu Thr Arg Gln Lys Gln Tyr Arg
130 135 140

Trp Met Glu Trp Asn Pro Gly Phe Pro Leu Ser Ile Asp Ala Lys Cys
145 150 155 160

His Lys Asp Leu Pro Arg Asp Ile Gln Phe Asp Ser Glu Lys Gly Val
165 170 175

Asp Phe Val Leu Asn Tyr Ser Lys Ala Met Glu Asn Leu Phe Ile Asn
180 185 190

Arg Phe Met His Met Phe Gln Ser Ser Trp Asn Asp Phe Ala Asp Phe
195 200 205

Glu Lys Ile Phe Val Lys Ile Ser Asn Thr Ile Ser Glu Arg Val Met
210 215 220

Asn His Trp Gln Glu Asp Leu Met Phe Gly Tyr Gln Phe Leu Asn Gly
225 230 235 240

```
Cys Asn Pro Val Leu Ile Arg Arg Cys Thr Glu Leu Pro Glu Lys Leu
                245                 250                 255

Pro Val Thr Thr Glu Met Val Glu Cys Ser Leu Glu Arg Gln Leu Ser
            260                 265                 270

Leu Glu Gln Glu Val Gln Gln Gly Asn Ile Phe Ile Val Asp Phe Glu
        275                 280                 285

Leu Leu Asp Gly Ile Asp Ala Asn Lys Thr Asp Pro Cys Thr Leu Gln
    290                 295                 300

Phe Leu Ala Ala Pro Ile Cys Leu Leu Tyr Lys Asn Leu Ala Asn Lys
305                 310                 315                 320

Ile Val Pro Ile Ala Ile Gln Leu Asn Gln Ile Pro Gly Asp Glu Asn
                325                 330                 335

Pro Ile Phe Leu Pro Ser Asp Ala Lys Tyr Asp Trp Leu Leu Ala Lys
            340                 345                 350

Ile Trp Val Arg Ser Ser Asp Phe His Val His Gln Thr Ile Thr His
        355                 360                 365

Leu Leu Arg Thr His Leu Val Ser Glu Val Phe Gly Ile Ala Met Tyr
    370                 375                 380

Arg Gln Leu Pro Ala Val His Pro Ile Phe Lys Leu Leu Val Ala His
385                 390                 395                 400

Val Arg Phe Thr Ile Ala Ile Asn Thr Lys Ala Arg Glu Gln Leu Ile
                405                 410                 415

Cys Glu Cys Gly Leu Phe Asp Lys Ala Asn Ala Thr Gly Gly Gly Gly
            420                 425                 430

His Val Gln Met Val Gln Arg Ala Met Lys Asp Leu Thr Tyr Ala Ser
        435                 440                 445

Leu Cys Phe Pro Glu Ala Ile Lys Ala Arg Gly Met Glu Ser Lys Glu
    450                 455                 460
```

```
Asp Ile Pro Tyr Tyr Phe Tyr Arg Asp Asp Gly Leu Leu Val Trp Glu
465                 470                 475                 480

Ala Ile Arg Thr Phe Thr Ala Glu Val Val Asp Ile Tyr Tyr Glu Gly
                485                 490                 495

Asp Gln Val Val Glu Glu Asp Pro Glu Leu Gln Asp Phe Val Asn Asp
            500                 505                 510

Val Tyr Val Tyr Gly Met Arg Gly Arg Lys Ser Ser Gly Phe Pro Lys
        515                 520                 525

Ser Val Lys Ser Arg Glu Gln Leu Ser Glu Tyr Leu Thr Val Val Ile
    530                 535                 540

Phe Thr Ala Ser Ala Gln His Ala Ala Val Asn Phe Gly Gln Leu Phe
545                 550                 555                 560

Leu Gly Met Tyr Pro Glu Glu His Phe Ile Glu Lys Pro Val Lys Glu
                565                 570                 575

Ala Met Ala Arg Phe Arg Lys Asn Leu Glu Ala Ile Val Ser Val Ile
            580                 585                 590

Ala Glu Arg Asn Lys Lys Lys Gln Leu Pro Tyr Tyr Tyr Leu Ser Pro
        595                 600                 605

Asp Arg Ile Pro Asn Ser Val Ala Ile
    610                 615


<210> 6000
<211> 139
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<220>
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<223> /note="Gene Name:
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arachidonate 5-lipoxygenase; "

<220>
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<400> 6000
Met Pro Ser Tyr Thr Val Thr Val Ala Thr Gly Ser Gln Trp Phe Ala
1   5   10   15

Gly Thr Asp Asp Tyr Ile Tyr Leu Ser Leu Val Gly Ser Ala Gly Cys
            20   25   30

Ser Glu Lys His Leu Leu Asp Lys Pro Phe Tyr Asn Asp Phe Glu Arg
        35   40   45

Gly Ala Val Asp Ser Tyr Asp Val Thr Val Asp Glu Glu Leu Gly Glu
    50   55   60

Ile Gln Leu Val Arg Ile Glu Lys Arg Lys Tyr Trp Leu Asn Asp Asp
65   70   75   80

Trp Tyr Leu Lys Tyr Ile Thr Leu Lys Thr Pro His Gly Asp Tyr Ile
                85   90   95

Glu Phe Pro Cys Tyr Arg Trp Ile Thr Gly Asp Val Glu Val Val Leu
            100   105   110

Arg Asp Gly Arg Glu Met Asp Gly Val Glu Pro Trp Leu Pro Leu Glu
        115   120   125

His Arg Cys Gln Met Pro Gln Gly Phe Thr Pro
    130   135

<210> 6001
<211> 617
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Uniprot ID: P09917; "

<220>
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<400> 6001

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Met Pro Ser Tyr Thr Val Thr Val Ala Thr Gly Ser Gln Trp Phe Ala
1               5                   10                  15

Gly Thr Asp Asp Tyr Ile Tyr Leu Ser Leu Val Gly Ser Ala Gly Cys
            20                  25                  30

Ser Glu Lys His Leu Leu Asp Lys Pro Phe Tyr Asn Asp Phe Glu Arg
        35                  40                  45

Gly Ala Val Asp Ser Tyr Asp Val Thr Val Asp Glu Glu Leu Gly Glu
    50                  55                  60

Ile Gln Leu Val Arg Ile Glu Lys Arg Lys Tyr Trp Leu Asn Asp Asp
65                  70                  75                  80

Trp Tyr Leu Lys Tyr Ile Thr Leu Lys Thr Pro His Gly Asp Tyr Ile
                85                  90                  95

Glu Phe Pro Cys Tyr Arg Trp Ile Thr Gly Asp Val Glu Val Val Leu
            100                 105                 110

Arg Asp Gly Arg Ala Lys Leu Ala Arg Asp Asp Gln Ile His Ile Leu
        115                 120                 125

Lys Gln His Arg Arg Lys Glu Leu Glu Thr Arg Gln Lys Gln Tyr Arg
    130                 135                 140

Trp Met Glu Trp Asn Pro Gly Phe Pro Leu Ser Ile Asp Ala Lys Cys
145                 150                 155                 160

His Lys Asp Leu Pro Arg Asp Ile Gln Phe Asp Ser Glu Lys Gly Val
                165                 170                 175
```

```
Asp Phe Val Leu Asn Tyr Ser Lys Ala Met Glu Asn Leu Phe Ile Asn
            180                 185                 190

Arg Phe Met His Met Phe Gln Ser Ser Trp Asn Asp Phe Ala Asp Phe
        195                 200                 205

Glu Lys Ile Phe Val Lys Ile Ser Asn Thr Ile Ser Glu Arg Val Met
    210                 215                 220

Asn His Trp Gln Glu Asp Leu Met Phe Gly Tyr Gln Phe Leu Asn Gly
225                 230                 235                 240

Cys Asn Pro Val Leu Ile Arg Arg Cys Thr Glu Leu Pro Glu Lys Leu
                245                 250                 255

Pro Val Thr Thr Glu Met Val Glu Cys Ser Leu Glu Arg Gln Leu Ser
            260                 265                 270

Leu Glu Gln Glu Val Gln Gln Gly Asn Ile Phe Ile Val Asp Phe Glu
        275                 280                 285

Leu Leu Asp Gly Ile Asp Ala Asn Lys Thr Asp Pro Cys Thr Leu Gln
    290                 295                 300

Phe Leu Ala Ala Pro Ile Cys Leu Leu Tyr Lys Asn Leu Ala Asn Lys
305                 310                 315                 320

Ile Val Pro Ile Ala Ile Gln Leu Asn Gln Ile Pro Gly Asp Glu Asn
                325                 330                 335

Pro Ile Phe Leu Pro Ser Asp Ala Lys Tyr Asp Trp Leu Leu Ala Lys
            340                 345                 350

Ile Trp Val Arg Ser Ser Asp Phe His Val His Gln Thr Ile Thr His
        355                 360                 365

Leu Leu Arg Thr His Leu Val Ser Glu Val Phe Gly Ile Ala Met Tyr
    370                 375                 380

Arg Gln Leu Pro Ala Val His Pro Ile Phe Lys Leu Leu Val Ala His
385                 390                 395                 400

Val Arg Phe Thr Ile Ala Ile Asn Thr Lys Ala Arg Glu Gln Leu Ile
```

405 410 415

Cys Glu Cys Gly Leu Phe Asp Lys Ala Asn Ala Thr Gly Gly Gly Gly
420 425 430

His Val Gln Met Val Gln Arg Ala Met Lys Asp Leu Thr Tyr Ala Ser
435 440 445

Leu Cys Phe Pro Glu Ala Ile Lys Ala Arg Gly Met Glu Ser Lys Glu
450 455 460

Asp Ile Pro Tyr Tyr Phe Tyr Arg Asp Asp Gly Leu Leu Val Trp Glu
465 470 475 480

Ala Ile Arg Thr Phe Thr Ala Glu Val Val Asp Ile Tyr Tyr Glu Gly
485 490 495

Asp Gln Val Val Glu Glu Asp Pro Glu Leu Gln Asp Phe Val Asn Asp
500 505 510

Val Tyr Val Tyr Gly Met Arg Gly Arg Lys Ser Ser Gly Phe Pro Lys
515 520 525

Ser Val Lys Ser Arg Glu Gln Leu Ser Glu Tyr Leu Thr Val Val Ile
530 535 540

Phe Thr Ala Ser Ala Gln His Ala Ala Val Asn Phe Gly Gln Leu Phe
545 550 555 560

Leu Gly Met Tyr Pro Glu Glu His Phe Ile Glu Lys Pro Val Lys Glu
565 570 575

Ala Met Ala Arg Phe Arg Lys Asn Leu Glu Ala Ile Val Ser Val Ile
580 585 590

Ala Glu Arg Asn Lys Lys Lys Gln Leu Pro Tyr Tyr Tyr Leu Ser Pro
595 600 605

Asp Arg Ile Pro Asn Ser Val Ala Ile
610 615

<210> 6002
<211> 139

<212> PRT
<213> Homo sapiens

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<220>
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<223> /note="Gene Symbol: ALOX5; "

<220>
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<223> /note="Gene Name:
arachidonate 5-lipoxygenase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000483803"

<400> 6002

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Met Pro Ser Tyr Thr Val Thr Val Ala Thr Gly Ser Gln Trp Phe Ala
1               5                   10                  15


Gly Thr Asp Asp Tyr Ile Tyr Leu Ser Leu Val Gly Ser Ala Gly Cys
            20                  25                  30


Ser Glu Lys His Leu Leu Asp Lys Pro Phe Tyr Asn Asp Phe Glu Arg
        35                  40                  45


Gly Ala Val Asp Ser Tyr Asp Val Thr Val Asp Glu Glu Leu Gly Glu
    50                  55                  60


Ile Gln Leu Val Arg Ile Glu Lys Arg Lys Tyr Trp Leu Asn Asp Asp
65                  70                  75                  80


Trp Tyr Leu Lys Tyr Ile Thr Leu Lys Thr Pro His Gly Asp Tyr Ile
                85                  90                  95


Glu Phe Pro Cys Tyr Arg Trp Ile Thr Gly Asp Val Glu Val Val Leu
            100                 105                 110


Arg Asp Gly Arg Glu Met Asp Gly Val Glu Pro Trp Leu Pro Leu Glu
        115                 120                 125


His Arg Cys Gln Met Pro Gln Gly Phe Thr Pro
    130                 135
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<210> 6003
<211> 674
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Uniprot ID: P09917; "

<220>
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<400> 6003
Met Pro Ser Tyr Thr Val Thr Val Ala Thr Gly Ser Gln Trp Phe Ala
1   5   10   15

Gly Thr Asp Asp Tyr Ile Tyr Leu Ser Leu Val Gly Ser Ala Gly Cys
            20   25   30

Ser Glu Lys His Leu Leu Asp Lys Pro Phe Tyr Asn Asp Phe Glu Arg
        35   40   45

Gly Ala Val Asp Ser Tyr Asp Val Thr Val Asp Glu Glu Leu Gly Glu
    50   55   60

Ile Gln Leu Val Arg Ile Glu Lys Arg Lys Tyr Trp Leu Asn Asp Asp
65   70   75   80

Trp Tyr Leu Lys Tyr Ile Thr Leu Lys Thr Pro His Gly Asp Tyr Ile
                85   90   95

Glu Phe Pro Cys Tyr Arg Trp Ile Thr Gly Asp Val Glu Val Val Leu
            100   105   110

Arg Asp Gly Arg Ala Lys Leu Ala Arg Asp Asp Gln Ile His Ile Leu
        115   120   125

```
Lys Gln His Arg Arg Lys Glu Leu Glu Thr Arg Gln Lys Gln Tyr Arg
    130                 135                 140

Trp Met Glu Trp Asn Pro Gly Phe Pro Leu Ser Ile Asp Ala Lys Cys
145                 150                 155                 160

His Lys Asp Leu Pro Arg Asp Ile Gln Phe Asp Ser Glu Lys Gly Val
                165                 170                 175

Asp Phe Val Leu Asn Tyr Ser Lys Ala Met Glu Asn Leu Phe Ile Asn
            180                 185                 190

Arg Phe Met His Met Phe Gln Ser Ser Trp Asn Asp Phe Ala Asp Phe
        195                 200                 205

Glu Lys Ile Phe Val Lys Ile Ser Asn Thr Ile Ser Glu Arg Val Met
    210                 215                 220

Asn His Trp Gln Glu Asp Leu Met Phe Gly Tyr Gln Phe Leu Asn Gly
225                 230                 235                 240

Cys Asn Pro Val Leu Ile Arg Arg Cys Thr Glu Leu Pro Glu Lys Leu
                245                 250                 255

Pro Val Thr Thr Glu Met Val Glu Cys Ser Leu Glu Arg Gln Leu Ser
            260                 265                 270

Leu Glu Gln Glu Val Gln Gln Gly Asn Ile Phe Ile Val Asp Phe Glu
        275                 280                 285

Leu Leu Asp Gly Ile Asp Ala Asn Lys Thr Asp Pro Cys Thr Leu Gln
    290                 295                 300

Phe Leu Ala Ala Pro Ile Cys Leu Leu Tyr Lys Asn Leu Ala Asn Lys
305                 310                 315                 320

Ile Val Pro Ile Ala Ile Gln Leu Asn Gln Ile Pro Gly Asp Glu Asn
                325                 330                 335

Pro Ile Phe Leu Pro Ser Asp Ala Lys Tyr Asp Trp Leu Leu Ala Lys
            340                 345                 350
```

```
Ile Trp Val Arg Ser Ser Asp Phe His Val His Gln Thr Ile Thr His
        355                 360                 365

Leu Leu Arg Thr His Leu Val Ser Glu Val Phe Gly Ile Ala Met Tyr
    370                 375                 380

Arg Gln Leu Pro Ala Val His Pro Ile Phe Lys Leu Leu Val Ala His
385                 390                 395                 400

Val Arg Phe Thr Ile Ala Ile Asn Thr Lys Ala Arg Glu Gln Leu Ile
                405                 410                 415

Cys Glu Cys Gly Leu Phe Asp Lys Ala Asn Ala Thr Gly Gly Gly Gly
            420                 425                 430

His Val Gln Met Val Gln Arg Ala Met Lys Asp Leu Thr Tyr Ala Ser
        435                 440                 445

Leu Cys Phe Pro Glu Ala Ile Lys Ala Arg Gly Met Glu Ser Lys Glu
    450                 455                 460

Asp Ile Pro Tyr Tyr Phe Tyr Arg Asp Asp Gly Leu Leu Val Trp Glu
465                 470                 475                 480

Ala Ile Arg Thr Phe Thr Ala Glu Val Val Asp Ile Tyr Tyr Glu Gly
                485                 490                 495

Asp Gln Val Val Glu Glu Asp Pro Glu Leu Gln Asp Phe Val Asn Asp
            500                 505                 510

Val Tyr Val Tyr Gly Met Arg Gly Arg Lys Ser Ser Gly Phe Pro Lys
        515                 520                 525

Ser Val Lys Ser Arg Glu Gln Leu Ser Glu Tyr Leu Thr Val Val Ile
    530                 535                 540

Phe Thr Ala Ser Ala Gln His Ala Ala Val Asn Phe Gly Gln Tyr Asp
545                 550                 555                 560

Trp Cys Ser Trp Ile Pro Asn Ala Pro Pro Thr Met Arg Ala Pro Pro
                565                 570                 575
```

```
Pro Thr Ala Lys Gly Val Val Thr Ile Glu Gln Ile Val Asp Thr Leu
            580                 585                 590

Pro Asp Arg Gly Arg Ser Cys Trp His Leu Gly Ala Val Trp Ala Leu
        595                 600                 605

Ser Gln Phe Gln Glu Asn Glu Leu Phe Leu Gly Met Tyr Pro Glu Glu
    610                 615                 620

His Phe Ile Glu Lys Pro Val Lys Glu Ala Met Ala Arg Phe Arg Lys
625                 630                 635                 640

Asn Leu Glu Ala Ile Val Ser Val Ile Ala Glu Arg Asn Lys Lys Lys
                645                 650                 655

Gln Leu Pro Tyr Tyr Tyr Leu Ser Pro Asp Arg Ile Pro Asn Ser Val
            660                 665                 670

Ala Ile
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<210> 6004
<211> 161
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ALOX5AP; "

<220>
<221> source
<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID: P20292; "

<220>
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<400> 6004

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Met Asp Gln Glu Thr Val Gly Asn Val Val Leu Leu Ala Ile Val Thr
1               5                   10                  15
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```
Leu Ile Ser Val Val Gln Asn Gly Phe Phe Ala His Lys Val Glu His
            20                  25                  30

Glu Ser Arg Thr Gln Asn Gly Arg Ser Phe Gln Arg Thr Gly Thr Leu
        35                  40                  45

Ala Phe Glu Arg Val Tyr Thr Ala Asn Gln Asn Cys Val Asp Ala Tyr
    50                  55                  60

Pro Thr Phe Leu Ala Val Leu Trp Ser Ala Gly Leu Leu Cys Ser Gln
65                  70                  75                  80

Val Pro Ala Ala Phe Ala Gly Leu Met Tyr Leu Phe Val Arg Gln Lys
                85                  90                  95

Tyr Phe Val Gly Tyr Leu Gly Glu Arg Thr Gln Ser Thr Pro Gly Tyr
            100                 105                 110

Ile Phe Gly Lys Arg Ile Ile Leu Phe Leu Phe Leu Met Ser Val Ala
        115                 120                 125

Gly Ile Phe Asn Tyr Tyr Leu Ile Phe Phe Phe Gly Ser Asp Phe Glu
    130                 135                 140

Asn Tyr Ile Lys Thr Ile Ser Thr Thr Ile Ser Pro Leu Leu Leu Ile
145                 150                 155                 160

Pro
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<210> 6005
<211> 218
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1311; "

<220>
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<223> /note="Gene Symbol: ALOX5AP; "

<220>
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<223> /note="Gene Name:
arachidonate 5-lipoxygenase-activating prt; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000479870"

<400> 6005

```
Met Leu Thr Phe Asn His Asp Ala Pro Trp His Thr Gln Lys Thr Leu
1               5                  10                  15

Lys Thr Ser Glu Phe Gly Lys Ser Phe Gly Thr Leu Gly His Ile Gly
            20                  25                  30

Asn Ile Ser His Gln Cys Trp Ala Gly Cys Ala Ala Gly Gly Arg Ala
        35                  40                  45

Val Leu Ser Gly Glu Pro Glu Ala Asn Met Asp Gln Glu Thr Val Gly
    50                  55                  60

Asn Val Val Leu Leu Ala Ile Val Thr Leu Ile Ser Val Val Gln Asn
65                  70                  75                  80

Gly Phe Phe Ala His Lys Val Glu His Glu Ser Arg Thr Gln Asn Gly
                85                  90                  95

Arg Ser Phe Gln Arg Thr Gly Thr Leu Ala Phe Glu Arg Val Tyr Thr
            100                 105                 110

Ala Asn Gln Asn Cys Val Asp Ala Tyr Pro Thr Phe Leu Ala Val Leu
        115                 120                 125

Trp Ser Ala Gly Leu Leu Cys Ser Gln Val Pro Ala Ala Phe Ala Gly
    130                 135                 140

Leu Met Tyr Leu Phe Val Arg Gln Lys Tyr Phe Val Gly Tyr Leu Gly
145                 150                 155                 160

Glu Arg Thr Gln Ser Thr Pro Gly Tyr Ile Phe Gly Lys Arg Ile Ile
                165                 170                 175

Leu Phe Leu Phe Leu Met Ser Val Ala Gly Ile Phe Asn Tyr Tyr Leu
            180                 185                 190

Ile Phe Phe Phe Gly Ser Asp Phe Glu Asn Tyr Ile Lys Thr Ile Ser
```

195 200 205

Thr Thr Ile Ser Pro Leu Leu Leu Ile Pro
210 215

<210> 6006
<211> 843
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<223> /note="Gene Symbol: ALOXE3; "

<220>
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<223> /note="Gene Name:
arachidonate lipoxygenase 3; "

<220>
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<223> /note="Uniprot ID: Q9BYJ1; "

<220>
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<223> /note="ENSP ID: ENSP00000314879"

<400> 6006
Met Pro Arg Gly Ala Phe Arg Pro Cys Leu Pro Ala Leu Tyr Phe Ala
1 5 10 15

Phe Leu Thr Cys Pro Thr Pro Glu Gln Arg Met Ser Gly Thr Gln Ala
20 25 30

Pro Asp Ile His Leu Gly Glu Pro Ala Arg Gly Thr Gly Cys Val Arg
35 40 45

Gly Lys Gln Thr Ser Ile Arg Val Gln Asp Cys Gly Arg Arg Glu Glu
50 55 60

Ala Arg Ala Ala Ser Arg Glu Leu Arg Arg Glu Lys Ala Gln Glu His
65 70 75 80

Pro Arg Glu Ser Trp Ala His Pro Gln Pro Tyr Pro Ala Pro Gln Pro
85 90 95

```
Leu Ala Leu Arg Pro Glu Thr Gln Pro Cys Pro Ala Cys Arg Ser Ser
            100                 105                 110

Pro Pro Gly Arg Leu Leu Leu Arg Pro Ala Leu Pro Gly His Pro Phe
        115                 120                 125

Leu Leu Pro Ile Met Ala Val Tyr Arg Leu Cys Val Thr Thr Gly Pro
    130                 135                 140

Tyr Leu Arg Ala Gly Thr Leu Asp Asn Ile Ser Val Thr Leu Val Gly
145                 150                 155                 160

Thr Cys Gly Glu Ser Pro Lys Gln Arg Leu Asp Arg Met Gly Arg Asp
                165                 170                 175

Phe Ala Pro Gly Ser Val Gln Lys Tyr Lys Val Arg Cys Thr Ala Glu
            180                 185                 190

Leu Gly Glu Leu Leu Leu Leu Arg Val His Lys Glu Arg Tyr Ala Phe
        195                 200                 205

Phe Arg Lys Asp Ser Trp Tyr Cys Ser Arg Ile Cys Val Thr Glu Pro
    210                 215                 220

Asp Gly Ser Val Ser His Phe Pro Cys Tyr Gln Trp Ile Glu Gly Tyr
225                 230                 235                 240

Cys Thr Val Glu Leu Arg Pro Gly Thr Ala Arg Thr Ile Cys Gln Asp
                245                 250                 255

Ser Leu Pro Leu Leu Leu Asp His Arg Thr Arg Glu Leu Arg Ala Arg
            260                 265                 270

Gln Glu Cys Tyr Arg Trp Lys Ile Tyr Ala Pro Gly Phe Pro Cys Met
        275                 280                 285

Val Asp Val Asn Ser Phe Gln Glu Met Glu Ser Asp Lys Lys Phe Ala
    290                 295                 300

Leu Thr Lys Thr Thr Thr Cys Val Asp Gln Gly Asp Ser Ser Gly Asn
305                 310                 315                 320
```

```
Arg Tyr Leu Pro Gly Phe Pro Met Lys Ile Asp Ile Pro Ser Leu Met
                325                 330                 335

Tyr Met Glu Pro Asn Val Arg Tyr Ser Ala Thr Lys Thr Ile Ser Leu
            340                 345                 350

Leu Phe Asn Ala Ile Pro Ala Ser Leu Gly Met Lys Leu Arg Gly Leu
        355                 360                 365

Leu Asp Arg Lys Gly Ser Trp Lys Lys Leu Asp Asp Met Gln Asn Ile
    370                 375                 380

Phe Trp Cys His Lys Thr Phe Thr Thr Lys Tyr Val Thr Glu His Trp
385                 390                 395                 400

Cys Glu Asp His Phe Phe Gly Tyr Gln Tyr Leu Asn Gly Val Asn Pro
                405                 410                 415

Val Met Leu His Cys Ile Ser Ser Leu Pro Ser Lys Leu Pro Val Thr
            420                 425                 430

Asn Asp Met Val Ala Pro Leu Leu Gly Gln Asp Thr Cys Leu Gln Thr
        435                 440                 445

Glu Leu Glu Arg Gly Asn Ile Phe Leu Ala Asp Tyr Trp Ile Leu Ala
    450                 455                 460

Glu Ala Pro Thr His Cys Leu Asn Gly Arg Gln Gln Tyr Val Ala Ala
465                 470                 475                 480

Pro Leu Cys Leu Leu Trp Leu Ser Pro Gln Gly Ala Leu Val Pro Leu
                485                 490                 495

Ala Ile Gln Leu Ser Gln Thr Pro Gly Pro Asp Ser Pro Ile Phe Leu
            500                 505                 510

Pro Thr Asp Ser Glu Trp Asp Trp Leu Leu Ala Lys Thr Trp Val Arg
        515                 520                 525

Asn Ser Glu Phe Leu Val His Glu Asn Asn Thr His Phe Leu Cys Thr
    530                 535                 540

His Leu Leu Cys Glu Ala Phe Ala Met Ala Thr Leu Arg Gln Leu Pro
```

545 550 555 560

Leu Cys His Pro Ile Tyr Lys Leu Leu Leu Pro His Thr Arg Tyr Thr
565 570 575

Leu Gln Val Asn Thr Ile Ala Arg Ala Thr Leu Leu Asn Pro Glu Gly
580 585 590

Leu Val Asp Gln Val Thr Ser Ile Gly Arg Gln Gly Leu Ile Tyr Leu
595 600 605

Met Ser Thr Gly Leu Ala His Phe Thr Tyr Thr Asn Phe Cys Leu Pro
610 615 620

Asp Ser Leu Arg Ala Arg Gly Val Leu Ala Ile Pro Asn Tyr His Tyr
625 630 635 640

Arg Asp Asp Gly Leu Lys Ile Trp Ala Ala Ile Glu Ser Phe Val Ser
645 650 655

Glu Ile Val Gly Tyr Tyr Tyr Pro Ser Asp Ala Ser Val Gln Gln Asp
660 665 670

Ser Glu Leu Gln Ala Trp Thr Gly Glu Ile Phe Ala Gln Ala Phe Leu
675 680 685

Gly Arg Glu Ser Ser Gly Phe Pro Ser Arg Leu Cys Thr Pro Gly Glu
690 695 700

Met Val Lys Phe Leu Thr Ala Ile Ile Phe Asn Cys Ser Ala Gln His
705 710 715 720

Ala Ala Val Asn Ser Gly Gln His Asp Phe Gly Ala Trp Met Pro Asn
725 730 735

Ala Pro Ser Ser Met Arg Gln Pro Pro Pro Gln Thr Lys Gly Thr Thr
740 745 750

Thr Leu Lys Thr Tyr Leu Asp Thr Leu Pro Glu Val Asn Ile Ser Cys
755 760 765

Asn Asn Leu Leu Leu Phe Trp Leu Val Ser Gln Glu Pro Lys Asp Gln
770 775 780

```
Arg Pro Leu Gly Thr Tyr Pro Asp Glu His Phe Thr Glu Glu Ala Pro
785                 790                 795                 800


Arg Arg Ser Ile Ala Ala Phe Gln Ser Arg Leu Ala Gln Ile Ser Arg
                805                 810                 815


Asp Ile Gln Glu Arg Asn Gln Gly Leu Ala Leu Pro Tyr Thr Tyr Leu
            820                 825                 830


Asp Pro Pro Leu Ile Glu Asn Ser Val Ser Ile
        835                 840


<210> 6007
<211> 867
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1312; "

<220>
<221> source
<223> /note="Gene Symbol: ALOXE3; "

<220>
<221> source
<223> /note="Gene Name:
      arachidonate lipoxygenase 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000369494"

<400> 6007
Met Gly Arg Asn Arg Ser Trp Gly Thr Leu Gly Ser Gly Arg Thr Ser
1               5                   10                  15


Thr Pro Gly His Gln Ser Gly Pro Leu Thr Arg Arg Arg Ala Val Ser
            20                  25                  30


Gln Leu Tyr Arg Arg Tyr Leu Leu Phe Ser Ile Ser Ala Ser Asp Pro
        35                  40                  45


Ser Leu Arg Ser Gly Thr Gln Ala Pro Asp Ile His Leu Gly Glu Pro
    50                  55                  60
```

```
Ala Arg Gly Thr Gly Cys Val Arg Gly Lys Gln Thr Ser Ile Arg Val
65                  70                  75                  80

Gln Asp Cys Gly Arg Arg Glu Glu Ala Arg Ala Ala Ser Arg Glu Leu
                85                  90                  95

Arg Arg Glu Lys Ala Gln Glu His Pro Arg Glu Ser Trp Ala His Pro
            100                 105                 110

Gln Pro Tyr Pro Ala Pro Gln Pro Leu Ala Leu Arg Pro Glu Thr Gln
        115                 120                 125

Pro Cys Pro Ala Cys Arg Ser Ser Pro Pro Gly Arg Leu Leu Leu Arg
    130                 135                 140

Pro Ala Leu Pro Gly His Pro Phe Leu Leu Pro Ile Met Ala Val Tyr
145                 150                 155                 160

Arg Leu Cys Val Thr Thr Gly Pro Tyr Leu Arg Ala Gly Thr Leu Asp
                165                 170                 175

Asn Ile Ser Val Thr Leu Val Gly Thr Cys Gly Glu Ser Pro Lys Gln
            180                 185                 190

Arg Leu Asp Arg Met Gly Arg Asp Phe Ala Pro Gly Ser Val Gln Lys
        195                 200                 205

Tyr Lys Val Arg Cys Thr Ala Glu Leu Gly Glu Leu Leu Leu Leu Arg
    210                 215                 220

Val His Lys Glu Arg Tyr Ala Phe Phe Arg Lys Asp Ser Trp Tyr Cys
225                 230                 235                 240

Ser Arg Ile Cys Val Thr Glu Pro Asp Gly Ser Val Ser His Phe Pro
                245                 250                 255

Cys Tyr Gln Trp Ile Glu Gly Tyr Cys Thr Val Glu Leu Arg Pro Gly
            260                 265                 270

Thr Ala Arg Thr Ile Cys Gln Asp Ser Leu Pro Leu Leu Leu Asp His
        275                 280                 285

Arg Thr Arg Glu Leu Arg Ala Arg Gln Glu Cys Tyr Arg Trp Lys Ile
```

290 295 300

Tyr Ala Pro Gly Phe Pro Cys Met Val Asp Val Asn Ser Phe Gln Glu
305 310 315 320

Met Glu Ser Asp Lys Lys Phe Ala Leu Thr Lys Thr Thr Thr Cys Val
325 330 335

Asp Gln Gly Asp Ser Ser Gly Asn Arg Tyr Leu Pro Gly Phe Pro Met
340 345 350

Lys Ile Asp Ile Pro Ser Leu Met Tyr Met Glu Pro Asn Val Arg Tyr
355 360 365

Ser Ala Thr Lys Thr Ile Ser Leu Leu Phe Asn Ala Ile Pro Ala Ser
370 375 380

Leu Gly Met Lys Leu Arg Gly Leu Leu Asp Arg Lys Gly Ser Trp Lys
385 390 395 400

Lys Leu Asp Asp Met Gln Asn Ile Phe Trp Cys His Lys Thr Phe Thr
405 410 415

Thr Lys Tyr Val Thr Glu His Trp Cys Glu Asp His Phe Phe Gly Tyr
420 425 430

Gln Tyr Leu Asn Gly Val Asn Pro Val Met Leu His Cys Ile Ser Ser
435 440 445

Leu Pro Ser Lys Leu Pro Val Thr Asn Asp Met Val Ala Pro Leu Leu
450 455 460

Gly Gln Asp Thr Cys Leu Gln Thr Glu Leu Glu Arg Gly Asn Ile Phe
465 470 475 480

Leu Ala Asp Tyr Trp Ile Leu Ala Glu Ala Pro Thr His Cys Leu Asn
485 490 495

Gly Arg Gln Gln Tyr Val Ala Ala Pro Leu Cys Leu Leu Trp Leu Ser
500 505 510

Pro Gln Gly Ala Leu Val Pro Leu Ala Ile Gln Leu Ser Gln Thr Pro
515 520 525

```
Gly Pro Asp Ser Pro Ile Phe Leu Pro Thr Asp Ser Glu Trp Asp Trp
    530                 535                 540

Leu Leu Ala Lys Thr Trp Val Arg Asn Ser Glu Phe Leu Val His Glu
545                 550                 555                 560

Asn Asn Thr His Phe Leu Cys Thr His Leu Leu Cys Glu Ala Phe Ala
                565                 570                 575

Met Ala Thr Leu Arg Gln Leu Pro Leu Cys His Pro Ile Tyr Lys Leu
            580                 585                 590

Leu Leu Pro His Thr Arg Tyr Thr Leu Gln Val Asn Thr Ile Ala Arg
        595                 600                 605

Ala Thr Leu Leu Asn Pro Glu Gly Leu Val Asp Gln Val Thr Ser Ile
    610                 615                 620

Gly Arg Gln Gly Leu Ile Tyr Leu Met Ser Thr Gly Leu Ala His Phe
625                 630                 635                 640

Thr Tyr Thr Asn Phe Cys Leu Pro Asp Ser Leu Arg Ala Arg Gly Val
                645                 650                 655

Leu Ala Ile Pro Asn Tyr His Tyr Arg Asp Asp Gly Leu Lys Ile Trp
            660                 665                 670

Ala Ala Ile Glu Ser Phe Val Ser Glu Ile Val Gly Tyr Tyr Tyr Pro
        675                 680                 685

Ser Asp Ala Ser Val Gln Gln Asp Ser Glu Leu Gln Ala Trp Thr Gly
    690                 695                 700

Glu Ile Phe Ala Gln Ala Phe Leu Gly Arg Glu Ser Ser Gly Phe Pro
705                 710                 715                 720

Ser Arg Leu Cys Thr Pro Gly Glu Met Val Lys Phe Leu Thr Ala Ile
                725                 730                 735

Ile Phe Asn Cys Ser Ala Gln His Ala Ala Val Asn Ser Gly Gln His
            740                 745                 750
```

```
Asp Phe Gly Ala Trp Met Pro Asn Ala Pro Ser Ser Met Arg Gln Pro
        755                 760                 765

Pro Pro Gln Thr Lys Gly Thr Thr Thr Leu Lys Thr Tyr Leu Asp Thr
    770                 775                 780

Leu Pro Glu Val Asn Ile Ser Cys Asn Asn Leu Leu Leu Phe Trp Leu
785                 790                 795                 800

Val Ser Gln Glu Pro Lys Asp Gln Arg Pro Leu Gly Thr Tyr Pro Asp
                805                 810                 815

Glu His Phe Thr Glu Glu Ala Pro Arg Arg Ser Ile Ala Ala Phe Gln
            820                 825                 830

Ser Arg Leu Ala Gln Ile Ser Arg Asp Ile Gln Glu Arg Asn Gln Gly
        835                 840                 845

Leu Ala Leu Pro Tyr Thr Tyr Leu Asp Pro Pro Leu Ile Glu Asn Ser
    850                 855                 860

Val Ser Ile
865


<210> 6008
<211> 711
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1312; "

<220>
<221> source
<223> /note="Gene Symbol: ALOXE3; "

<220>
<221> source
<223> /note="Gene Name:
      arachidonate lipoxygenase 3; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9BYJ1; "

<220>
<221> source
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<223> /note="ENSP ID: ENSP00000400581"

<400> 6008

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Met Ala Val Tyr Arg Leu Cys Val Thr Thr Gly Pro Tyr Leu Arg Ala
1               5                  10                  15

Gly Thr Leu Asp Asn Ile Ser Val Thr Leu Val Gly Thr Cys Gly Glu
            20                  25                  30

Ser Pro Lys Gln Arg Leu Asp Arg Met Gly Arg Asp Phe Ala Pro Gly
        35                  40                  45

Ser Val Gln Lys Tyr Lys Val Arg Cys Thr Ala Glu Leu Gly Glu Leu
    50                  55                  60

Leu Leu Leu Arg Val His Lys Glu Arg Tyr Ala Phe Phe Arg Lys Asp
65                  70                  75                  80

Ser Trp Tyr Cys Ser Arg Ile Cys Val Thr Glu Pro Asp Gly Ser Val
                85                  90                  95

Ser His Phe Pro Cys Tyr Gln Trp Ile Glu Gly Tyr Cys Thr Val Glu
            100                 105                 110

Leu Arg Pro Gly Thr Ala Arg Thr Ile Cys Gln Asp Ser Leu Pro Leu
        115                 120                 125

Leu Leu Asp His Arg Thr Arg Glu Leu Arg Ala Arg Gln Glu Cys Tyr
    130                 135                 140

Arg Trp Lys Ile Tyr Ala Pro Gly Phe Pro Cys Met Val Asp Val Asn
145                 150                 155                 160

Ser Phe Gln Glu Met Glu Ser Asp Lys Lys Phe Ala Leu Thr Lys Thr
                165                 170                 175

Thr Thr Cys Val Asp Gln Gly Asp Ser Ser Gly Asn Arg Tyr Leu Pro
            180                 185                 190

Gly Phe Pro Met Lys Ile Asp Ile Pro Ser Leu Met Tyr Met Glu Pro
        195                 200                 205

Asn Val Arg Tyr Ser Ala Thr Lys Thr Ile Ser Leu Leu Phe Asn Ala
    210                 215                 220
```

Ile Pro Ala Ser Leu Gly Met Lys Leu Arg Gly Leu Leu Asp Arg Lys
225 230 235 240

Gly Ser Trp Lys Lys Leu Asp Asp Met Gln Asn Ile Phe Trp Cys His
245 250 255

Lys Thr Phe Thr Thr Lys Tyr Val Thr Glu His Trp Cys Glu Asp His
260 265 270

Phe Phe Gly Tyr Gln Tyr Leu Asn Gly Val Asn Pro Val Met Leu His
275 280 285

Cys Ile Ser Ser Leu Pro Ser Lys Leu Pro Val Thr Asn Asp Met Val
290 295 300

Ala Pro Leu Leu Gly Gln Asp Thr Cys Leu Gln Thr Glu Leu Glu Arg
305 310 315 320

Gly Asn Ile Phe Leu Ala Asp Tyr Trp Ile Leu Ala Glu Ala Pro Thr
325 330 335

His Cys Leu Asn Gly Arg Gln Gln Tyr Val Ala Ala Pro Leu Cys Leu
340 345 350

Leu Trp Leu Ser Pro Gln Gly Ala Leu Val Pro Leu Ala Ile Gln Leu
355 360 365

Ser Gln Thr Pro Gly Pro Asp Ser Pro Ile Phe Leu Pro Thr Asp Ser
370 375 380

Glu Trp Asp Trp Leu Leu Ala Lys Thr Trp Val Arg Asn Ser Glu Phe
385 390 395 400

Leu Val His Glu Asn Asn Thr His Phe Leu Cys Thr His Leu Leu Cys
405 410 415

Glu Ala Phe Ala Met Ala Thr Leu Arg Gln Leu Pro Leu Cys His Pro
420 425 430

Ile Tyr Lys Leu Leu Leu Pro His Thr Arg Tyr Thr Leu Gln Val Asn
435 440 445

```
Thr Ile Ala Arg Ala Thr Leu Leu Asn Pro Glu Gly Leu Val Asp Gln
    450                 455                 460

Val Thr Ser Ile Gly Arg Gln Gly Leu Ile Tyr Leu Met Ser Thr Gly
465                 470                 475                 480

Leu Ala His Phe Thr Tyr Thr Asn Phe Cys Leu Pro Asp Ser Leu Arg
                485                 490                 495

Ala Arg Gly Val Leu Ala Ile Pro Asn Tyr His Tyr Arg Asp Asp Gly
            500                 505                 510

Leu Lys Ile Trp Ala Ala Ile Glu Ser Phe Val Ser Glu Ile Val Gly
        515                 520                 525

Tyr Tyr Tyr Pro Ser Asp Ala Ser Val Gln Gln Asp Ser Glu Leu Gln
    530                 535                 540

Ala Trp Thr Gly Glu Ile Phe Ala Gln Ala Phe Leu Gly Arg Glu Ser
545                 550                 555                 560

Ser Gly Phe Pro Ser Arg Leu Cys Thr Pro Gly Glu Met Val Lys Phe
                565                 570                 575

Leu Thr Ala Ile Ile Phe Asn Cys Ser Ala Gln His Ala Ala Val Asn
            580                 585                 590

Ser Gly Gln His Asp Phe Gly Ala Trp Met Pro Asn Ala Pro Ser Ser
        595                 600                 605

Met Arg Gln Pro Pro Pro Gln Thr Lys Gly Thr Thr Thr Leu Lys Thr
    610                 615                 620

Tyr Leu Asp Thr Leu Pro Glu Val Asn Ile Ser Cys Asn Asn Leu Leu
625                 630                 635                 640

Leu Phe Trp Leu Val Ser Gln Glu Pro Lys Asp Gln Arg Pro Leu Gly
                645                 650                 655

Thr Tyr Pro Asp Glu His Phe Thr Glu Glu Ala Pro Arg Arg Ser Ile
            660                 665                 670
```

```
Ala Ala Phe Gln Ser Arg Leu Ala Gln Ile Ser Arg Asp Ile Gln Glu
        675                 680                 685

Arg Asn Gln Gly Leu Ala Leu Pro Tyr Thr Tyr Leu Asp Pro Pro Leu
    690                 695                 700

Ile Glu Asn Ser Val Ser Ile
705                 710
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<210> 6009
<211> 609
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1313; "

<220>
<221> source
<223> /note="Gene Symbol: ARAF; "

<220>
<221> source
<223> /note="Gene Name:
A-Raf proto-oncogene, serine/threonine kinase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000290277"

<400> 6009

```
Met Glu Pro Pro Arg Gly Pro Pro Ala Asn Gly Ala Glu Pro Ser Arg
1               5                   10                  15

Ala Val Gly Thr Val Lys Val Tyr Leu Pro Asn Lys Gln Arg Thr Val
            20                  25                  30

Val Thr Val Arg Asp Gly Met Ser Val Tyr Asp Ser Leu Asp Lys Ala
        35                  40                  45

Leu Lys Val Arg Gly Leu Asn Gln Asp Cys Cys Val Val Tyr Arg Leu
    50                  55                  60

Ile Lys Gly Arg Lys Thr Val Thr Ala Trp Asp Thr Ala Ile Ala Pro
65                  70                  75                  80

Leu Asp Gly Glu Glu Leu Ile Val Glu Val Leu Glu Asp Val Pro Leu
                85                  90                  95
```

```
Thr Met His Asn Phe Val Arg Lys Thr Phe Phe Ser Leu Ala Phe Cys
            100                 105                 110

Asp Phe Cys Leu Lys Phe Leu Phe His Gly Phe Arg Cys Gln Thr Cys
        115                 120                 125

Gly Tyr Lys Phe His Gln His Cys Ser Ser Lys Val Pro Thr Val Cys
    130                 135                 140

Val Asp Met Ser Thr Asn Arg Gln Gln Pro Ser Arg Phe Tyr His Ser
145                 150                 155                 160

Val Gln Asp Leu Ser Gly Gly Ser Arg Gln His Glu Ala Pro Ser Asn
                165                 170                 175

Arg Pro Leu Asn Glu Leu Leu Thr Pro Gln Gly Pro Ser Pro Arg Thr
            180                 185                 190

Gln His Cys Asp Pro Glu His Phe Pro Phe Pro Ala Pro Ala Asn Ala
        195                 200                 205

Pro Leu Gln Arg Ile Arg Ser Thr Ser Thr Pro Asn Val His Met Val
    210                 215                 220

Ser Thr Thr Ala Pro Met Asp Ser Asn Leu Ile Gln Leu Thr Gly Gln
225                 230                 235                 240

Ser Phe Ser Thr Asp Ala Ala Gly Ser Arg Gly Gly Ser Asp Gly Thr
                245                 250                 255

Pro Arg Gly Ser Pro Ser Pro Ala Ser Val Ser Ser Gly Arg Lys Ser
            260                 265                 270

Pro His Ser Lys Ser Pro Ala Glu Gln Arg Glu Arg Lys Ser Leu Ala
        275                 280                 285

Asp Asp Lys Lys Lys Val Lys Asn Leu Gly Tyr Arg Asp Ser Gly Tyr
    290                 295                 300

Tyr Trp Glu Val Pro Pro Ser Glu Val Gln Leu Leu Lys Arg Ile Gly
305                 310                 315                 320
```

```
Thr Gly Ser Phe Gly Thr Val Phe Arg Gly Arg Trp His Gly Asp Val
                325                 330                 335

Ala Val Lys Val Leu Lys Val Ser Gln Pro Thr Ala Glu Gln Ala Gln
            340                 345                 350

Ala Phe Lys Asn Glu Met Gln Val Leu Arg Lys Thr Arg His Val Asn
        355                 360                 365

Ile Leu Leu Phe Met Gly Phe Met Thr Arg Pro Gly Phe Ala Ile Ile
    370                 375                 380

Thr Gln Trp Cys Glu Gly Ser Ser Leu Tyr His His Leu His Val Ala
385                 390                 395                 400

Asp Thr Arg Phe Asp Met Val Gln Leu Ile Asp Val Ala Arg Gln Thr
                405                 410                 415

Ala Gln Gly Met Asp Tyr Leu His Ala Lys Asn Ile Ile His Arg Asp
            420                 425                 430

Leu Lys Ser Asn Asn Ile Phe Leu His Glu Gly Leu Thr Val Lys Ile
        435                 440                 445

Gly Asp Phe Gly Leu Ala Thr Val Lys Thr Arg Trp Ser Gly Ala Gln
    450                 455                 460

Pro Leu Glu Gln Pro Ser Gly Ser Val Leu Trp Met Ala Ala Glu Val
465                 470                 475                 480

Ile Arg Met Gln Asp Pro Asn Pro Tyr Ser Phe Gln Ser Asp Val Tyr
                485                 490                 495

Ala Tyr Gly Val Val Leu Tyr Glu Leu Met Thr Gly Ser Leu Pro Tyr
            500                 505                 510

Ser His Ile Gly Cys Arg Asp Gln Ile Ile Phe Met Val Gly Arg Gly
        515                 520                 525

Tyr Leu Ser Pro Asp Leu Ser Lys Ile Ser Ser Asn Cys Pro Lys Ala
    530                 535                 540
```

```
Met Arg Arg Leu Leu Ser Asp Cys Leu Lys Phe Gln Arg Glu Glu Arg
545                 550                 555                 560

Pro Leu Phe Pro Gln Ile Leu Ala Thr Ile Glu Leu Leu Gln Arg Ser
                565                 570                 575

Leu Pro Lys Ile Glu Arg Ser Ala Ser Glu Pro Ser Leu His Arg Thr
            580                 585                 590

Gln Ala Asp Glu Leu Pro Ala Cys Leu Leu Ser Ala Ala Arg Leu Val
        595                 600                 605

Pro
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<210> 6010
<211> 186
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1313; "

<220>
<221> source
<223> /note="Gene Symbol: ARAF; "

<220>
<221> source
<223> /note="Gene Name:
A-Raf proto-oncogene, serine/threonine kinase; "

<220>
<221> source
<223> /note="Uniprot ID: P10398; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000366238"

<400> 6010

```
Met Glu Pro Pro Arg Gly Pro Pro Ala Asn Gly Ala Glu Pro Ser Arg
1               5                   10                  15

Ala Val Gly Thr Val Lys Val Tyr Leu Pro Asn Lys Gln Arg Thr Val
            20                  25                  30

Val Thr Val Arg Asp Gly Met Ser Val Tyr Asp Ser Leu Asp Lys Ala
        35                  40                  45
```

```
Leu Lys Val Arg Gly Leu Asn Gln Asp Cys Cys Val Val Tyr Arg Leu
    50                  55                  60

Ile Lys Gly Arg Lys Thr Val Thr Ala Trp Asp Thr Ala Ile Ala Pro
65                  70                  75                  80

Leu Asp Gly Glu Glu Leu Ile Val Glu Val Leu Glu Asp Val Pro Leu
                85                  90                  95

Thr Met His Asn Phe Val Arg Lys Thr Phe Phe Ser Leu Ala Phe Cys
            100                 105                 110

Asp Phe Cys Leu Lys Phe Leu Phe His Gly Phe Arg Cys Gln Thr Cys
        115                 120                 125

Gly Tyr Lys Phe His Gln His Cys Ser Ser Lys Val Pro Thr Val Cys
    130                 135                 140

Val Asp Met Ser Thr Asn Arg Gln Gln Phe Tyr His Ser Val Gln Asp
145                 150                 155                 160

Leu Ser Gly Gly Ser Arg Gln His Glu Ala Pro Ser Asn Arg Pro Leu
                165                 170                 175

Asn Glu Leu Leu Thr Pro Gln Gly Pro Arg
            180                 185


<210> 6011
<211> 606
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1313; "

<220>
<221> source
<223> /note="Gene Symbol: ARAF; "

<220>
<221> source
<223> /note="Gene Name:
      A-Raf proto-oncogene, serine/threonine kinase; "

<220>
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<221> source
<223> /note="Uniprot ID: P10398; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000366244"

<400> 6011
Met Glu Pro Pro Arg Gly Pro Pro Ala Asn Gly Ala Glu Pro Ser Arg
1   5   10   15

Ala Val Gly Thr Val Lys Val Tyr Leu Pro Asn Lys Gln Arg Thr Val
            20   25   30

Val Thr Val Arg Asp Gly Met Ser Val Tyr Asp Ser Leu Asp Lys Ala
        35   40   45

Leu Lys Val Arg Gly Leu Asn Gln Asp Cys Cys Val Val Tyr Arg Leu
    50   55   60

Ile Lys Gly Arg Lys Thr Val Thr Ala Trp Asp Thr Ala Ile Ala Pro
65   70   75   80

Leu Asp Gly Glu Glu Leu Ile Val Glu Val Leu Glu Asp Val Pro Leu
                85   90   95

Thr Met His Asn Phe Val Arg Lys Thr Phe Phe Ser Leu Ala Phe Cys
            100   105   110

Asp Phe Cys Leu Lys Phe Leu Phe His Gly Phe Arg Cys Gln Thr Cys
        115   120   125

Gly Tyr Lys Phe His Gln His Cys Ser Ser Lys Val Pro Thr Val Cys
    130   135   140

Val Asp Met Ser Thr Asn Arg Gln Gln Phe Tyr His Ser Val Gln Asp
145   150   155   160

Leu Ser Gly Gly Ser Arg Gln His Glu Ala Pro Ser Asn Arg Pro Leu
                165   170   175

Asn Glu Leu Leu Thr Pro Gln Gly Pro Ser Pro Arg Thr Gln His Cys
            180   185   190

Asp Pro Glu His Phe Pro Phe Pro Ala Pro Ala Asn Ala Pro Leu Gln

```
        195                 200                 205

Arg Ile Arg Ser Thr Ser Thr Pro Asn Val His Met Val Ser Thr Thr
    210                 215                 220

Ala Pro Met Asp Ser Asn Leu Ile Gln Leu Thr Gly Gln Ser Phe Ser
225                 230                 235                 240

Thr Asp Ala Ala Gly Ser Arg Gly Gly Ser Asp Gly Thr Pro Arg Gly
                245                 250                 255

Ser Pro Ser Pro Ala Ser Val Ser Ser Gly Arg Lys Ser Pro His Ser
            260                 265                 270

Lys Ser Pro Ala Glu Gln Arg Glu Arg Lys Ser Leu Ala Asp Asp Lys
        275                 280                 285

Lys Lys Val Lys Asn Leu Gly Tyr Arg Asp Ser Gly Tyr Tyr Trp Glu
    290                 295                 300

Val Pro Pro Ser Glu Val Gln Leu Leu Lys Arg Ile Gly Thr Gly Ser
305                 310                 315                 320

Phe Gly Thr Val Phe Arg Gly Arg Trp His Gly Asp Val Ala Val Lys
                325                 330                 335

Val Leu Lys Val Ser Gln Pro Thr Ala Glu Gln Ala Gln Ala Phe Lys
            340                 345                 350

Asn Glu Met Gln Val Leu Arg Lys Thr Arg His Val Asn Ile Leu Leu
        355                 360                 365

Phe Met Gly Phe Met Thr Arg Pro Gly Phe Ala Ile Ile Thr Gln Trp
    370                 375                 380

Cys Glu Gly Ser Ser Leu Tyr His His Leu His Val Ala Asp Thr Arg
385                 390                 395                 400

Phe Asp Met Val Gln Leu Ile Asp Val Ala Arg Gln Thr Ala Gln Gly
                405                 410                 415

Met Asp Tyr Leu His Ala Lys Asn Ile Ile His Arg Asp Leu Lys Ser
            420                 425                 430
```

```
Asn Asn Ile Phe Leu His Glu Gly Leu Thr Val Lys Ile Gly Asp Phe
        435                 440                 445

Gly Leu Ala Thr Val Lys Thr Arg Trp Ser Gly Ala Gln Pro Leu Glu
    450                 455                 460

Gln Pro Ser Gly Ser Val Leu Trp Met Ala Ala Glu Val Ile Arg Met
465                 470                 475                 480

Gln Asp Pro Asn Pro Tyr Ser Phe Gln Ser Asp Val Tyr Ala Tyr Gly
                485                 490                 495

Val Val Leu Tyr Glu Leu Met Thr Gly Ser Leu Pro Tyr Ser His Ile
            500                 505                 510

Gly Cys Arg Asp Gln Ile Ile Phe Met Val Gly Arg Gly Tyr Leu Ser
        515                 520                 525

Pro Asp Leu Ser Lys Ile Ser Ser Asn Cys Pro Lys Ala Met Arg Arg
    530                 535                 540

Leu Leu Ser Asp Cys Leu Lys Phe Gln Arg Glu Glu Arg Pro Leu Phe
545                 550                 555                 560

Pro Gln Ile Leu Ala Thr Ile Glu Leu Leu Gln Arg Ser Leu Pro Lys
                565                 570                 575

Ile Glu Arg Ser Ala Ser Glu Pro Ser Leu His Arg Thr Gln Ala Asp
            580                 585                 590

Glu Leu Pro Ala Cys Leu Leu Ser Ala Ala Arg Leu Val Pro
        595                 600                 605


<210> 6012
<211> 252
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: AANAT; "

<220>
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<223> /note="Gene Name:
aralkylamine N-acetyltransferase; "

<220>
<221> source
<223> /note="Uniprot ID: Q16613; "

<220>
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<223> /note="ENSP ID: ENSP00000250615"

<400> 6012

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Met Glu Pro Gln Ser Met Lys Gly Gln Lys Arg Pro Phe Gly Gly Pro
1               5                  10                  15

Trp Arg Leu Lys Val Leu Gly Gly Pro Pro Trp Leu Arg Arg Thr Leu
            20                  25                  30

Pro Lys Leu Gly Arg Pro Lys Glu Ala Pro Val Ala Arg Met Ser Thr
        35                  40                  45

Gln Ser Thr His Pro Leu Lys Pro Glu Ala Pro Arg Leu Pro Pro Gly
    50                  55                  60

Ile Pro Glu Ser Pro Ser Cys Gln Arg Arg His Thr Leu Pro Ala Ser
65                  70                  75                  80

Glu Phe Arg Cys Leu Thr Pro Glu Asp Ala Val Ser Ala Phe Glu Ile
                85                  90                  95

Glu Arg Glu Ala Phe Ile Ser Val Leu Gly Val Cys Pro Leu Tyr Leu
            100                 105                 110

Asp Glu Ile Arg His Phe Leu Thr Leu Cys Pro Glu Leu Ser Leu Gly
        115                 120                 125

Trp Phe Glu Glu Gly Cys Leu Val Ala Phe Ile Ile Gly Ser Leu Trp
    130                 135                 140

Asp Lys Glu Arg Leu Met Gln Glu Ser Leu Thr Leu His Arg Ser Gly
145                 150                 155                 160

Gly His Ile Ala His Leu His Val Leu Ala Val His Arg Ala Phe Arg
```

```
                165                 170                 175

Gln Gln Gly Arg Gly Pro Ile Leu Leu Trp Arg Tyr Leu His His Leu
            180                 185                 190

Gly Ser Gln Pro Ala Val Arg Arg Ala Ala Leu Met Cys Glu Asp Ala
        195                 200                 205

Leu Val Pro Phe Tyr Glu Arg Phe Ser Phe His Ala Val Gly Pro Cys
    210                 215                 220

Ala Ile Thr Val Gly Ser Leu Thr Phe Met Glu Leu His Cys Ser Leu
225                 230                 235                 240

Arg Gly His Pro Phe Leu Arg Arg Asn Ser Gly Cys
                245                 250


<210> 6013
<211> 207
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<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID:  Q16613; "

<220>
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<400> 6013
Met Ser Thr Gln Ser Thr His Pro Leu Lys Pro Glu Ala Pro Arg Leu
1               5                   10                  15

Pro Pro Gly Ile Pro Glu Ser Pro Ser Cys Gln Arg Arg His Thr Leu
            20                  25                  30
```

```
Pro Ala Ser Glu Phe Arg Cys Leu Thr Pro Glu Asp Ala Val Ser Ala
        35                  40                  45

Phe Glu Ile Glu Arg Glu Ala Phe Ile Ser Val Leu Gly Val Cys Pro
    50                  55                  60

Leu Tyr Leu Asp Glu Ile Arg His Phe Leu Thr Leu Cys Pro Glu Leu
65                  70                  75                  80

Ser Leu Gly Trp Phe Glu Glu Gly Cys Leu Val Ala Phe Ile Ile Gly
                85                  90                  95

Ser Leu Trp Asp Lys Glu Arg Leu Met Gln Glu Ser Leu Thr Leu His
            100                 105                 110

Arg Ser Gly Gly His Ile Ala His Leu His Val Leu Ala Val His Arg
        115                 120                 125

Ala Phe Arg Gln Gln Gly Arg Gly Pro Ile Leu Leu Trp Arg Tyr Leu
    130                 135                 140

His His Leu Gly Ser Gln Pro Ala Val Arg Arg Ala Ala Leu Met Cys
145                 150                 155                 160

Glu Asp Ala Leu Val Pro Phe Tyr Glu Arg Phe Ser Phe His Ala Val
                165                 170                 175

Gly Pro Cys Ala Ile Thr Val Gly Ser Leu Thr Phe Met Glu Leu His
            180                 185                 190

Cys Ser Leu Arg Gly His Pro Phe Leu Arg Arg Asn Ser Gly Cys
        195                 200                 205


<210> 6014
<211> 92
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<400> 6014
Met Ser Thr Gln Ser Thr His Pro Leu Lys Pro Glu Ala Pro Arg Leu
1 5 10 15

Pro Pro Gly Ile Pro Glu Ser Pro Ser Cys Gln Arg Arg His Thr Leu
20 25 30

Pro Ala Ser Glu Phe Arg Cys Leu Thr Pro Glu Asp Ala Val Ser Ala
35 40 45

Phe Glu Ile Glu Arg Glu Asp Ser Gly Arg Glu Ala Gln Arg Leu Pro
50 55 60

Val Thr His Leu Ser Leu Leu Pro Gln Pro Ser Ser Pro Ser Trp Ala
65 70 75 80

Ser Ala Pro Cys Thr Trp Met Arg Ser Gly Thr Ser
85 90

<210> 6015
<211> 151
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
aralkylamine N-acetyltransferase; "

<220>
<221> source
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<400> 6015
Met Arg Met Arg Pro Leu Ser Leu Ala Val Leu Gln Gln Val Leu Gly
1 5 10 15

Gly Pro Pro Trp Leu Arg Arg Thr Leu Pro Lys Leu Gly Arg Pro Lys
20 25 30

Glu Ala Pro Val Ala Arg Met Ser Thr Gln Ser Thr His Pro Leu Lys
35 40 45

Pro Glu Ala Pro Arg Leu Pro Pro Gly Ile Pro Glu Ser Pro Ser Cys
50 55 60

Gln Arg Arg His Thr Leu Pro Ala Ser Glu Phe Arg Cys Leu Thr Pro
65 70 75 80

Glu Asp Ala Val Ser Ala Phe Glu Ile Glu Arg Glu Ala Phe Ile Ser
85 90 95

Val Leu Gly Val Cys Pro Leu Tyr Leu Asp Glu Ile Arg His Phe Leu
100 105 110

Thr Leu Cys Pro Glu Leu Ser Leu Gly Trp Phe Glu Glu Gly Cys Leu
115 120 125

Val Ala Phe Ile Ile Gly Ser Leu Trp Asp Lys Glu Arg Leu Met Gln
130 135 140

Glu Ser Leu Thr Leu His Arg
145 150

<210> 6016
<211> 498
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<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: AMZ1; "

<220>
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<223> /note="Gene Name:

archaelysin family metallopeptidase 1; "

<220>
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<223> /note="Uniprot ID: Q400G9; "

<220>
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<223> /note="ENSP ID: ENSP00000308149"

<400> 6016

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Met Leu Gln Cys Arg Pro Ala Gln Glu Phe Ser Phe Gly Pro Arg Ala
1               5                  10                  15

Leu Lys Asp Ala Leu Val Ser Thr Asp Ala Ala Leu Gln Gln Leu Tyr
            20                  25                  30

Val Ser Ala Phe Ser Pro Ala Glu Arg Leu Phe Leu Ala Glu Ala Tyr
        35                  40                  45

Asn Pro Gln Arg Thr Leu Phe Cys Thr Leu Leu Ile Arg Thr Gly Phe
    50                  55                  60

Asp Trp Leu Leu Ser Arg Pro Glu Ala Pro Glu Asp Phe Gln Thr Phe
65                  70                  75                  80

His Ala Ser Leu Gln His Arg Lys Pro Arg Leu Ala Arg Lys His Ile
                85                  90                  95

Tyr Leu Gln Pro Ile Asp Leu Ser Glu Glu Pro Val Gly Ser Ser Leu
            100                 105                 110

Leu His Gln Leu Cys Ser Cys Thr Glu Ala Phe Phe Leu Gly Leu Arg
        115                 120                 125

Val Lys Cys Leu Pro Ser Val Ala Ala Ala Ser Ile Arg Cys Ser Ser
    130                 135                 140

Arg Pro Ser Arg Asp Ser Asp Arg Leu Gln Leu His Thr Asp Gly Ile
145                 150                 155                 160

Leu Ser Phe Leu Lys Asn Asn Lys Pro Gly Asp Ala Leu Cys Val Leu
                165                 170                 175

Gly Leu Thr Leu Ser Asp Leu Tyr Pro His Glu Ala Trp Ser Phe Thr
            180                 185                 190
```

```
Phe Ser Lys Phe Leu Pro Gly His Glu Val Gly Val Cys Ser Phe Ala
        195                 200                 205

Arg Phe Ser Gly Glu Phe Pro Lys Ser Gly Pro Ser Ala Pro Asp Leu
    210                 215                 220

Ala Leu Val Glu Ala Ala Ala Asp Gly Pro Glu Ala Pro Leu Gln Asp
225                 230                 235                 240

Arg Gly Trp Ala Leu Cys Phe Ser Ala Leu Gly Met Val Gln Cys Cys
                245                 250                 255

Lys Val Thr Cys His Glu Leu Cys His Leu Leu Gly Leu Gly Asn Cys
            260                 265                 270

Arg Trp Leu Arg Cys Leu Met Gln Gly Ala Leu Ser Leu Asp Glu Ala
        275                 280                 285

Leu Arg Arg Pro Leu Asp Leu Cys Pro Ile Cys Leu Arg Lys Leu Gln
    290                 295                 300

His Val Leu Gly Phe Arg Leu Ile Glu Arg Tyr Gln Arg Leu Tyr Thr
305                 310                 315                 320

Trp Thr Gln Ala Val Val Gly Thr Trp Pro Ser Gln Glu Ala Gly Glu
                325                 330                 335

Pro Ser Val Trp Glu Asp Thr Pro Pro Ala Ser Ala Asp Ser Gly Met
            340                 345                 350

Cys Cys Glu Ser Asp Ser Glu Pro Gly Thr Ser Val Ser Glu Pro Leu
        355                 360                 365

Thr Pro Asp Ala Gly Ser His Thr Phe Ala Ser Gly Pro Glu Glu Gly
    370                 375                 380

Leu Ser Tyr Leu Ala Ala Ser Glu Ala Pro Leu Pro Pro Gly Gly Pro
385                 390                 395                 400

Ala Glu Ala Ile Lys Glu His Glu Arg Trp Leu Ala Met Cys Ile Gln
                405                 410                 415
```

```
Ala Leu Gln Arg Glu Val Ala Glu Glu Asp Leu Val Gln Val Asp Arg
            420                 425                 430

Ala Val Asp Ala Leu Asp Arg Trp Glu Met Phe Thr Gly Gln Leu Pro
        435                 440                 445

Ala Thr Arg Gln Asp Pro Pro Ser Ser Arg Asp Ser Val Gly Leu Arg
    450                 455                 460

Lys Val Leu Gly Asp Lys Phe Ser Ser Leu Arg Arg Lys Leu Ser Ala
465                 470                 475                 480

Arg Lys Leu Ala Arg Ala Glu Ser Ala Pro Arg Pro Trp Asp Gly Glu
                485                 490                 495

Glu Ser
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<210> 6017
<211> 297
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<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000386020"

<400> 6017

```
Met Leu Gln Cys Arg Pro Ala Gln Glu Phe Ser Phe Gly Pro Arg Ala
1               5                   10                  15

Leu Lys Asp Ala Leu Val Ser Thr Asp Ala Ala Leu Gln Gln Leu Tyr
```

```
            20                  25                  30

Val Ser Ala Phe Ser Pro Ala Glu Arg Leu Phe Leu Ala Glu Ala Tyr
        35                  40                  45

Asn Pro Gln Arg Thr Leu Phe Cys Thr Leu Leu Ile Arg Thr Gly Phe
    50                  55                  60

Asp Trp Leu Leu Ser Arg Pro Glu Ala Pro Glu Asp Phe Gln Thr Phe
65                  70                  75                  80

His Ala Ser Leu Gln His Arg Lys Pro Arg Leu Ala Arg Lys His Ile
                85                  90                  95

Tyr Leu Gln Pro Ile Asp Leu Ser Glu Glu Pro Val Gly Ser Ser Leu
            100                 105                 110

Leu His Gln Leu Cys Ser Cys Thr Glu Ala Phe Phe Leu Gly Leu Arg
        115                 120                 125

Val Lys Cys Leu Pro Ser Val Ala Ala Ala Ser Ile Arg Cys Ser Ser
    130                 135                 140

Arg Pro Ser Arg Asp Ser Asp Arg Leu Gln Leu His Thr Asp Gly Ile
145                 150                 155                 160

Leu Ser Phe Leu Lys Asn Asn Lys Pro Gly Asp Ala Leu Cys Val Leu
                165                 170                 175

Gly Leu Thr Leu Ser Asp Leu Tyr Pro His Glu Ala Trp Ser Phe Thr
            180                 185                 190

Phe Ser Lys Phe Leu Pro Gly His Gly His Val Pro Arg Ala Leu Pro
        195                 200                 205

Pro Ser Gly Pro Gly Glu Leu Pro Leu Ala Pro Leu Pro His Ala Gly
    210                 215                 220

Cys Ala Gln Pro Gly Arg Gly Pro Ala Ala Ala Pro Gly Pro Leu Ser
225                 230                 235                 240

His Leu Pro Glu Glu Ala Ala Ala Cys Pro Gly Phe Gln Ala His Arg
                245                 250                 255
```

```
Glu Val Pro Glu Thr Leu His Leu Asp Ser Gly Gly Gly Gly Asp Val
            260                 265                 270

Ala Gln Pro Gly Gly Gly Gly Ala Val Ser Val Gly Gly His Pro Ala
        275                 280                 285

Cys Gln Arg Arg Leu Gly His Val Leu
    290                 295


<210> 6018
<211> 302
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
      archaelysin family metallopeptidase 2; "

<220>
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<223> /note="Uniprot ID:  Q86W34; "

<220>
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<223> /note="ENSP ID: ENSP00000352831"

<400> 6018
Met Gln Ile Ile Arg His Ser Glu Gln Thr Leu Lys Thr Ala Leu Ile
1               5                  10                  15

Ser Lys Asn Pro Val Leu Val Ser Gln Tyr Glu Lys Leu Asn Ala Gly
            20                  25                  30

Glu Gln Arg Leu Met Asn Glu Ala Phe Gln Pro Ala Ser Asp Leu Phe
        35                  40                  45

Gly Pro Ile Thr Leu His Ser Pro Ser Asp Trp Ile Thr Ser His Pro
    50                  55                  60
```

Glu Ala Pro Gln Asp Phe Glu Gln Phe Phe Ser Asp Pro Tyr Arg Lys
65 70 75 80

Thr Pro Ser Pro Asn Lys Arg Ser Ile Tyr Ile Gln Ser Ile Gly Asp
85 90 95

Ile Leu Lys Phe Leu Lys Lys Lys Lys Pro Glu Asp Ala Phe Cys Val
100 105 110

Val Gly Ile Thr Met Ile Asp Leu Tyr Pro Arg Asp Ser Trp Asn Phe
115 120 125

Val Phe Gly Gln Ala Ser Leu Thr Asp Gly Val Gly Ile Phe Ser Phe
130 135 140

Ala Arg Tyr Gly Ser Asp Phe Tyr Ser Met His Tyr Lys Gly Lys Val
145 150 155 160

Lys Lys Leu Lys Lys Thr Ser Ser Ser Asp Tyr Ser Ile Phe Asp Asn
165 170 175

Tyr Tyr Ile Pro Glu Ile Thr Ser Val Leu Leu Leu Arg Ser Cys Lys
180 185 190

Thr Leu Thr His Glu Ile Gly His Ile Phe Gly Leu Arg His Cys Gln
195 200 205

Trp Leu Ala Cys Leu Met Gln Gly Ser Asn His Leu Glu Glu Ala Asp
210 215 220

Arg Arg Pro Leu Asn Leu Cys Pro Ile Cys Leu His Lys Leu Gln Cys
225 230 235 240

Ala Val Gly Phe Ser Ile Val Glu Arg Tyr Lys Ala Leu Val Arg Trp
245 250 255

Ile Asp Asp Glu Ser Ser Asp Thr Pro Gly Ala Thr Pro Glu His Ser
260 265 270

His Glu Asp Asn Gly Asn Leu Pro Lys Pro Val Glu Ala Phe Lys Glu
275 280 285

Trp Lys Glu Trp Ile Ile Lys Cys Leu Ala Val Leu Gln Lys

290 295 300

<210> 6019
<211> 360
<212> PRT
<213> Homo sapiens

<220>
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archaelysin family metallopeptidase 2; "

<220>
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<220>
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<400> 6019
Met Gln Ile Ile Arg His Ser Glu Gln Thr Leu Lys Thr Ala Leu Ile
1 5 10 15

Ser Lys Asn Pro Val Leu Val Ser Gln Tyr Glu Lys Leu Asn Ala Gly
20 25 30

Glu Gln Arg Leu Met Asn Glu Ala Phe Gln Pro Ala Ser Asp Leu Phe
35 40 45

Gly Pro Ile Thr Leu His Ser Pro Ser Asp Trp Ile Thr Ser His Pro
50 55 60

Glu Ala Pro Gln Asp Phe Glu Gln Phe Phe Ser Asp Pro Tyr Arg Lys
65 70 75 80

Thr Pro Ser Pro Asn Lys Arg Ser Ile Tyr Ile Gln Ser Ile Gly Ser
85 90 95

Leu Gly Asn Thr Arg Ile Ile Ser Glu Glu Tyr Ile Lys Trp Leu Thr
100 105 110

```
Gly Tyr Cys Lys Ala Tyr Phe Tyr Gly Leu Arg Val Lys Leu Leu Glu
        115                 120                 125

Pro Val Pro Val Ser Val Thr Arg Cys Ser Phe Arg Val Asn Glu Asn
    130                 135                 140

Thr His Asn Leu Gln Ile His Ala Gly Asp Ile Leu Lys Phe Leu Lys
145                 150                 155                 160

Lys Lys Lys Pro Glu Asp Ala Phe Cys Val Val Gly Ile Thr Met Ile
                165                 170                 175

Asp Leu Tyr Pro Arg Asp Ser Trp Asn Phe Val Phe Gly Gln Ala Ser
            180                 185                 190

Leu Thr Asp Gly Val Gly Ile Phe Ser Phe Ala Arg Tyr Gly Ser Asp
        195                 200                 205

Phe Tyr Ser Met His Tyr Lys Gly Lys Val Lys Lys Leu Lys Lys Thr
    210                 215                 220

Ser Ser Ser Asp Tyr Ser Ile Phe Asp Asn Tyr Tyr Ile Pro Glu Ile
225                 230                 235                 240

Thr Ser Val Leu Leu Leu Arg Ser Cys Lys Thr Leu Thr His Glu Ile
                245                 250                 255

Gly His Ile Phe Gly Leu Arg His Cys Gln Trp Leu Ala Cys Leu Met
            260                 265                 270

Gln Gly Ser Asn His Leu Glu Glu Ala Asp Arg Arg Pro Leu Asn Leu
        275                 280                 285

Cys Pro Ile Cys Leu His Lys Leu Gln Cys Ala Val Gly Phe Ser Ile
    290                 295                 300

Val Glu Arg Tyr Lys Ala Leu Val Arg Trp Ile Asp Asp Glu Ser Ser
305                 310                 315                 320

Asp Thr Pro Gly Ala Thr Pro Glu His Ser His Glu Asp Asn Gly Asn
                325                 330                 335
```

```
Leu Pro Lys Pro Val Glu Ala Phe Lys Glu Trp Lys Glu Trp Ile Ile
            340                 345                 350


Lys Cys Leu Ala Val Leu Gln Lys
        355                 360


<210> 6020
<211> 360
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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      archaelysin family metallopeptidase 2; "

<220>
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<223> /note="Uniprot ID:  Q86W34; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000376481"

<400> 6020
Met Gln Ile Ile Arg His Ser Glu Gln Thr Leu Lys Thr Ala Leu Ile
1               5                   10                  15


Ser Lys Asn Pro Val Leu Val Ser Gln Tyr Glu Lys Leu Asn Ala Gly
            20                  25                  30


Glu Gln Arg Leu Met Asn Glu Ala Phe Gln Pro Ala Ser Asp Leu Phe
        35                  40                  45


Gly Pro Ile Thr Leu His Ser Pro Ser Asp Trp Ile Thr Ser His Pro
    50                  55                  60


Glu Ala Pro Gln Asp Phe Glu Gln Phe Phe Ser Asp Pro Tyr Arg Lys
65                  70                  75                  80


Thr Pro Ser Pro Asn Lys Arg Ser Ile Tyr Ile Gln Ser Ile Gly Ser
                85                  90                  95
```

```
Leu Gly Asn Thr Arg Ile Ile Ser Glu Glu Tyr Ile Lys Trp Leu Thr
            100                 105                 110

Gly Tyr Cys Lys Ala Tyr Phe Tyr Gly Leu Arg Val Lys Leu Leu Glu
        115                 120                 125

Pro Val Pro Val Ser Val Thr Arg Cys Ser Phe Arg Val Asn Glu Asn
    130                 135                 140

Thr His Asn Leu Gln Ile His Ala Gly Asp Ile Leu Lys Phe Leu Lys
145                 150                 155                 160

Lys Lys Lys Pro Glu Asp Ala Phe Cys Val Val Gly Ile Thr Met Ile
                165                 170                 175

Asp Leu Tyr Pro Arg Asp Ser Trp Asn Phe Val Phe Gly Gln Ala Ser
            180                 185                 190

Leu Thr Asp Gly Val Gly Ile Phe Ser Phe Ala Arg Tyr Gly Ser Asp
        195                 200                 205

Phe Tyr Ser Met His Tyr Lys Gly Lys Val Lys Lys Leu Lys Lys Thr
    210                 215                 220

Ser Ser Ser Asp Tyr Ser Ile Phe Asp Asn Tyr Tyr Ile Pro Glu Ile
225                 230                 235                 240

Thr Ser Val Leu Leu Leu Arg Ser Cys Lys Thr Leu Thr His Glu Ile
                245                 250                 255

Gly His Ile Phe Gly Leu Arg His Cys Gln Trp Leu Ala Cys Leu Met
            260                 265                 270

Gln Gly Ser Asn His Leu Glu Glu Ala Asp Arg Arg Pro Leu Asn Leu
        275                 280                 285

Cys Pro Ile Cys Leu His Lys Leu Gln Cys Ala Val Gly Phe Ser Ile
    290                 295                 300

Val Glu Arg Tyr Lys Ala Leu Val Arg Trp Ile Asp Asp Glu Ser Ser
305                 310                 315                 320
```

```
Asp Thr Pro Gly Ala Thr Pro Glu His Ser His Glu Asp Asn Gly Asn
                325                 330                 335

Leu Pro Lys Pro Val Glu Ala Phe Lys Glu Trp Lys Glu Trp Ile Ile
            340                 345                 350

Lys Cys Leu Ala Val Leu Gln Lys
        355                 360


<210> 6021
<211> 248
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
<221> source
<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000461935"

<400> 6021
Met Gln Ile Ile Arg His Ser Glu Gln Thr Leu Lys Thr Ala Leu Ile
1               5                   10                  15

Ser Lys Asn Pro Val Leu Val Ser Gln Tyr Glu Lys Leu Asn Ala Gly
            20                  25                  30

Glu Gln Arg Leu Met Asn Glu Ala Phe Gln Pro Ala Ser Asp Leu Phe
        35                  40                  45

Gly Pro Ile Thr Leu His Ser Pro Ser Asp Trp Ile Thr Ser His Pro
    50                  55                  60

Glu Ala Pro Gln Asp Phe Glu Gln Phe Phe Ser Asp Pro Tyr Arg Lys
65                  70                  75                  80

Thr Pro Ser Pro Asn Lys Arg Ser Ile Tyr Ile Gln Ser Ile Gly Ser
```

```
                85                  90                  95

Leu Gly Asn Thr Arg Ile Ile Ser Glu Glu Tyr Ile Lys Trp Leu Thr
            100                 105                 110

Gly Tyr Cys Lys Ala Tyr Phe Tyr Gly Leu Arg Val Lys Leu Leu Glu
        115                 120                 125

Pro Val Pro Val Ser Val Thr Arg Cys Ser Phe Arg Val Asn Glu Asn
    130                 135                 140

Thr His Asn Leu Gln Ile His Ala Gly Asp Ile Leu Lys Phe Leu Lys
145                 150                 155                 160

Lys Lys Lys Pro Glu Asp Ala Phe Cys Val Val Gly Ile Thr Met Ile
                165                 170                 175

Asp Leu Tyr Pro Arg Asp Ser Trp Asn Phe Val Phe Gly Gln Ala Ser
            180                 185                 190

Leu Thr Asp Gly Val Gly Ile Phe Ser Phe Ala Arg Tyr Gly Ser Asp
        195                 200                 205

Phe Tyr Ser Met His Tyr Lys Gly Lys Val Lys Lys Leu Lys Lys Thr
    210                 215                 220

Ser Ser Ser Asp Tyr Ser Ile Phe Asp Asn Tyr Tyr Ile Pro Glu Ile
225                 230                 235                 240

Thr Ser Val Leu Leu Leu Arg Ser
                245


<210> 6022
<211> 201
<212> PRT
<213> Homo sapiens

<220>
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<221> source
<223> /note="Gene Name:
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<220>
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<400> 6022

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Met Gln Ile Ile Arg His Ser Glu Gln Thr Leu Lys Thr Ala Leu Ile
1               5                  10                  15

Ser Lys Asn Pro Val Leu Val Ser Gln Tyr Glu Lys Leu Asn Ala Gly
            20                  25                  30

Glu Gln Arg Leu Met Asn Glu Ala Phe Gln Pro Ala Ser Asp Leu Phe
        35                  40                  45

Gly Pro Ile Thr Leu His Ser Pro Ser Asp Trp Ile Thr Ser His Pro
    50                  55                  60

Glu Ala Pro Gln Asp Phe Glu Gln Phe Phe Ser Asp Pro Tyr Arg Lys
65                  70                  75                  80

Thr Pro Ser Pro Asn Lys Arg Ser Ile Tyr Ile Gln Ser Ile Gly Ser
                85                  90                  95

Leu Gly Asn Thr Arg Ile Ile Ser Glu Glu Tyr Ile Lys Trp Leu Thr
            100                 105                 110

Gly Tyr Cys Lys Ala Tyr Phe Tyr Gly Leu Arg Val Lys Leu Leu Glu
        115                 120                 125

Pro Val Pro Val Ser Val Thr Arg Cys Ser Phe Arg Val Asn Glu Asn
    130                 135                 140

Thr His Asn Leu Gln Ile His Ala Gly Asp Ile Leu Lys Phe Leu Lys
145                 150                 155                 160

Lys Lys Lys Pro Glu Asp Ala Phe Cys Val Val Gly Ile Thr Met Ile
                165                 170                 175

Asp Leu Tyr Pro Arg Asp Ser Trp Asn Phe Val Phe Gly Gln Ala Ser
            180                 185                 190
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Leu Thr Asp Gly Thr Gly Glu Val Asp
195 200

<210> 6023
<211> 197
<212> PRT
<213> Homo sapiens

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<400> 6023
Met Gln Ile Ile Arg His Ser Glu Gln Thr Leu Lys Thr Ala Leu Ile
1 5 10 15

Ser Lys Asn Pro Val Leu Val Ser Gln Tyr Glu Lys Leu Asn Ala Gly
20 25 30

Glu Gln Arg Leu Met Asn Glu Ala Phe Gln Pro Ala Ser Asp Leu Phe
35 40 45

Gly Pro Ile Thr Leu His Ser Pro Ser Asp Trp Ile Thr Ser His Pro
50 55 60

Glu Ala Pro Gln Asp Phe Glu Gln Phe Phe Ser Asp Pro Tyr Arg Lys
65 70 75 80

Thr Pro Ser Pro Asn Lys Arg Ser Ile Tyr Ile Gln Ser Ile Gly Ser
85 90 95

Leu Gly Asn Thr Arg Ile Ile Ser Glu Glu Tyr Ile Lys Trp Leu Thr
100 105 110

Gly Tyr Cys Lys Ala Tyr Phe Tyr Gly Leu Arg Val Lys Leu Leu Glu
115 120 125

```
Pro Val Pro Val Ser Val Thr Arg Cys Ser Phe Arg Val Asn Glu Asn
    130                 135                 140

Thr His Asn Leu Gln Ile His Ala Gly Asp Ile Leu Lys Phe Leu Lys
145                 150                 155                 160

Lys Lys Lys Pro Glu Asp Ala Phe Cys Val Val Gly Ile Thr Met Ile
                165                 170                 175

Asp Leu Tyr Pro Arg Asp Ser Trp Asn Phe Val Phe Gly Gln Ala Ser
            180                 185                 190

Leu Thr Asp Gly Val
        195


<210> 6024
<211> 195
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<223> /note="Gene Name:
      archaelysin family metallopeptidase 2; "

<220>
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<400> 6024
Met Gln Ile Ile Arg His Ser Glu Gln Thr Leu Lys Thr Ala Leu Ile
1               5                   10                  15

Ser Lys Asn Pro Val Leu Val Ser Gln Tyr Glu Lys Leu Asn Ala Gly
            20                  25                  30

Glu Gln Arg Leu Met Asn Glu Ala Phe Gln Pro Ala Ser Asp Leu Phe
        35                  40                  45
```

```
Gly Pro Ile Thr Leu His Ser Pro Ser Asp Trp Ile Thr Ser His Pro
    50                  55                  60

Glu Ala Pro Gln Asp Phe Glu Gln Phe Phe Ser Asp Pro Tyr Arg Lys
65                  70                  75                  80

Thr Pro Ser Pro Asn Lys Arg Ser Ile Tyr Ile Gln Ser Ile Gly Ser
                85                  90                  95

Leu Gly Asn Thr Arg Ile Ile Ser Glu Glu Tyr Ile Lys Trp Leu Thr
            100                 105                 110

Gly Tyr Cys Lys Ala Tyr Phe Tyr Gly Leu Arg Val Lys Leu Leu Glu
        115                 120                 125

Pro Val Pro Val Ser Val Thr Arg Cys Ser Phe Arg Val Asn Glu Asn
    130                 135                 140

Thr His Asn Leu Gln Ile His Ala Gly Asp Ile Leu Lys Phe Leu Lys
145                 150                 155                 160

Lys Lys Lys Pro Glu Asp Ala Phe Cys Val Val Gly Ile Thr Met Ile
                165                 170                 175

Asp Leu Tyr Pro Arg Asp Ser Trp Asn Phe Val Phe Gly Gln Ala Ser
            180                 185                 190

Leu Thr Asp
        195


<210> 6025
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<220>
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<220>
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<223> /note="Uniprot ID: Q86W34; "

<220>
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<400> 6025
Met Gln Ile Ile Arg His Ser Glu Gln Thr Leu Lys Thr Ala Leu Ile
1   5   10   15

Ser Lys Asn Pro Val Leu Val Ser Gln Tyr Glu Lys Leu Asn Ala Gly
            20   25   30

Glu Gln Arg Leu Met Asn Glu Ala Phe Gln Pro Ala Ser Asp Leu Phe
        35   40   45

Gly Pro Ile Thr Leu His Ser Pro Ser Asp Trp Ile Thr Ser His Pro
    50   55   60

Glu Ala Pro Gln Asp Phe Glu Gln Phe Phe Ser Asp Pro Tyr Arg Lys
65   70   75   80

Thr Pro Ser Pro Asn Lys Arg Ser Ile Tyr Ile Gln Ser Ile Gly Ser
                85   90   95

Leu Gly Asn Thr Arg Ile Ile Ser Glu Glu Tyr Ile Lys Trp Leu Thr
            100   105   110

Gly Tyr Cys Lys Ala Tyr Phe Tyr Gly Leu Arg Val Lys Leu Leu Glu
        115   120   125

Pro Val Pro Val Ser Val Thr Arg Cys Ser Phe Arg Val Asn Glu Asn
    130   135   140

Thr His Asn Leu Gln Ile His Ala Gly Asp Ile Leu Lys Phe Leu Lys
145   150   155   160

Lys Lys Lys Pro Glu Asp Ala Phe Cys Val Val Gly Ile Thr Met Ile
                165   170   175

Asp Leu Tyr Pro Arg Asp Ser Trp Asn Phe Val Phe Gly Gln Ala Ser
            180   185   190

```
Leu Thr Asp Gly Val Gly Ile Phe Ser Phe Ala Arg Tyr Gly Ser Asp
        195                 200                 205

Phe Tyr Ser Met His Tyr Lys Gly Lys Val Lys Lys Leu Lys Lys Thr
    210                 215                 220

Ser Ser Ser Asp Tyr Ser Ile Phe Asp Asn Tyr Tyr Ile Pro Glu Ile
225                 230                 235                 240

Thr Ser Val Leu Leu Leu Arg Ser Cys Lys Thr Leu Thr His Glu Ile
                245                 250                 255

Gly His Ile Phe Gly Leu Arg His Cys Gln Trp Leu Ala Cys Leu Met
            260                 265                 270

Gln Gly Ser Asn His Leu Glu Glu Ala Asp Arg Arg Pro Leu Asn Leu
        275                 280                 285

Cys Pro Ile Cys Leu His Lys Leu Gln Cys Ala Val Gly Phe Ser Ile
    290                 295                 300

Val Glu Arg Tyr Lys Ala Leu Val Arg Trp Ile Asp Asp Glu Ser Ser
305                 310                 315                 320

Asp Thr Pro Gly Ala Thr Pro Glu His Ser His Glu Asp Asn Gly Asn
                325                 330                 335

Leu Pro Lys Pro Val Glu Ala Phe Lys Glu Trp Lys Glu Trp Ile Ile
            340                 345                 350

Lys Cys Leu Ala Val Leu Gln Lys
        355                 360
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<210> 6026
<211> 221
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<220>
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<223> /note="Gene Symbol: AMZ2; "

<220>
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archaelysin family metallopeptidase 2; "

<220>
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<223> /note="ENSP ID: ENSP00000463053"

<400> 6026
Met Arg Val Arg Ala Ala Ala Ala Arg Pro Arg His Val Arg Pro Cys
1 5 10 15

Lys Leu Lys Ala Ser Met Gly Ala Phe Leu Pro Asn Gln Asp Trp Ile
20 25 30

Thr Ser His Pro Glu Ala Pro Gln Asp Phe Glu Gln Phe Phe Ser Asp
35 40 45

Pro Tyr Arg Lys Thr Pro Ser Pro Asn Lys Arg Ser Ile Tyr Ile Gln
50 55 60

Ser Ile Gly Ser Leu Gly Asn Thr Arg Ile Ile Ser Glu Glu Tyr Ile
65 70 75 80

Lys Trp Leu Thr Gly Tyr Cys Lys Ala Tyr Phe Tyr Gly Leu Arg Val
85 90 95

Lys Leu Leu Glu Pro Val Pro Val Ser Val Thr Arg Cys Ser Phe Arg
100 105 110

Val Asn Glu Asn Thr His Asn Leu Gln Ile His Ala Gly Asp Ile Leu
115 120 125

Lys Phe Leu Lys Lys Lys Lys Pro Glu Asp Ala Phe Cys Val Val Gly
130 135 140

Ile Thr Met Ile Asp Leu Tyr Pro Arg Asp Ser Trp Asn Phe Val Phe
145 150 155 160

Gly Gln Ala Ser Leu Thr Asp Gly Val Gly Ile Phe Ser Phe Ala Arg
165 170 175

Tyr Gly Ser Asp Phe Tyr Ser Met His Tyr Lys Gly Lys Val Lys Lys
180 185 190

```
Leu Lys Lys Thr Ser Ser Ser Asp Tyr Ser Ile Phe Asp Asn Tyr Tyr
        195                 200                 205


Ile Pro Glu Ile Thr Ser Val Leu Leu Leu Arg Ser Cys
    210                 215                 220


<210> 6027
<211> 76
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000463344"


<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 6027
Xaa Glu Gln Arg Leu Met Asn Glu Ala Phe Gln Pro Ala Ser Asp Leu
1               5                   10                  15


Phe Gly Pro Ile Thr Leu His Ser Pro Ser Asp Trp Ile Thr Ser His
            20                  25                  30


Pro Glu Ala Pro Gln Asp Phe Glu Gln Phe Phe Ser Asp Pro Tyr Arg
        35                  40                  45


Lys Thr Pro Ser Pro Asn Lys Arg Ser Ile Tyr Ile Gln Ser Ile Gly
    50                  55                  60


Lys Tyr Trp Leu Ser Arg Lys His Gln Asn Tyr Gln
65                  70                  75
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<210> 6028
<211> 206
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: AMZ2; "

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archaelysin family metallopeptidase 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000463596"

<400> 6028
Met Gln Ile Ile Arg His Ser Glu Gln Thr Leu Lys Thr Ala Leu Ile
1 5 10 15

Ser Lys Asn Pro Val Leu Val Ser Gln Tyr Glu Lys Leu Asn Ala Gly
20 25 30

Glu Gln Arg Leu Met Asn Glu Ala Phe Gln Pro Ala Ser Asp Leu Phe
35 40 45

Gly Pro Ile Thr Leu His Ser Pro Ser Asp Trp Ile Thr Ser His Pro
50 55 60

Glu Ala Pro Gln Asp Phe Glu Gln Phe Phe Ser Asp Pro Tyr Arg Lys
65 70 75 80

Thr Pro Ser Pro Asn Lys Arg Ser Ile Tyr Ile Gln Ser Ile Gly Ser
85 90 95

Leu Gly Asn Thr Arg Ile Ile Ser Glu Glu Tyr Ile Lys Trp Leu Thr
100 105 110

Gly Tyr Cys Lys Ala Tyr Phe Tyr Gly Leu Arg Val Lys Leu Leu Glu
115 120 125

```
Pro Val Pro Val Ser Val Thr Arg Cys Ser Phe Arg Val Asn Glu Asn
    130                 135                 140

Thr His Asn Leu Gln Ile His Ala Gly Asp Ile Leu Lys Phe Leu Lys
145                 150                 155                 160

Lys Lys Lys Pro Glu Asp Ala Phe Cys Val Val Gly Ile Thr Met Ile
                165                 170                 175

Asp Leu Tyr Pro Arg Asp Ser Trp Asn Phe Val Phe Gly Gln Ala Ser
            180                 185                 190

Leu Thr Asp Gly Val Gly Ile Phe Ser Phe Ala Arg Tyr Gly
        195                 200                 205
```

<210> 6029
<211> 23
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<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000463857"

<400> 6029

```
Arg Ser Ile Tyr Ile Gln Ser Ile Gly Lys Tyr Trp Gly His Pro Glu
1               5                   10                  15

Val Leu Glu Lys Glu Glu Thr
            20
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<210> 6030
<211> 360
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1316; "

<220>
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<220>
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<220>
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<220>
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<400> 6030

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Met Gln Ile Ile Arg His Ser Glu Gln Thr Leu Lys Thr Ala Leu Ile
1               5                   10                  15


Ser Lys Asn Pro Val Leu Val Ser Gln Tyr Glu Lys Leu Asn Ala Gly
            20                  25                  30


Glu Gln Arg Leu Met Asn Glu Ala Phe Gln Pro Ala Ser Asp Leu Phe
        35                  40                  45


Gly Pro Ile Thr Leu His Ser Pro Ser Asp Trp Ile Thr Ser His Pro
    50                  55                  60


Glu Ala Pro Gln Asp Phe Glu Gln Phe Phe Ser Asp Pro Tyr Arg Lys
65                  70                  75                  80


Thr Pro Ser Pro Asn Lys Arg Ser Ile Tyr Ile Gln Ser Ile Gly Ser
                85                  90                  95


Leu Gly Asn Thr Arg Ile Ile Ser Glu Glu Tyr Ile Lys Trp Leu Thr
            100                 105                 110


Gly Tyr Cys Lys Ala Tyr Phe Tyr Gly Leu Arg Val Lys Leu Leu Glu
        115                 120                 125


Pro Val Pro Val Ser Val Thr Arg Cys Ser Phe Arg Val Asn Glu Asn
    130                 135                 140
```

Thr His Asn Leu Gln Ile His Ala Gly Asp Ile Leu Lys Phe Leu Lys
145 150 155 160

Lys Lys Lys Pro Glu Asp Ala Phe Cys Val Val Gly Ile Thr Met Ile
165 170 175

Asp Leu Tyr Pro Arg Asp Ser Trp Asn Phe Val Phe Gly Gln Ala Ser
180 185 190

Leu Thr Asp Gly Val Gly Ile Phe Ser Phe Ala Arg Tyr Gly Ser Asp
195 200 205

Phe Tyr Ser Met His Tyr Lys Gly Lys Val Lys Lys Leu Lys Lys Thr
210 215 220

Ser Ser Ser Asp Tyr Ser Ile Phe Asp Asn Tyr Tyr Ile Pro Glu Ile
225 230 235 240

Thr Ser Val Leu Leu Leu Arg Ser Cys Lys Thr Leu Thr His Glu Ile
245 250 255

Gly His Ile Phe Gly Leu Arg His Cys Gln Trp Leu Ala Cys Leu Met
260 265 270

Gln Gly Ser Asn His Leu Glu Glu Ala Asp Arg Arg Pro Leu Asn Leu
275 280 285

Cys Pro Ile Cys Leu His Lys Leu Gln Cys Ala Val Gly Phe Ser Ile
290 295 300

Val Glu Arg Tyr Lys Ala Leu Val Arg Trp Ile Asp Asp Glu Ser Ser
305 310 315 320

Asp Thr Pro Gly Ala Thr Pro Glu His Ser His Glu Asp Asn Gly Asn
325 330 335

Leu Pro Lys Pro Val Glu Ala Phe Lys Glu Trp Lys Glu Trp Ile Ile
340 345 350

Lys Cys Leu Ala Val Leu Gln Lys
355 360

<210> 6031

<211> 360
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Uniprot ID: Q86W34; "

<220>
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<223> /note="ENSP ID: ENSP00000464635"

<400> 6031
Met Gln Ile Ile Arg His Ser Glu Gln Thr Leu Lys Thr Ala Leu Ile
1 5 10 15

Ser Lys Asn Pro Val Leu Val Ser Gln Tyr Glu Lys Leu Asn Ala Gly
20 25 30

Glu Gln Arg Leu Met Asn Glu Ala Phe Gln Pro Ala Ser Asp Leu Phe
35 40 45

Gly Pro Ile Thr Leu His Ser Pro Ser Asp Trp Ile Thr Ser His Pro
50 55 60

Glu Ala Pro Gln Asp Phe Glu Gln Phe Phe Ser Asp Pro Tyr Arg Lys
65 70 75 80

Thr Pro Ser Pro Asn Lys Arg Ser Ile Tyr Ile Gln Ser Ile Gly Ser
85 90 95

Leu Gly Asn Thr Arg Ile Ile Ser Glu Glu Tyr Ile Lys Trp Leu Thr
100 105 110

Gly Tyr Cys Lys Ala Tyr Phe Tyr Gly Leu Arg Val Lys Leu Leu Glu
115 120 125

```
Pro Val Pro Val Ser Val Thr Arg Cys Ser Phe Arg Val Asn Glu Asn
    130                 135                 140

Thr His Asn Leu Gln Ile His Ala Gly Asp Ile Leu Lys Phe Leu Lys
145                 150                 155                 160

Lys Lys Lys Pro Glu Asp Ala Phe Cys Val Val Gly Ile Thr Met Ile
                165                 170                 175

Asp Leu Tyr Pro Arg Asp Ser Trp Asn Phe Val Phe Gly Gln Ala Ser
            180                 185                 190

Leu Thr Asp Gly Val Gly Ile Phe Ser Phe Ala Arg Tyr Gly Ser Asp
        195                 200                 205

Phe Tyr Ser Met His Tyr Lys Gly Lys Val Lys Lys Leu Lys Lys Thr
    210                 215                 220

Ser Ser Ser Asp Tyr Ser Ile Phe Asp Asn Tyr Tyr Ile Pro Glu Ile
225                 230                 235                 240

Thr Ser Val Leu Leu Leu Arg Ser Cys Lys Thr Leu Thr His Glu Ile
                245                 250                 255

Gly His Ile Phe Gly Leu Arg His Cys Gln Trp Leu Ala Cys Leu Met
            260                 265                 270

Gln Gly Ser Asn His Leu Glu Glu Ala Asp Arg Arg Pro Leu Asn Leu
        275                 280                 285

Cys Pro Ile Cys Leu His Lys Leu Gln Cys Ala Val Gly Phe Ser Ile
    290                 295                 300

Val Glu Arg Tyr Lys Ala Leu Val Arg Trp Ile Asp Asp Glu Ser Ser
305                 310                 315                 320

Asp Thr Pro Gly Ala Thr Pro Glu His Ser His Glu Asp Asn Gly Asn
                325                 330                 335

Leu Pro Lys Pro Val Glu Ala Phe Lys Glu Trp Lys Glu Trp Ile Ile
            340                 345                 350
```

Lys Cys Leu Ala Val Leu Gln Lys
355 360

<210> 6032
<211> 360
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<220>
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<400> 6032
Met Gln Ile Ile Arg His Ser Glu Gln Thr Leu Lys Thr Ala Leu Ile
1 5 10 15

Ser Lys Asn Pro Val Leu Val Ser Gln Tyr Glu Lys Leu Asn Ala Gly
20 25 30

Glu Gln Arg Leu Met Asn Glu Ala Phe Gln Pro Ala Ser Asp Leu Phe
35 40 45

Gly Pro Ile Thr Leu His Ser Pro Ser Asp Trp Ile Thr Ser His Pro
50 55 60

Glu Ala Pro Gln Asp Phe Glu Gln Phe Phe Ser Asp Pro Tyr Arg Lys
65 70 75 80

Thr Pro Ser Pro Asn Lys Arg Ser Ile Tyr Ile Gln Ser Ile Gly Ser
85 90 95

Leu Gly Asn Thr Arg Ile Ile Ser Glu Glu Tyr Ile Lys Trp Leu Thr
100 105 110

```
Gly Tyr Cys Lys Ala Tyr Phe Tyr Gly Leu Arg Val Lys Leu Leu Glu
        115                 120                 125

Pro Val Pro Val Ser Val Thr Arg Cys Ser Phe Arg Val Asn Glu Asn
    130                 135                 140

Thr His Asn Leu Gln Ile His Ala Gly Asp Ile Leu Lys Phe Leu Lys
145                 150                 155                 160

Lys Lys Lys Pro Glu Asp Ala Phe Cys Val Val Gly Ile Thr Met Ile
                165                 170                 175

Asp Leu Tyr Pro Arg Asp Ser Trp Asn Phe Val Phe Gly Gln Ala Ser
            180                 185                 190

Leu Thr Asp Gly Val Gly Ile Phe Ser Phe Ala Arg Tyr Gly Ser Asp
        195                 200                 205

Phe Tyr Ser Met His Tyr Lys Gly Lys Val Lys Lys Leu Lys Lys Thr
    210                 215                 220

Ser Ser Ser Asp Tyr Ser Ile Phe Asp Asn Tyr Tyr Ile Pro Glu Ile
225                 230                 235                 240

Thr Ser Val Leu Leu Leu Arg Ser Cys Lys Thr Leu Thr His Glu Ile
                245                 250                 255

Gly His Ile Phe Gly Leu Arg His Cys Gln Trp Leu Ala Cys Leu Met
            260                 265                 270

Gln Gly Ser Asn His Leu Glu Glu Ala Asp Arg Arg Pro Leu Asn Leu
        275                 280                 285

Cys Pro Ile Cys Leu His Lys Leu Gln Cys Ala Val Gly Phe Ser Ile
    290                 295                 300

Val Glu Arg Tyr Lys Ala Leu Val Arg Trp Ile Asp Asp Glu Ser Ser
305                 310                 315                 320

Asp Thr Pro Gly Ala Thr Pro Glu His Ser His Glu Asp Asn Gly Asn
                325                 330                 335
```

```
Leu Pro Lys Pro Val Glu Ala Phe Lys Glu Trp Lys Glu Trp Ile Ile
            340                 345                 350


Lys Cys Leu Ala Val Leu Gln Lys
        355                 360


<210> 6033
<211> 511
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
      archain 1; "

<220>
<221> source
<223> /note="Uniprot ID:  P48444; "

<220>
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<400> 6033
Met Val Leu Leu Ala Ala Ala Val Cys Thr Lys Ala Gly Lys Ala Ile
1               5                  10                  15


Val Ser Arg Gln Phe Val Glu Met Thr Arg Thr Arg Ile Glu Gly Leu
            20                  25                  30


Leu Ala Ala Phe Pro Lys Leu Met Asn Thr Gly Lys Gln His Thr Phe
        35                  40                  45


Val Glu Thr Glu Ser Val Arg Tyr Val Tyr Gln Pro Met Glu Lys Leu
    50                  55                  60


Tyr Met Val Leu Ile Thr Thr Lys Asn Ser Asn Ile Leu Glu Asp Leu
65                  70                  75                  80


Glu Thr Leu Arg Leu Phe Ser Arg Val Ile Pro Glu Tyr Cys Arg Ala
```

85 90 95

Leu Glu Glu Asn Glu Ile Ser Glu His Cys Phe Asp Leu Ile Phe Ala
100 105 110

Phe Asp Glu Ile Val Ala Leu Gly Tyr Arg Glu Asn Val Asn Leu Ala
115 120 125

Gln Ile Arg Thr Phe Thr Glu Met Asp Ser His Glu Glu Lys Val Phe
130 135 140

Arg Ala Val Arg Glu Thr Gln Glu Arg Glu Ala Lys Ala Glu Met Arg
145 150 155 160

Arg Lys Ala Lys Glu Leu Gln Gln Ala Arg Arg Asp Ala Glu Arg Gln
165 170 175

Gly Lys Lys Ala Pro Gly Phe Gly Gly Phe Gly Ser Ser Ala Val Ser
180 185 190

Gly Gly Ser Thr Ala Ala Met Ile Thr Glu Thr Ile Ile Glu Thr Asp
195 200 205

Lys Pro Lys Val Ala Pro Ala Pro Ala Arg Pro Ser Gly Pro Ser Lys
210 215 220

Ala Leu Lys Leu Gly Ala Lys Gly Lys Glu Val Asp Asn Phe Val Asp
225 230 235 240

Lys Leu Lys Ser Glu Gly Glu Thr Ile Met Ser Ser Ser Met Gly Lys
245 250 255

Arg Thr Ser Glu Ala Thr Lys Met His Ala Pro Pro Ile Asn Met Glu
260 265 270

Ser Val His Met Lys Ile Glu Glu Lys Ile Thr Leu Thr Cys Gly Arg
275 280 285

Asp Gly Gly Leu Gln Asn Met Glu Leu His Gly Met Ile Met Leu Arg
290 295 300

Ile Ser Asp Asp Lys Tyr Gly Arg Ile Arg Leu His Val Glu Asn Glu
305 310 315 320

```
Asp Lys Lys Gly Val Gln Leu Gln Thr His Pro Asn Val Asp Lys Lys
                325                 330                 335

Leu Phe Thr Ala Glu Ser Leu Ile Gly Leu Lys Asn Pro Glu Lys Ser
            340                 345                 350

Phe Pro Val Asn Ser Asp Val Gly Val Leu Lys Trp Arg Leu Gln Thr
        355                 360                 365

Thr Glu Glu Ser Phe Ile Pro Leu Thr Ile Asn Cys Trp Pro Ser Glu
    370                 375                 380

Ser Gly Asn Gly Cys Asp Val Asn Ile Glu Tyr Glu Leu Gln Glu Asp
385                 390                 395                 400

Asn Leu Glu Leu Asn Asp Val Val Ile Thr Ile Pro Leu Pro Ser Gly
                405                 410                 415

Val Gly Ala Pro Val Ile Gly Glu Ile Asp Gly Glu Tyr Arg His Asp
            420                 425                 430

Ser Arg Arg Asn Thr Leu Glu Trp Cys Leu Pro Val Ile Asp Ala Lys
        435                 440                 445

Asn Lys Ser Gly Ser Leu Glu Phe Ser Ile Ala Gly Gln Pro Asn Asp
    450                 455                 460

Phe Phe Pro Val Gln Val Ser Phe Val Ser Lys Lys Asn Tyr Cys Asn
465                 470                 475                 480

Ile Gln Val Thr Lys Val Thr Gln Val Asp Gly Asn Ser Pro Val Arg
                485                 490                 495

Phe Ser Thr Glu Thr Thr Phe Leu Val Asp Lys Tyr Glu Ile Leu
            500                 505                 510


<210> 6034
<211> 552
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<223> /note="Payload ID: 1317; "

<220>
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<220>
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<223> /note="Gene Name:
archain 1; "

<220>
<221> source
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<400> 6034

```
Met Ala Glu Cys Asn Leu Val Ala Ile Leu Ile Ser Ser Ile Asp Asn
1               5                  10                  15

Pro Leu Asp Lys Asn Leu Asp Asn Gly Gly Asn Ser Cys Leu Asp Phe
            20                  25                  30

Arg Pro Leu Asn Ser Phe Ser Gln Pro Gln Val Leu Leu Ala Ala Ala
        35                  40                  45

Val Cys Thr Lys Ala Gly Lys Ala Ile Val Ser Arg Gln Phe Val Glu
    50                  55                  60

Met Thr Arg Thr Arg Ile Glu Gly Leu Leu Ala Ala Phe Pro Lys Leu
65                  70                  75                  80

Met Asn Thr Gly Lys Gln His Thr Phe Val Glu Thr Glu Ser Val Arg
                85                  90                  95

Tyr Val Tyr Gln Pro Met Glu Lys Leu Tyr Met Val Leu Ile Thr Thr
            100                 105                 110

Lys Asn Ser Asn Ile Leu Glu Asp Leu Glu Thr Leu Arg Leu Phe Ser
        115                 120                 125

Arg Val Ile Pro Glu Tyr Cys Arg Ala Leu Glu Glu Asn Glu Ile Ser
    130                 135                 140

Glu His Cys Phe Asp Leu Ile Phe Ala Phe Asp Glu Ile Val Ala Leu
145                 150                 155                 160

Gly Tyr Arg Glu Asn Val Asn Leu Ala Gln Ile Arg Thr Phe Thr Glu
```

```
                165                 170                 175

Met Asp Ser His Glu Glu Lys Val Phe Arg Ala Val Arg Glu Thr Gln
            180                 185                 190

Glu Arg Glu Ala Lys Ala Glu Met Arg Arg Lys Ala Lys Glu Leu Gln
        195                 200                 205

Gln Ala Arg Arg Asp Ala Glu Arg Gln Gly Lys Lys Ala Pro Gly Phe
    210                 215                 220

Gly Gly Phe Gly Ser Ser Ala Val Ser Gly Gly Ser Thr Ala Ala Met
225                 230                 235                 240

Ile Thr Glu Thr Ile Ile Glu Thr Asp Lys Pro Lys Val Ala Pro Ala
                245                 250                 255

Pro Ala Arg Pro Ser Gly Pro Ser Lys Ala Leu Lys Leu Gly Ala Lys
            260                 265                 270

Gly Lys Glu Val Asp Asn Phe Val Asp Lys Leu Lys Ser Glu Gly Glu
        275                 280                 285

Thr Ile Met Ser Ser Ser Met Gly Lys Arg Thr Ser Glu Ala Thr Lys
    290                 295                 300

Met His Ala Pro Pro Ile Asn Met Glu Ser Val His Met Lys Ile Glu
305                 310                 315                 320

Glu Lys Ile Thr Leu Thr Cys Gly Arg Asp Gly Gly Leu Gln Asn Met
                325                 330                 335

Glu Leu His Gly Met Ile Met Leu Arg Ile Ser Asp Asp Lys Tyr Gly
            340                 345                 350

Arg Ile Arg Leu His Val Glu Asn Glu Asp Lys Lys Gly Val Gln Leu
        355                 360                 365

Gln Thr His Pro Asn Val Asp Lys Lys Leu Phe Thr Ala Glu Ser Leu
    370                 375                 380

Ile Gly Leu Lys Asn Pro Glu Lys Ser Phe Pro Val Asn Ser Asp Val
385                 390                 395                 400
```

```
Gly Val Leu Lys Trp Arg Leu Gln Thr Thr Glu Glu Ser Phe Ile Pro
                405                 410                 415

Leu Thr Ile Asn Cys Trp Pro Ser Glu Ser Gly Asn Gly Cys Asp Val
            420                 425                 430

Asn Ile Glu Tyr Glu Leu Gln Glu Asp Asn Leu Glu Leu Asn Asp Val
        435                 440                 445

Val Ile Thr Ile Pro Leu Pro Ser Gly Val Gly Ala Pro Val Ile Gly
    450                 455                 460

Glu Ile Asp Gly Glu Tyr Arg His Asp Ser Arg Arg Asn Thr Leu Glu
465                 470                 475                 480

Trp Cys Leu Pro Val Ile Asp Ala Lys Asn Lys Ser Gly Ser Leu Glu
                485                 490                 495

Phe Ser Ile Ala Gly Gln Pro Asn Asp Phe Phe Pro Val Gln Val Ser
            500                 505                 510

Phe Val Ser Lys Lys Asn Tyr Cys Asn Ile Gln Val Thr Lys Val Thr
        515                 520                 525

Gln Val Asp Gly Asn Ser Pro Val Arg Phe Ser Thr Glu Thr Thr Phe
    530                 535                 540

Leu Val Asp Lys Tyr Glu Ile Leu
545                 550


<210> 6035
<211> 423
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1317; "

<220>
<221> source
<223> /note="Gene Symbol: ARCN1; "

<220>
<221> source
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<223> /note="Gene Name:
archain 1; "

<220>
<221> source
<223> /note="Uniprot ID: P48444; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000376599"

<400> 6035

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Met Ile Pro Glu Tyr Cys Arg Ala Leu Glu Glu Asn Glu Ile Ser Glu
1               5                  10                  15

His Cys Phe Asp Leu Ile Phe Ala Phe Asp Glu Ile Val Ala Leu Gly
            20                  25                  30

Tyr Arg Glu Asn Val Asn Leu Ala Gln Ile Arg Thr Phe Thr Glu Met
        35                  40                  45

Asp Ser His Glu Glu Lys Val Phe Arg Ala Val Arg Glu Thr Gln Glu
    50                  55                  60

Arg Glu Ala Lys Ala Glu Met Arg Arg Lys Ala Lys Glu Leu Gln Gln
65                  70                  75                  80

Ala Arg Arg Asp Ala Glu Arg Gln Gly Lys Lys Ala Pro Gly Phe Gly
                85                  90                  95

Gly Phe Gly Ser Ser Ala Val Ser Gly Gly Ser Thr Ala Ala Met Ile
            100                 105                 110

Thr Glu Thr Ile Ile Glu Thr Asp Lys Pro Lys Val Ala Pro Ala Pro
        115                 120                 125

Ala Arg Pro Ser Gly Pro Ser Lys Ala Leu Lys Leu Gly Ala Lys Gly
    130                 135                 140

Lys Glu Val Asp Asn Phe Val Asp Lys Leu Lys Ser Glu Gly Glu Thr
145                 150                 155                 160

Ile Met Ser Ser Ser Met Gly Lys Arg Thr Ser Glu Ala Thr Lys Met
                165                 170                 175

His Ala Pro Pro Ile Asn Met Glu Ser Val His Met Lys Ile Glu Glu
```

```
            180                 185                 190

Lys Ile Thr Leu Thr Cys Gly Arg Asp Gly Gly Leu Gln Asn Met Glu
        195                 200                 205

Leu His Gly Met Ile Met Leu Arg Ile Ser Asp Asp Lys Tyr Gly Arg
    210                 215                 220

Ile Arg Leu His Val Glu Asn Glu Asp Lys Lys Gly Val Gln Leu Gln
225                 230                 235                 240

Thr His Pro Asn Val Asp Lys Lys Leu Phe Thr Ala Glu Ser Leu Ile
                245                 250                 255

Gly Leu Lys Asn Pro Glu Lys Ser Phe Pro Val Asn Ser Asp Val Gly
            260                 265                 270

Val Leu Lys Trp Arg Leu Gln Thr Thr Glu Glu Ser Phe Ile Pro Leu
        275                 280                 285

Thr Ile Asn Cys Trp Pro Ser Glu Ser Gly Asn Gly Cys Asp Val Asn
    290                 295                 300

Ile Glu Tyr Glu Leu Gln Glu Asp Asn Leu Glu Leu Asn Asp Val Val
305                 310                 315                 320

Ile Thr Ile Pro Leu Pro Ser Gly Val Gly Ala Pro Val Ile Gly Glu
                325                 330                 335

Ile Asp Gly Glu Tyr Arg His Asp Ser Arg Arg Asn Thr Leu Glu Trp
            340                 345                 350

Cys Leu Pro Val Ile Asp Ala Lys Asn Lys Ser Gly Ser Leu Glu Phe
        355                 360                 365

Ser Ile Ala Gly Gln Pro Asn Asp Phe Phe Pro Val Gln Val Ser Phe
    370                 375                 380

Val Ser Lys Lys Asn Tyr Cys Asn Ile Gln Val Thr Lys Val Thr Gln
385                 390                 395                 400

Val Asp Gly Asn Ser Pro Val Arg Phe Ser Thr Glu Thr Thr Phe Leu
                405                 410                 415
```

Val Asp Lys Tyr Glu Ile Leu
420

<210> 6036
<211> 83
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1317; "

<220>
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<223> /note="Gene Symbol: ARCN1; "

<220>
<221> source
<223> /note="Gene Name:
archain 1; "

<220>
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<223> /note="ENSP ID: ENSP00000431676"

<400> 6036
Met Val Leu Leu Ala Ala Ala Val Cys Thr Lys Ala Gly Lys Ala Ile
1 5 10 15

Val Ser Arg Gln Phe Val Glu Met Thr Arg Thr Arg Ile Glu Gly Leu
20 25 30

Leu Ala Ala Phe Pro Lys Leu Met Asn Thr Gly Lys Gln His Thr Phe
35 40 45

Val Glu Thr Glu Ser Ile Arg Met Ser Ser Val Leu Phe Pro Tyr Gln
50 55 60

Phe Ile Pro Ser Ser Leu Cys Gln Val Val Phe Leu Ser Gly Pro Val
65 70 75 80

Leu Pro Val

<210> 6037
<211> 189
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1317; "

<220>
<221> source
<223> /note="Gene Symbol: ARCN1; "

<220>
<221> source
<223> /note="Gene Name:
archain 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000482114"

<400> 6037
Met Val Leu Leu Ala Ala Ala Val Cys Thr Lys Ala Gly Lys Ala Ile
1 5 10 15

Val Ser Arg Gln Phe Val Glu Met Thr Arg Thr Arg Ile Glu Gly Leu
20 25 30

Leu Ala Ala Phe Pro Lys Leu Met Asn Thr Gly Lys Gln His Thr Phe
35 40 45

Val Glu Thr Glu Ser Val Arg Tyr Val Tyr Gln Pro Met Glu Lys Leu
50 55 60

Tyr Met Val Leu Ile Thr Thr Lys Asn Ser Asn Ile Leu Glu Asp Leu
65 70 75 80

Glu Thr Leu Arg Leu Phe Ser Arg Val Ile Pro Glu Tyr Cys Arg Ala
85 90 95

Leu Glu Glu Asn Glu Ile Ser Glu His Cys Phe Asp Leu Ile Phe Ala
100 105 110

Phe Asp Glu Ile Val Ala Leu Gly Tyr Arg Glu Asn Val Asn Leu Ala
115 120 125

Gln Ile Arg Thr Phe Thr Glu Met Asp Ser His Glu Glu Lys Val Phe
130 135 140

Arg Ala Val Arg Glu Thr Gln Glu Arg Glu Ala Lys Ala Glu Met Arg
145 150 155 160

```
Arg Lys Ala Lys Glu Leu Gln Gln Ala Gln Ser Val Gly Ile Thr Gly
                165                 170                 175


Met Ser His His Ala Gln Leu Leu Leu Tyr Phe Asn Pro
            180                 185


<210> 6038
<211> 740
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1318; "

<220>
<221> source
<223> /note="Gene Symbol: ACAP1; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with coiled-coil, ankyrin repeat and PH domains
      1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q15027; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000158762"

<400> 6038
Met Thr Val Lys Leu Asp Phe Glu Glu Cys Leu Lys Asp Ser Pro Arg
1               5                   10                  15


Phe Arg Ala Ser Ile Glu Leu Val Glu Ala Glu Val Ser Glu Leu Glu
            20                  25                  30


Thr Arg Leu Glu Lys Leu Leu Lys Leu Gly Thr Gly Leu Leu Glu Ser
        35                  40                  45


Gly Arg His Tyr Leu Ala Ala Ser Arg Ala Phe Val Val Gly Ile Cys
    50                  55                  60


Asp Leu Ala Arg Leu Gly Pro Pro Glu Pro Met Met Ala Glu Cys Leu
65                  70                  75                  80
```

```
Glu Lys Phe Thr Val Ser Leu Asn His Lys Leu Asp Ser His Ala Glu
                85                  90                  95

Leu Leu Asp Ala Thr Gln His Thr Leu Gln Gln Gln Ile Gln Thr Leu
            100                 105                 110

Val Lys Glu Gly Leu Arg Gly Phe Arg Glu Ala Arg Arg Asp Phe Trp
        115                 120                 125

Arg Gly Ala Glu Ser Leu Glu Ala Ala Leu Thr His Asn Ala Glu Val
    130                 135                 140

Pro Arg Arg Arg Ala Gln Glu Ala Glu Glu Ala Gly Ala Ala Leu Arg
145                 150                 155                 160

Thr Ala Arg Ala Gly Tyr Arg Gly Arg Ala Leu Asp Tyr Ala Leu Gln
                165                 170                 175

Ile Asn Val Ile Glu Asp Lys Arg Lys Phe Asp Ile Met Glu Phe Val
            180                 185                 190

Leu Arg Leu Val Glu Ala Gln Ala Thr His Phe Gln Gln Gly His Glu
        195                 200                 205

Glu Leu Ser Arg Leu Ser Gln Tyr Arg Lys Glu Leu Gly Ala Gln Leu
    210                 215                 220

His Gln Leu Val Leu Asn Ser Ala Arg Glu Lys Arg Asp Met Glu Gln
225                 230                 235                 240

Arg His Val Leu Leu Lys Gln Lys Glu Leu Gly Gly Glu Glu Pro Glu
                245                 250                 255

Pro Ser Leu Arg Glu Gly Pro Gly Gly Leu Val Met Glu Gly His Leu
            260                 265                 270

Phe Lys Arg Ala Ser Asn Ala Phe Lys Thr Trp Ser Arg Arg Trp Phe
        275                 280                 285

Thr Ile Gln Ser Asn Gln Leu Val Tyr Gln Lys Lys Tyr Lys Asp Pro
    290                 295                 300
```

```
Val Thr Val Val Val Asp Asp Leu Arg Leu Cys Thr Val Lys Leu Cys
305                 310                 315                 320

Pro Asp Ser Glu Arg Arg Phe Cys Phe Glu Val Val Ser Thr Ser Lys
                325                 330                 335

Ser Cys Leu Leu Gln Ala Asp Ser Glu Arg Leu Leu Gln Leu Trp Val
            340                 345                 350

Ser Ala Val Gln Ser Ser Ile Ala Ser Ala Phe Ser Gln Ala Arg Leu
        355                 360                 365

Asp Asp Ser Pro Arg Gly Pro Gly Gln Gly Ser Gly His Leu Ala Ile
    370                 375                 380

Gly Ser Ala Ala Thr Leu Gly Ser Gly Gly Met Ala Arg Gly Arg Glu
385                 390                 395                 400

Pro Gly Gly Val Gly His Val Val Ala Gln Val Gln Ser Val Asp Gly
                405                 410                 415

Asn Ala Gln Cys Cys Asp Cys Arg Glu Pro Ala Pro Glu Trp Ala Ser
            420                 425                 430

Ile Asn Leu Gly Val Thr Leu Cys Ile Gln Cys Ser Gly Ile His Arg
        435                 440                 445

Ser Leu Gly Val His Phe Ser Lys Val Arg Ser Leu Thr Leu Asp Ser
    450                 455                 460

Trp Glu Pro Glu Leu Val Lys Leu Met Cys Glu Leu Gly Asn Val Ile
465                 470                 475                 480

Ile Asn Gln Ile Tyr Glu Ala Arg Val Glu Ala Met Ala Val Lys Lys
                485                 490                 495

Pro Gly Pro Ser Cys Ser Arg Gln Glu Lys Glu Ala Trp Ile His Ala
            500                 505                 510

Lys Tyr Val Glu Lys Lys Phe Leu Thr Lys Leu Pro Glu Ile Arg Gly
        515                 520                 525

Arg Arg Gly Gly Arg Gly Arg Pro Arg Gly Gln Pro Pro Val Pro Pro
```

```
    530                 535                 540

Lys Pro Ser Ile Arg Pro Arg Pro Gly Ser Leu Arg Ser Lys Pro Glu
545                 550                 555                 560

Pro Pro Ser Glu Asp Leu Gly Ser Leu His Pro Gly Ala Leu Leu Phe
                565                 570                 575

Arg Ala Ser Gly His Pro Pro Ser Leu Pro Thr Met Ala Asp Ala Leu
            580                 585                 590

Ala His Gly Ala Asp Val Asn Trp Val Asn Gly Gly Gln Asp Asn Ala
        595                 600                 605

Thr Pro Leu Ile Gln Ala Thr Ala Ala Asn Ser Leu Leu Ala Cys Glu
    610                 615                 620

Phe Leu Leu Gln Asn Gly Ala Asn Val Asn Gln Ala Asp Ser Ala Gly
625                 630                 635                 640

Arg Gly Pro Leu His His Ala Thr Ile Leu Gly His Thr Gly Leu Ala
                645                 650                 655

Cys Leu Phe Leu Lys Arg Gly Ala Asp Leu Gly Ala Arg Asp Ser Glu
            660                 665                 670

Gly Arg Asp Pro Leu Thr Ile Ala Met Glu Thr Ala Asn Ala Asp Ile
        675                 680                 685

Val Thr Leu Leu Arg Leu Ala Lys Met Arg Glu Ala Glu Ala Ala Gln
    690                 695                 700

Gly Gln Ala Gly Asp Glu Thr Tyr Leu Asp Ile Phe Arg Asp Phe Ser
705                 710                 715                 720

Leu Met Ala Ser Asp Asp Pro Glu Lys Leu Ser Arg Arg Ser His Asp
                725                 730                 735

Leu His Thr Leu
            740
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<210> 6039
<211> 148

<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1318; "

<220>
<221> source
<223> /note="Gene Symbol: ACAP1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with coiled-coil, ankyrin repeat and PH domains
1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000458173"

<400> 6039

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Met Met Ala Glu Cys Leu Glu Lys Phe Thr Val Ser Leu Asn His Lys
1               5                  10                  15

Leu Asp Ser His Ala Glu Leu Leu Asp Ala Thr Gln His Thr Leu Gln
            20                  25                  30

Gln Gln Ile Gln Thr Leu Val Lys Glu Gly Leu Arg Gly Phe Arg Glu
        35                  40                  45

Ala Arg Arg Asp Phe Trp Arg Gly Ala Glu Ser Leu Glu Ala Ala Leu
    50                  55                  60

Thr His Asn Ala Glu Val Pro Arg Arg Arg Ala Gln Glu Ala Glu Glu
65                  70                  75                  80

Ala Gly Ala Ala Leu Arg Thr Ala Arg Ala Gly Tyr Arg Gly Arg Ala
                85                  90                  95

Leu Asp Tyr Ala Leu Gln Ile Asn Val Ile Glu Asp Lys Arg Lys Phe
            100                 105                 110

Asp Ile Met Glu Phe Val Leu Arg Leu Val Glu Ala Gln Ala Thr His
        115                 120                 125

Phe Gln Gln Gly His Glu Glu Leu Ser Arg Leu Ser Gln Tyr Arg Lys
    130                 135                 140
```

Glu Leu Gly Ala
145

<210> 6040
<211> 101
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1318; "

<220>
<221> source
<223> /note="Gene Symbol: ACAP1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with coiled-coil, ankyrin repeat and PH domains
1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000459422"

<400> 6040
Met Met Ala Glu Cys Leu Glu Lys Phe Thr Val Ser Leu Asn His Lys
1 5 10 15

Leu Asp Ser His Ala Glu Leu Leu Asp Ala Thr Gln His Thr Leu Gln
20 25 30

Gln Gln Ile Gln Thr Leu Val Lys Glu Gly Leu Arg Gly Phe Arg Glu
35 40 45

Ala Arg Arg Asp Phe Trp Arg Gly Ala Glu Ser Leu Glu Ala Ala Leu
50 55 60

Thr His Asn Ala Glu Val Pro Arg Arg Arg Ala Gln Glu Ala Glu Glu
65 70 75 80

Ala Gly Ala Ala Leu Arg Thr Ala Arg Ala Gly Tyr Arg Gly Arg Ala
85 90 95

Leu Asp Tyr Ala Leu
100

<210> 6041
<211> 44
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1318; "

<220>
<221> source
<223> /note="Gene Symbol: ACAP1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with coiled-coil, ankyrin repeat and PH domains
1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000460054"

<400> 6041
Met Arg Glu Ala Glu Ala Ala Gln Gly Gln Ala Gly Asp Glu Thr Tyr
1 5 10 15

Leu Asp Ile Phe Arg Asp Phe Ser Leu Met Ala Ser Asp Asp Pro Glu
20 25 30

Lys Leu Ser Arg Arg Ser His Asp Leu His Thr Leu
35 40

<210> 6042
<211> 44
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1318; "

<220>
<221> source
<223> /note="Gene Symbol: ACAP1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with coiled-coil, ankyrin repeat and PH domains
1; "

<220>
<221> source

<223> /note="ENSP ID: ENSP00000460735"

<400> 6042
Met Arg Glu Ala Glu Ala Ala Gln Gly Gln Ala Gly Asp Glu Thr Tyr
1 5 10 15

Leu Asp Ile Phe Arg Asp Phe Ser Leu Met Ala Ser Asp Asp Pro Glu
20 25 30

Lys Leu Ser Arg Arg Ser His Asp Leu His Thr Leu
35 40

<210> 6043
<211> 65
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1318; "

<220>
<221> source
<223> /note="Gene Symbol: ACAP1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with coiled-coil, ankyrin repeat and PH domains
1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000460803"

<400> 6043
Met Asn Gly Thr Gln Pro Ser Ser Lys Asp Gly Lys Leu Trp Gly Arg
1 5 10 15

Leu Arg Leu Ala Lys Met Arg Glu Ala Glu Ala Ala Gln Gly Gln Ala
20 25 30

Gly Asp Glu Thr Tyr Leu Asp Ile Phe Arg Asp Phe Ser Leu Met Ala
35 40 45

Ser Asp Asp Pro Glu Lys Leu Ser Arg Arg Ser His Asp Leu His Thr
50 55 60

Leu
65

<210> 6044
<211> 44
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1318; "

<220>
<221> source
<223> /note="Gene Symbol: ACAP1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with coiled-coil, ankyrin repeat and PH domains
1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000461314"

<400> 6044
Met Arg Glu Ala Glu Ala Ala Gln Gly Gln Ala Gly Asp Glu Thr Tyr
1 5 10 15

Leu Asp Ile Phe Arg Asp Phe Ser Leu Met Ala Ser Asp Asp Pro Glu
20 25 30

Lys Leu Ser Arg Arg Ser His Asp Leu His Thr Leu
35 40

<210> 6045
<211> 778
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1319; "

<220>
<221> source
<223> /note="Gene Symbol: ACAP2; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with coiled-coil, ankyrin repeat and PH domains
2; "

<220>
<221> source
<223> /note="Uniprot ID: Q15057; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000324287"

<400> 6045
Met Lys Met Thr Val Asp Phe Glu Glu Cys Leu Lys Asp Ser Pro Arg
1   5   10   15

Phe Arg Ala Ala Leu Glu Glu Val Glu Gly Asp Val Ala Glu Leu Glu
            20   25   30

Leu Lys Leu Asp Lys Leu Val Lys Leu Cys Ile Ala Met Ile Asp Thr
        35   40   45

Gly Lys Ala Phe Cys Val Ala Asn Lys Gln Phe Met Asn Gly Ile Arg
    50   55   60

Asp Leu Ala Gln Tyr Ser Ser Asn Asp Ala Val Val Glu Thr Ser Leu
65   70   75   80

Thr Lys Phe Ser Asp Ser Leu Gln Glu Met Ile Asn Phe His Thr Ile
                85   90   95

Leu Phe Asp Gln Thr Gln Arg Ser Ile Lys Ala Gln Leu Gln Asn Phe
            100   105   110

Val Lys Glu Asp Leu Arg Lys Phe Lys Asp Ala Lys Lys Gln Phe Glu
        115   120   125

Lys Val Ser Glu Glu Lys Glu Asn Ala Leu Val Lys Asn Ala Gln Val
    130   135   140

Gln Arg Asn Lys Gln His Glu Val Glu Glu Ala Thr Asn Ile Leu Thr
145   150   155   160

Ala Thr Arg Lys Cys Phe Arg His Ile Ala Leu Asp Tyr Val Leu Gln
                165   170   175

Ile Asn Val Leu Gln Ser Lys Arg Arg Ser Glu Ile Leu Lys Ser Met
            180   185   190

```
Leu Ser Phe Met Tyr Ala His Leu Ala Phe Phe His Gln Gly Tyr Asp
        195                 200                 205

Leu Phe Ser Glu Leu Gly Pro Tyr Met Lys Asp Leu Gly Ala Gln Leu
    210                 215                 220

Asp Arg Leu Val Val Asp Ala Ala Lys Glu Lys Arg Glu Met Glu Gln
225                 230                 235                 240

Lys His Ser Thr Ile Gln Gln Lys Asp Phe Ser Ser Asp Asp Ser Lys
                245                 250                 255

Leu Glu Tyr Asn Val Asp Ala Ala Asn Gly Ile Val Met Glu Gly Tyr
            260                 265                 270

Leu Phe Lys Arg Ala Ser Asn Ala Phe Lys Thr Trp Asn Arg Arg Trp
        275                 280                 285

Phe Ser Ile Gln Asn Asn Gln Leu Val Tyr Gln Lys Lys Phe Lys Asp
    290                 295                 300

Asn Pro Thr Val Val Val Glu Asp Leu Arg Leu Cys Thr Val Lys His
305                 310                 315                 320

Cys Glu Asp Ile Glu Arg Arg Phe Cys Phe Glu Val Val Ser Pro Thr
                325                 330                 335

Lys Ser Cys Met Leu Gln Ala Asp Ser Glu Lys Leu Arg Gln Ala Trp
            340                 345                 350

Ile Lys Ala Val Gln Thr Ser Ile Ala Thr Ala Tyr Arg Glu Lys Gly
        355                 360                 365

Asp Glu Ser Glu Lys Leu Asp Lys Lys Ser Ser Pro Ser Thr Gly Ser
    370                 375                 380

Leu Asp Ser Gly Asn Glu Ser Lys Glu Lys Leu Leu Lys Gly Glu Ser
385                 390                 395                 400

Ala Leu Gln Arg Val Gln Cys Ile Pro Gly Asn Ala Ser Cys Cys Asp
                405                 410                 415

Cys Gly Leu Ala Asp Pro Arg Trp Ala Ser Ile Asn Leu Gly Ile Thr
```

```
            420                 425                 430

Leu Cys Ile Glu Cys Ser Gly Ile His Arg Ser Leu Gly Val His Phe
        435                 440                 445

Ser Lys Val Arg Ser Leu Thr Leu Asp Thr Trp Glu Pro Glu Leu Leu
    450                 455                 460

Lys Leu Met Cys Glu Leu Gly Asn Asp Val Ile Asn Arg Val Tyr Glu
465                 470                 475                 480

Ala Asn Val Glu Lys Met Gly Ile Lys Lys Pro Gln Pro Gly Gln Arg
                485                 490                 495

Gln Glu Lys Glu Ala Tyr Ile Arg Ala Lys Tyr Val Glu Arg Lys Phe
            500                 505                 510

Val Asp Lys Tyr Ser Ile Ser Leu Ser Pro Pro Glu Gln Gln Lys Lys
        515                 520                 525

Phe Val Ser Lys Ser Ser Glu Glu Lys Arg Leu Ser Ile Ser Lys Phe
    530                 535                 540

Gly Pro Gly Asp Gln Val Arg Ala Ser Ala Gln Ser Ser Val Arg Ser
545                 550                 555                 560

Asn Asp Ser Gly Ile Gln Gln Ser Ser Asp Asp Gly Arg Glu Ser Leu
                565                 570                 575

Pro Ser Thr Val Ser Ala Asn Ser Leu Tyr Glu Pro Glu Gly Glu Arg
            580                 585                 590

Gln Asp Ser Ser Met Phe Leu Asp Ser Lys His Leu Asn Pro Gly Leu
        595                 600                 605

Gln Leu Tyr Arg Ala Ser Tyr Glu Lys Asn Leu Pro Lys Met Ala Glu
    610                 615                 620

Ala Leu Ala His Gly Ala Asp Val Asn Trp Ala Asn Ser Glu Glu Asn
625                 630                 635                 640

Lys Ala Thr Pro Leu Ile Gln Ala Val Leu Gly Gly Ser Leu Val Thr
                645                 650                 655
```

```
Cys Glu Phe Leu Leu Gln Asn Gly Ala Asn Val Asn Gln Arg Asp Val
            660                 665                 670

Gln Gly Arg Gly Pro Leu His His Ala Thr Val Leu Gly His Thr Gly
        675                 680                 685

Gln Val Cys Leu Phe Leu Lys Arg Gly Ala Asn Gln His Ala Thr Asp
    690                 695                 700

Glu Glu Gly Lys Asp Pro Leu Ser Ile Ala Val Glu Ala Ala Asn Ala
705                 710                 715                 720

Asp Ile Val Thr Leu Leu Arg Leu Ala Arg Met Asn Glu Glu Met Arg
                725                 730                 735

Glu Ser Glu Gly Leu Tyr Gly Gln Pro Gly Asp Glu Thr Tyr Gln Asp
            740                 745                 750

Ile Phe Arg Asp Phe Ser Gln Met Ala Ser Asn Asn Pro Glu Lys Leu
        755                 760                 765

Asn Arg Phe Gln Gln Asp Ser Gln Lys Phe
    770                 775


<210> 6046
<211> 49
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1319; "

<220>
<221> source
<223> /note="Gene Symbol: ACAP2; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with coiled-coil, ankyrin repeat and PH domains
      2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000405262"
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<400> 6046
Met Lys Met Thr Val Asp Phe Glu Glu Cys Leu Lys Asp Ser Pro Arg
1   5   10   15

Phe Arg Cys Arg Glu Ser Arg Gly Leu Phe Tyr Arg Leu Leu Phe Pro
            20   25   30

Lys Ser Leu Val Gln Cys Val Thr Ser Ile Leu Glu Leu Gly Ser Pro
        35   40   45

Arg

<210> 6047
<211> 51
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ACAP2; "

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      ArfGAP with coiled-coil, ankyrin repeat and PH domains
      2; "

<220>
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<223> /note="ENSP ID: ENSP00000411336"

<400> 6047
Met Ile Asp Thr Gly Lys Ala Phe Cys Val Ala Asn Lys Gln Phe Met
1   5   10   15

Asn Gly Ile Arg Asp Leu Ala Gln Tyr Ser Ser Asn Asp Ala Val Val
            20   25   30

Glu Thr Ser Leu Thr Lys Phe Ser Asp Ser Leu Gln Glu Met Ile Asn
        35   40   45

Phe His Thr
    50

<210> 6048
<211> 228
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<223> Any amino acid

<400> 6048
Xaa Ser Leu Gly Val His Phe Ser Lys Val Arg Ser Leu Thr Leu Asp
1 5 10 15

Thr Trp Glu Pro Glu Leu Leu Lys Leu Met Cys Glu Leu Gly Asn Asp
20 25 30

Val Ile Asn Arg Val Tyr Glu Ala Asn Val Glu Lys Met Gly Ile Lys
35 40 45

Lys Pro Gln Pro Gly Gln Arg Gln Glu Lys Glu Ala Tyr Ile Arg Ala
50 55 60

Lys Tyr Val Glu Arg Lys Phe Val Asp Lys Tyr Ser Ile Ser Leu Ser
65 70 75 80

Pro Pro Glu Gln Gln Lys Lys Phe Val Ser Lys Ser Ser Glu Glu Lys
85 90 95

Arg Leu Ser Ile Ser Lys Phe Gly Pro Gly Asp Gln Val Arg Ala Ser
100 105 110

```
Ala Gln Ser Ser Val Ile Ala Val Asn Ser Asp Glu Ala Arg Arg Glu
        115                 120                 125

Ser Leu Phe Cys Pro Asp Glu Leu Asp Ser Leu Phe Ser Tyr Phe Asp
    130                 135                 140

Thr Ser Ser Lys Leu Arg Ser Ile Arg Ser Asn Asp Ser Gly Ile Gln
145                 150                 155                 160

Gln Ser Ser Asp Asp Gly Arg Glu Ser Leu Pro Ser Thr Val Ser Ala
                165                 170                 175

Asn Ser Leu Tyr Glu Pro Glu Gly Glu Arg Gln Asp Ser Ser Met Phe
            180                 185                 190

Leu Asp Ser Lys His Leu Asn Pro Gly Leu Gln Leu Tyr Arg Ala Ser
        195                 200                 205

Tyr Glu Lys Asn Leu Pro Lys Met Ala Glu Ala Leu Ala His Gly Ala
    210                 215                 220

Asp Val Asn Trp
225
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<210> 6049
<211> 256
<212> PRT
<213> Homo sapiens

<220>
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2; "

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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 6049
Xaa Ser Glu Glu Lys Glu Asn Ala Leu Val Lys Asn Ala Gln Val Gln
1 5 10 15

Arg Asn Lys Gln His Glu Val Glu Glu Ala Thr Asn Ile Leu Thr Ala
20 25 30

Thr Arg Lys Cys Phe Arg His Ile Ala Leu Asp Tyr Val Leu Gln Ile
35 40 45

Asn Val Leu Gln Ser Lys Arg Arg Ser Glu Ile Leu Lys Ser Met Leu
50 55 60

Ser Phe Met Tyr Ala His Leu Ala Phe Phe His Gln Gly Tyr Asp Leu
65 70 75 80

Phe Ser Glu Leu Gly Pro Tyr Met Lys Asp Leu Gly Ala Gln Leu Asp
85 90 95

Arg Leu Val Val Asp Ala Ala Lys Glu Lys Arg Glu Met Glu Gln Lys
100 105 110

His Ser Thr Ile Gln Gln Lys Ala Ala Leu Gln Asp Phe Ser Ser Asp
115 120 125

Asp Ser Lys Leu Glu Tyr Asn Val Asp Ala Ala Asn Gly Ile Val Met
130 135 140

Glu Gly Tyr Leu Phe Lys Arg Ala Ser Asn Ala Phe Lys Thr Trp Asn
145 150 155 160

Arg Arg Trp Phe Ser Ile Gln Asn Asn Gln Leu Val Tyr Gln Lys Lys
165 170 175

Phe Lys Asp Asn Pro Thr Val Val Val Glu Asp Leu Arg Leu Cys Thr
180 185 190

Val Lys His Cys Glu Asp Ile Glu Arg Arg Phe Cys Phe Glu Val Val
195 200 205

```
Ser Pro Thr Lys Ser Cys Met Leu Gln Ala Asp Ser Glu Lys Leu Arg
    210                 215                 220

Gln Ala Trp Ile Lys Ala Val Gln Thr Ser Ile Ala Thr Ala Tyr Arg
225                 230                 235                 240

Glu Lys Gly Asp Glu Ser Glu Lys Leu Asp Lys Lys Ser Ser Pro Ser
                245                 250                 255


<210> 6050
<211> 777
<212> PRT
<213> Homo sapiens

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      2; "

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<400> 6050
Met Lys Met Thr Val Asp Phe Glu Glu Cys Leu Lys Asp Ser Pro Arg
1               5                   10                  15

Phe Arg Ala Ala Leu Glu Glu Val Glu Gly Asp Val Ala Glu Leu Glu
            20                  25                  30

Leu Lys Leu Asp Lys Leu Val Lys Leu Cys Ile Ala Met Ile Asp Thr
        35                  40                  45

Gly Lys Ala Phe Cys Val Ala Asn Lys Gln Phe Met Asn Gly Ile Arg
    50                  55                  60

Asp Leu Ala Gln Tyr Ser Ser Asn Asp Ala Val Val Glu Thr Ser Leu
65                  70                  75                  80
```

```
Thr Lys Phe Ser Asp Ser Leu Gln Glu Met Ile Asn Phe His Thr Ile
                85                  90                  95

Leu Phe Pro Asn Ser Glu Ile Asn Tyr Lys Ser Phe Thr Lys Phe Phe
            100                 105                 110

Phe Arg Asp Leu Arg Lys Phe Lys Asp Ala Lys Lys Gln Phe Glu Lys
        115                 120                 125

Val Ser Glu Glu Lys Glu Asn Ala Leu Val Lys Asn Ala Gln Val Gln
    130                 135                 140

Arg Asn Lys Gln His Glu Val Glu Glu Ala Thr Asn Ile Leu Thr Ala
145                 150                 155                 160

Thr Arg Lys Cys Phe Arg His Ile Ala Leu Asp Tyr Val Leu Gln Ile
                165                 170                 175

Asn Val Leu Gln Ser Lys Arg Arg Ser Glu Ile Leu Lys Ser Met Leu
            180                 185                 190

Ser Phe Met Tyr Ala His Leu Ala Phe Phe His Gln Gly Tyr Asp Leu
        195                 200                 205

Phe Ser Glu Leu Gly Pro Tyr Met Lys Asp Leu Gly Ala Gln Leu Asp
    210                 215                 220

Arg Leu Val Val Asp Ala Ala Lys Glu Lys Arg Glu Met Glu Gln Lys
225                 230                 235                 240

His Ser Thr Ile Gln Gln Lys Asp Phe Ser Ser Asp Asp Ser Lys Leu
                245                 250                 255

Glu Tyr Asn Val Asp Ala Ala Asn Gly Ile Val Met Glu Gly Tyr Leu
            260                 265                 270

Phe Lys Arg Ala Ser Asn Ala Phe Lys Thr Trp Asn Arg Arg Trp Phe
        275                 280                 285

Ser Ile Gln Asn Asn Gln Leu Val Tyr Gln Lys Lys Phe Lys Asp Asn
    290                 295                 300

Pro Thr Val Val Val Glu Asp Leu Arg Leu Cys Thr Val Lys His Cys
```

305 310 315 320

Glu Asp Ile Glu Arg Arg Phe Cys Phe Glu Val Val Ser Pro Thr Lys
325 330 335

Ser Cys Met Leu Gln Ala Asp Ser Glu Lys Leu Arg Gln Ala Trp Ile
340 345 350

Lys Ala Val Gln Thr Ser Ile Ala Thr Ala Tyr Arg Glu Lys Gly Asp
355 360 365

Glu Ser Glu Lys Leu Asp Lys Lys Ser Ser Pro Ser Thr Gly Ser Leu
370 375 380

Asp Ser Gly Asn Glu Ser Lys Glu Lys Leu Leu Lys Gly Glu Ser Ala
385 390 395 400

Leu Gln Arg Val Gln Cys Ile Pro Gly Asn Ala Ser Cys Cys Asp Cys
405 410 415

Gly Leu Ala Asp Pro Arg Trp Ala Ser Ile Asn Leu Gly Ile Thr Leu
420 425 430

Cys Ile Glu Cys Ser Gly Ile His Arg Ser Leu Gly Val His Phe Ser
435 440 445

Lys Val Arg Ser Leu Thr Leu Asp Thr Trp Glu Pro Glu Leu Leu Lys
450 455 460

Leu Met Cys Glu Leu Gly Asn Asp Val Ile Asn Arg Val Tyr Glu Ala
465 470 475 480

Asn Val Glu Lys Met Gly Ile Lys Lys Pro Gln Pro Gly Gln Arg Gln
485 490 495

Glu Lys Glu Ala Tyr Ile Arg Ala Lys Tyr Val Glu Arg Lys Phe Val
500 505 510

Asp Lys Tyr Ser Ile Ser Leu Ser Pro Pro Glu Gln Gln Lys Lys Phe
515 520 525

Val Ser Lys Ser Ser Glu Glu Lys Arg Leu Ser Ile Ser Lys Phe Gly
530 535 540

```
Pro Gly Asp Gln Val Arg Ala Ser Ala Gln Ser Ser Val Arg Ser Asn
545                 550                 555                 560

Asp Ser Gly Ile Gln Gln Ser Ser Asp Asp Gly Arg Glu Ser Leu Pro
                565                 570                 575

Ser Thr Val Ser Ala Asn Ser Leu Tyr Glu Pro Glu Gly Glu Arg Gln
            580                 585                 590

Asp Ser Ser Met Phe Leu Asp Ser Lys His Leu Asn Pro Gly Leu Gln
        595                 600                 605

Leu Tyr Arg Ala Ser Tyr Glu Lys Asn Leu Pro Lys Met Ala Glu Ala
    610                 615                 620

Leu Ala His Gly Ala Asp Val Asn Trp Ala Asn Ser Glu Glu Asn Lys
625                 630                 635                 640

Ala Thr Pro Leu Ile Gln Ala Val Leu Gly Gly Ser Leu Val Thr Cys
                645                 650                 655

Glu Phe Leu Leu Gln Asn Gly Ala Asn Val Asn Gln Arg Asp Val Gln
            660                 665                 670

Gly Arg Gly Pro Leu His His Ala Thr Val Leu Gly His Thr Gly Gln
        675                 680                 685

Val Cys Leu Phe Leu Lys Arg Gly Ala Asn Gln His Ala Thr Asp Glu
    690                 695                 700

Glu Gly Lys Asp Pro Leu Ser Ile Ala Val Glu Ala Ala Asn Ala Asp
705                 710                 715                 720

Ile Val Thr Leu Leu Arg Leu Ala Arg Met Asn Glu Glu Met Arg Glu
                725                 730                 735

Ser Glu Gly Leu Tyr Gly Gln Pro Gly Asp Glu Thr Tyr Gln Asp Ile
            740                 745                 750

Phe Arg Asp Phe Ser Gln Met Ala Ser Asn Asn Pro Glu Lys Leu Asn
        755                 760                 765
```

Arg Phe Gln Gln Asp Ser Gln Lys Phe
770 775

<210> 6051
<211> 547
<212> PRT
<213> Homo sapiens

<220>
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ArfGAP with coiled-coil, ankyrin repeat and PH domains
2; "

<220>
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<223> /note="ENSP ID: ENSP00000489156"

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Met Lys Met Thr Val Asp Phe Glu Glu Cys Leu Lys Asp Ser Pro Arg
1 5 10 15

Phe Arg Ala Ala Leu Glu Glu Val Glu Gly Asp Val Ala Glu Leu Glu
20 25 30

Leu Lys Leu Asp Lys Leu Val Lys Leu Cys Ile Ala Met Ile Asp Thr
35 40 45

Gly Lys Ala Phe Cys Val Ala Asn Lys Gln Phe Met Asn Gly Ile Arg
50 55 60

Asp Leu Ala Gln Tyr Ser Ser Asn Asp Ala Val Val Glu Thr Ser Leu
65 70 75 80

Thr Lys Phe Ser Asp Ser Leu Gln Glu Met Ile Asn Phe His Thr Ile
85 90 95

Leu Phe Asp Gln Thr Gln Arg Ser Ile Lys Ala Gln Leu Gln Asn Phe
100 105 110

```
Val Lys Glu Asp Leu Arg Lys Phe Lys Asp Ala Lys Lys Gln Phe Glu
        115                 120                 125

Lys Val Ser Glu Glu Lys Glu Asn Ala Leu Val Lys Asn Ala Gln Val
    130                 135                 140

Gln Arg Asn Lys Gln His Glu Val Glu Glu Ala Thr Asn Ile Leu Thr
145                 150                 155                 160

Ala Thr Arg Lys Cys Phe Arg His Ile Ala Leu Asp Tyr Val Leu Gln
                165                 170                 175

Ile Asn Val Leu Gln Ser Lys Arg Arg Ser Glu Ile Leu Lys Ser Met
            180                 185                 190

Leu Ser Phe Met Tyr Ala His Leu Ala Phe Phe His Gln Gly Tyr Asp
        195                 200                 205

Leu Phe Ser Glu Leu Gly Pro Tyr Met Lys Asp Leu Gly Ala Gln Leu
    210                 215                 220

Asp Arg Leu Val Val Asp Ala Ala Lys Glu Lys Arg Glu Met Glu Gln
225                 230                 235                 240

Lys His Ser Thr Ile Gln Gln Lys Asp Phe Ser Ser Asp Asp Ser Lys
                245                 250                 255

Leu Glu Tyr Asn Val Asp Ala Ala Asn Gly Ile Val Met Glu Gly Tyr
            260                 265                 270

Leu Phe Lys Arg Ala Ser Asn Ala Phe Lys Thr Trp Asn Arg Lys Lys
        275                 280                 285

Pro Asp His Ile Arg Arg Trp Phe Ser Ile Gln Asn Asn Gln Leu Val
    290                 295                 300

Tyr Gln Lys Lys Phe Lys Asp Asn Pro Thr Val Val Val Glu Asp Leu
305                 310                 315                 320

Arg Leu Cys Thr Val Lys His Cys Glu Asp Ile Glu Arg Arg Phe Cys
                325                 330                 335

Phe Glu Val Val Ser Pro Thr Lys Ser Cys Met Leu Gln Ala Asp Ser
```

340 345 350

Glu Lys Leu Arg Gln Ala Trp Ile Lys Ala Val Gln Thr Ser Ile Ala
355 360 365

Thr Ala Tyr Arg Glu Lys Gly Asp Glu Ser Glu Lys Leu Asp Lys Lys
370 375 380

Ser Ser Pro Ser Thr Gly Ser Leu Asp Ser Gly Asn Glu Ser Lys Glu
385 390 395 400

Lys Leu Leu Lys Gly Glu Ser Ala Leu Gln Arg Val Gln Cys Ile Pro
405 410 415

Gly Asn Ala Ser Cys Cys Asp Cys Gly Leu Ala Asp Pro Arg Trp Ala
420 425 430

Ser Ile Asn Leu Gly Ile Thr Leu Cys Ile Glu Cys Ser Gly Ile His
435 440 445

Arg Ser Leu Gly Val His Phe Ser Lys Val Arg Ser Leu Thr Leu Asp
450 455 460

Thr Trp Glu Pro Glu Leu Leu Lys Leu Met Cys Glu Leu Gly Asn Asp
465 470 475 480

Val Ile Asn Arg Val Tyr Glu Ala Asn Val Glu Lys Met Gly Ile Lys
485 490 495

Lys Pro Gln Pro Gly Gln Arg Gln Glu Lys Glu Ala Tyr Ile Arg Ala
500 505 510

Lys Tyr Val Glu Arg Lys Phe Val Asp Lys Tyr Ser Ile Ser Leu Ser
515 520 525

Pro Pro Glu Gln Gln Lys Lys Phe Val Ser Lys Ser Ser Glu Glu Lys
530 535 540

Arg Leu Ser
545

<210> 6052
<211> 759

<212> PRT
<213> Homo sapiens

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<223> /note="Gene Name:
ArfGAP with coiled-coil, ankyrin repeat and PH domains
3; "

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<223> /note="Uniprot ID: Q96P50; "

<220>
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<223> /note="ENSP ID: ENSP00000321139"

<400> 6052

Met	Val	Glu	Ala	Gly	Lys	Ala	Tyr	Val	Ser	Thr	Ser	Arg	Leu	Phe	Val
1					5				10					15	

Ser	Gly	Val	Arg	Asp	Leu	Ser	Gln	Gln	Cys	Gln	Gly	Asp	Thr	Val	Ile
			20					25					30		

Ser	Glu	Cys	Leu	Gln	Arg	Phe	Ala	Asp	Ser	Leu	Gln	Glu	Val	Val	Asn
		35					40					45			

Tyr	His	Met	Ile	Leu	Phe	Asp	Gln	Ala	Gln	Arg	Ser	Val	Arg	Gln	Gln
	50					55					60				

Leu	Gln	Ser	Phe	Val	Lys	Glu	Asp	Val	Arg	Lys	Phe	Lys	Glu	Thr	Lys
65					70					75					80

Lys	Gln	Phe	Asp	Lys	Val	Arg	Glu	Asp	Leu	Glu	Leu	Ser	Leu	Val	Arg
					85					90					95

Asn	Ala	Gln	Ala	Pro	Arg	His	Arg	Pro	His	Glu	Val	Glu	Glu	Ala	Thr
			100					105					110		

Gly	Ala	Leu	Thr	Leu	Thr	Arg	Lys	Cys	Phe	Arg	His	Leu	Ala	Leu	Asp
			115					120					125		

```
Tyr Val Leu Gln Ile Asn Val Leu Gln Ala Lys Lys Lys Phe Glu Ile
    130                 135                 140

Leu Asp Ser Met Leu Ser Phe Met His Ala Gln Ser Ser Phe Phe Gln
145                 150                 155                 160

Gln Gly Tyr Ser Leu Leu His Gln Leu Asp Pro Tyr Met Lys Lys Leu
                165                 170                 175

Ala Ala Glu Leu Asp Gln Leu Val Ile Asp Ser Ala Val Glu Lys Arg
            180                 185                 190

Glu Met Glu Arg Lys His Ala Ala Ile Gln Gln Arg Thr Leu Leu Gln
        195                 200                 205

Asp Phe Ser Tyr Asp Glu Ser Lys Val Glu Phe Asp Val Asp Ala Pro
    210                 215                 220

Ser Gly Val Val Met Glu Gly Tyr Leu Phe Lys Arg Ala Ser Asn Ala
225                 230                 235                 240

Phe Lys Thr Trp Asn Arg Arg Trp Phe Ser Ile Gln Asn Ser Gln Leu
                245                 250                 255

Val Tyr Gln Lys Lys Leu Lys Asp Ala Leu Thr Val Val Val Asp Asp
            260                 265                 270

Leu Arg Leu Cys Ser Val Lys Pro Cys Glu Asp Ile Glu Arg Arg Phe
        275                 280                 285

Cys Phe Glu Val Leu Ser Pro Thr Lys Ser Cys Met Leu Gln Ala Asp
    290                 295                 300

Ser Glu Lys Leu Arg Gln Ala Trp Val Gln Ala Val Gln Ala Ser Ile
305                 310                 315                 320

Ala Ser Ala Tyr Arg Glu Ser Pro Asp Ser Cys Tyr Ser Glu Arg Leu
                325                 330                 335

Asp Arg Thr Ala Ser Pro Ser Thr Ser Ser Ile Asp Ser Ala Thr Asp
            340                 345                 350
```

```
Thr Arg Glu Arg Gly Val Lys Gly Glu Ser Val Leu Gln Arg Val Gln
        355                 360                 365

Ser Val Ala Gly Asn Ser Gln Cys Gly Asp Cys Gly Gln Pro Asp Pro
    370                 375                 380

Arg Trp Ala Ser Ile Asn Leu Gly Val Leu Leu Cys Ile Glu Cys Ser
385                 390                 395                 400

Gly Ile His Arg Ser Leu Gly Val His Cys Ser Lys Val Arg Ser Leu
                405                 410                 415

Thr Leu Asp Ser Trp Glu Pro Glu Leu Leu Lys Leu Met Cys Glu Leu
            420                 425                 430

Gly Asn Ser Ala Val Asn Gln Ile Tyr Glu Ala Gln Cys Glu Gly Ala
        435                 440                 445

Gly Ser Arg Lys Pro Thr Ala Ser Ser Ser Arg Gln Asp Lys Glu Ala
    450                 455                 460

Trp Ile Lys Asp Lys Tyr Val Glu Lys Lys Phe Leu Arg Lys Ala Pro
465                 470                 475                 480

Met Ala Pro Ala Leu Glu Ala Pro Arg Arg Trp Arg Val Gln Lys Cys
                485                 490                 495

Leu Arg Pro His Ser Ser Pro Arg Ala Pro Thr Ala Arg Arg Lys Val
            500                 505                 510

Arg Leu Glu Pro Val Leu Pro Cys Val Ala Ala Leu Ser Ser Val Gly
        515                 520                 525

Thr Leu Asp Arg Lys Phe Arg Arg Asp Ser Leu Phe Cys Pro Asp Glu
    530                 535                 540

Leu Asp Ser Leu Phe Ser Tyr Phe Asp Ala Gly Ala Ala Gly Ala Gly
545                 550                 555                 560

Pro Arg Lys Gly Ala Glu Ser Glu Glu Ser Ser Gly Glu Ala Asp Gly
                565                 570                 575

Asp Thr Glu Ala Glu Ala Trp Gly Leu Ala Asp Val Arg Glu Leu His
```

580 585 590

Pro Gly Leu Leu Ala His Arg Ala Ala Arg Ala Arg Asp Leu Pro Ala
595 600 605

Leu Ala Ala Ala Leu Ala His Gly Ala Glu Val Asn Trp Ala Asp Ala
610 615 620

Glu Asp Glu Gly Lys Thr Pro Leu Val Gln Ala Val Leu Gly Gly Ser
625 630 635 640

Leu Ile Val Cys Glu Phe Leu Leu Gln Asn Gly Ala Asp Val Asn Gln
645 650 655

Arg Asp Ser Arg Gly Arg Ala Pro Leu His His Ala Thr Leu Leu Gly
660 665 670

Arg Thr Gly Gln Val Cys Leu Phe Leu Lys Arg Gly Ala Asp Gln His
675 680 685

Ala Leu Asp Gln Glu Gln Arg Asp Pro Leu Ala Ile Ala Val Gln Ala
690 695 700

Ala Asn Ala Asp Ile Val Thr Leu Leu Arg Leu Ala Arg Met Ala Glu
705 710 715 720

Glu Met Arg Glu Ala Glu Ala Ala Pro Gly Pro Pro Gly Ala Leu Ala
725 730 735

Gly Ser Pro Thr Glu Leu Gln Phe Arg Arg Cys Ile Gln Glu Phe Ile
740 745 750

Ser Leu His Leu Glu Glu Ser
755

<210> 6053
<211> 834
<212> PRT
<213> Homo sapiens

<220>
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ArfGAP with coiled-coil, ankyrin repeat and PH domains
3; "

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<223> /note="Uniprot ID: Q96P50; "

<220>
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<400> 6053

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Met Thr Val Glu Phe Glu Glu Cys Val Lys Asp Ser Pro Arg Phe Arg
1               5                  10                  15

Ala Thr Ile Asp Glu Val Glu Thr Asp Val Val Glu Ile Glu Ala Lys
            20                  25                  30

Leu Asp Lys Leu Val Lys Leu Cys Ser Gly Met Val Glu Ala Gly Lys
        35                  40                  45

Ala Tyr Val Ser Thr Ser Arg Leu Phe Val Ser Gly Val Arg Asp Leu
    50                  55                  60

Ser Gln Gln Cys Gln Gly Asp Thr Val Ile Ser Glu Cys Leu Gln Arg
65                  70                  75                  80

Phe Ala Asp Ser Leu Gln Glu Val Val Asn Tyr His Met Ile Leu Phe
                85                  90                  95

Asp Gln Ala Gln Arg Ser Val Arg Gln Gln Leu Gln Ser Phe Val Lys
            100                 105                 110

Glu Asp Val Arg Lys Phe Lys Glu Thr Lys Lys Gln Phe Asp Lys Val
        115                 120                 125

Arg Glu Asp Leu Glu Leu Ser Leu Val Arg Asn Ala Gln Ala Pro Arg
    130                 135                 140

His Arg Pro His Glu Val Glu Glu Ala Thr Gly Ala Leu Thr Leu Thr
145                 150                 155                 160
```

```
Arg Lys Cys Phe Arg His Leu Ala Leu Asp Tyr Val Leu Gln Ile Asn
                165                 170                 175

Val Leu Gln Ala Lys Lys Lys Phe Glu Ile Leu Asp Ser Met Leu Ser
            180                 185                 190

Phe Met His Ala Gln Ser Ser Phe Phe Gln Gln Gly Tyr Ser Leu Leu
        195                 200                 205

His Gln Leu Asp Pro Tyr Met Lys Lys Leu Ala Ala Glu Leu Asp Gln
    210                 215                 220

Leu Val Ile Asp Ser Ala Val Glu Lys Arg Glu Met Glu Arg Lys His
225                 230                 235                 240

Ala Ala Ile Gln Gln Arg Thr Leu Leu Gln Asp Phe Ser Tyr Asp Glu
                245                 250                 255

Ser Lys Val Glu Phe Asp Val Asp Ala Pro Ser Gly Val Val Met Glu
            260                 265                 270

Gly Tyr Leu Phe Lys Arg Ala Ser Asn Ala Phe Lys Thr Trp Asn Arg
        275                 280                 285

Arg Trp Phe Ser Ile Gln Asn Ser Gln Leu Val Tyr Gln Lys Lys Leu
    290                 295                 300

Lys Asp Ala Leu Thr Val Val Val Asp Asp Leu Arg Leu Cys Ser Val
305                 310                 315                 320

Lys Pro Cys Glu Asp Ile Glu Arg Arg Phe Cys Phe Glu Val Leu Ser
                325                 330                 335

Pro Thr Lys Ser Cys Met Leu Gln Ala Asp Ser Glu Lys Leu Arg Gln
            340                 345                 350

Ala Trp Val Gln Ala Val Gln Ala Ser Ile Ala Ser Ala Tyr Arg Glu
        355                 360                 365

Ser Pro Asp Ser Cys Tyr Ser Glu Arg Leu Asp Arg Thr Ala Ser Pro
    370                 375                 380
```

```
Ser Thr Ser Ser Ile Asp Ser Ala Thr Asp Thr Arg Glu Arg Gly Val
385                 390                 395                 400

Lys Gly Glu Ser Val Leu Gln Arg Val Gln Ser Val Ala Gly Asn Ser
                405                 410                 415

Gln Cys Gly Asp Cys Gly Gln Pro Asp Pro Arg Trp Ala Ser Ile Asn
            420                 425                 430

Leu Gly Val Leu Leu Cys Ile Glu Cys Ser Gly Ile His Arg Ser Leu
        435                 440                 445

Gly Val His Cys Ser Lys Val Arg Ser Leu Thr Leu Asp Ser Trp Glu
    450                 455                 460

Pro Glu Leu Leu Lys Leu Met Cys Glu Leu Gly Asn Ser Ala Val Asn
465                 470                 475                 480

Gln Ile Tyr Glu Ala Gln Cys Glu Gly Ala Gly Ser Arg Lys Pro Thr
                485                 490                 495

Ala Ser Ser Ser Arg Gln Asp Lys Glu Ala Trp Ile Lys Asp Lys Tyr
            500                 505                 510

Val Glu Lys Lys Phe Leu Arg Lys Ala Pro Met Ala Pro Ala Leu Glu
        515                 520                 525

Ala Pro Arg Arg Trp Arg Val Gln Lys Cys Leu Arg Pro His Ser Ser
    530                 535                 540

Pro Arg Ala Pro Thr Ala Arg Arg Lys Val Arg Leu Glu Pro Val Leu
545                 550                 555                 560

Pro Cys Val Ala Ala Leu Ser Ser Val Gly Thr Leu Asp Arg Lys Phe
                565                 570                 575

Arg Arg Asp Ser Leu Phe Cys Pro Asp Glu Leu Asp Ser Leu Phe Ser
            580                 585                 590

Tyr Phe Asp Ala Gly Ala Ala Gly Ala Gly Pro Arg Ser Leu Ser Ser
        595                 600                 605

Asp Ser Gly Leu Gly Gly Ser Ser Asp Gly Ser Ser Asp Val Leu Ala
```

610 615 620

Phe Gly Ser Gly Ser Val Val Asp Ser Val Thr Glu Glu Glu Gly Ala
625 630 635 640

Glu Ser Glu Glu Ser Ser Gly Glu Ala Asp Gly Asp Thr Glu Ala Glu
645 650 655

Ala Trp Gly Leu Ala Asp Val Arg Glu Leu His Pro Gly Leu Leu Ala
660 665 670

His Arg Ala Ala Arg Ala Arg Asp Leu Pro Ala Leu Ala Ala Ala Leu
675 680 685

Ala His Gly Ala Glu Val Asn Trp Ala Asp Ala Glu Asp Glu Gly Lys
690 695 700

Thr Pro Leu Val Gln Ala Val Leu Gly Gly Ser Leu Ile Val Cys Glu
705 710 715 720

Phe Leu Leu Gln Asn Gly Ala Asp Val Asn Gln Arg Asp Ser Arg Gly
725 730 735

Arg Ala Pro Leu His His Ala Thr Leu Leu Gly Arg Thr Gly Gln Val
740 745 750

Cys Leu Phe Leu Lys Arg Gly Ala Asp Gln His Ala Leu Asp Gln Glu
755 760 765

Gln Arg Asp Pro Leu Ala Ile Ala Val Gln Ala Ala Asn Ala Asp Ile
770 775 780

Val Thr Leu Leu Arg Leu Ala Arg Met Ala Glu Glu Met Arg Glu Ala
785 790 795 800

Glu Ala Ala Pro Gly Pro Pro Gly Ala Leu Ala Gly Ser Pro Thr Glu
805 810 815

Leu Gln Phe Arg Arg Cys Ile Gln Glu Phe Ile Ser Leu His Leu Glu
820 825 830

Glu Ser

<210> 6054
<211> 52
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1320; "

<220>
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<223> /note="Gene Symbol: ACAP3; "

<220>
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<223> /note="Gene Name:
ArfGAP with coiled-coil, ankyrin repeat and PH domains
3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000347075"

<400> 6054
Met Thr Val Glu Phe Glu Glu Cys Val Lys Asp Ser Pro Arg Phe Arg
1 5 10 15

Ala Ala Arg Gly Glu Gln Ala Ala Gly Ala Ala Phe Lys Ala Trp Gly
20 25 30

Arg Pro Leu Thr Arg Trp Arg Arg Thr Trp Trp Arg Leu Arg Pro Asn
35 40 45

Trp Thr Ser Trp
50

<210> 6055
<211> 374
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ADAP1; "

<220>
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<223> /note="Gene Name:
ArfGAP with dual PH domains 1; "

<220>
<221> source
<223> /note="Uniprot ID: O75689; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000265846"

<400> 6055

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Met Ala Lys Glu Arg Arg Arg Ala Val Leu Glu Leu Leu Gln Arg Pro
1               5                  10                  15

Gly Asn Ala Arg Cys Ala Asp Cys Gly Ala Pro Asp Pro Asp Trp Ala
            20                  25                  30

Ser Tyr Thr Leu Gly Val Phe Ile Cys Leu Ser Cys Ser Gly Ile His
        35                  40                  45

Arg Asn Ile Pro Gln Val Ser Lys Val Lys Ser Val Arg Leu Asp Ala
    50                  55                  60

Trp Glu Glu Ala Gln Val Glu Phe Met Ala Ser His Gly Asn Asp Ala
65                  70                  75                  80

Ala Arg Ala Arg Phe Glu Ser Lys Val Pro Ser Phe Tyr Tyr Arg Pro
                85                  90                  95

Thr Pro Ser Asp Cys Gln Leu Leu Arg Glu Gln Trp Ile Arg Ala Lys
            100                 105                 110

Tyr Glu Arg Gln Glu Phe Ile Tyr Pro Glu Lys Gln Glu Pro Tyr Ser
        115                 120                 125

Ala Gly Tyr Arg Glu Gly Phe Leu Trp Lys Arg Gly Arg Asp Asn Gly
    130                 135                 140

Gln Phe Leu Ser Arg Lys Phe Val Leu Thr Glu Arg Glu Gly Ala Leu
145                 150                 155                 160

Lys Tyr Phe Asn Arg Asn Asp Ala Lys Glu Pro Lys Ala Val Met Lys
                165                 170                 175

Ile Glu His Leu Asn Ala Thr Phe Gln Pro Ala Lys Ile Gly His Pro
```

```
            180                 185                 190

His Gly Leu Gln Val Thr Tyr Leu Lys Asp Asn Ser Thr Arg Asn Ile
        195                 200                 205

Phe Ile Tyr His Glu Asp Gly Lys Glu Ile Val Asp Trp Phe Asn Ala
    210                 215                 220

Leu Arg Ala Ala Arg Phe His Tyr Leu Gln Val Ala Phe Pro Gly Ala
225                 230                 235                 240

Gly Asp Ala Asp Leu Val Pro Lys Leu Ser Arg Asn Tyr Leu Lys Glu
                245                 250                 255

Gly Tyr Met Glu Lys Thr Gly Pro Lys Gln Thr Glu Gly Phe Arg Lys
            260                 265                 270

Arg Trp Phe Thr Met Asp Asp Arg Arg Leu Met Tyr Phe Lys Asp Pro
        275                 280                 285

Leu Asp Ala Phe Ala Arg Gly Glu Val Phe Ile Gly Ser Lys Glu Ser
    290                 295                 300

Gly Tyr Thr Val Leu His Gly Phe Pro Pro Ser Thr Gln Gly His His
305                 310                 315                 320

Trp Pro His Gly Ile Thr Ile Val Thr Pro Asp Arg Lys Phe Leu Phe
                325                 330                 335

Ala Cys Glu Thr Glu Ser Asp Gln Arg Glu Trp Val Ala Ala Phe Gln
            340                 345                 350

Lys Ala Val Asp Arg Pro Met Leu Pro Gln Glu Tyr Ala Val Glu Ala
        355                 360                 365

His Phe Lys His Lys Pro
    370
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<210> 6056
<211> 192
<212> PRT
<213> Homo sapiens

<220>

<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ADAP1; "

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<221> source
<223> /note="Gene Name:
ArfGAP with dual PH domains 1; "

<220>
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<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6056
Xaa Cys Arg Val Gln Pro Leu Cys Glu Gln Leu Gln Phe Met Ala Ser
1 5 10 15

His Gly Asn Asp Ala Ala Arg Ala Arg Phe Glu Ser Lys Val Pro Ser
20 25 30

Phe Tyr Tyr Arg Pro Thr Pro Ser Asp Cys Gln Leu Leu Arg Glu Gln
35 40 45

Trp Ile Arg Ala Lys Tyr Glu Arg Gln Glu Phe Ile Tyr Pro Glu Lys
50 55 60

Gln Glu Pro Tyr Ser Ala Gly Tyr Arg Glu Gly Phe Leu Trp Lys Arg
65 70 75 80

Gly Arg Asp Asn Gly Gln Phe Leu Ser Arg Lys Phe Val Leu Thr Glu
85 90 95

Arg Glu Gly Ala Leu Lys Tyr Phe Asn Arg Asn Asp Ala Lys Glu Pro
100 105 110

Lys Ala Val Met Lys Ile Glu His Leu Asn Ala Thr Phe Gln Pro Ala
115 120 125

Lys Ile Gly His Pro His Gly Leu Gln Val Thr Tyr Leu Lys Asp Asn
130 135 140

```
Ser Thr Arg Asn Ile Phe Ile Tyr His Glu Asp Gly Lys Glu Ile Val
145                 150                 155                 160


Asp Trp Phe Asn Ala Leu Arg Ala Ala Arg Phe His Tyr Leu Gln Val
                165                 170                 175


Ala Phe Pro Gly Ala Gly Asp Ala Asp Leu Val Pro Lys Leu Ser Arg
            180                 185                 190


<210> 6057
<211> 162
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1321; "

<220>
<221> source
<223> /note="Gene Symbol: ADAP1; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with dual PH domains 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000394973"

<400> 6057
Met Leu Gly Cys Ala Glu Glu Gly His Ala Ser Leu Gly Arg Asp Pro
1               5                   10                  15


Asp Trp Ala Ser Tyr Thr Leu Gly Val Phe Ile Cys Leu Ser Cys Ser
            20                  25                  30


Gly Ile His Arg Asn Ile Pro Gln Val Ser Lys Val Lys Ser Val Arg
        35                  40                  45


Leu Asp Ala Trp Glu Glu Ala Gln Val Glu Phe Met Ala Ser His Gly
    50                  55                  60


Asn Asp Ala Ala Arg Ala Arg Phe Glu Ser Lys Val Pro Ser Phe Tyr
65                  70                  75                  80
```

```
Tyr Arg Pro Thr Pro Ser Asp Cys Gln Leu Leu Arg Glu Gln Trp Ile
                85                  90                  95

Arg Ala Lys Tyr Glu Arg Gln Glu Phe Ile Tyr Pro Glu Lys Gln Glu
            100                 105                 110

Pro Tyr Ser Ala Gly Tyr Arg Glu Gly Phe Leu Trp Lys Arg Gly Arg
        115                 120                 125

Asp Asn Gly Gln Phe Leu Ser Arg Lys Phe Val Leu Thr Glu Arg Glu
    130                 135                 140

Gly Ala Leu Lys Tyr Phe Asn Arg Asn Asp Ala Lys Glu Pro Lys Ala
145                 150                 155                 160

Val Met
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<210> 6058
<211> 207
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1321; "

<220>
<221> source
<223> /note="Gene Symbol: ADAP1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with dual PH domains 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000404217"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6058

```
Xaa Asn Ser Leu Gly Val Glu Lys Ala Gly Ala Ala Ala Cys Ala Pro
1               5                   10                  15
```

```
Gly Pro Cys Arg Ala Cys Val Trp Val Val Val Ser Ala Met Val Leu
            20                  25                  30

Ala Ser Leu Glu Leu Leu Arg Glu Gln Trp Ile Arg Ala Lys Tyr Glu
        35                  40                  45

Arg Gln Glu Phe Ile Tyr Pro Glu Lys Gln Glu Pro Tyr Ser Ala Gly
    50                  55                  60

Tyr Arg Glu Gly Phe Leu Trp Lys Arg Gly Arg Asp Asn Gly Gln Phe
65                  70                  75                  80

Leu Ser Arg Lys Phe Val Leu Thr Glu Arg Glu Gly Ala Leu Lys Tyr
                85                  90                  95

Phe Asn Arg Asn Asp Ala Lys Glu Pro Lys Ala Val Met Lys Ile Glu
            100                 105                 110

His Leu Asn Ala Thr Phe Gln Pro Ala Lys Ile Gly His Pro His Gly
        115                 120                 125

Leu Gln Val Thr Tyr Leu Lys Asp Asn Ser Thr Arg Asn Ile Phe Ile
    130                 135                 140

Tyr His Glu Asp Gly Lys Glu Ile Val Asp Trp Phe Asn Ala Leu Arg
145                 150                 155                 160

Ala Ala Arg Phe His Tyr Leu Gln Val Ala Phe Pro Gly Ala Gly Asp
                165                 170                 175

Ala Asp Leu Val Pro Lys Leu Ser Arg Asn Tyr Leu Lys Glu Gly Tyr
            180                 185                 190

Met Glu Lys Thr Gly Pro Lys Gln Thr Glu Gly Phe Arg Lys Arg
        195                 200                 205


<210> 6059
<211> 302
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1321; "
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<220>
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<220>
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<223> /note="Gene Name:
ArfGAP with dual PH domains 1; "

<220>
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<223> /note="Uniprot ID: O75689; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000407267"

<400> 6059
Met Ala Ser His Gly Asn Asp Ala Ala Arg Ala Arg Phe Glu Ser Lys
1   5   10   15

Val Pro Ser Phe Tyr Tyr Arg Pro Thr Pro Ser Asp Cys Gln Leu Leu
            20   25   30

Arg Glu Gln Trp Ile Arg Ala Lys Tyr Glu Arg Gln Glu Phe Ile Tyr
        35   40   45

Pro Glu Lys Gln Glu Pro Tyr Ser Ala Gly Tyr Arg Glu Gly Phe Leu
    50   55   60

Trp Lys Arg Gly Arg Asp Asn Gly Gln Phe Leu Ser Arg Lys Phe Val
65   70   75   80

Leu Thr Glu Arg Glu Gly Ala Leu Lys Tyr Phe Asn Arg Asn Asp Ala
                85   90   95

Lys Glu Pro Lys Ala Val Met Lys Ile Glu His Leu Asn Ala Thr Phe
            100   105   110

Gln Pro Ala Lys Ile Gly His Pro His Gly Leu Gln Val Thr Tyr Leu
        115   120   125

Lys Asp Asn Ser Thr Arg Asn Ile Phe Ile Tyr His Glu Asp Gly Lys
    130   135   140

Glu Ile Val Asp Trp Phe Asn Ala Leu Arg Ala Ala Arg Phe His Tyr
145   150   155   160

```
Leu Gln Val Ala Phe Pro Gly Ala Gly Asp Ala Asp Leu Val Pro Lys
                165                 170                 175

Leu Ser Arg Asn Tyr Leu Lys Glu Gly Tyr Met Glu Lys Thr Gly Pro
            180                 185                 190

Lys Gln Thr Glu Gly Phe Arg Lys Arg Trp Phe Thr Met Asp Asp Arg
        195                 200                 205

Arg Leu Met Tyr Phe Lys Asp Pro Leu Asp Ala Phe Ala Arg Gly Glu
    210                 215                 220

Val Phe Ile Gly Ser Lys Glu Ser Gly Tyr Thr Val Leu His Gly Phe
225                 230                 235                 240

Pro Pro Ser Thr Gln Gly His His Trp Pro His Gly Ile Thr Ile Val
                245                 250                 255

Thr Pro Asp Arg Lys Phe Leu Phe Ala Cys Glu Thr Glu Ser Asp Gln
            260                 265                 270

Arg Glu Trp Val Ala Ala Phe Gln Lys Ala Val Asp Arg Pro Met Leu
        275                 280                 285

Pro Gln Glu Tyr Ala Val Glu Ala His Phe Lys His Lys Pro
    290                 295                 300


<210> 6060
<211> 245
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1321; "

<220>
<221> source
<223> /note="Gene Symbol: ADAP1; "

<220>
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<223> /note="Gene Name:
      ArfGAP with dual PH domains 1; "

<220>
<221> source
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<223> /note="ENSP ID: ENSP00000409129"

<400> 6060

```
Tyr Phe Asn Arg Asn Asp Ala Lys Glu Pro Lys Ala Val Met Lys Ile
1               5                  10                  15

Glu His Leu Asn Ala Thr Phe Gln Pro Ala Lys Ile Gly His Pro His
            20                  25                  30

Gly Leu Gln Val Thr Tyr Leu Lys Asp Asn Ser Thr Arg Asn Ile Phe
        35                  40                  45

Ile Tyr His Glu Asp Gly Lys Thr Cys Leu Ser Tyr Lys Ile Arg Ile
    50                  55                  60

Phe Ile Lys Ile Ala Pro Ser Glu Arg Lys Ala Ser Trp Pro Arg Pro
65                  70                  75                  80

Gln Gln His Gln Gly His Arg Glu Ile Val Asp Trp Phe Asn Ala Leu
                85                  90                  95

Arg Ala Ala Arg Phe His Tyr Leu Gln Val Ala Phe Pro Gly Ala Gly
            100                 105                 110

Asp Ala Asp Leu Val Pro Lys Leu Ser Arg Asn Tyr Leu Lys Glu Gly
        115                 120                 125

Tyr Met Glu Lys Thr Gly Pro Lys Gln Thr Glu Gly Phe Arg Lys Arg
    130                 135                 140

Trp Phe Thr Met Asp Asp Arg Arg Leu Met Tyr Phe Lys Asp Pro Leu
145                 150                 155                 160

Asp Ala Phe Ala Arg Gly Glu Val Phe Ile Gly Ser Lys Glu Ser Gly
                165                 170                 175

Tyr Thr Val Leu His Gly Phe Pro Pro Ser Thr Gln Gly His His Trp
            180                 185                 190

Pro His Gly Ile Thr Ile Val Thr Pro Asp Arg Lys Phe Leu Phe Ala
        195                 200                 205

Cys Glu Thr Glu Ser Asp Gln Arg Glu Trp Val Ala Ala Phe Gln Lys
    210                 215                 220
```

```
Ala Val Asp Arg Pro Met Leu Pro Gln Glu Tyr Ala Val Glu Ala His
225                 230                 235                 240


Phe Lys His Lys Pro
                245


<210> 6061
<211> 357
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1321; "

<220>
<221> source
<223> /note="Gene Symbol: ADAP1; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with dual PH domains 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000414436"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6061
Xaa Ser Phe Ser Leu Ser Leu Phe Arg Lys His Val Leu Gly Pro Cys
1               5                   10                  15


Ser Val Ser Leu Gln Ser Pro Leu Arg Asp Ser Val Leu Ala Thr Ser
            20                  25                  30


Gly Ser Leu Ala His Gln Pro Ile Ser Arg Pro Pro Cys Leu Ala Pro
        35                  40                  45


Val Gly Ser Leu Leu Asn Phe Met Ala Ser His Gly Asn Asp Ala Ala
    50                  55                  60


Arg Ala Arg Phe Glu Ser Lys Val Pro Ser Phe Tyr Tyr Arg Pro Thr
65                  70                  75                  80
```

```
Pro Ser Asp Cys Gln Leu Leu Arg Glu Gln Trp Ile Arg Ala Lys Tyr
                85                  90                  95

Glu Arg Gln Glu Phe Ile Tyr Pro Glu Lys Gln Glu Pro Tyr Ser Ala
            100                 105                 110

Gly Tyr Arg Glu Gly Phe Leu Trp Lys Arg Gly Arg Asp Asn Gly Gln
        115                 120                 125

Phe Leu Ser Arg Lys Phe Val Leu Thr Glu Arg Glu Gly Ala Leu Lys
    130                 135                 140

Tyr Phe Asn Arg Asn Asp Ala Lys Glu Pro Lys Ala Val Met Lys Ile
145                 150                 155                 160

Glu His Leu Asn Ala Thr Phe Gln Pro Ala Lys Ile Gly His Pro His
                165                 170                 175

Gly Leu Gln Val Thr Tyr Leu Lys Asp Asn Ser Thr Arg Asn Ile Phe
            180                 185                 190

Ile Tyr His Glu Asp Gly Lys Glu Ile Val Asp Trp Phe Asn Ala Leu
        195                 200                 205

Arg Ala Ala Arg Phe His Tyr Leu Gln Val Ala Phe Pro Gly Ala Gly
    210                 215                 220

Asp Ala Asp Leu Val Pro Lys Leu Ser Arg Asn Tyr Leu Lys Glu Gly
225                 230                 235                 240

Tyr Met Glu Lys Thr Gly Pro Lys Gln Thr Glu Gly Phe Arg Lys Arg
                245                 250                 255

Trp Phe Thr Met Asp Asp Arg Arg Leu Met Tyr Phe Lys Asp Pro Leu
            260                 265                 270

Asp Ala Phe Ala Arg Gly Glu Val Phe Ile Gly Ser Lys Glu Ser Gly
        275                 280                 285

Tyr Thr Val Leu His Gly Phe Pro Pro Ser Thr Gln Gly His His Trp
    290                 295                 300
```

```
Pro His Gly Ile Thr Ile Val Thr Pro Asp Arg Lys Phe Leu Phe Ala
305                 310                 315                 320

Cys Glu Thr Glu Ser Asp Gln Arg Glu Trp Val Ala Ala Phe Gln Lys
                325                 330                 335

Ala Val Asp Arg Pro Met Leu Pro Gln Glu Tyr Ala Val Glu Ala His
            340                 345                 350

Phe Lys His Lys Pro
        355
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<210> 6062
<211> 187
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1321; "

<220>
<221> source
<223> /note="Gene Symbol: ADAP1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with dual PH domains 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000416545"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6062

```
Xaa Gly Cys Gly Leu Arg Arg Val Val Phe Arg Ser Leu Lys Phe Met
1               5                   10                  15

Ala Ser His Gly Asn Asp Ala Ala Arg Ala Arg Phe Glu Ser Lys Val
            20                  25                  30

Pro Ser Phe Tyr Tyr Arg Pro Thr Pro Ser Asp Cys Gln Leu Leu Arg
        35                  40                  45
```

```
Glu Gln Trp Ile Arg Ala Lys Tyr Glu Arg Gln Glu Phe Ile Tyr Pro
    50                  55                  60

Glu Lys Gln Glu Pro Tyr Ser Ala Gly Tyr Arg Glu Gly Phe Leu Trp
65                  70                  75                  80

Lys Arg Gly Arg Asp Asn Gly Gln Phe Leu Ser Arg Lys Phe Val Leu
                85                  90                  95

Thr Glu Arg Glu Gly Ala Leu Lys Tyr Phe Asn Arg Asn Asp Ala Lys
            100                 105                 110

Glu Pro Lys Ala Val Met Lys Ile Glu His Leu Asn Ala Thr Phe Gln
        115                 120                 125

Pro Ala Lys Ile Gly His Pro His Gly Leu Gln Val Thr Tyr Leu Lys
    130                 135                 140

Asp Asn Ser Thr Arg Asn Ile Phe Ile Tyr His Glu Asp Gly Lys Glu
145                 150                 155                 160

Ile Val Asp Trp Phe Asn Ala Leu Arg Ala Ala Arg Phe His Tyr Leu
                165                 170                 175

Gln Val Ala Phe Pro Gly Ala Gly Asp Ala Asp
            180                 185


<210> 6063
<211> 385
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1321; "

<220>
<221> source
<223> /note="Gene Symbol: ADAP1; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with dual PH domains 1; "

<220>
<221> source
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<223> /note="Uniprot ID: O75689; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000442682"

<400> 6063

```
Met Phe Gln Phe Val Phe Ser Arg Val Tyr Cys Ile Asn Pro Ala Arg
1               5                  10                  15

Arg Lys Trp Lys Glu Phe Glu Lys Met Leu Gly Cys Ala Glu Glu Gly
            20                  25                  30

His Ala Ser Leu Gly Arg Asp Pro Asp Trp Ala Ser Tyr Thr Leu Gly
        35                  40                  45

Val Phe Ile Cys Leu Ser Cys Ser Gly Ile His Arg Asn Ile Pro Gln
    50                  55                  60

Val Ser Lys Val Lys Ser Val Arg Leu Asp Ala Trp Glu Glu Ala Gln
65                  70                  75                  80

Val Glu Phe Met Ala Ser His Gly Asn Asp Ala Ala Arg Ala Arg Phe
                85                  90                  95

Glu Ser Lys Val Pro Ser Phe Tyr Tyr Arg Pro Thr Pro Ser Asp Cys
            100                 105                 110

Gln Leu Leu Arg Glu Gln Trp Ile Arg Ala Lys Tyr Glu Arg Gln Glu
        115                 120                 125

Phe Ile Tyr Pro Glu Lys Gln Glu Pro Tyr Ser Ala Gly Tyr Arg Glu
    130                 135                 140

Gly Phe Leu Trp Lys Arg Gly Arg Asp Asn Gly Gln Phe Leu Ser Arg
145                 150                 155                 160

Lys Phe Val Leu Thr Glu Arg Glu Gly Ala Leu Lys Tyr Phe Asn Arg
                165                 170                 175

Asn Asp Ala Lys Glu Pro Lys Ala Val Met Lys Ile Glu His Leu Asn
            180                 185                 190

Ala Thr Phe Gln Pro Ala Lys Ile Gly His Pro His Gly Leu Gln Val
        195                 200                 205
```

Thr Tyr Leu Lys Asp Asn Ser Thr Arg Asn Ile Phe Ile Tyr His Glu
210 215 220

Asp Gly Lys Glu Ile Val Asp Trp Phe Asn Ala Leu Arg Ala Ala Arg
225 230 235 240

Phe His Tyr Leu Gln Val Ala Phe Pro Gly Ala Gly Asp Ala Asp Leu
245 250 255

Val Pro Lys Leu Ser Arg Asn Tyr Leu Lys Glu Gly Tyr Met Glu Lys
260 265 270

Thr Gly Pro Lys Gln Thr Glu Gly Phe Arg Lys Arg Trp Phe Thr Met
275 280 285

Asp Asp Arg Arg Leu Met Tyr Phe Lys Asp Pro Leu Asp Ala Phe Ala
290 295 300

Arg Gly Glu Val Phe Ile Gly Ser Lys Glu Ser Gly Tyr Thr Val Leu
305 310 315 320

His Gly Phe Pro Pro Ser Thr Gln Gly His His Trp Pro His Gly Ile
325 330 335

Thr Ile Val Thr Pro Asp Arg Lys Phe Leu Phe Ala Cys Glu Thr Glu
340 345 350

Ser Asp Gln Arg Glu Trp Val Ala Ala Phe Gln Lys Ala Val Asp Arg
355 360 365

Pro Met Leu Pro Gln Glu Tyr Ala Val Glu Ala His Phe Lys His Lys
370 375 380

Pro
385

<210> 6064
<211> 279
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1321; "

<220>
<221> source
<223> /note="Gene Symbol: ADAP1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with dual PH domains 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000478011"

<400> 6064

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Met Val Leu Ala Ser Leu Glu Leu Leu Arg Glu Gln Trp Ile Arg Ala
1               5                  10                  15

Lys Tyr Glu Arg Gln Glu Phe Ile Tyr Pro Glu Lys Gln Glu Pro Tyr
            20                  25                  30

Ser Ala Gly Tyr Arg Glu Gly Phe Leu Trp Lys Arg Gly Arg Asp Asn
        35                  40                  45

Gly Gln Phe Leu Ser Arg Lys Phe Val Leu Thr Glu Arg Glu Gly Ala
    50                  55                  60

Leu Lys Tyr Phe Asn Arg Asn Asp Ala Lys Glu Pro Lys Ala Val Met
65                  70                  75                  80

Lys Ile Glu His Leu Asn Ala Thr Phe Gln Pro Ala Lys Ile Gly His
                85                  90                  95

Pro His Gly Leu Gln Val Thr Tyr Leu Lys Asp Asn Ser Thr Arg Asn
            100                 105                 110

Ile Phe Ile Tyr His Glu Asp Gly Lys Glu Ile Val Asp Trp Phe Asn
        115                 120                 125

Ala Leu Arg Ala Ala Arg Phe His Tyr Leu Gln Val Ala Phe Pro Gly
    130                 135                 140

Ala Gly Asp Ala Asp Leu Val Pro Lys Leu Ser Arg Asn Tyr Leu Lys
145                 150                 155                 160

Glu Gly Tyr Met Glu Lys Thr Gly Pro Lys Gln Thr Glu Gly Phe Arg
```

```
                165                 170                 175

Lys Arg Trp Phe Thr Met Asp Asp Arg Arg Leu Met Tyr Phe Lys Asp
            180                 185                 190

Pro Leu Asp Ala Phe Ala Arg Gly Glu Val Phe Ile Gly Ser Lys Glu
        195                 200                 205

Ser Gly Tyr Thr Val Leu His Gly Phe Pro Pro Ser Thr Gln Gly His
    210                 215                 220

His Trp Pro His Gly Ile Thr Ile Val Thr Pro Asp Arg Lys Phe Leu
225                 230                 235                 240

Phe Ala Cys Glu Thr Glu Ser Asp Gln Arg Glu Trp Val Ala Ala Phe
                245                 250                 255

Gln Lys Ala Val Asp Arg Pro Met Leu Pro Gln Glu Tyr Ala Val Glu
            260                 265                 270

Ala His Phe Lys His Lys Pro
        275


<210> 6065
<211> 302
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1321; "

<220>
<221> source
<223> /note="Gene Symbol: ADAP1; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with dual PH domains 1; "

<220>
<221> source
<223> /note="Uniprot ID:  O75689; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000481154"
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<400> 6065
Met Ala Ser His Gly Asn Asp Ala Ala Arg Ala Arg Phe Glu Ser Lys
1 5 10 15

Val Pro Ser Phe Tyr Tyr Arg Pro Thr Pro Ser Asp Cys Gln Leu Leu
20 25 30

Arg Glu Gln Trp Ile Arg Ala Lys Tyr Glu Arg Gln Glu Phe Ile Tyr
35 40 45

Pro Glu Lys Gln Glu Pro Tyr Ser Ala Gly Tyr Arg Glu Gly Phe Leu
50 55 60

Trp Lys Arg Gly Arg Asp Asn Gly Gln Phe Leu Ser Arg Lys Phe Val
65 70 75 80

Leu Thr Glu Arg Glu Gly Ala Leu Lys Tyr Phe Asn Arg Asn Asp Ala
85 90 95

Lys Glu Pro Lys Ala Val Met Lys Ile Glu His Leu Asn Ala Thr Phe
100 105 110

Gln Pro Ala Lys Ile Gly His Pro His Gly Leu Gln Val Thr Tyr Leu
115 120 125

Lys Asp Asn Ser Thr Arg Asn Ile Phe Ile Tyr His Glu Asp Gly Lys
130 135 140

Glu Ile Val Asp Trp Phe Asn Ala Leu Arg Ala Ala Arg Phe His Tyr
145 150 155 160

Leu Gln Val Ala Phe Pro Gly Ala Gly Asp Ala Asp Leu Val Pro Lys
165 170 175

Leu Ser Arg Asn Tyr Leu Lys Glu Gly Tyr Met Glu Lys Thr Gly Pro
180 185 190

Lys Gln Thr Glu Gly Phe Arg Lys Arg Trp Phe Thr Met Asp Asp Arg
195 200 205

Arg Leu Met Tyr Phe Lys Asp Pro Leu Asp Ala Phe Ala Arg Gly Glu
210 215 220

```
Val Phe Ile Gly Ser Lys Glu Ser Gly Tyr Thr Val Leu His Gly Phe
225                 230                 235                 240


Pro Pro Ser Thr Gln Gly His His Trp Pro His Gly Ile Thr Ile Val
                245                 250                 255


Thr Pro Asp Arg Lys Phe Leu Phe Ala Cys Glu Thr Glu Ser Asp Gln
            260                 265                 270


Arg Glu Trp Val Ala Ala Phe Gln Lys Ala Val Asp Arg Pro Met Leu
        275                 280                 285


Pro Gln Glu Tyr Ala Val Glu Ala His Phe Lys His Lys Pro
    290                 295                 300


<210> 6066
<211> 381
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1322; "

<220>
<221> source
<223> /note="Gene Symbol: ADAP2; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with dual PH domains 2; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9NPF8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000329468"

<400> 6066
Met Gly Asp Arg Glu Arg Asn Lys Lys Arg Leu Leu Glu Leu Leu Arg
1               5                   10                  15


Ala Pro Asp Thr Gly Asn Ala His Cys Ala Asp Cys Gly Ala Ala Asp
            20                  25                  30


Pro Asp Trp Ala Ser Tyr Lys Leu Gly Ile Phe Ile Cys Leu Asn Cys
        35                  40                  45
```

```
Cys Gly Val His Arg Asn Phe Pro Asp Ile Ser Arg Val Lys Ser Val
    50                  55                  60

Arg Leu Asp Phe Trp Asp Asp Ser Ile Val Glu Phe Met Ile His Asn
65                  70                  75                  80

Gly Asn Leu Arg Val Lys Ala Lys Phe Glu Ala Arg Val Pro Ala Phe
                85                  90                  95

Tyr Tyr Ile Pro Gln Ala Asn Asp Cys Leu Val Leu Lys Glu Gln Trp
            100                 105                 110

Ile Arg Ala Lys Tyr Glu Arg Arg Glu Phe Met Ala Asp Gly Glu Thr
        115                 120                 125

Ile Ser Leu Pro Gly Asn Arg Glu Gly Phe Leu Trp Lys Arg Gly Arg
    130                 135                 140

Asp Asn Ser Gln Phe Leu Arg Arg Lys Phe Val Leu Leu Ala Arg Glu
145                 150                 155                 160

Gly Leu Leu Lys Tyr Phe Thr Lys Glu Gln Gly Lys Ser Pro Lys Ala
                165                 170                 175

Val Ile Ser Ile Lys Asp Leu Asn Ala Thr Phe Gln Thr Glu Lys Ile
            180                 185                 190

Gly His Pro His Gly Leu Gln Ile Thr Tyr Arg Arg Asp Gly His Thr
        195                 200                 205

Arg Asn Leu Phe Val Tyr His Glu Ser Gly Lys Glu Ile Val Asp Trp
    210                 215                 220

Phe Asn Ala Leu Arg Ala Ala Arg Leu Gln Tyr Leu Lys Met Ala Phe
225                 230                 235                 240

Pro Glu Leu Pro Glu Ser Glu Leu Val Pro Phe Leu Thr Arg Asn Tyr
                245                 250                 255

Leu Lys Gln Gly Phe Met Glu Lys Thr Gly Pro Lys Gln Lys Glu Pro
            260                 265                 270
```

Phe Lys Lys Arg Trp Phe Ala Leu Asp Cys His Glu Arg Arg Leu Leu
        275   280   285

Tyr Tyr Lys Asn Pro Leu Asp Ala Phe Glu Gln Gly Gln Val Phe Leu
    290   295   300

Gly Asn Lys Glu Gln Gly Tyr Glu Ala Tyr Glu Asp Leu Pro Lys Gly
305   310   315   320

Ile Arg Gly Asn Arg Trp Lys Ala Gly Leu Thr Ile Val Thr Pro Glu
                325   330   335

Arg Arg Phe Val Leu Thr Cys Pro Ser Glu Lys Glu Gln Gln Glu Trp
            340   345   350

Leu Glu Ser Leu Arg Gly Val Leu Ser Ser Pro Leu Thr Pro Leu Asn
        355   360   365

Arg Leu Thr Ala Ser Thr Glu Ser Gly Arg Ser Ser Arg
    370   375   380

<210> 6067
<211> 98
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1322; "

<220>
<221> source
<223> /note="Gene Symbol: ADAP2; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with dual PH domains 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000462634"

<400> 6067
Glu Ser Gly Lys Glu Ile Val Asp Trp Phe Asn Ala Leu Arg Ala Ala
1   5   10   15

Arg Leu Gln Tyr Leu Lys Met Ala Phe Pro Glu Leu Pro Glu Ser Glu

```
            20                  25                  30

Gln Lys Glu Pro Phe Lys Lys Arg Trp Phe Ala Leu Asp Cys His Glu
        35                  40                  45

Arg Arg Leu Leu Tyr Tyr Lys Asn Pro Leu Asp Ala Phe Glu Gln Gly
    50                  55                  60

Gln Val Phe Leu Gly Asn Lys Glu Gln Gly Tyr Glu Ala Tyr Glu Asp
65                  70                  75                  80

Leu Pro Lys Gly Ile Arg Gly Asn Arg Trp Lys Ala Gly Leu Thr Ile
                85                  90                  95

Val Thr
```

<210> 6068
<211> 84
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
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<223> /note="Gene Name:
ArfGAP with dual PH domains 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000462832"

<400> 6068

```
Met Gly Asp Arg Glu Arg Asn Lys Lys Arg Leu Leu Glu Leu Leu Arg
1               5                   10                  15

Ala Pro Asp Thr Gly Asn Ala His Cys Ala Asp Cys Gly Ala Ala Asp
            20                  25                  30

Pro Asp Trp Ala Ser Tyr Lys Leu Gly Ile Phe Ile Cys Leu Asn Cys
        35                  40                  45
```

Cys Gly Val His Arg Asn Phe Pro Asp Ile Ser Arg Val Lys Ser Val
    50   55   60

Arg Leu Asp Phe Trp Asp Asp Ser Ile Val Glu Gly Leu Lys Gly Thr
65   70   75   80

Met Asp Ser Ser

<210> 6069
<211> 145
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ADAP2; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with dual PH domains 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000463649"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6069
Xaa Phe Val Tyr His Glu Ser Gly Lys Glu Ile Val Asp Trp Phe Asn
1   5   10   15

Ala Leu Arg Ala Ala Arg Leu Gln Tyr Leu Lys Met Ala Phe Pro Glu
            20   25   30

Leu Pro Glu Ser Glu Leu Val Pro Phe Leu Thr Arg Asn Tyr Leu Lys
        35   40   45

Gln Gly Phe Met Glu Lys Thr Gly Pro Lys Gln Lys Glu Pro Phe Lys
    50   55   60

```
Lys Arg Trp Phe Ala Leu Asp Cys His Glu Arg Arg Leu Leu Tyr Tyr
65                  70                  75                  80

Lys Asn Pro Leu Asp Ala Phe Glu Gln Gly Gln Val Phe Leu Gly Asn
                85                  90                  95

Lys Glu Gln Gly Tyr Glu Ala Tyr Glu Asp Leu Pro Lys Gly Ile Arg
            100                 105                 110

Gly Asn Arg Trp Lys Ala Gly Leu Thr Ile Val Thr Pro Glu Arg Arg
        115                 120                 125

Phe Val Leu Thr Cys Pro Thr Ala Ser Thr Glu Ser Gly Arg Ser Ser
    130                 135                 140

Arg
145


<210> 6070
<211> 106
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ADAP2; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with dual PH domains 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000464120"

<400> 6070
Met Gly Asp Arg Glu Arg Asn Lys Lys Arg Leu Leu Glu Leu Leu Arg
1               5                   10                  15

Ala Pro Asp Thr Gly Asn Ala His Cys Ala Asp Cys Gly Ala Ala Asp
            20                  25                  30

Pro Asp Trp Ala Ser Tyr Lys Leu Gly Ile Phe Ile Cys Leu Asn Cys
```

```
        35                  40                  45

Cys Gly Val His Arg Asn Phe Pro Asp Ile Ser Arg Val Lys Ser Val
    50                  55                  60

Arg Leu Asp Phe Trp Asp Asp Ser Ile Val Glu Phe Met Ile His Asn
65                  70                  75                  80

Gly Asn Leu Arg Val Lys Ala Lys Phe Glu Ala Arg Val Pro Ala Phe
                85                  90                  95

Tyr Tyr Ile Pro Gln Ala Asn Asp Cys Leu
            100                 105


<210> 6071
<211> 387
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1322; "

<220>
<221> source
<223> /note="Gene Symbol: ADAP2; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with dual PH domains 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000464121"

<400> 6071
Met Gly Asp Arg Glu Arg Asn Lys Lys Arg Leu Leu Glu Leu Leu Arg
1               5                   10                  15

Ala Pro Asp Thr Gly Asn Ala His Cys Ala Asp Cys Gly Ala Ala Asp
            20                  25                  30

Pro Asp Trp Ala Ser Tyr Lys Leu Gly Ile Phe Ile Cys Leu Asn Cys
        35                  40                  45

Cys Gly Val His Arg Asn Phe Pro Asp Ile Ser Arg Val Lys Ser Val
    50                  55                  60
```

```
Arg Leu Asp Phe Trp Asp Asp Ser Ile Val Glu Val Ala Val Val Leu
65                  70                  75                  80

Gln Phe Met Ile His Asn Gly Asn Leu Arg Val Lys Ala Lys Phe Glu
                85                  90                  95

Ala Arg Val Pro Ala Phe Tyr Tyr Ile Pro Gln Ala Asn Asp Cys Leu
            100                 105                 110

Val Leu Lys Glu Gln Trp Ile Arg Ala Lys Tyr Glu Arg Arg Glu Phe
        115                 120                 125

Met Ala Asp Gly Glu Thr Ile Ser Leu Pro Gly Asn Arg Glu Gly Phe
    130                 135                 140

Leu Trp Lys Arg Gly Arg Asp Asn Ser Gln Phe Leu Arg Arg Lys Phe
145                 150                 155                 160

Val Leu Leu Ala Arg Glu Gly Leu Leu Lys Tyr Phe Thr Lys Glu Gln
                165                 170                 175

Gly Lys Ser Pro Lys Ala Val Ile Ser Ile Lys Asp Leu Asn Ala Thr
            180                 185                 190

Phe Gln Thr Glu Lys Ile Gly His Pro His Gly Leu Gln Ile Thr Tyr
        195                 200                 205

Arg Arg Asp Gly His Thr Arg Asn Leu Phe Val Tyr His Glu Ser Gly
    210                 215                 220

Lys Glu Ile Val Asp Trp Phe Asn Ala Leu Arg Ala Ala Arg Leu Gln
225                 230                 235                 240

Tyr Leu Lys Met Ala Phe Pro Glu Leu Pro Glu Ser Glu Leu Val Pro
                245                 250                 255

Phe Leu Thr Arg Asn Tyr Leu Lys Gln Gly Phe Met Glu Lys Thr Gly
            260                 265                 270

Pro Lys Gln Lys Glu Pro Phe Lys Lys Arg Trp Phe Ala Leu Asp Cys
        275                 280                 285
```

```
His Glu Arg Arg Leu Leu Tyr Tyr Lys Asn Pro Leu Asp Ala Phe Glu
    290                 295                 300

Gln Gly Gln Val Phe Leu Gly Asn Lys Glu Gln Gly Tyr Glu Ala Tyr
305                 310                 315                 320

Glu Asp Leu Pro Lys Gly Ile Arg Gly Asn Arg Trp Lys Ala Gly Leu
                325                 330                 335

Thr Ile Val Thr Pro Glu Arg Arg Phe Val Leu Thr Cys Pro Ser Glu
            340                 345                 350

Lys Glu Gln Gln Glu Trp Leu Glu Ser Leu Arg Gly Val Leu Ser Ser
        355                 360                 365

Pro Leu Thr Pro Leu Asn Arg Leu Thr Ala Ser Thr Glu Ser Gly Arg
    370                 375                 380

Ser Ser Arg
385
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<210> 6072
<211> 333
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1322; "

<220>
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<223> /note="Gene Symbol: ADAP2; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with dual PH domains 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000464155"

<400> 6072

```
Met Gly Asp Arg Glu Arg Asn Lys Lys Arg Leu Leu Glu Leu Leu Arg
1               5                   10                  15

Ala Pro Asp Thr Gly Asn Ala His Cys Ala Asp Cys Gly Ala Ala Asp
            20                  25                  30
```

```
Pro Asp Trp Ala Ser Tyr Lys Leu Gly Ile Phe Ile Cys Leu Asn Cys
        35                  40                  45

Cys Gly Val His Arg Asn Phe Pro Asp Ile Ser Arg Val Lys Ser Val
    50                  55                  60

Arg Leu Asp Phe Trp Asp Asp Ser Ile Val Glu Phe Met Ile His Asn
65                  70                  75                  80

Gly Asn Leu Arg Val Lys Ala Lys Phe Glu Ala Arg Val Pro Ala Phe
                85                  90                  95

Tyr Tyr Ile Pro Gln Ala Asn Asp Cys Leu Val Leu Lys Glu Gln Trp
            100                 105                 110

Ile Arg Ala Lys Tyr Glu Arg Arg Glu Phe Met Ala Asp Gly Glu Thr
        115                 120                 125

Ile Ser Leu Pro Gly Asn Arg Glu Gly Phe Leu Trp Lys Arg Gly Arg
    130                 135                 140

Asp Asn Ser Gln Phe Leu Arg Arg Lys Phe Val Leu Leu Ala Arg Glu
145                 150                 155                 160

Gly Leu Leu Lys Tyr Phe Thr Lys Glu Gln Gly Lys Ser Pro Lys Ala
                165                 170                 175

Val Ile Ser Ile Lys Asp Leu Asn Ala Thr Phe Gln Thr Glu Lys Ile
            180                 185                 190

Gly His Pro His Gly Leu Gln Ile Thr Tyr Arg Arg Asp Gly His Thr
        195                 200                 205

Arg Asn Leu Phe Val Tyr His Glu Ser Gly Lys Leu Val Pro Phe Leu
    210                 215                 220

Thr Arg Asn Tyr Leu Lys Gln Gly Phe Met Glu Lys Thr Gly Pro Lys
225                 230                 235                 240

Gln Lys Glu Pro Phe Lys Lys Arg Trp Phe Ala Leu Asp Cys His Glu
                245                 250                 255
```

```
Arg Arg Leu Leu Tyr Tyr Lys Asn Pro Leu Asp Ala Phe Glu Gln Gly
            260                 265                 270

Gln Val Phe Leu Gly Asn Lys Glu Gln Gly Tyr Glu Ala Tyr Glu Asp
        275                 280                 285

Leu Pro Lys Gly Ile Arg Gly Asn Arg Trp Lys Ala Gly Leu Thr Ile
    290                 295                 300

Val Thr Pro Glu Arg Arg Phe Val Leu Thr Cys Pro Ser Glu Lys Glu
305                 310                 315                 320

Gln Gln Glu Trp Leu Glu Ser Leu Arg Gly Val Leu Ser
                325                 330


<210> 6073
<211> 114
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1322; "

<220>
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<223> /note="Gene Symbol: ADAP2; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with dual PH domains 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467079"

<400> 6073
Met Ala Asp Gly Glu Thr Ile Ser Leu Pro Gly Asn Arg Glu Gly Phe
1               5                   10                  15

Leu Trp Lys Arg Gly Arg Asp Asn Ser Gln Phe Leu Arg Arg Lys Phe
            20                  25                  30

Val Leu Leu Ala Arg Glu Gly Leu Leu Lys Tyr Phe Thr Lys Glu Gln
        35                  40                  45

Gly Lys Ser Pro Lys Ala Val Ile Ser Ile Lys Asp Leu Asn Ala Thr
```

50 55 60

Phe Gln Thr Glu Lys Ile Gly His Pro His Gly Leu Gln Ile Thr Tyr
65 70 75 80

Arg Arg Asp Gly His Thr Arg Asn Leu Phe Val Tyr His Glu Ser Gly
85 90 95

Lys Glu Ile Val Asp Trp Phe Asn Ala Leu Arg Ala Ala Arg Leu Gln
100 105 110

Tyr Leu

<210> 6074
<211> 562
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1323; "

<220>
<221> source
<223> /note="Gene Symbol: AGFG1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with FG repeats 1; "

<220>
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<223> /note="Uniprot ID: P52594; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000312059"

<400> 6074
Met Ala Ala Ser Ala Lys Arg Lys Gln Glu Glu Lys His Leu Lys Met
1 5 10 15

Leu Arg Asp Met Thr Gly Leu Pro His Asn Arg Lys Cys Phe Asp Cys
20 25 30

Asp Gln Arg Gly Pro Thr Tyr Val Asn Met Thr Val Gly Ser Phe Val
35 40 45

```
Cys Thr Ser Cys Ser Gly Ser Leu Arg Gly Leu Asn Pro Pro His Arg
    50                  55                  60

Val Lys Ser Ile Ser Met Thr Thr Phe Thr Gln Gln Glu Ile Glu Phe
65                  70                  75                  80

Leu Gln Lys His Gly Asn Glu Val Cys Lys Gln Ile Trp Leu Gly Leu
                85                  90                  95

Phe Asp Asp Arg Ser Ser Ala Ile Pro Asp Phe Arg Asp Pro Gln Lys
            100                 105                 110

Val Lys Glu Phe Leu Gln Glu Lys Tyr Glu Lys Lys Arg Trp Tyr Val
        115                 120                 125

Pro Pro Glu Gln Ala Lys Val Val Ala Ser Val His Ala Ser Ile Ser
    130                 135                 140

Gly Ser Ser Ala Ser Ser Thr Ser Ser Thr Pro Glu Val Lys Pro Leu
145                 150                 155                 160

Lys Ser Leu Leu Gly Asp Ser Ala Pro Thr Leu His Leu Asn Lys Gly
                165                 170                 175

Thr Pro Ser Gln Ser Pro Val Val Gly Arg Ser Gln Gly Gln Gln Gln
            180                 185                 190

Glu Lys Lys Gln Phe Asp Leu Leu Ser Asp Leu Gly Ser Asp Ile Phe
        195                 200                 205

Ala Ala Pro Ala Pro Gln Ser Thr Ala Thr Ala Asn Phe Ala Asn Phe
    210                 215                 220

Ala His Phe Asn Ser His Ala Ala Gln Asn Ser Ala Asn Ala Asp Phe
225                 230                 235                 240

Ala Asn Phe Asp Ala Phe Gly Gln Ser Ser Gly Ser Ser Asn Phe Gly
                245                 250                 255

Gly Phe Pro Thr Ala Ser His Ser Pro Phe Gln Pro Gln Thr Thr Gly
            260                 265                 270
```

```
Gly Ser Ala Ala Ser Val Asn Ala Asn Phe Ala His Phe Asp Asn Phe
        275                 280                 285

Pro Lys Ser Ser Ser Ala Asp Phe Gly Thr Phe Asn Thr Ser Gln Ser
    290                 295                 300

His Gln Thr Ala Ser Ala Val Ser Lys Val Ser Thr Asn Lys Ala Gly
305                 310                 315                 320

Leu Gln Thr Ala Asp Lys Tyr Ala Ala Leu Ala Asn Leu Asp Asn Ile
                325                 330                 335

Phe Ser Ala Gly Gln Gly Gly Asp Gln Gly Ser Gly Phe Gly Thr Thr
            340                 345                 350

Gly Lys Ala Pro Val Gly Ser Val Val Ser Val Pro Ser Gln Ser Ser
        355                 360                 365

Ala Ser Ser Asp Lys Tyr Ala Ala Leu Ala Glu Leu Asp Ser Val Phe
    370                 375                 380

Ser Ser Ala Ala Thr Ser Ser Asn Ala Tyr Thr Ser Thr Ser Asn Ala
385                 390                 395                 400

Ser Ser Asn Val Phe Gly Thr Val Pro Val Val Ala Ser Ala Gln Thr
                405                 410                 415

Gln Pro Ala Ser Ser Ser Val Pro Ala Pro Phe Gly Ala Thr Pro Ser
            420                 425                 430

Thr Asn Pro Phe Val Ala Ala Ala Gly Pro Ser Val Ala Ser Ser Thr
        435                 440                 445

Asn Pro Phe Gln Thr Asn Ala Arg Gly Ala Thr Ala Ala Thr Phe Gly
    450                 455                 460

Thr Ala Ser Met Ser Met Pro Thr Gly Phe Gly Thr Pro Ala Pro Tyr
465                 470                 475                 480

Ser Leu Pro Thr Ser Phe Ser Gly Ser Phe Gln Gln Pro Ala Phe Pro
                485                 490                 495

Ala Gln Ala Ala Phe Pro Gln Gln Thr Ala Phe Ser Gln Gln Pro Asn
```

500 505 510

Gly Ala Gly Phe Ala Ala Phe Gly Gln Thr Lys Pro Val Val Thr Pro
515 520 525

Phe Gly Gln Val Ala Ala Ala Gly Val Ser Ser Asn Pro Phe Met Thr
530 535 540

Gly Ala Pro Thr Gly Gln Phe Pro Thr Gly Ser Ser Ser Thr Asn Pro
545 550 555 560

Phe Leu

<210> 6075
<211> 522
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1323; "

<220>
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<223> /note="Gene Symbol: AGFG1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with FG repeats 1; "

<220>
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<223> /note="Uniprot ID: P52594; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000362775"

<400> 6075
Met Ala Ala Ser Ala Lys Arg Lys Gln Glu Glu Lys His Leu Lys Met
1 5 10 15

Leu Arg Asp Met Thr Gly Leu Pro His Asn Arg Lys Cys Phe Asp Cys
20 25 30

Asp Gln Arg Gly Pro Thr Tyr Val Asn Met Thr Val Gly Ser Phe Val
35 40 45

```
Cys Thr Ser Cys Ser Gly Ser Leu Arg Gly Leu Asn Pro Pro His Arg
    50                  55                  60

Val Lys Ser Ile Ser Met Thr Thr Phe Thr Gln Gln Glu Ile Glu Phe
65                  70                  75                  80

Leu Gln Lys His Gly Asn Glu Val Cys Lys Gln Ile Trp Leu Gly Leu
                85                  90                  95

Phe Asp Asp Arg Ser Ser Ala Ile Pro Asp Phe Arg Asp Pro Gln Lys
            100                 105                 110

Val Lys Glu Phe Leu Gln Glu Lys Tyr Glu Lys Lys Arg Trp Tyr Val
        115                 120                 125

Pro Pro Glu Gln Ala Lys Val Val Ala Ser Val His Ala Ser Ile Ser
    130                 135                 140

Gly Ser Ser Ala Ser Ser Thr Ser Ser Thr Pro Glu Val Lys Pro Leu
145                 150                 155                 160

Lys Ser Leu Leu Gly Asp Ser Ala Pro Thr Leu His Leu Asn Lys Gly
                165                 170                 175

Thr Pro Ser Gln Ser Pro Val Val Gly Arg Ser Gln Gly Gln Gln Gln
            180                 185                 190

Glu Lys Lys Gln Phe Asp Leu Leu Ser Asp Leu Gly Ser Asp Ile Phe
        195                 200                 205

Ala Ala Pro Ala Pro Gln Ser Thr Ala Thr Ala Asn Phe Ala Asn Phe
    210                 215                 220

Ala His Phe Asn Ser His Ala Gly Gly Ser Ala Ala Ser Val Asn Ala
225                 230                 235                 240

Asn Phe Ala His Phe Asp Asn Phe Pro Lys Ser Ser Ser Ala Asp Phe
                245                 250                 255

Gly Thr Phe Asn Thr Ser Gln Ser His Gln Thr Ala Ser Ala Val Ser
            260                 265                 270
```

```
Lys Val Ser Thr Asn Lys Ala Gly Leu Gln Thr Ala Asp Lys Tyr Ala
        275                 280                 285

Ala Leu Ala Asn Leu Asp Asn Ile Phe Ser Ala Gly Gln Gly Gly Asp
    290                 295                 300

Gln Gly Ser Gly Phe Gly Thr Thr Gly Lys Ala Pro Val Gly Ser Val
305                 310                 315                 320

Val Ser Val Pro Ser Gln Ser Ser Ala Ser Ser Asp Lys Tyr Ala Ala
                325                 330                 335

Leu Ala Glu Leu Asp Ser Val Phe Ser Ser Ala Ala Thr Ser Ser Asn
            340                 345                 350

Ala Tyr Thr Ser Thr Ser Asn Ala Ser Ser Asn Val Phe Gly Thr Val
        355                 360                 365

Pro Val Val Ala Ser Ala Gln Thr Gln Pro Ala Ser Ser Ser Val Pro
    370                 375                 380

Ala Pro Phe Gly Ala Thr Pro Ser Thr Asn Pro Phe Val Ala Ala Ala
385                 390                 395                 400

Gly Pro Ser Val Ala Ser Ser Thr Asn Pro Phe Gln Thr Asn Ala Arg
                405                 410                 415

Gly Ala Thr Ala Ala Thr Phe Gly Thr Ala Ser Met Ser Met Pro Thr
            420                 425                 430

Gly Phe Gly Thr Pro Ala Pro Tyr Ser Leu Pro Thr Ser Phe Ser Gly
        435                 440                 445

Ser Phe Gln Gln Pro Ala Phe Pro Ala Gln Ala Ala Phe Pro Gln Gln
    450                 455                 460

Thr Ala Phe Ser Gln Gln Pro Asn Gly Ala Gly Phe Ala Ala Phe Gly
465                 470                 475                 480

Gln Thr Lys Pro Val Val Thr Pro Phe Gly Gln Val Ala Ala Ala Gly
                485                 490                 495

Val Ser Ser Asn Pro Phe Met Thr Gly Ala Pro Thr Gly Gln Phe Pro
```

500 505 510

Thr Gly Ser Ser Ser Thr Asn Pro Phe Leu
515 520

<210> 6076
<211> 541
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1323; "

<220>
<221> source
<223> /note="Gene Symbol: AGFG1; "

<220>
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<223> /note="Gene Name:
ArfGAP with FG repeats 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000387154"

<400> 6076
Met Ala Ala Ser Ala Lys Arg Lys Gln Glu Glu Lys His Leu Lys Met
1 5 10 15

Leu Arg Asp Met Thr Gly Leu Pro His Asn Arg Lys Cys Phe Asp Cys
20 25 30

Asp Gln Arg Gly Pro Thr Tyr Val Asn Met Thr Val Gly Ser Phe Val
35 40 45

Cys Thr Ser Cys Ser Gly Ser Leu Arg Gly Leu Asn Pro Pro His Arg
50 55 60

Val Lys Ser Ile Ser Met Thr Thr Phe Thr Gln Gln Glu Ile Glu Phe
65 70 75 80

Leu Gln Lys His Gly Asn Glu Val Cys Lys Gln Ile Trp Leu Gly Leu
85 90 95

Phe Asp Asp Arg Ser Ser Ala Ile Pro Asp Phe Arg Asp Pro Gln Lys
100 105 110

```
Val Lys Glu Phe Leu Gln Glu Lys Tyr Glu Lys Lys Arg Trp Tyr Val
        115                 120                 125

Pro Pro Glu Gln Ala Lys Val Val Ala Ser Val His Ala Ser Ile Ser
    130                 135                 140

Gly Ser Ser Ala Ser Ser Thr Ser Ser Thr Pro Glu Val Lys Pro Leu
145                 150                 155                 160

Lys Ser Leu Leu Gly Asp Ser Ala Pro Thr Leu His Leu Asn Lys Gly
                165                 170                 175

Thr Pro Ser Gln Ser Pro Val Val Gly Arg Ser Gln Gly Gln Gln Gln
            180                 185                 190

Glu Lys Lys Gln Phe Asp Leu Leu Ser Asp Leu Gly Ser Asp Ile Phe
        195                 200                 205

Ala Ala Pro Ala Pro Gln Ser Thr Ala Thr Ala Asn Phe Ala Asn Phe
    210                 215                 220

Ala His Phe Asn Ser His Ala Ala Gln Asn Ser Ala Asn Ala Asp Phe
225                 230                 235                 240

Ala Asn Phe Asp Ala Phe Gly Gln Ser Ser Gly Ser Ser Asn Phe Gly
                245                 250                 255

Gly Phe Pro Thr Ala Ser His Ser Pro Phe Gln Pro Gln Thr Thr Gly
            260                 265                 270

Gly Ser Ala Ala Ser Val Asn Ala Asn Phe Ala His Phe Asp Asn Phe
        275                 280                 285

Pro Lys Ser Ser Ser Ala Asp Phe Gly Thr Phe Asn Thr Ser Gln Ser
    290                 295                 300

His Gln Thr Ala Ser Ala Val Ser Lys Val Ser Thr Asn Lys Ala Gly
305                 310                 315                 320

Leu Gln Thr Ala Asp Lys Tyr Ala Ala Leu Ala Asn Leu Asp Asn Ile
                325                 330                 335
```

```
Phe Ser Ala Gly Gln Val Pro Ser Gln Ser Ser Ala Ser Ser Asp Lys
            340                 345                 350

Tyr Ala Ala Leu Ala Glu Leu Asp Ser Val Phe Ser Ser Ala Ala Thr
        355                 360                 365

Ser Ser Asn Ala Tyr Thr Ser Thr Ser Asn Ala Ser Ser Asn Val Phe
    370                 375                 380

Gly Thr Val Pro Val Val Ala Ser Ala Gln Thr Gln Pro Ala Ser Ser
385                 390                 395                 400

Ser Val Pro Ala Pro Phe Gly Ala Thr Pro Ser Thr Asn Pro Phe Val
                405                 410                 415

Ala Ala Ala Gly Pro Ser Val Ala Ser Ser Thr Asn Pro Phe Gln Thr
            420                 425                 430

Asn Ala Arg Gly Ala Thr Ala Ala Thr Phe Gly Thr Ala Ser Met Ser
        435                 440                 445

Met Pro Thr Gly Phe Gly Thr Pro Ala Pro Tyr Ser Leu Pro Thr Ser
    450                 455                 460

Phe Ser Gly Ser Phe Gln Gln Pro Ala Phe Pro Ala Gln Ala Ala Phe
465                 470                 475                 480

Pro Gln Gln Thr Ala Phe Ser Gln Gln Pro Asn Gly Ala Gly Phe Ala
                485                 490                 495

Ala Phe Gly Gln Thr Lys Pro Val Val Thr Pro Phe Gly Gln Val Ala
            500                 505                 510

Ala Ala Gly Val Ser Ser Asn Pro Phe Met Thr Gly Ala Pro Thr Gly
        515                 520                 525

Gln Phe Pro Thr Gly Ser Ser Ser Thr Asn Pro Phe Leu
    530                 535                 540
```

<210> 6077
<211> 560
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: AGFG1; "

<220>
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<223> /note="Gene Name:
ArfGAP with FG repeats 1; "

<220>
<221> source
<223> /note="Uniprot ID: P52594; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000387218"

<400> 6077

```
Met Ala Ala Ser Ala Lys Arg Lys Gln Glu Glu Lys His Leu Lys Met
1               5                   10                  15

Leu Arg Asp Met Thr Gly Leu Pro His Asn Arg Lys Cys Phe Asp Cys
            20                  25                  30

Asp Gln Arg Gly Pro Thr Tyr Val Asn Met Thr Val Gly Ser Phe Val
        35                  40                  45

Cys Thr Ser Cys Ser Gly Ser Leu Arg Gly Leu Asn Pro Pro His Arg
    50                  55                  60

Val Lys Ser Ile Ser Met Thr Thr Phe Thr Gln Gln Glu Ile Glu Phe
65                  70                  75                  80

Leu Gln Lys His Gly Asn Glu Val Cys Lys Gln Ile Trp Leu Gly Leu
                85                  90                  95

Phe Asp Asp Arg Ser Ser Ala Ile Pro Asp Phe Arg Asp Pro Gln Lys
            100                 105                 110

Val Lys Glu Phe Leu Gln Glu Lys Tyr Glu Lys Lys Arg Trp Tyr Val
        115                 120                 125

Pro Pro Glu Gln Ala Lys Val Val Ala Ser Val His Ala Ser Ile Ser
    130                 135                 140
```

```
Gly Ser Ser Ala Ser Ser Thr Ser Ser Thr Pro Glu Val Lys Pro Leu
145                 150                 155                 160

Lys Ser Leu Leu Gly Asp Ser Ala Pro Thr Leu His Leu Asn Lys Gly
                165                 170                 175

Thr Pro Ser Gln Ser Pro Val Val Gly Arg Ser Gln Gly Gln Gln Gln
            180                 185                 190

Glu Lys Lys Gln Phe Asp Leu Leu Ser Asp Leu Gly Ser Asp Ile Phe
        195                 200                 205

Ala Ala Pro Ala Pro Gln Ser Thr Ala Thr Ala Asn Phe Ala Asn Phe
    210                 215                 220

Ala His Phe Asn Ser His Ala Ala Gln Asn Ser Ala Asn Ala Asp Phe
225                 230                 235                 240

Ala Asn Phe Asp Ala Phe Gly Gln Ser Ser Gly Ser Ser Asn Phe Gly
                245                 250                 255

Gly Phe Pro Thr Ala Ser His Ser Pro Phe Gln Pro Gln Thr Thr Gly
            260                 265                 270

Gly Ser Ala Ala Ser Val Asn Ala Asn Phe Ala His Phe Asp Asn Phe
        275                 280                 285

Pro Lys Ser Ser Ser Ala Asp Phe Gly Thr Phe Asn Thr Ser Gln Ser
    290                 295                 300

His Gln Thr Ala Ser Ala Val Ser Lys Val Ser Thr Asn Lys Ala Gly
305                 310                 315                 320

Leu Gln Thr Ala Asp Lys Tyr Ala Ala Leu Ala Asn Leu Asp Asn Ile
                325                 330                 335

Phe Ser Ala Gly Gln Gly Gly Asp Gln Gly Ser Gly Phe Gly Thr Thr
            340                 345                 350

Gly Lys Ala Pro Val Gly Ser Val Val Ser Val Pro Ser Gln Ser Ser
        355                 360                 365
```

```
Ala Ser Ser Asp Lys Tyr Ala Ala Leu Ala Glu Leu Asp Ser Val Phe
    370                 375                 380

Ser Ser Ala Ala Thr Ser Ser Asn Ala Tyr Thr Ser Thr Ser Asn Ala
385                 390                 395                 400

Ser Ser Asn Val Phe Gly Thr Val Pro Val Val Ala Ser Ala Gln Thr
                405                 410                 415

Gln Pro Ala Ser Ser Ser Val Pro Ala Pro Phe Gly Ala Thr Pro Ser
            420                 425                 430

Thr Asn Pro Phe Val Ala Ala Ala Gly Pro Ser Val Ala Ser Ser Thr
        435                 440                 445

Asn Pro Phe Gln Thr Asn Ala Arg Gly Ala Thr Ala Ala Thr Phe Gly
    450                 455                 460

Thr Ala Ser Met Ser Met Pro Thr Gly Phe Gly Thr Pro Ala Pro Tyr
465                 470                 475                 480

Ser Leu Pro Thr Ser Phe Ser Gly Ser Phe Gln Gln Pro Ala Phe Pro
                485                 490                 495

Ala Gln Ala Ala Phe Pro Gln Gln Thr Ala Phe Ser Gln Gln Pro Asn
            500                 505                 510

Gly Phe Ala Ala Phe Gly Gln Thr Lys Pro Val Val Thr Pro Phe Gly
        515                 520                 525

Gln Val Ala Ala Ala Gly Val Ser Ser Asn Pro Phe Met Thr Gly Ala
    530                 535                 540

Pro Thr Gly Gln Phe Pro Thr Gly Ser Ser Ser Thr Asn Pro Phe Leu
545                 550                 555                 560


<210> 6078
<211> 584
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1323; "
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<220>
<221> source
<223> /note="Gene Symbol: AGFG1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with FG repeats 1; "

<220>
<221> source
<223> /note="Uniprot ID: P52594; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000387282"

<400> 6078

```
Met Ala Ala Ser Ala Lys Arg Lys Gln Glu Glu Lys His Leu Lys Met
1               5                   10                  15


Leu Arg Asp Met Thr Gly Leu Pro His Asn Arg Lys Cys Phe Asp Cys
            20                  25                  30


Asp Gln Arg Gly Pro Thr Tyr Val Asn Met Thr Val Gly Ser Phe Val
        35                  40                  45


Cys Thr Ser Cys Ser Gly Ser Leu Arg Gly Leu Asn Pro Pro His Arg
    50                  55                  60


Val Lys Ser Ile Ser Met Thr Thr Phe Thr Gln Gln Glu Ile Glu Phe
65                  70                  75                  80


Leu Gln Lys His Gly Asn Glu Val Cys Lys Gln Ile Trp Leu Gly Leu
                85                  90                  95


Phe Asp Asp Arg Ser Ser Ala Ile Pro Asp Phe Arg Asp Pro Gln Lys
            100                 105                 110


Val Lys Glu Phe Leu Gln Glu Lys Tyr Glu Lys Lys Arg Trp Tyr Val
        115                 120                 125


Pro Pro Glu Gln Ala Lys Val Val Ala Ser Val His Ala Ser Ile Ser
    130                 135                 140


Gly Ser Ser Ala Ser Ser Thr Ser Ser Thr Pro Glu Val Lys Pro Leu
145                 150                 155                 160
```

Lys Ser Leu Leu Gly Asp Ser Ala Pro Thr Leu His Leu Asn Lys Gly
165 170 175

Thr Pro Ser Gln Ser Pro Val Val Gly Arg Ser Gln Gly Gln Gln Gln
180 185 190

Glu Lys Lys Gln Phe Asp Leu Leu Ser Asp Leu Gly Ser Asp Ile Phe
195 200 205

Ala Ala Pro Ala Pro Gln Ser Thr Ala Thr Ala Asn Phe Ala Asn Phe
210 215 220

Ala His Phe Asn Ser His Ala Ala Gln Asn Ser Ala Asn Ala Asp Phe
225 230 235 240

Ala Asn Phe Asp Ala Phe Gly Gln Ser Ser Gly Ser Ser Asn Phe Gly
245 250 255

Gly Phe Pro Thr Ala Ser His Ser Pro Phe Gln Pro Gln Thr Thr Ala
260 265 270

Phe Arg Met Leu Ser Ser Ser Cys Ser Phe Gly Glu Phe Thr Ser Ala
275 280 285

Phe Pro Leu Gln Ala Thr His Ser Gly Ser Ala Ala Ser Val Asn Ala
290 295 300

Asn Phe Ala His Phe Asp Asn Phe Pro Lys Ser Ser Ser Ala Asp Phe
305 310 315 320

Gly Thr Phe Asn Thr Ser Gln Ser His Gln Thr Ala Ser Ala Val Ser
325 330 335

Lys Val Ser Thr Asn Lys Ala Gly Leu Gln Thr Ala Asp Lys Tyr Ala
340 345 350

Ala Leu Ala Asn Leu Asp Asn Ile Phe Ser Ala Gly Gln Gly Gly Asp
355 360 365

Gln Gly Ser Gly Phe Gly Thr Thr Gly Lys Ala Pro Val Gly Ser Val
370 375 380

```
Val Ser Val Pro Ser Gln Ser Ser Ala Ser Ser Asp Lys Tyr Ala Ala
385                 390                 395                 400

Leu Ala Glu Leu Asp Ser Val Phe Ser Ser Ala Ala Thr Ser Ser Asn
                405                 410                 415

Ala Tyr Thr Ser Thr Ser Asn Ala Ser Ser Asn Val Phe Gly Thr Val
            420                 425                 430

Pro Val Val Ala Ser Ala Gln Thr Gln Pro Ala Ser Ser Ser Val Pro
        435                 440                 445

Ala Pro Phe Gly Ala Thr Pro Ser Thr Asn Pro Phe Val Ala Ala Ala
    450                 455                 460

Gly Pro Ser Val Ala Ser Ser Thr Asn Pro Phe Gln Thr Asn Ala Arg
465                 470                 475                 480

Gly Ala Thr Ala Ala Thr Phe Gly Thr Ala Ser Met Ser Met Pro Thr
                485                 490                 495

Gly Phe Gly Thr Pro Ala Pro Tyr Ser Leu Pro Thr Ser Phe Ser Gly
            500                 505                 510

Ser Phe Gln Gln Pro Ala Phe Pro Ala Gln Ala Ala Phe Pro Gln Gln
        515                 520                 525

Thr Ala Phe Ser Gln Gln Pro Asn Gly Phe Ala Ala Phe Gly Gln Thr
    530                 535                 540

Lys Pro Val Val Thr Pro Phe Gly Gln Val Ala Ala Ala Gly Val Ser
545                 550                 555                 560

Ser Asn Pro Phe Met Thr Gly Ala Pro Thr Gly Gln Phe Pro Thr Gly
                565                 570                 575

Ser Ser Ser Thr Asn Pro Phe Leu
            580
```

<210> 6079
<211> 132
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1323; "

<220>
<221> source
<223> /note="Gene Symbol: AGFG1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with FG repeats 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000396469"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6079
Xaa Thr Asn Pro Phe Gln Thr Asn Ala Arg Gly Ala Thr Gly Leu Ser
1 5 10 15

Gly Ala Met His Ser Gln Val Phe Pro His Ala His Phe Ala Ala Thr
20 25 30

Phe Gly Thr Ala Ser Met Ser Met Pro Thr Gly Phe Gly Thr Pro Ala
35 40 45

Pro Tyr Ser Leu Pro Thr Ser Phe Ser Gly Ser Phe Gln Gln Pro Ala
50 55 60

Phe Pro Ala Gln Ala Ala Phe Pro Gln Gln Thr Ala Phe Ser Gln Gln
65 70 75 80

Pro Asn Gly Ala Gly Phe Ala Ala Phe Gly Gln Thr Lys Pro Val Val
85 90 95

Thr Pro Phe Gly Gln Val Ala Ala Ala Gly Val Ser Ser Asn Pro Phe
100 105 110

Met Thr Gly Ala Pro Thr Gly Gln Phe Pro Thr Gly Ser Ser Ser Thr
115 120 125

Asn Pro Phe Leu

130

<210> 6080
<211> 237
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1323; "

<220>
<221> source
<223> /note="Gene Symbol: AGFG1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with FG repeats 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000405429"

<400> 6080
Met Leu Cys Phe Lys Arg Arg His Lys Val Cys Lys Gln Ile Trp Leu
1 5 10 15

Gly Leu Phe Asp Asp Arg Ser Ser Ala Ile Pro Asp Phe Arg Asp Pro
20 25 30

Gln Lys Val Lys Glu Phe Leu Gln Glu Lys Tyr Glu Lys Lys Arg Trp
35 40 45

Tyr Val Pro Pro Glu Gln Ala Lys Val Val Ala Ser Val His Ala Ser
50 55 60

Ile Ser Gly Ser Ser Ala Ser Ser Thr Ser Ser Thr Pro Glu Val Lys
65 70 75 80

Pro Leu Lys Ser Leu Leu Gly Asp Ser Ala Pro Thr Leu His Leu Asn
85 90 95

Lys Gly Thr Pro Ser Gln Ser Pro Val Val Gly Arg Ser Gln Gly Gln
100 105 110

Gln Gln Glu Lys Lys Gln Phe Asp Leu Leu Ser Asp Leu Gly Ser Asp
115 120 125

```
Ile Phe Ala Ala Pro Ala Pro Gln Ser Thr Ala Thr Ala Asn Phe Ala
    130                 135                 140

Asn Phe Ala His Phe Asn Ser His Ala Ala Gln Asn Ser Ala Asn Ala
145                 150                 155                 160

Asp Phe Ala Asn Phe Asp Ala Phe Gly Gln Ser Ser Gly Ser Ser Asn
                165                 170                 175

Phe Gly Gly Phe Pro Thr Ala Ser His Ser Pro Phe Gln Pro Gln Thr
            180                 185                 190

Thr Gly Gly Ser Ala Ala Ser Val Asn Ala Asn Phe Ala His Phe Asp
        195                 200                 205

Asn Phe Pro Lys Ser Ser Ser Ala Asp Phe Gly Thr Phe Asn Thr Ser
    210                 215                 220

Gln Ser His Gln Thr Ala Ser Ala Val Ser Lys Val Ser
225                 230                 235


<210> 6081
<211> 481
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1324; "

<220>
<221> source
<223> /note="Gene Symbol: AGFG2; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with FG repeats 2; "

<220>
<221> source
<223> /note="Uniprot ID:  O95081; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000300176"


<400> 6081
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```
Met Val Met Ala Ala Lys Lys Gly Pro Gly Pro Gly Gly Gly Val Ser
1               5                  10                  15

Gly Gly Lys Ala Glu Ala Glu Ala Ala Ser Glu Val Trp Cys Arg Arg
            20                  25                  30

Val Arg Glu Leu Gly Gly Cys Ser Gln Ala Gly Asn Arg His Cys Phe
        35                  40                  45

Glu Cys Ala Gln Arg Gly Val Thr Tyr Val Asp Ile Thr Val Gly Ser
    50                  55                  60

Phe Val Cys Thr Thr Cys Ser Gly Leu Leu Arg Gly Leu Asn Pro Pro
65                  70                  75                  80

His Arg Val Lys Ser Ile Ser Met Thr Thr Phe Thr Glu Pro Glu Val
                85                  90                  95

Val Phe Leu Gln Ser Arg Gly Asn Glu Val Cys Arg Lys Ile Trp Leu
            100                 105                 110

Gly Leu Phe Asp Ala Arg Thr Ser Leu Val Pro Asp Ser Arg Asp Pro
        115                 120                 125

Gln Lys Val Lys Glu Phe Leu Gln Glu Lys Tyr Glu Lys Lys Arg Trp
    130                 135                 140

Tyr Val Pro Pro Asp Gln Val Lys Gly Pro Thr Tyr Thr Lys Gly Ser
145                 150                 155                 160

Ala Ser Thr Pro Val Gln Gly Ser Ile Pro Glu Gly Lys Pro Leu Arg
                165                 170                 175

Thr Leu Leu Gly Asp Pro Ala Pro Ser Leu Ser Val Ala Ala Ser Thr
            180                 185                 190

Ser Ser Gln Pro Val Ser Gln Ser His Ala Arg Thr Ser Gln Ala Arg
        195                 200                 205

Ser Thr Gln Pro Pro Pro His Ser Ser Val Lys Lys Ala Ser Thr Asp
    210                 215                 220

Leu Leu Ala Asp Ile Gly Gly Asp Pro Phe Ala Ala Pro Gln Met Ala
```

225 230 235 240

Pro Ala Phe Ala Ala Phe Pro Ala Phe Gly Gly Gln Thr Pro Ser Gln
245 250 255

Gly Gly Phe Ala Asn Phe Asp Ala Phe Ser Ser Gly Pro Ser Ser Ser
260 265 270

Val Phe Gly Ser Leu Pro Pro Ala Gly Gln Ala Ser Phe Gln Ala Gln
275 280 285

Pro Thr Pro Ala Gly Ser Ser Gln Gly Thr Pro Phe Gly Ala Thr Pro
290 295 300

Leu Ala Pro Ala Ser Gln Pro Asn Ser Leu Ala Asp Val Gly Ser Phe
305 310 315 320

Leu Gly Pro Gly Val Pro Ala Ala Gly Val Pro Ser Ser Leu Phe Gly
325 330 335

Met Ala Gly Gln Val Pro Pro Leu Gln Ser Val Thr Met Gly Gly Gly
340 345 350

Gly Gly Ser Ser Thr Gly Leu Ala Phe Gly Ala Phe Thr Asn Pro Phe
355 360 365

Thr Ala Pro Ala Ala Gln Ser Pro Leu Pro Ser Thr Asn Pro Phe Gln
370 375 380

Pro Asn Gly Leu Ala Pro Gly Pro Gly Phe Gly Met Ser Ser Ala Gly
385 390 395 400

Pro Gly Phe Pro Gln Ala Val Pro Pro Thr Gly Ala Phe Ala Ser Ser
405 410 415

Phe Pro Ala Pro Leu Phe Pro Pro Gln Thr Pro Leu Val Gln Gln Gln
420 425 430

Asn Gly Ser Ser Phe Gly Asp Leu Gly Ser Ala Lys Leu Gly Gln Arg
435 440 445

Pro Leu Ser Gln Pro Ala Gly Ile Ser Thr Asn Pro Phe Met Thr Gly
450 455 460

```
Pro Ser Ser Ser Pro Phe Ala Ser Lys Pro Pro Thr Thr Asn Pro Phe
465                 470                 475                 480


Leu



<210> 6082
<211> 223
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1324; "

<220>
<221> source
<223> /note="Gene Symbol: AGFG2; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with FG repeats 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000388594"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6082
Xaa Ser Ser Val Phe Gly Ser Leu Pro Pro Ala Gly Gln Ala Ser Phe
1               5                   10                  15


Gln Ala Gln Pro Thr Pro Ala Ala Ser Arg Met Leu Thr Glu Ser Tyr
            20                  25                  30


Ser Phe Gly Ser Ser Gln Gly Thr Pro Phe Gly Ala Thr Pro Leu Ala
        35                  40                  45


Pro Ala Ser Gln Pro Asn Ser Leu Ala Asp Val Gly Ser Phe Leu Gly
    50                  55                  60


Pro Gly Val Pro Ala Ala Gly Val Pro Ser Ser Leu Phe Gly Met Ala
65                  70                  75                  80
```

```
Gly Gln Val Pro Pro Leu Gln Ser Val Thr Met Gly Gly Gly Gly Gly
                85                  90                  95

Ser Ser Thr Gly Leu Ala Phe Gly Ala Phe Thr Asn Pro Phe Thr Ala
            100                 105                 110

Pro Ala Ala Gln Ser Pro Leu Pro Ser Thr Asn Pro Phe Gln Pro Asn
        115                 120                 125

Gly Leu Ala Pro Gly Pro Gly Phe Gly Met Ser Ser Ala Gly Pro Gly
    130                 135                 140

Phe Pro Gln Ala Val Pro Pro Thr Gly Ala Phe Ala Ser Ser Phe Pro
145                 150                 155                 160

Ala Pro Leu Phe Pro Pro Gln Thr Pro Leu Val Gln Gln Gln Asn Gly
                165                 170                 175

Ser Ser Phe Gly Asp Leu Gly Ser Ala Lys Leu Gly Gln Arg Pro Leu
            180                 185                 190

Ser Gln Pro Ala Gly Ile Ser Thr Asn Pro Phe Met Thr Gly Pro Ser
        195                 200                 205

Ser Ser Pro Phe Ala Ser Lys Pro Pro Thr Thr Asn Pro Phe Leu
    210                 215                 220


<210> 6083
<211> 155
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1324; "

<220>
<221> source
<223> /note="Gene Symbol: AGFG2; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with FG repeats 2; "

<220>
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<221> source
<223> /note="ENSP ID: ENSP00000394453"

<400> 6083
Met Val Met Ala Ala Lys Lys Gly Pro Gly Pro Gly Gly Gly Val Ser
1   5   10   15

Gly Gly Lys Ala Glu Ala Glu Ala Ala Ser Glu Val Trp Cys Arg Arg
            20   25   30

Val Arg Glu Leu Gly Gly Cys Ser Gln Ala Gly Asn Arg His Cys Phe
        35   40   45

Glu Cys Ala Gln Arg Gly Val Thr Tyr Val Asp Ile Thr Val Gly Ser
    50   55   60

Phe Val Cys Thr Thr Cys Ser Gly Leu Leu Arg Gly Leu Asn Pro Pro
65   70   75   80

His Arg Val Lys Ser Ile Ser Met Thr Thr Phe Thr Glu Pro Glu Val
                85   90   95

Val Phe Leu Gln Ser Arg Gly Asn Glu Val Cys Arg Lys Ile Trp Leu
            100   105   110

Gly Leu Phe Asp Ala Arg Thr Ser Leu Val Pro Asp Ser Arg Asp Pro
        115   120   125

Gln Lys Val Lys Glu Phe Leu Gln Glu Lys Tyr Glu Lys Lys Arg Trp
    130   135   140

Pro Asp Thr Phe Pro Arg Arg Leu Cys Gln Leu
145   150   155

<210> 6084
<211> 857
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1325; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with GTPase domain, ankyrin repeat and PH domain
1; "

<220>
<221> source
<223> /note="Uniprot ID: Q9UPQ3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000307634"

<400> 6084
Met Asn Tyr Gln Gln Gln Leu Ala Asn Ser Ala Ala Ile Arg Ala Glu
1 5 10 15

Ile Gln Arg Phe Glu Ser Val His Pro Asn Ile Tyr Ser Ile Tyr Glu
20 25 30

Leu Leu Glu Arg Val Glu Glu Pro Val Leu Gln Asn Gln Ile Arg Glu
35 40 45

His Val Ile Ala Ile Glu Asp Ala Phe Val Asn Ser Gln Glu Trp Thr
50 55 60

Leu Ser Arg Ser Val Pro Glu Leu Lys Val Gly Ile Val Gly Asn Leu
65 70 75 80

Ala Ser Gly Lys Ser Ala Leu Val His Arg Tyr Leu Thr Gly Thr Tyr
85 90 95

Val Gln Glu Glu Ser Pro Glu Gly Gly Arg Phe Lys Lys Glu Ile Val
100 105 110

Val Asp Gly Gln Ser Tyr Leu Leu Leu Ile Arg Asp Glu Gly Gly Pro
115 120 125

Pro Glu Ala Gln Phe Ala Met Trp Val Asp Ala Val Ile Phe Val Phe
130 135 140

Ser Leu Glu Asp Glu Ile Ser Phe Gln Thr Val Tyr His Tyr Tyr Ser
145 150 155 160

Arg Met Ala Asn Tyr Arg Asn Thr Ser Glu Ile Pro Leu Val Leu Val
165 170 175

```
Gly Thr Gln Asp Ala Ile Ser Ser Ala Asn Pro Arg Val Ile Asp Asp
            180                 185                 190

Ala Arg Ala Arg Lys Leu Ser Asn Asp Leu Lys Arg Cys Thr Tyr Tyr
        195                 200                 205

Glu Thr Cys Ala Thr Tyr Gly Leu Asn Val Glu Arg Val Phe Gln Asp
    210                 215                 220

Val Ala Gln Lys Ile Val Ala Thr Arg Lys Lys Gln Gln Leu Ser Ile
225                 230                 235                 240

Gly Pro Cys Lys Ser Leu Pro Asn Ser Pro Ser His Ser Ser Val Cys
                245                 250                 255

Ser Ala Gln Val Ser Ala Val His Ile Ser Gln Thr Ser Asn Gly Gly
            260                 265                 270

Gly Ser Leu Ser Asp Tyr Ser Ser Ser Val Pro Ser Thr Pro Ser Thr
        275                 280                 285

Ser Gln Lys Glu Leu Arg Ile Asp Val Pro Pro Thr Ala Asn Thr Pro
    290                 295                 300

Thr Pro Val Arg Lys Gln Ser Lys Arg Arg Ser Asn Leu Phe Thr Ser
305                 310                 315                 320

Arg Lys Gly Ser Asp Pro Asp Lys Glu Lys Lys Gly Leu Glu Ser Arg
                325                 330                 335

Ala Asp Ser Ile Gly Ser Gly Arg Ala Ile Pro Ile Lys Gln Gly Met
            340                 345                 350

Leu Leu Lys Arg Ser Gly Lys Ser Leu Asn Lys Glu Trp Lys Lys Lys
        355                 360                 365

Tyr Val Thr Leu Cys Asp Asn Gly Val Leu Thr Tyr His Pro Ser Leu
    370                 375                 380

His Asp Tyr Met Gln Asn Val His Gly Lys Glu Ile Asp Leu Leu Arg
385                 390                 395                 400
```

Thr Thr Val Lys Val Pro Gly Lys Arg Pro Pro Arg Ala Thr Ser Ala
405 410 415

Cys Ala Pro Ile Ser Ser Pro Lys Thr Asn Gly Leu Ser Lys Asp Met
420 425 430

Ser Ser Leu His Ile Ser Pro Asn Ser Gly Asn Val Thr Ser Ala Ser
435 440 445

Gly Ser Gln Met Ala Ser Gly Ile Ser Leu Val Ser Phe Asn Ser Arg
450 455 460

Pro Asp Gly Met His Gln Arg Ser Tyr Ser Val Ser Ser Ala Asp Gln
465 470 475 480

Trp Ser Glu Ala Thr Val Ile Ala Asn Ser Ala Ile Ser Ser Asp Thr
485 490 495

Gly Leu Gly Asp Ser Val Cys Ser Ser Pro Ser Ile Ser Ser Thr Thr
500 505 510

Ser Pro Lys Leu Asp Pro Pro Pro Ser Pro His Ala Asn Arg Lys Lys
515 520 525

His Arg Arg Lys Lys Ser Thr Ser Asn Phe Lys Ala Asp Gly Leu Ser
530 535 540

Gly Thr Ala Glu Glu Gln Glu Glu Asn Phe Glu Phe Ile Ile Val Ser
545 550 555 560

Leu Thr Gly Gln Thr Trp His Phe Glu Ala Thr Thr Tyr Glu Glu Arg
565 570 575

Asp Ala Trp Val Gln Ala Ile Glu Ser Gln Ile Leu Ala Ser Leu Gln
580 585 590

Ser Cys Glu Ser Ser Lys Asn Lys Ser Arg Leu Thr Ser Gln Ser Glu
595 600 605

Ala Met Ala Leu Gln Ser Ile Arg Asn Met Arg Gly Asn Ser His Cys
610 615 620

```
Val Asp Cys Glu Thr Gln Asn Pro Asn Trp Ala Ser Leu Asn Leu Gly
625                 630                 635                 640

Ala Leu Met Cys Ile Glu Cys Ser Gly Ile His Arg Asn Leu Gly Thr
                645                 650                 655

His Leu Ser Arg Val Arg Ser Leu Asp Leu Asp Asp Trp Pro Val Glu
            660                 665                 670

Leu Ile Lys Val Met Ser Ser Ile Gly Asn Glu Leu Ala Asn Ser Val
        675                 680                 685

Trp Glu Glu Ser Ser Gln Gly Arg Thr Lys Pro Ser Val Asp Ser Thr
    690                 695                 700

Arg Glu Glu Lys Glu Arg Trp Ile Arg Ala Lys Tyr Glu Gln Lys Leu
705                 710                 715                 720

Phe Leu Ala Pro Leu Pro Cys Thr Glu Leu Ser Leu Gly Gln His Leu
                725                 730                 735

Leu Arg Ala Thr Ala Asp Glu Asp Leu Arg Thr Ala Ile Leu Leu Leu
            740                 745                 750

Ala His Gly Ser Arg Asp Glu Val Asn Glu Thr Cys Gly Glu Gly Asp
        755                 760                 765

Gly Arg Thr Ala Leu His Leu Ala Cys Arg Lys Gly Asn Val Val Leu
    770                 775                 780

Ala Gln Leu Leu Ile Trp Tyr Gly Val Asp Val Thr Ala Arg Asp Ala
785                 790                 795                 800

His Gly Asn Thr Ala Leu Ala Tyr Ala Arg Gln Ala Ser Ser Gln Glu
                805                 810                 815

Cys Ile Asp Val Leu Leu Gln Tyr Gly Cys Pro Asp Glu Arg Phe Val
            820                 825                 830

Leu Met Ala Thr Pro Asn Leu Ser Arg Arg Asn Asn Asn Arg Asn Asn
        835                 840                 845

Ser Ser Gly Arg Val Pro Thr Ile Ile
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850 855

<210> 6085
<211> 804
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1325; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with GTPase domain, ankyrin repeat and PH domain
1; "

<220>
<221> source
<223> /note="Uniprot ID: Q9UPQ3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000338378"

<400> 6085
Met Asn Tyr Gln Gln Gln Leu Ala Asn Ser Ala Ala Ile Arg Ala Glu
1 5 10 15

Ile Gln Arg Phe Glu Ser Val His Pro Asn Ile Tyr Ser Ile Tyr Glu
20 25 30

Leu Leu Glu Arg Val Glu Glu Pro Val Leu Gln Asn Gln Ile Arg Glu
35 40 45

His Val Ile Ala Ile Glu Asp Ala Phe Val Asn Ser Gln Glu Trp Thr
50 55 60

Leu Ser Arg Ser Val Pro Glu Leu Lys Val Gly Ile Val Gly Asn Leu
65 70 75 80

Ala Ser Gly Lys Ser Ala Leu Val His Arg Tyr Leu Thr Gly Thr Tyr
85 90 95

Val Gln Glu Glu Ser Pro Glu Gly Gly Arg Phe Lys Lys Glu Ile Val
100 105 110

```
Val Asp Gly Gln Ser Tyr Leu Leu Leu Ile Arg Asp Glu Gly Gly Pro
        115                 120                 125

Pro Glu Ala Gln Phe Ala Met Trp Val Asp Ala Val Ile Phe Val Phe
    130                 135                 140

Ser Leu Glu Asp Glu Ile Ser Phe Gln Thr Val Tyr His Tyr Tyr Ser
145                 150                 155                 160

Arg Met Ala Asn Tyr Arg Asn Thr Ser Glu Ile Pro Leu Val Leu Val
                165                 170                 175

Gly Thr Gln Asp Ala Ile Ser Ser Ala Asn Pro Arg Val Ile Asp Asp
            180                 185                 190

Ala Arg Ala Arg Lys Leu Ser Asn Asp Leu Lys Arg Cys Thr Tyr Tyr
        195                 200                 205

Glu Thr Cys Ala Thr Tyr Gly Leu Asn Val Glu Arg Val Phe Gln Asp
    210                 215                 220

Val Ala Gln Lys Ile Val Ala Thr Arg Lys Lys Gln Gln Leu Ser Ile
225                 230                 235                 240

Gly Pro Cys Lys Ser Leu Pro Asn Ser Pro Ser His Ser Ser Val Cys
                245                 250                 255

Ser Ala Gln Val Ser Ala Val His Ile Ser Gln Thr Ser Asn Gly Gly
            260                 265                 270

Gly Ser Leu Ser Asp Tyr Ser Ser Ser Val Pro Ser Thr Pro Ser Thr
        275                 280                 285

Ser Gln Lys Glu Leu Arg Ile Asp Val Pro Pro Thr Ala Asn Thr Pro
    290                 295                 300

Thr Pro Val Arg Lys Gln Ser Lys Arg Arg Ser Asn Leu Phe Thr Ser
305                 310                 315                 320

Arg Lys Gly Ser Asp Pro Asp Lys Glu Lys Lys Gly Leu Glu Ser Arg
                325                 330                 335
```

```
Ala Asp Ser Ile Gly Ser Gly Arg Ala Ile Pro Ile Lys Gln Gly Met
            340                 345                 350

Leu Leu Lys Arg Ser Gly Lys Ser Leu Asn Lys Glu Trp Lys Lys Lys
        355                 360                 365

Tyr Val Thr Leu Cys Asp Asn Gly Val Leu Thr Tyr His Pro Ser Leu
    370                 375                 380

His Asp Tyr Met Gln Asn Val His Gly Lys Glu Ile Asp Leu Leu Arg
385                 390                 395                 400

Thr Thr Val Lys Val Pro Gly Lys Arg Pro Pro Arg Ala Thr Ser Ala
                405                 410                 415

Cys Ala Pro Ile Ser Ser Pro Lys Thr Asn Gly Leu Ser Lys Asp Met
            420                 425                 430

Ser Ser Leu His Ile Ser Pro Asn Ser Asp Thr Gly Leu Gly Asp Ser
        435                 440                 445

Val Cys Ser Ser Pro Ser Ile Ser Ser Thr Thr Ser Pro Lys Leu Asp
    450                 455                 460

Pro Pro Pro Ser Pro His Ala Asn Arg Lys Lys His Arg Arg Lys Lys
465                 470                 475                 480

Ser Thr Ser Asn Phe Lys Ala Asp Gly Leu Ser Gly Thr Ala Glu Glu
                485                 490                 495

Gln Glu Glu Asn Phe Glu Phe Ile Ile Val Ser Leu Thr Gly Gln Thr
            500                 505                 510

Trp His Phe Glu Ala Thr Thr Tyr Glu Glu Arg Asp Ala Trp Val Gln
        515                 520                 525

Ala Ile Glu Ser Gln Ile Leu Ala Ser Leu Gln Ser Cys Glu Ser Ser
    530                 535                 540

Lys Asn Lys Ser Arg Leu Thr Ser Gln Ser Glu Ala Met Ala Leu Gln
545                 550                 555                 560
```

```
Ser Ile Arg Asn Met Arg Gly Asn Ser His Cys Val Asp Cys Glu Thr
                565                 570                 575

Gln Asn Pro Asn Trp Ala Ser Leu Asn Leu Gly Ala Leu Met Cys Ile
            580                 585                 590

Glu Cys Ser Gly Ile His Arg Asn Leu Gly Thr His Leu Ser Arg Val
        595                 600                 605

Arg Ser Leu Asp Leu Asp Asp Trp Pro Val Glu Leu Ile Lys Val Met
    610                 615                 620

Ser Ser Ile Gly Asn Glu Leu Ala Asn Ser Val Trp Glu Glu Ser Ser
625                 630                 635                 640

Gln Gly Arg Thr Lys Pro Ser Val Asp Ser Thr Arg Glu Glu Lys Glu
                645                 650                 655

Arg Trp Ile Arg Ala Lys Tyr Glu Gln Lys Leu Phe Leu Ala Pro Leu
            660                 665                 670

Pro Cys Thr Glu Leu Ser Leu Gly Gln His Leu Leu Arg Ala Thr Ala
        675                 680                 685

Asp Glu Asp Leu Arg Thr Ala Ile Leu Leu Leu Ala His Gly Ser Arg
    690                 695                 700

Asp Glu Val Asn Glu Thr Cys Gly Glu Gly Asp Gly Arg Thr Ala Leu
705                 710                 715                 720

His Leu Ala Cys Arg Lys Gly Asn Val Val Leu Ala Gln Leu Leu Ile
                725                 730                 735

Trp Tyr Gly Val Asp Val Thr Ala Arg Asp Ala His Gly Asn Thr Ala
            740                 745                 750

Leu Ala Tyr Ala Arg Gln Ala Ser Ser Gln Glu Cys Ile Asp Val Leu
        755                 760                 765

Leu Gln Tyr Gly Cys Pro Asp Glu Arg Phe Val Leu Met Ala Thr Pro
    770                 775                 780

Asn Leu Ser Arg Arg Asn Asn Asn Arg Asn Asn Ser Ser Gly Arg Val
```

785 790 795 800

Pro Thr Ile Ile

<210> 6086
<211> 117
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1325; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with GTPase domain, ankyrin repeat and PH domain
1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000385492"

<400> 6086
Met Asp Ala Phe Val Asn Ser Gln Glu Trp Thr Leu Ser Arg Ser Val
1 5 10 15

Pro Glu Leu Lys Val Gly Ile Val Gly Asn Leu Ala Ser Gly Lys Ser
20 25 30

Ala Leu Val His Arg Tyr Leu Thr Gly Thr Tyr Val Gln Glu Glu Ser
35 40 45

Pro Glu Gly Gly Arg Phe Lys Lys Glu Ile Val Val Asp Gly Gln Ser
50 55 60

Tyr Leu Leu Leu Ile Arg Asp Glu Gly Gly Pro Pro Glu Ala Gln Phe
65 70 75 80

Ala Met Trp Val Asp Ala Val Ile Phe Val Phe Ser Leu Glu Asp Glu
85 90 95

Ile Ser Phe Gln Thr Val Tyr His Tyr Tyr Ser Arg Met Ala Asn Tyr
100 105 110

Arg Asn Thr Ser Glu
115

<210> 6087
<211> 1069
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1325; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with GTPase domain, ankyrin repeat and PH domain
1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000386897"

<400> 6087
Met Tyr Leu Leu Asp Gly Ser Gly Glu Pro Ala Ser Pro Pro Ala Asp
1 5 10 15

Ala Met Pro Arg Gly Thr Pro Pro Arg Lys Thr Val Tyr Arg Ile Ser
20 25 30

Val Thr Met Val Arg Lys Glu Gln Leu Ala Ala Pro Gly Ser Gly Gly
35 40 45

Pro Asp Pro Arg Pro Val Arg Arg Pro Arg Pro Ala Arg Ser Pro Asp
50 55 60

Ala Pro Gly Arg Leu Glu Glu Glu Ala Glu Glu Ala Glu Gly Ala Glu
65 70 75 80

Glu Pro Glu Gly Pro Arg Pro Arg Ala Trp Asp Phe Arg Thr Phe Arg
85 90 95

Thr Arg Ser Thr Gly Gln Leu Glu Leu Gly Arg Leu Arg Pro Cys Ala
100 105 110

```
Arg Gly Leu Glu Pro Ala Asp Leu Ala Gly Ser Ala Pro Ala Glu Glu
        115                 120                 125

Glu Gly Arg Gly Ser Pro Ala Ser Gly Ser Pro Asp Val Glu Gly Ala
    130                 135                 140

Arg Ala Ala Pro Leu Arg Arg Ser Leu Ser Phe Arg His Trp Ser Gly
145                 150                 155                 160

Pro Glu Ala Pro Gln Gly Arg Thr Leu Gly Gly Gly Arg Arg His Ser
                165                 170                 175

Ser Ser Gly Ser Leu Ala Trp Ala Pro Cys Asp Glu Ala Ala Ala Gly
            180                 185                 190

Thr Thr Leu Glu Pro Ala Thr Ala Thr Gln Pro Ala Ser Glu Lys Arg
        195                 200                 205

Asn Thr Leu Asp Val Gly Glu Val Leu Ser Lys Asn Asp Ala Leu Ser
    210                 215                 220

Asp Leu Glu Arg Trp Glu Arg Ser Lys Ser Lys Asn Arg Thr Leu Asp
225                 230                 235                 240

Asn Ser Asp Leu Gln Arg Leu Glu Arg Ala Arg Ala Ala Ala Gly Ala
                245                 250                 255

Gly Ala Ala Ser Glu His Arg Leu Leu Arg Phe Phe Ser Gly Ile Phe
            260                 265                 270

Ala Arg Arg Asp Gly Gly Pro Gly Gly Gly Pro Ser Pro Arg Ser Gly
        275                 280                 285

Ala Ser Arg Pro Arg Gly Tyr Phe Ser Leu Arg Arg Ala Pro Ala Glu
    290                 295                 300

Ala His Ser Ser Ser Ala Glu Ser Ile Asp Gly Ser Pro Arg Arg Asp
305                 310                 315                 320

Ala Phe Val Asn Ser Gln Glu Trp Thr Leu Ser Arg Ser Val Pro Glu
                325                 330                 335
```

```
Leu Lys Val Gly Ile Val Gly Asn Leu Ala Ser Gly Lys Ser Ala Leu
            340                 345                 350

Val His Arg Tyr Leu Thr Gly Thr Tyr Val Gln Glu Glu Ser Pro Glu
        355                 360                 365

Gly Gly Arg Phe Lys Lys Glu Ile Val Val Asp Gly Gln Ser Tyr Leu
    370                 375                 380

Leu Leu Ile Arg Asp Glu Gly Gly Pro Pro Glu Ala Gln Phe Ala Met
385                 390                 395                 400

Trp Val Asp Ala Val Ile Phe Val Phe Ser Leu Glu Asp Glu Ile Ser
                405                 410                 415

Phe Gln Thr Val Tyr His Tyr Tyr Ser Arg Met Ala Asn Tyr Arg Asn
            420                 425                 430

Thr Ser Glu Ile Pro Leu Val Leu Val Gly Thr Gln Asp Ala Ile Ser
        435                 440                 445

Ser Ala Asn Pro Arg Val Ile Asp Asp Ala Arg Ala Arg Lys Leu Ser
    450                 455                 460

Asn Asp Leu Lys Arg Cys Thr Tyr Tyr Glu Thr Cys Ala Thr Tyr Gly
465                 470                 475                 480

Leu Asn Val Glu Arg Val Phe Gln Asp Val Ala Gln Lys Ile Val Ala
                485                 490                 495

Thr Arg Lys Lys Gln Gln Leu Ser Ile Gly Pro Cys Lys Ser Leu Pro
            500                 505                 510

Asn Ser Pro Ser His Ser Ser Val Cys Ser Ala Gln Val Ser Ala Val
        515                 520                 525

His Ile Ser Gln Thr Ser Asn Gly Gly Gly Ser Leu Ser Asp Tyr Ser
    530                 535                 540

Ser Ser Val Pro Ser Thr Pro Ser Thr Ser Gln Lys Glu Leu Arg Ile
545                 550                 555                 560

Asp Val Pro Pro Thr Ala Asn Thr Pro Thr Pro Val Arg Lys Gln Ser
```

565 570 575

Lys Arg Arg Ser Asn Leu Phe Thr Ser Arg Lys Gly Ser Asp Pro Asp
580 585 590

Lys Glu Lys Lys Gly Leu Glu Ser Arg Ala Asp Ser Ile Gly Ser Gly
595 600 605

Arg Ala Ile Pro Ile Lys Gln Gly Met Leu Leu Lys Arg Ser Gly Lys
610 615 620

Ser Leu Asn Lys Glu Trp Lys Lys Lys Tyr Val Thr Leu Cys Asp Asn
625 630 635 640

Gly Val Leu Thr Tyr His Pro Ser Leu His Asp Tyr Met Gln Asn Val
645 650 655

His Gly Lys Glu Ile Asp Leu Leu Arg Thr Thr Val Lys Val Pro Gly
660 665 670

Lys Arg Pro Pro Arg Ala Thr Ser Ala Cys Ala Pro Ile Ser Ser Pro
675 680 685

Lys Thr Asn Gly Leu Ser Lys Asp Met Ser Ser Leu His Ile Ser Pro
690 695 700

Asn Ser Asp Thr Gly Leu Gly Asp Ser Val Cys Ser Ser Pro Ser Ile
705 710 715 720

Ser Ser Thr Thr Ser Pro Lys Leu Asp Pro Pro Pro Ser Pro His Ala
725 730 735

Asn Arg Lys Lys His Arg Arg Lys Lys Ser Thr Ser Asn Phe Lys Ala
740 745 750

Asp Gly Leu Ser Gly Thr Ala Glu Glu Gln Glu Glu Asn Phe Glu Phe
755 760 765

Ile Ile Val Ser Leu Thr Gly Gln Thr Trp His Phe Glu Ala Thr Thr
770 775 780

Tyr Glu Glu Arg Asp Ala Trp Val Gln Ala Ile Glu Ser Gln Ile Leu
785 790 795 800

```
Ala Ser Leu Gln Ser Cys Glu Ser Ser Lys Asn Lys Ser Arg Leu Thr
                805                 810                 815

Ser Gln Ser Glu Ala Met Ala Leu Gln Ser Ile Arg Asn Met Arg Gly
            820                 825                 830

Asn Ser His Cys Val Asp Cys Glu Thr Gln Asn Pro Asn Trp Ala Ser
        835                 840                 845

Leu Asn Leu Gly Ala Leu Met Cys Ile Glu Cys Ser Gly Ile His Arg
    850                 855                 860

Asn Leu Gly Thr His Leu Ser Arg Val Arg Ser Leu Asp Leu Asp Asp
865                 870                 875                 880

Trp Pro Val Glu Leu Ile Lys Val Met Ser Ser Ile Gly Asn Glu Leu
                885                 890                 895

Ala Asn Ser Val Trp Glu Glu Ser Ser Gln Gly Arg Thr Lys Pro Ser
            900                 905                 910

Val Asp Ser Thr Arg Glu Glu Lys Glu Arg Trp Ile Arg Ala Lys Tyr
        915                 920                 925

Glu Gln Lys Leu Phe Leu Ala Pro Leu Pro Cys Thr Glu Leu Ser Leu
    930                 935                 940

Gly Gln His Leu Leu Arg Ala Thr Ala Asp Glu Asp Leu Arg Thr Ala
945                 950                 955                 960

Ile Leu Leu Leu Ala His Gly Ser Arg Asp Glu Val Asn Glu Thr Cys
                965                 970                 975

Gly Glu Gly Asp Gly Arg Thr Ala Leu His Leu Ala Cys Arg Lys Gly
            980                 985                 990

Asn Val Val Leu Ala Gln Leu Leu  Ile Trp Tyr Gly Val  Asp Val
Thr
        995                 1000                1005

Ala Arg  Asp Ala His Gly Asn  Thr Ala Leu Ala Tyr  Ala Arg Gln
    1010                1015                1020
```

```
Ala Ser  Ser Gln Glu Cys Ile  Asp Val Leu Leu Gln  Tyr Gly Cys
    1025                1030                1035


Pro Asp  Glu Arg Phe Val Leu  Met Ala Thr Pro Asn  Leu Ser Arg
    1040                1045                1050


Arg Asn  Asn Asn Arg Asn Asn  Ser Ser Gly Arg Val  Pro Thr Ile
    1055                1060                1065


Ile
```

<210> 6088
<211> 405
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1325; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with GTPase domain, ankyrin repeat and PH domain
1; "

<220>
<221> source
<223> /note="Uniprot ID: Q9UPQ3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000387174"

<400> 6088

```
Met Asn Tyr Gln Gln Gln Leu Ala Asn Ser Ala Ala Ile Arg Ala Glu
1               5                  10                  15


Ile Gln Arg Phe Glu Ser Val His Pro Asn Ile Tyr Ser Ile Tyr Glu
            20                  25                  30


Leu Leu Glu Arg Val Glu Glu Pro Val Leu Gln Asn Gln Ile Arg Glu
        35                  40                  45
```

```
His Val Ile Ala Ile Glu Asp Ala Phe Val Asn Ser Gln Glu Trp Thr
    50                  55                  60

Leu Ser Arg Ser Val Pro Glu Leu Lys Val Gly Ile Val Gly Asn Leu
65                  70                  75                  80

Ala Ser Gly Lys Ser Ala Leu Val His Arg Tyr Leu Thr Gly Thr Tyr
                85                  90                  95

Val Gln Glu Glu Ser Pro Glu Gly Gly Arg Phe Lys Lys Glu Ile Val
            100                 105                 110

Val Asp Gly Gln Ser Tyr Leu Leu Leu Ile Arg Asp Glu Gly Gly Pro
        115                 120                 125

Pro Glu Ala Gln Phe Ala Met Trp Val Asp Ala Val Ile Phe Val Phe
    130                 135                 140

Ser Leu Glu Asp Glu Ile Ser Phe Gln Thr Val Tyr His Tyr Tyr Ser
145                 150                 155                 160

Arg Met Ala Asn Tyr Arg Asn Thr Ser Glu Ile Pro Leu Val Leu Val
                165                 170                 175

Gly Thr Gln Asp Ala Ile Ser Ser Ala Asn Pro Arg Val Ile Asp Asp
            180                 185                 190

Ala Arg Ala Arg Lys Leu Ser Asn Asp Leu Lys Arg Cys Thr Tyr Tyr
        195                 200                 205

Glu Thr Cys Ala Thr Tyr Gly Leu Asn Val Glu Arg Val Phe Gln Asp
    210                 215                 220

Val Ala Gln Lys Ile Val Ala Thr Arg Lys Lys Gln Gln Leu Ser Ile
225                 230                 235                 240

Gly Pro Cys Lys Ser Leu Pro Asn Ser Pro Ser His Ser Ser Val Cys
                245                 250                 255

Ser Ala Gln Val Ser Ala Val His Ile Ser Gln Thr Ser Asn Gly Gly
            260                 265                 270
```

```
Gly Ser Leu Ser Asp Tyr Ser Ser Ser Val Pro Ser Thr Pro Ser Thr
        275                 280                 285

Ser Gln Lys Glu Leu Arg Ile Asp Val Pro Pro Thr Ala Asn Thr Pro
    290                 295                 300

Thr Pro Val Arg Lys Gln Ser Lys Arg Arg Ser Asn Leu Phe Thr Ser
305                 310                 315                 320

Arg Lys Gly Ser Asp Pro Asp Lys Glu Lys Lys Gly Leu Glu Ser Arg
                325                 330                 335

Ala Asp Ser Ile Gly Ser Gly Arg Ala Ile Pro Ile Lys Gln Gly Leu
            340                 345                 350

Pro Phe Phe Val Leu Ala Leu Thr Ala Ser Thr Tyr Leu Arg Pro Ala
        355                 360                 365

Gly Ala Arg Ala Arg Gln Ser Ser Pro Trp Pro Gly Pro Arg Gly Gly
    370                 375                 380

Gln Thr Ser Pro His Cys Ala Glu Gly Pro Gln Ser Ala Gln Leu Ser
385                 390                 395                 400

Gly Ala Met Met Asn
                405


<210> 6089
<211> 276
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1325; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP1; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with GTPase domain, ankyrin repeat and PH domain
      1; "

<220>
<221> source
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<223> /note="ENSP ID: ENSP00000393838"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6089

```
Xaa Ser Ser Pro Lys Thr Asn Gly Leu Ser Lys Asp Met Ser Ser Leu
1               5                  10                  15

His Ile Ser Pro Asn Ser Asp Thr Gly Leu Gly Asp Ser Val Cys Ser
            20                  25                  30

Ser Pro Ser Ile Ser Ser Thr Thr Ser Pro Lys Leu Asp Pro Pro Pro
        35                  40                  45

Ser Pro His Ala Asn Arg Lys Lys His Arg Arg Lys Lys Ser Thr Ser
    50                  55                  60

Asn Phe Lys Ala Asp Gly Leu Ser Gly Thr Ala Glu Ala Lys Arg Lys
65                  70                  75                  80

Ala Trp Lys Leu Asn Arg Val Gly Ser Leu Arg Asn Ile Tyr Ser Ser
                85                  90                  95

Ser Thr Asn Thr Glu Glu Gln Glu Glu Asn Phe Glu Phe Ile Ile Val
            100                 105                 110

Ser Leu Thr Gly Gln Thr Trp His Phe Glu Ala Thr Thr Tyr Glu Glu
        115                 120                 125

Arg Asp Ala Trp Val Gln Ala Ile Glu Ser Gln Ile Leu Ala Ser Leu
    130                 135                 140

Gln Ser Cys Glu Ser Ser Lys Asn Lys Ser Arg Leu Thr Ser Gln Ser
145                 150                 155                 160

Glu Ala Met Ala Leu Gln Ser Ile Arg Asn Met Arg Gly Asn Ser His
                165                 170                 175

Cys Val Asp Cys Glu Thr Gln Asn Pro Asn Trp Ala Ser Leu Asn Leu
            180                 185                 190
```

```
Gly Ala Leu Met Cys Ile Glu Cys Ser Gly Ile His Arg Asn Leu Gly
        195                 200                 205

Thr His Leu Ser Arg Val Arg Ser Leu Asp Leu Asp Asp Trp Pro Val
    210                 215                 220

Glu Leu Ile Lys Val Met Ser Ser Ile Gly Asn Glu Leu Ala Asn Ser
225                 230                 235                 240

Val Trp Glu Glu Ser Ser Gln Gly Arg Thr Lys Pro Ser Val Asp Ser
                245                 250                 255

Thr Arg Glu Glu Lys Glu Arg Trp Ile Arg Ala Lys Tyr Glu Gln Lys
            260                 265                 270

Leu Phe Leu Ala
        275


<210> 6090
<211> 253
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1325; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP1; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with GTPase domain, ankyrin repeat and PH domain
      1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000403482"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6090
Xaa Lys Tyr Val Thr Leu Cys Asp Asn Gly Val Leu Thr Tyr His Pro
1               5                   10                  15
```

```
Ser Leu His Asp Tyr Met Gln Asn Val His Gly Lys Glu Ile Asp Leu
            20                  25                  30

Leu Arg Thr Thr Val Lys Val Pro Gly Lys Arg Pro Pro Arg Ala Thr
        35                  40                  45

Ser Ala Cys Ala Pro Ile Ser Ser Pro Lys Thr Asn Gly Leu Ser Lys
    50                  55                  60

Asp Met Ser Ser Leu His Ile Ser Pro Asn Ser Gly Asn Val Thr Ser
65                  70                  75                  80

Ala Ser Gly Ser Gln Met Ala Ser Gly Ile Ser Leu Val Ser Phe Asn
                85                  90                  95

Ser Arg Pro Asp Gly Met His Gln Arg Ser Tyr Ser Val Ser Ser Ala
            100                 105                 110

Asp Gln Trp Ser Glu Ala Thr Val Ile Ala Asn Ser Ala Ile Ser Ser
        115                 120                 125

Asp Thr Gly Leu Gly Asp Ser Val Cys Ser Ser Pro Ser Ile Ser Ser
    130                 135                 140

Thr Thr Ser Pro Lys Leu Asp Pro Pro Pro Ser Pro His Ala Asn Arg
145                 150                 155                 160

Lys Lys His Arg Arg Lys Lys Ser Thr Ser Asn Phe Lys Ala Asp Gly
                165                 170                 175

Leu Ser Gly Thr Ala Glu Ala Lys Arg Lys Ala Trp Lys Leu Asn Arg
            180                 185                 190

Val Gly Ser Leu Arg Asn Ile Tyr Ser Ser Ser Thr Asn Thr Glu Glu
        195                 200                 205

Gln Glu Glu Asn Phe Glu Phe Ile Ile Val Ser Leu Thr Gly Gln Thr
    210                 215                 220

Trp His Phe Glu Ala Thr Thr Tyr Glu Glu Arg Asp Ala Trp Val Gln
225                 230                 235                 240
```

Ala Ile Glu Ser Gln Ile Leu Ala Ser Leu Gln Ser Cys
245 250

<210> 6091
<211> 803
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1325; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with GTPase domain, ankyrin repeat and PH domain
1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000411824"

<400> 6091
Asp Ala Phe Val Asn Ser Gln Glu Trp Thr Leu Ser Arg Ser Val Pro
1 5 10 15

Glu Leu Lys Val Gly Ile Val Gly Asn Leu Ala Ser Gly Lys Ser Ala
20 25 30

Leu Val His Arg Tyr Leu Thr Gly Thr Tyr Val Gln Glu Glu Ser Pro
35 40 45

Glu Gly Gly Arg Phe Lys Lys Glu Ile Val Val Asp Gly Gln Ser Tyr
50 55 60

Leu Leu Leu Ile Arg Asp Glu Gly Gly Pro Pro Glu Ala Gln Phe Ala
65 70 75 80

Met Trp Val Asp Ala Val Ile Phe Val Phe Ser Leu Glu Asp Glu Ile
85 90 95

Ser Phe Gln Thr Val Tyr His Tyr Tyr Ser Arg Met Ala Asn Tyr Arg
100 105 110

Asn Thr Ser Glu Ile Pro Leu Val Leu Val Gly Thr Gln Asp Ala Ile

```
        115                 120                 125

Ser Ser Ala Asn Pro Arg Val Ile Asp Asp Ala Arg Ala Arg Lys Leu
    130                 135                 140

Ser Asn Asp Leu Lys Arg Cys Thr Tyr Tyr Glu Thr Cys Ala Thr Tyr
145                 150                 155                 160

Gly Leu Asn Val Glu Arg Val Phe Gln Asp Val Ala Gln Lys Ile Val
                165                 170                 175

Ala Thr Arg Lys Lys Gln Gln Leu Ser Ile Gly Pro Cys Lys Ser Leu
            180                 185                 190

Pro Asn Ser Pro Ser His Ser Ser Val Cys Ser Ala Gln Val Ser Ala
        195                 200                 205

Val His Ile Ser Gln Thr Ser Asn Gly Gly Gly Ser Leu Ser Asp Tyr
    210                 215                 220

Ser Ser Ser Val Pro Ser Thr Pro Ser Thr Ser Gln Lys Glu Leu Arg
225                 230                 235                 240

Ile Asp Val Pro Pro Thr Ala Asn Thr Pro Thr Pro Val Arg Lys Gln
                245                 250                 255

Ser Lys Arg Arg Ser Asn Leu Phe Thr Ser Arg Lys Gly Ser Asp Pro
            260                 265                 270

Asp Lys Glu Lys Lys Gly Leu Glu Ser Arg Ala Asp Ser Ile Gly Ser
        275                 280                 285

Gly Arg Ala Ile Pro Ile Lys Gln Gly Met Leu Leu Lys Arg Ser Gly
    290                 295                 300

Lys Ser Leu Asn Lys Glu Trp Lys Lys Lys Tyr Val Thr Leu Cys Asp
305                 310                 315                 320

Asn Gly Val Leu Thr Tyr His Pro Ser Leu His Asp Tyr Met Gln Asn
                325                 330                 335

Val His Gly Lys Glu Ile Asp Leu Leu Arg Thr Thr Val Lys Val Pro
            340                 345                 350
```

```
Gly Lys Arg Pro Pro Arg Ala Thr Ser Ala Cys Ala Pro Ile Ser Ser
        355                 360                 365

Pro Lys Thr Asn Gly Leu Ser Lys Asp Met Ser Ser Leu His Ile Ser
    370                 375                 380

Pro Asn Ser Gly Asn Val Thr Ser Ala Ser Gly Ser Gln Met Ala Ser
385                 390                 395                 400

Gly Ile Ser Leu Val Ser Phe Asn Ser Arg Pro Asp Gly Met His Gln
                405                 410                 415

Arg Ser Tyr Ser Val Ser Ser Ala Asp Gln Trp Ser Glu Ala Thr Val
            420                 425                 430

Ile Ala Asn Ser Ala Ile Ser Ser Asp Thr Gly Leu Gly Asp Ser Val
        435                 440                 445

Cys Ser Ser Pro Ser Ile Ser Ser Thr Thr Ser Pro Lys Leu Asp Pro
    450                 455                 460

Pro Pro Ser Pro His Ala Asn Arg Lys Lys His Arg Arg Lys Lys Ser
465                 470                 475                 480

Thr Ser Asn Phe Lys Ala Asp Gly Leu Ser Gly Thr Ala Glu Glu Gln
                485                 490                 495

Glu Glu Asn Phe Glu Phe Ile Ile Val Ser Leu Thr Gly Gln Thr Trp
            500                 505                 510

His Phe Glu Ala Thr Thr Tyr Glu Glu Arg Asp Ala Trp Val Gln Ala
        515                 520                 525

Ile Glu Ser Gln Ile Leu Ala Ser Leu Gln Ser Cys Glu Ser Ser Lys
    530                 535                 540

Asn Lys Ser Arg Leu Thr Ser Gln Ser Glu Ala Met Ala Leu Gln Ser
545                 550                 555                 560

Ile Arg Asn Met Arg Gly Asn Ser His Cys Val Asp Cys Glu Thr Gln
                565                 570                 575
```

```
Asn Pro Asn Trp Ala Ser Leu Asn Leu Gly Ala Leu Met Cys Ile Glu
            580                 585                 590

Cys Ser Gly Ile His Arg Asn Leu Gly Thr His Leu Ser Arg Val Arg
        595                 600                 605

Ser Leu Asp Leu Asp Asp Trp Pro Val Glu Leu Ile Lys Val Met Ser
    610                 615                 620

Ser Ile Gly Asn Glu Leu Ala Asn Ser Val Trp Glu Glu Ser Ser Gln
625                 630                 635                 640

Gly Arg Thr Lys Pro Ser Val Asp Ser Thr Arg Glu Glu Lys Glu Arg
                645                 650                 655

Trp Ile Arg Ala Lys Tyr Glu Gln Lys Leu Phe Leu Ala Pro Leu Pro
            660                 665                 670

Cys Thr Glu Leu Ser Leu Gly Gln His Leu Leu Arg Ala Thr Ala Asp
        675                 680                 685

Glu Asp Leu Arg Thr Ala Ile Leu Leu Leu Ala His Gly Ser Arg Asp
    690                 695                 700

Glu Val Asn Glu Thr Cys Gly Glu Gly Asp Gly Arg Thr Ala Leu His
705                 710                 715                 720

Leu Ala Cys Arg Lys Gly Asn Val Val Leu Ala Gln Leu Leu Ile Trp
                725                 730                 735

Tyr Gly Val Asp Val Thr Ala Arg Asp Ala His Gly Asn Thr Ala Leu
            740                 745                 750

Ala Tyr Ala Arg Gln Ala Ser Ser Gln Glu Cys Ile Asp Val Leu Leu
        755                 760                 765

Gln Tyr Gly Cys Pro Asp Glu Arg Phe Val Leu Met Ala Thr Pro Asn
    770                 775                 780

Leu Ser Arg Arg Asn Asn Asn Arg Asn Asn Ser Ser Gly Arg Val Pro
785                 790                 795                 800
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Thr Ile Ile

<210> 6092
<211> 351
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1325; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with GTPase domain, ankyrin repeat and PH domain
1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000483085"

<400> 6092
Asp Ala Phe Val Asn Ser Gln Glu Trp Thr Leu Ser Arg Ser Val Pro
1 5 10 15

Glu Leu Lys Val Gly Ile Val Gly Asn Leu Ala Ser Gly Lys Ser Ala
20 25 30

Leu Val His Arg Tyr Leu Thr Gly Thr Tyr Val Gln Glu Glu Ser Pro
35 40 45

Glu Gly Gly Arg Phe Lys Lys Glu Ile Val Val Asp Gly Gln Ser Tyr
50 55 60

Leu Leu Leu Ile Arg Asp Glu Gly Gly Pro Pro Glu Ala Gln Phe Ala
65 70 75 80

Met Trp Val Asp Ala Val Ile Phe Val Phe Ser Leu Glu Asp Glu Ile
85 90 95

Ser Phe Gln Thr Val Tyr His Tyr Tyr Ser Arg Met Ala Asn Tyr Arg
100 105 110

Asn Thr Ser Glu Ile Pro Leu Val Leu Val Gly Thr Gln Asp Ala Ile

```
        115                 120                 125

Ser Ser Ala Asn Pro Arg Val Ile Asp Asp Ala Arg Ala Arg Lys Leu
    130                 135                 140

Ser Asn Asp Leu Lys Arg Cys Thr Tyr Tyr Glu Thr Cys Ala Thr Tyr
145                 150                 155                 160

Gly Leu Asn Val Glu Arg Val Phe Gln Asp Val Ala Gln Lys Ile Val
                165                 170                 175

Ala Thr Arg Lys Lys Gln Gln Leu Ser Ile Gly Pro Cys Lys Ser Leu
            180                 185                 190

Pro Asn Ser Pro Ser His Ser Ser Val Cys Ser Ala Gln Val Ser Ala
        195                 200                 205

Val His Ile Ser Gln Thr Ser Asn Gly Gly Gly Ser Leu Ser Asp Tyr
    210                 215                 220

Ser Ser Ser Val Pro Ser Thr Pro Ser Thr Ser Gln Lys Glu Leu Arg
225                 230                 235                 240

Ile Asp Val Pro Pro Thr Ala Asn Thr Pro Thr Pro Val Arg Lys Gln
                245                 250                 255

Ser Lys Arg Arg Ser Asn Leu Phe Thr Ser Arg Lys Gly Ser Asp Pro
            260                 265                 270

Asp Lys Glu Lys Lys Gly Leu Glu Ser Arg Ala Asp Ser Ile Gly Ser
        275                 280                 285

Gly Arg Ala Ile Pro Ile Lys Gln Gly Leu Pro Phe Phe Val Leu Ala
    290                 295                 300

Leu Thr Ala Ser Thr Tyr Leu Arg Pro Ala Gly Ala Arg Ala Arg Gln
305                 310                 315                 320

Ser Ser Pro Trp Pro Gly Pro Arg Gly Gly Gln Thr Ser Pro His Cys
                325                 330                 335

Ala Glu Gly Pro Gln Ser Ala Gln Leu Ser Gly Ala Met Met Asn
            340                 345                 350
```

<210> 6093
<211> 750
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1325; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with GTPase domain, ankyrin repeat and PH domain
1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000484463"

<400> 6093

```
Asp Ala Phe Val Asn Ser Gln Glu Trp Thr Leu Ser Arg Ser Val Pro
1               5                  10                  15

Glu Leu Lys Val Gly Ile Val Gly Asn Leu Ala Ser Gly Lys Ser Ala
            20                  25                  30

Leu Val His Arg Tyr Leu Thr Gly Thr Tyr Val Gln Glu Glu Ser Pro
        35                  40                  45

Glu Gly Gly Arg Phe Lys Lys Glu Ile Val Val Asp Gly Gln Ser Tyr
    50                  55                  60

Leu Leu Leu Ile Arg Asp Glu Gly Gly Pro Pro Glu Ala Gln Phe Ala
65                  70                  75                  80

Met Trp Val Asp Ala Val Ile Phe Val Phe Ser Leu Glu Asp Glu Ile
                85                  90                  95

Ser Phe Gln Thr Val Tyr His Tyr Tyr Ser Arg Met Ala Asn Tyr Arg
            100                 105                 110

Asn Thr Ser Glu Ile Pro Leu Val Leu Val Gly Thr Gln Asp Ala Ile
        115                 120                 125
```

```
Ser Ser Ala Asn Pro Arg Val Ile Asp Asp Ala Arg Ala Arg Lys Leu
    130                 135                 140

Ser Asn Asp Leu Lys Arg Cys Thr Tyr Tyr Glu Thr Cys Ala Thr Tyr
145                 150                 155                 160

Gly Leu Asn Val Glu Arg Val Phe Gln Asp Val Ala Gln Lys Ile Val
                165                 170                 175

Ala Thr Arg Lys Lys Gln Gln Leu Ser Ile Gly Pro Cys Lys Ser Leu
            180                 185                 190

Pro Asn Ser Pro Ser His Ser Ser Val Cys Ser Ala Gln Val Ser Ala
        195                 200                 205

Val His Ile Ser Gln Thr Ser Asn Gly Gly Gly Ser Leu Ser Asp Tyr
    210                 215                 220

Ser Ser Ser Val Pro Ser Thr Pro Ser Thr Ser Gln Lys Glu Leu Arg
225                 230                 235                 240

Ile Asp Val Pro Pro Thr Ala Asn Thr Pro Thr Pro Val Arg Lys Gln
                245                 250                 255

Ser Lys Arg Arg Ser Asn Leu Phe Thr Ser Arg Lys Gly Ser Asp Pro
            260                 265                 270

Asp Lys Glu Lys Lys Gly Leu Glu Ser Arg Ala Asp Ser Ile Gly Ser
        275                 280                 285

Gly Arg Ala Ile Pro Ile Lys Gln Gly Met Leu Leu Lys Arg Ser Gly
    290                 295                 300

Lys Ser Leu Asn Lys Glu Trp Lys Lys Lys Tyr Val Thr Leu Cys Asp
305                 310                 315                 320

Asn Gly Val Leu Thr Tyr His Pro Ser Leu His Asp Tyr Met Gln Asn
                325                 330                 335

Val His Gly Lys Glu Ile Asp Leu Leu Arg Thr Thr Val Lys Val Pro
            340                 345                 350
```

```
Gly Lys Arg Pro Pro Arg Ala Thr Ser Ala Cys Ala Pro Ile Ser Ser
        355                 360                 365

Pro Lys Thr Asn Gly Leu Ser Lys Asp Met Ser Ser Leu His Ile Ser
    370                 375                 380

Pro Asn Ser Asp Thr Gly Leu Gly Asp Ser Val Cys Ser Ser Pro Ser
385                 390                 395                 400

Ile Ser Ser Thr Thr Ser Pro Lys Leu Asp Pro Pro Pro Ser Pro His
                405                 410                 415

Ala Asn Arg Lys Lys His Arg Arg Lys Lys Ser Thr Ser Asn Phe Lys
            420                 425                 430

Ala Asp Gly Leu Ser Gly Thr Ala Glu Glu Gln Glu Glu Asn Phe Glu
        435                 440                 445

Phe Ile Ile Val Ser Leu Thr Gly Gln Thr Trp His Phe Glu Ala Thr
    450                 455                 460

Thr Tyr Glu Glu Arg Asp Ala Trp Val Gln Ala Ile Glu Ser Gln Ile
465                 470                 475                 480

Leu Ala Ser Leu Gln Ser Cys Glu Ser Ser Lys Asn Lys Ser Arg Leu
                485                 490                 495

Thr Ser Gln Ser Glu Ala Met Ala Leu Gln Ser Ile Arg Asn Met Arg
            500                 505                 510

Gly Asn Ser His Cys Val Asp Cys Glu Thr Gln Asn Pro Asn Trp Ala
        515                 520                 525

Ser Leu Asn Leu Gly Ala Leu Met Cys Ile Glu Cys Ser Gly Ile His
    530                 535                 540

Arg Asn Leu Gly Thr His Leu Ser Arg Val Arg Ser Leu Asp Leu Asp
545                 550                 555                 560

Asp Trp Pro Val Glu Leu Ile Lys Val Met Ser Ser Ile Gly Asn Glu
                565                 570                 575

Leu Ala Asn Ser Val Trp Glu Glu Ser Ser Gln Gly Arg Thr Lys Pro
```

```
            580                 585                 590

Ser Val Asp Ser Thr Arg Glu Glu Lys Glu Arg Trp Ile Arg Ala Lys
        595                 600                 605

Tyr Glu Gln Lys Leu Phe Leu Ala Pro Leu Pro Cys Thr Glu Leu Ser
    610                 615                 620

Leu Gly Gln His Leu Leu Arg Ala Thr Ala Asp Glu Asp Leu Arg Thr
625                 630                 635                 640

Ala Ile Leu Leu Leu Ala His Gly Ser Arg Asp Glu Val Asn Glu Thr
                645                 650                 655

Cys Gly Glu Gly Asp Gly Arg Thr Ala Leu His Leu Ala Cys Arg Lys
            660                 665                 670

Gly Asn Val Val Leu Ala Gln Leu Leu Ile Trp Tyr Gly Val Asp Val
        675                 680                 685

Thr Ala Arg Asp Ala His Gly Asn Thr Ala Leu Ala Tyr Ala Arg Gln
    690                 695                 700

Ala Ser Ser Gln Glu Cys Ile Asp Val Leu Leu Gln Tyr Gly Cys Pro
705                 710                 715                 720

Asp Glu Arg Phe Val Leu Met Ala Thr Pro Asn Leu Ser Arg Arg Asn
                725                 730                 735

Asn Asn Arg Asn Asn Ser Ser Gly Arg Val Pro Thr Ile Ile
            740                 745                 750


<210> 6094
<211> 108
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1325; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP1; "

<220>
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<221> source
<223> /note="Gene Name:
ArfGAP with GTPase domain, ankyrin repeat and PH domain
1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000489496"

<400> 6094
Gln Leu Ala Asn Ser Ala Ala Ile Arg Ala Glu Ile Gln Arg Phe Glu
1 5 10 15

Ser Val His Pro Asn Ile Tyr Ser Ile Tyr Glu Leu Leu Glu Arg Val
20 25 30

Glu Glu Pro Val Leu Gln Asn Gln Ile Arg Glu His Val Ile Ala Ile
35 40 45

Glu Asp Ala Phe Val Asn Ser Gln Glu Trp Thr Leu Ser Arg Ser Val
50 55 60

Pro Glu Leu Lys Val Gly Ile Val Gly Asn Leu Ala Ser Gly Lys Ser
65 70 75 80

Ala Leu Val His Arg Tyr Leu Thr Gly Thr Tyr Val Gln Glu Glu Tyr
85 90 95

Gly Cys Arg Trp Gln Val Gln Glu Arg Asp Cys Arg
100 105

<210> 6095
<211> 836
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1326; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP2; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with GTPase domain, ankyrin repeat and PH domain
2; "

<220>
<221> source
<223> /note="Uniprot ID: Q99490; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000257897"

<400> 6095
Met His Ala Gln Arg Gln Phe Val Val Ala Ala Val Arg Ala Glu Val
1   5   10   15

Arg Arg His Glu Val Ala Lys Gln Ala Leu Asn Arg Leu Arg Lys Leu
            20   25   30

Ala Glu Arg Val Asp Asp Pro Glu Leu Gln Asp Ser Ile Gln Ala Ser
        35   40   45

Leu Asp Ser Ile Arg Glu Ala Val Ile Asn Ser Gln Glu Trp Thr Leu
    50   55   60

Ser Arg Ser Ile Pro Glu Leu Arg Leu Gly Val Leu Gly Asp Ala Arg
65   70   75   80

Ser Gly Lys Ser Ser Leu Ile His Arg Phe Leu Thr Gly Ser Tyr Gln
                85   90   95

Val Leu Glu Lys Thr Glu Ser Glu Gln Tyr Lys Lys Glu Met Leu Val
            100   105   110

Asp Gly Gln Thr His Leu Val Leu Ile Arg Glu Glu Ala Gly Ala Pro
        115   120   125

Asp Ala Lys Phe Ser Gly Trp Ala Asp Ala Val Ile Phe Val Phe Ser
    130   135   140

Leu Glu Asp Glu Asn Ser Phe Gln Ala Val Ser Arg Leu His Gly Gln
145   150   155   160

Leu Ser Ser Leu Arg Gly Glu Gly Arg Gly Gly Leu Ala Leu Ala Leu
                165   170   175

Val Gly Thr Gln Asp Arg Ile Ser Ala Ser Ser Pro Arg Val Val Gly
            180   185   190

```
Asp Ala Arg Ala Arg Ala Leu Cys Ala Asp Met Lys Arg Cys Ser Tyr
        195                 200                 205

Tyr Glu Thr Cys Ala Thr Tyr Gly Leu Asn Val Asp Arg Val Phe Gln
    210                 215                 220

Glu Val Ala Gln Lys Val Val Thr Leu Arg Lys Gln Gln Gln Leu Leu
225                 230                 235                 240

Ala Ala Cys Lys Ser Leu Pro Ser Ser Pro Ser His Ser Ala Ala Ser
                245                 250                 255

Thr Pro Val Ala Gly Gln Ala Ser Asn Gly Gly His Thr Ser Asp Tyr
            260                 265                 270

Ser Ser Ser Leu Pro Ser Ser Pro Asn Val Gly His Arg Glu Leu Arg
        275                 280                 285

Ala Glu Ala Ala Ala Val Ala Gly Leu Ser Thr Pro Gly Ser Leu His
    290                 295                 300

Arg Ala Ala Lys Arg Arg Thr Ser Leu Phe Ala Asn Arg Arg Gly Ser
305                 310                 315                 320

Asp Ser Glu Lys Arg Ser Leu Asp Ser Arg Gly Glu Thr Thr Gly Ser
                325                 330                 335

Gly Arg Ala Ile Pro Ile Lys Gln Ser Phe Leu Leu Lys Arg Ser Gly
            340                 345                 350

Asn Ser Leu Asn Lys Glu Trp Lys Lys Lys Tyr Val Thr Leu Ser Ser
        355                 360                 365

Asn Gly Phe Leu Leu Tyr His Pro Ser Ile Asn Asp Tyr Ile His Ser
    370                 375                 380

Thr His Gly Lys Glu Met Asp Leu Leu Arg Thr Thr Val Lys Val Pro
385                 390                 395                 400

Gly Lys Arg Pro Pro Arg Ala Ile Ser Ala Phe Gly Pro Ser Ala Ser
                405                 410                 415

Ile Asn Gly Leu Val Lys Asp Met Ser Thr Val Gln Met Gly Glu Gly
```

```
            420                 425                 430

Leu Glu Ala Thr Thr Pro Met Pro Ser Pro Ser Pro Ser Pro Ser Ser
        435                 440                 445

Leu Gln Pro Pro Pro Asp Gln Thr Ser Lys His Leu Leu Lys Pro Asp
    450                 455                 460

Arg Asn Leu Ala Arg Ala Leu Ser Thr Asp Cys Thr Pro Ser Gly Asp
465                 470                 475                 480

Leu Ser Pro Leu Ser Arg Glu Pro Pro Pro Ser Pro Met Val Lys Lys
                485                 490                 495

Gln Arg Arg Lys Lys Leu Thr Thr Pro Ser Lys Thr Glu Gly Ser Ala
            500                 505                 510

Gly Gln Ala Glu Glu Glu Asn Phe Glu Phe Leu Ile Val Ser Ser Thr
        515                 520                 525

Gly Gln Thr Trp His Phe Glu Ala Ala Ser Phe Glu Glu Arg Asp Ala
    530                 535                 540

Trp Val Gln Ala Ile Glu Ser Gln Ile Leu Ala Ser Leu Gln Cys Cys
545                 550                 555                 560

Glu Ser Ser Lys Val Lys Leu Arg Thr Asp Ser Gln Ser Glu Ala Val
                565                 570                 575

Ala Ile Gln Ala Ile Arg Asn Ala Lys Gly Asn Ser Ile Cys Val Asp
            580                 585                 590

Cys Gly Ala Pro Asn Pro Thr Trp Ala Ser Leu Asn Leu Gly Ala Leu
        595                 600                 605

Ile Cys Ile Glu Cys Ser Gly Ile His Arg Asn Leu Gly Thr His Leu
    610                 615                 620

Ser Arg Val Arg Ser Leu Asp Leu Asp Asp Trp Pro Arg Glu Leu Thr
625                 630                 635                 640

Leu Val Leu Thr Ala Ile Gly Asn Asp Thr Ala Asn Arg Val Trp Glu
                645                 650                 655
```

```
Ser Asp Thr Arg Gly Arg Ala Lys Pro Ser Arg Asp Ser Ser Arg Glu
            660                 665                 670

Glu Arg Glu Ser Trp Ile Arg Ala Lys Tyr Glu Gln Leu Leu Phe Leu
        675                 680                 685

Ala Pro Leu Ser Thr Ser Glu Glu Pro Leu Gly Arg Gln Leu Trp Ala
    690                 695                 700

Ala Val Gln Ala Gln Asp Val Ala Thr Val Leu Leu Leu Leu Ala His
705                 710                 715                 720

Ala Arg His Gly Pro Leu Asp Thr Ser Val Glu Asp Pro Gln Leu Arg
                725                 730                 735

Ser Pro Leu His Leu Ala Ala Glu Leu Ala His Val Val Ile Thr Gln
            740                 745                 750

Leu Leu Leu Trp Tyr Gly Ala Asp Val Ala Ala Arg Asp Ala Gln Gly
        755                 760                 765

Arg Thr Ala Leu Phe Tyr Ala Arg Gln Ala Gly Ser Gln Leu Cys Ala
    770                 775                 780

Asp Ile Leu Leu Gln His Gly Cys Pro Gly Glu Gly Gly Ser Ala Ala
785                 790                 795                 800

Thr Thr Pro Ser Ala Ala Thr Thr Pro Ser Ile Thr Ala Thr Pro Ser
                805                 810                 815

Pro Arg Arg Arg Ser Ser Ala Ala Ser Val Gly Arg Ala Asp Ala Pro
            820                 825                 830

Val Ala Leu Val
        835


<210> 6096
<211> 1036
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<223> /note="Payload ID: 1326; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP2; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with GTPase domain, ankyrin repeat and PH domain
2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000328160"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6096

```
Xaa Thr Ser Ser Arg Arg Pro Leu Leu Ser Ser Pro Ser Trp Gly Gly
1               5                   10                  15

Pro Glu Pro Glu Gly Arg Ala Gly Gly Gly Ile Pro Gly Ser Ser Ser
            20                  25                  30

Pro His Pro Gly Thr Gly Ser Arg Arg Leu Lys Val Ala Pro Pro Pro
        35                  40                  45

Pro Ala Pro Lys Pro Cys Lys Thr Val Thr Thr Ser Gly Ala Lys Ala
    50                  55                  60

Gly Gly Gly Lys Gly Ala Gly Ser Arg Leu Ser Trp Pro Glu Ser Glu
65                  70                  75                  80

Gly Lys Pro Arg Val Lys Gly Ser Lys Ser Ser Ala Gly Thr Gly Ala
                85                  90                  95

Ser Val Ser Ala Ala Ala Thr Ala Ala Ala Ala Gly Gly Gly Gly Ser
            100                 105                 110

Thr Ala Ser Thr Ser Gly Gly Val Gly Ala Gly Ala Gly Ala Arg Gly
        115                 120                 125

Lys Leu Ser Pro Arg Lys Gly Lys Ser Lys Thr Leu Asp Asn Ser Asp
    130                 135                 140
```

```
Leu His Pro Gly Pro Pro Ala Gly Ser Pro Pro Pro Leu Thr Leu Pro
145                 150                 155                 160

Pro Thr Pro Ser Pro Ala Thr Ala Val Thr Ala Ala Ser Ala Gln Pro
                165                 170                 175

Pro Gly Pro Ala Pro Pro Ile Thr Leu Glu Pro Pro Ala Pro Gly Leu
            180                 185                 190

Lys Arg Gly Arg Glu Gly Gly Arg Ala Ser Thr Arg Asp Arg Lys Met
        195                 200                 205

Leu Lys Phe Ile Ser Gly Ile Phe Thr Lys Ser Thr Gly Gly Pro Pro
    210                 215                 220

Gly Ser Gly Pro Leu Pro Gly Pro Pro Ser Leu Ser Ser Gly Ser Gly
225                 230                 235                 240

Ser Arg Glu Leu Leu Gly Ala Glu Leu Arg Ala Ser Pro Lys Ala Val
                245                 250                 255

Ile Asn Ser Gln Glu Trp Thr Leu Ser Arg Ser Ile Pro Glu Leu Arg
            260                 265                 270

Leu Gly Val Leu Gly Asp Ala Arg Ser Gly Lys Ser Ser Leu Ile His
        275                 280                 285

Arg Phe Leu Thr Gly Ser Tyr Gln Val Leu Glu Lys Thr Glu Ser Glu
    290                 295                 300

Gln Tyr Lys Lys Glu Met Leu Val Asp Gly Gln Thr His Leu Val Leu
305                 310                 315                 320

Ile Arg Glu Glu Ala Gly Ala Pro Asp Ala Lys Phe Ser Gly Trp Ala
                325                 330                 335

Asp Ala Val Ile Phe Val Phe Ser Leu Glu Asp Glu Asn Ser Phe Gln
            340                 345                 350

Ala Val Ser Arg Leu His Gly Gln Leu Ser Ser Leu Arg Gly Glu Gly
        355                 360                 365
```

Arg Gly Gly Leu Ala Leu Ala Leu Val Gly Thr Gln Asp Arg Ile Ser
370 375 380

Ala Ser Ser Pro Arg Val Val Gly Asp Ala Arg Ala Arg Ala Leu Cys
385 390 395 400

Ala Asp Met Lys Arg Cys Ser Tyr Tyr Glu Thr Cys Ala Thr Tyr Gly
405 410 415

Leu Asn Val Asp Arg Val Phe Gln Glu Val Ala Gln Lys Val Val Thr
420 425 430

Leu Arg Lys Gln Gln Gln Leu Leu Ala Ala Cys Lys Ser Leu Pro Ser
435 440 445

Ser Pro Ser His Ser Ala Ala Ser Thr Pro Val Ala Gly Gln Ala Ser
450 455 460

Asn Gly Gly His Thr Ser Asp Tyr Ser Ser Ser Leu Pro Ser Ser Pro
465 470 475 480

Asn Val Gly His Arg Glu Leu Arg Ala Glu Ala Ala Ala Val Ala Gly
485 490 495

Leu Ser Thr Pro Gly Ser Leu His Arg Ala Ala Lys Arg Arg Thr Ser
500 505 510

Leu Phe Ala Asn Arg Arg Gly Ser Asp Ser Glu Lys Arg Ser Leu Asp
515 520 525

Ser Arg Gly Glu Thr Thr Gly Ser Gly Arg Ala Ile Pro Ile Lys Gln
530 535 540

Ser Phe Leu Leu Lys Arg Ser Gly Asn Ser Leu Asn Lys Glu Trp Lys
545 550 555 560

Lys Lys Tyr Val Thr Leu Ser Ser Asn Gly Phe Leu Leu Tyr His Pro
565 570 575

Ser Ile Asn Asp Tyr Ile His Ser Thr His Gly Lys Glu Met Asp Leu
580 585 590

```
Leu Arg Thr Thr Val Lys Val Pro Gly Lys Arg Pro Pro Arg Ala Ile
        595                 600                 605

Ser Ala Phe Gly Pro Ser Ala Ser Ile Asn Gly Leu Val Lys Asp Met
    610                 615                 620

Ser Thr Val Gln Met Gly Glu Gly Leu Glu Ala Thr Thr Pro Met Pro
625                 630                 635                 640

Ser Pro Ser Pro Ser Pro Ser Ser Leu Gln Pro Pro Pro Asp Gln Thr
                645                 650                 655

Ser Lys His Leu Leu Lys Pro Asp Arg Asn Leu Ala Arg Ala Leu Ser
            660                 665                 670

Thr Asp Cys Thr Pro Ser Gly Asp Leu Ser Pro Leu Ser Arg Glu Pro
        675                 680                 685

Pro Pro Ser Pro Met Val Lys Lys Gln Arg Arg Lys Lys Leu Thr Thr
    690                 695                 700

Pro Ser Lys Thr Glu Gly Ser Ala Gly Gln Ala Glu Glu Glu Asn Phe
705                 710                 715                 720

Glu Phe Leu Ile Val Ser Ser Thr Gly Gln Thr Trp His Phe Glu Ala
                725                 730                 735

Ala Ser Phe Glu Glu Arg Asp Ala Trp Val Gln Ala Ile Glu Ser Gln
            740                 745                 750

Ile Leu Ala Ser Leu Gln Cys Cys Glu Ser Ser Lys Val Lys Leu Arg
        755                 760                 765

Thr Asp Ser Gln Ser Glu Ala Val Ala Ile Gln Ala Ile Arg Asn Ala
    770                 775                 780

Lys Gly Asn Ser Ile Cys Val Asp Cys Gly Ala Pro Asn Pro Thr Trp
785                 790                 795                 800

Ala Ser Leu Asn Leu Gly Ala Leu Ile Cys Ile Glu Cys Ser Gly Ile
                805                 810                 815

His Arg Asn Leu Gly Thr His Leu Ser Arg Val Arg Ser Leu Asp Leu
```

820 825 830

Asp Asp Trp Pro Arg Glu Leu Thr Leu Val Leu Thr Ala Ile Gly Asn
835 840 845

Asp Thr Ala Asn Arg Val Trp Glu Ser Asp Thr Arg Gly Arg Ala Lys
850 855 860

Pro Ser Arg Asp Ser Ser Arg Glu Glu Arg Glu Ser Trp Ile Arg Ala
865 870 875 880

Lys Tyr Glu Gln Leu Leu Phe Leu Ala Pro Leu Ser Thr Ser Glu Glu
885 890 895

Pro Leu Gly Arg Gln Leu Trp Ala Ala Val Gln Ala Gln Asp Val Ala
900 905 910

Thr Val Leu Leu Leu Leu Ala His Ala Arg His Gly Pro Leu Asp Thr
915 920 925

Ser Val Glu Asp Pro Gln Leu Arg Ser Pro Leu His Leu Ala Ala Glu
930 935 940

Leu Ala His Val Val Ile Thr Gln Leu Leu Leu Trp Tyr Gly Ala Asp
945 950 955 960

Val Ala Ala Arg Asp Ala Gln Gly Arg Thr Ala Leu Phe Tyr Ala Arg
965 970 975

Gln Ala Gly Ser Gln Leu Cys Ala Asp Ile Leu Leu Gln His Gly Cys
980 985 990

Pro Gly Glu Gly Gly Ser Ala Ala Thr Thr Pro Ser Ala Ala Thr
Thr
995 1000 1005

Pro Ser Ile Thr Ala Thr Pro Ser Pro Arg Arg Arg Ser Ser Ala
1010 1015 1020

Ala Ser Val Gly Arg Ala Asp Ala Pro Val Ala Leu Val
1025 1030 1035

<210> 6097

<211> 169
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1326; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP2; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with GTPase domain, ankyrin repeat and PH domain
2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000446683"

<400> 6097

```
Arg Arg Thr Ser Leu Phe Ala Asn Arg Arg Gly Ser Asp Ser Glu Lys
1               5                  10                  15

Arg Ser Leu Asp Ser Arg Gly Glu Thr Thr Gly Ser Gly Arg Ala Ile
            20                  25                  30

Pro Ile Lys Gln Ser Phe Leu Leu Lys Arg Ser Gly Asn Ser Leu Asn
        35                  40                  45

Lys Glu Trp Lys Lys Lys Tyr Val Thr Leu Ser Ser Asn Gly Phe Leu
    50                  55                  60

Leu Tyr His Pro Ser Ile Asn Asp Tyr Ile His Ser Thr His Gly Lys
65                  70                  75                  80

Glu Met Asp Leu Leu Arg Thr Thr Val Lys Val Pro Gly Lys Arg Pro
                85                  90                  95

Pro Arg Ala Ile Ser Ala Phe Gly Pro Ser Ala Ser Ile Asn Gly Leu
            100                 105                 110

Val Lys Asp Met Ser Thr Val Gln Met Gly Glu Gly Leu Glu Ala Thr
        115                 120                 125

Thr Pro Met Pro Ser Pro Ser Pro Ser Pro Ser Ser Leu Gln Pro Pro
    130                 135                 140
```

```
Pro Asp Gln Thr Ser Lys His Leu Leu Lys Pro Asp Arg Asn Leu Ala
145                 150                 155                 160


Arg Ala Leu Ser Thr Gly Gln Trp Gly
                165


<210> 6098
<211> 1192
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1326; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP2; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with GTPase domain, ankyrin repeat and PH domain
      2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000449241"

<400> 6098
Met Ser Arg Gly Ala Gly Ala Leu Gln Arg Arg Thr Thr Thr Tyr Leu
1               5                   10                  15


Ile Ser Leu Thr Leu Val Lys Leu Glu Ser Val Pro Pro Pro Pro Pro
            20                  25                  30


Ser Pro Ser Ala Ala Ala Ala Gly Ala Ala Gly Ala Arg Gly Ser Glu
        35                  40                  45


Thr Gly Asp Pro Gly Ser Pro Arg Gly Ala Glu Glu Pro Gly Lys Lys
    50                  55                  60


Arg His Glu Arg Leu Phe His Arg Gln Asp Ala Leu Trp Ile Ser Thr
65                  70                  75                  80


Ser Ser Ala Gly Thr Gly Gly Ala Glu Pro Pro Ala Leu Ser Pro Ala
                85                  90                  95
```

```
Pro Ala Ser Pro Ala Arg Pro Val Ser Pro Ala Pro Gly Arg Arg Leu
            100                 105                 110

Ser Leu Trp Ala Val Pro Pro Gly Pro Pro Leu Ser Gly Gly Leu Ser
        115                 120                 125

Pro Asp Pro Lys Pro Gly Gly Ala Pro Thr Ser Ser Arg Arg Pro Leu
    130                 135                 140

Leu Ser Ser Pro Ser Trp Gly Gly Pro Glu Pro Glu Gly Arg Ala Gly
145                 150                 155                 160

Gly Gly Ile Pro Gly Ser Ser Ser Pro His Pro Gly Thr Gly Ser Arg
                165                 170                 175

Arg Leu Lys Val Ala Pro Pro Pro Pro Ala Pro Lys Pro Cys Lys Thr
            180                 185                 190

Val Thr Thr Ser Gly Ala Lys Ala Gly Gly Gly Lys Gly Ala Gly Ser
        195                 200                 205

Arg Leu Ser Trp Pro Glu Ser Glu Gly Lys Pro Arg Val Lys Gly Ser
    210                 215                 220

Lys Ser Ser Ala Gly Thr Gly Ala Ser Val Ser Ala Ala Ala Thr Ala
225                 230                 235                 240

Ala Ala Ala Gly Gly Gly Gly Ser Thr Ala Ser Thr Ser Gly Gly Val
                245                 250                 255

Gly Ala Gly Ala Gly Ala Arg Gly Lys Leu Ser Pro Arg Lys Gly Lys
            260                 265                 270

Ser Lys Thr Leu Asp Asn Ser Asp Leu His Pro Gly Pro Pro Ala Gly
        275                 280                 285

Ser Pro Pro Pro Leu Thr Leu Pro Pro Thr Pro Ser Pro Ala Thr Ala
    290                 295                 300

Val Thr Ala Ala Ser Ala Gln Pro Pro Gly Pro Ala Pro Pro Ile Thr
305                 310                 315                 320
```

```
Leu Glu Pro Pro Ala Pro Gly Leu Lys Arg Gly Arg Glu Gly Gly Arg
                325                 330                 335

Ala Ser Thr Arg Asp Arg Lys Met Leu Lys Phe Ile Ser Gly Ile Phe
            340                 345                 350

Thr Lys Ser Thr Gly Gly Pro Pro Gly Ser Gly Pro Leu Pro Gly Pro
        355                 360                 365

Pro Ser Leu Ser Ser Gly Ser Gly Ser Arg Glu Leu Leu Gly Ala Glu
    370                 375                 380

Leu Arg Ala Ser Pro Lys Ala Val Ile Asn Ser Gln Glu Trp Thr Leu
385                 390                 395                 400

Ser Arg Ser Ile Pro Glu Leu Arg Leu Gly Val Leu Gly Asp Ala Arg
                405                 410                 415

Ser Gly Lys Ser Ser Leu Ile His Arg Phe Leu Thr Gly Ser Tyr Gln
            420                 425                 430

Val Leu Glu Lys Thr Glu Ser Glu Gln Tyr Lys Lys Glu Met Leu Val
        435                 440                 445

Asp Gly Gln Thr His Leu Val Leu Ile Arg Glu Glu Ala Gly Ala Pro
    450                 455                 460

Asp Ala Lys Phe Ser Gly Trp Ala Asp Ala Val Ile Phe Val Phe Ser
465                 470                 475                 480

Leu Glu Asp Glu Asn Ser Phe Gln Ala Val Ser Arg Leu His Gly Gln
                485                 490                 495

Leu Ser Ser Leu Arg Gly Glu Gly Arg Gly Gly Leu Ala Leu Ala Leu
            500                 505                 510

Val Gly Thr Gln Asp Arg Ile Ser Ala Ser Ser Pro Arg Val Val Gly
        515                 520                 525

Asp Ala Arg Ala Arg Ala Leu Cys Ala Asp Met Lys Arg Cys Ser Tyr
    530                 535                 540

Tyr Glu Thr Cys Ala Thr Tyr Gly Leu Asn Val Asp Arg Val Phe Gln
```

545 550 555 560

Glu Val Ala Gln Lys Val Val Thr Leu Arg Lys Gln Gln Leu Leu
565 570 575

Ala Ala Cys Lys Ser Leu Pro Ser Ser Pro Ser His Ser Ala Ala Ser
580 585 590

Thr Pro Val Ala Gly Gln Ala Ser Asn Gly Gly His Thr Ser Asp Tyr
595 600 605

Ser Ser Ser Leu Pro Ser Ser Pro Asn Val Gly His Arg Glu Leu Arg
610 615 620

Ala Glu Ala Ala Ala Val Ala Gly Leu Ser Thr Pro Gly Ser Leu His
625 630 635 640

Arg Ala Ala Lys Arg Arg Thr Ser Leu Phe Ala Asn Arg Arg Gly Ser
645 650 655

Asp Ser Glu Lys Arg Ser Leu Asp Ser Arg Gly Glu Thr Thr Gly Ser
660 665 670

Gly Arg Ala Ile Pro Ile Lys Gln Ser Phe Leu Leu Lys Arg Ser Gly
675 680 685

Asn Ser Leu Asn Lys Glu Trp Lys Lys Lys Tyr Val Thr Leu Ser Ser
690 695 700

Asn Gly Phe Leu Leu Tyr His Pro Ser Ile Asn Asp Tyr Ile His Ser
705 710 715 720

Thr His Gly Lys Glu Met Asp Leu Leu Arg Thr Thr Val Lys Val Pro
725 730 735

Gly Lys Arg Pro Pro Arg Ala Ile Ser Ala Phe Gly Pro Ser Ala Ser
740 745 750

Ile Asn Gly Leu Val Lys Asp Met Ser Thr Val Gln Met Gly Glu Gly
755 760 765

Leu Glu Ala Thr Thr Pro Met Pro Ser Pro Ser Pro Ser Pro Ser Ser
770 775 780

```
Leu Gln Pro Pro Pro Asp Gln Thr Ser Lys His Leu Leu Lys Pro Asp
785                 790                 795                 800

Arg Asn Leu Ala Arg Ala Leu Ser Thr Asp Cys Thr Pro Ser Gly Asp
                805                 810                 815

Leu Ser Pro Leu Ser Arg Glu Pro Pro Pro Ser Pro Met Val Lys Lys
            820                 825                 830

Gln Arg Arg Lys Lys Leu Thr Thr Pro Ser Lys Thr Glu Gly Ser Ala
        835                 840                 845

Gly Gln Ala Glu Ala Lys Arg Lys Met Trp Lys Leu Lys Ser Phe Gly
    850                 855                 860

Ser Leu Arg Asn Ile Tyr Lys Ala Glu Glu Asn Phe Glu Phe Leu Ile
865                 870                 875                 880

Val Ser Ser Thr Gly Gln Thr Trp His Phe Glu Ala Ala Ser Phe Glu
                885                 890                 895

Glu Arg Asp Ala Trp Val Gln Ala Ile Glu Ser Gln Ile Leu Ala Ser
            900                 905                 910

Leu Gln Cys Cys Glu Ser Ser Lys Val Lys Leu Arg Thr Asp Ser Gln
        915                 920                 925

Ser Glu Ala Val Ala Ile Gln Ala Ile Arg Asn Ala Lys Gly Asn Ser
    930                 935                 940

Ile Cys Val Asp Cys Gly Ala Pro Asn Pro Thr Trp Ala Ser Leu Asn
945                 950                 955                 960

Leu Gly Ala Leu Ile Cys Ile Glu Cys Ser Gly Ile His Arg Asn Leu
                965                 970                 975

Gly Thr His Leu Ser Arg Val Arg Ser Leu Asp Leu Asp Asp Trp Pro
            980                 985                 990

Arg Glu Leu Thr Leu Val Leu Thr  Ala Ile Gly Asn Asp  Thr Ala
Asn
        995                 1000                1005
```

```
Arg Val  Trp Glu Ser Asp Thr  Arg Gly Arg Ala Lys  Pro Ser Arg
    1010                1015                1020

Asp Ser  Ser Arg Glu Glu Arg  Glu Ser Trp Ile Arg  Ala Lys Tyr
    1025                1030                1035

Glu Gln  Leu Leu Phe Leu Ala  Pro Leu Ser Thr Ser  Glu Glu Pro
    1040                1045                1050

Leu Gly  Arg Gln Leu Trp Ala  Ala Val Gln Ala Gln  Asp Val Ala
    1055                1060                1065

Thr Val  Leu Leu Leu Leu Ala  His Ala Arg His Gly  Pro Leu Asp
    1070                1075                1080

Thr Ser  Val Glu Asp Pro Gln  Leu Arg Ser Pro Leu  His Leu Ala
    1085                1090                1095

Ala Glu  Leu Ala His Val Val  Ile Thr Gln Leu Leu  Leu Trp Tyr
    1100                1105                1110

Gly Ala  Asp Val Ala Ala Arg  Asp Ala Gln Gly Arg  Thr Ala Leu
    1115                1120                1125

Phe Tyr  Ala Arg Gln Ala Gly  Ser Gln Leu Cys Ala  Asp Ile Leu
    1130                1135                1140

Leu Gln  His Gly Cys Pro Gly  Glu Gly Gly Ser Ala  Ala Thr Thr
    1145                1150                1155

Pro Ser  Ala Ala Thr Thr Pro  Ser Ile Thr Ala Thr  Pro Ser Pro
    1160                1165                1170

Arg Arg  Arg Ser Ser Ala Ala  Ser Val Gly Arg Ala  Asp Ala Pro
    1175                1180                1185

Val Ala  Leu Val
    1190
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<210> 6099
<211> 576
<212> PRT

<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1327; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP3; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with GTPase domain, ankyrin repeat and PH domain
3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000335589"

<400> 6099

```
Met Glu Arg Gly Trp Pro Gln Gly Asp Ser Cys Pro Gly Glu Arg Pro
1               5                  10                  15

Ala Ala Cys Arg Arg Ala His Ser Val Cys Asp Ser Leu Asp Leu His
            20                  25                  30

Gly Ala Ser Ala Gly Arg Ala Ala Ala Ala Leu Gln Ala Ala Leu Cys
        35                  40                  45

Ala Ala Ser Glu Gln Pro Ala Arg Pro Arg Ser Val Cys Ser Gly Gly
    50                  55                  60

Pro Glu Pro Pro Pro Thr Gly Ala Arg Gly Leu Leu Leu Gly Leu Leu
65                  70                  75                  80

Arg Pro Arg Leu Gly Arg Arg Gly Leu Ala Pro Ser Gly Pro Pro Val
                85                  90                  95

Ser Pro Ala Pro Ser Pro Ala Ser Ser Pro Ala Pro Thr Arg Arg Ser
            100                 105                 110

Arg Thr Arg Gly Glu Pro Thr Pro Arg Pro Arg Pro Ala Ser Met Thr
        115                 120                 125

Phe Leu Glu Val Asn Arg Leu Glu Leu Ala Ala Ala Glu Ala Pro Gly
    130                 135                 140
```

```
Ala Gly Leu Gly Arg Ala Gly Ser Ala Gly Phe Leu Arg Gly Ala Ala
145                 150                 155                 160

Leu Trp Ser Ser Gln Arg Trp Pro Val Leu Arg Gly Gly Arg Gly Pro
                165                 170                 175

Glu Gly Pro Arg Arg Gly Leu Ala Ala Leu Arg Lys Ser Phe Ser Phe
            180                 185                 190

Arg Leu Arg Arg Gly Gln Glu Val Arg Arg Ser Glu Ser Gly Leu Leu
        195                 200                 205

Ala Arg Pro Pro Arg Ala Arg Thr Arg Ser Asp Gly Asp Ala Gly Ser
    210                 215                 220

Leu Gly Ala Phe Pro Ser Arg Arg Asp Leu Leu Gly Ser Asp Ala Pro
225                 230                 235                 240

Arg Ala Ala Pro Glu Pro Gly Arg Pro Arg Thr Ala Ala Gly Leu Trp
                245                 250                 255

Arg Leu Leu Thr Ser Arg Phe Arg Arg Arg Glu Pro Ala Pro Ala Ala
            260                 265                 270

Pro Leu Trp Gly Arg Arg Ala Ala Ala Ala Pro Glu Leu Leu Arg Ala
        275                 280                 285

Pro Ser Asp Ser Phe Val Asn Ser Gln Glu Trp Thr Leu Ser Arg Ser
    290                 295                 300

Val Pro Glu Leu Lys Val Gly Ile Val Gly Asn Leu Ser Ser Gly Lys
305                 310                 315                 320

Ser Ala Leu Val His Arg Tyr Leu Thr Gly Thr Tyr Val Gln Glu Glu
                325                 330                 335

Ser Pro Glu Gly Gly Arg Phe Lys Lys Glu Ile Val Val Asp Gly Gln
            340                 345                 350

Ser Tyr Leu Leu Leu Ile Arg Asp Glu Gly Gly Pro Pro Glu Leu Gln
        355                 360                 365

Phe Ala Ala Trp Val Asp Ala Val Val Phe Val Phe Ser Leu Glu Asp
```

370 375 380

Glu Ile Ser Phe Gln Thr Val Tyr Asn Tyr Phe Leu Arg Leu Cys Ser
385 390 395 400

Phe Arg Asn Ala Ser Glu Val Pro Met Val Leu Val Gly Thr Gln Asp
405 410 415

Ala Ile Ser Ala Ala Asn Pro Arg Val Ile Asp Asp Ser Arg Ala Arg
420 425 430

Lys Leu Ser Thr Asp Leu Lys Arg Cys Thr Tyr Tyr Glu Thr Cys Ala
435 440 445

Thr Tyr Gly Leu Asn Val Glu Arg Val Phe Gln Asp Val Ala Gln Lys
450 455 460

Val Val Ala Leu Arg Lys Lys Gln Gln Leu Ala Ile Gly Pro Cys Lys
465 470 475 480

Ser Leu Pro Asn Ser Pro Ser His Ser Ala Val Ser Ala Ala Ser Ile
485 490 495

Pro Ala Val His Ile Asn Gln Ala Thr Asn Gly Gly Gly Ser Ala Phe
500 505 510

Ser Asp Tyr Ser Ser Ser Val Pro Ser Thr Pro Ser Ile Ser Gln Arg
515 520 525

Glu Leu Arg Ile Glu Thr Ile Ala Ala Ser Ser Thr Pro Thr Pro Ile
530 535 540

Arg Lys Gln Ser Lys Arg Arg Ser Asn Ile Phe Thr Ile Cys Ala Thr
545 550 555 560

Val Ser Asn Phe Ser Ser Thr Lys Arg Pro Phe Gln Leu Leu Pro Asn
565 570 575

<210> 6100
<211> 911
<212> PRT
<213> Homo sapiens

<220>

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<220>
<221> source
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<220>
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<223> /note="Gene Name:
ArfGAP with GTPase domain, ankyrin repeat and PH domain
3; "

<220>
<221> source
<223> /note="Uniprot ID: Q96P47; "

<220>
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<223> /note="ENSP ID: ENSP00000380413"

<400> 6100
Met Asn Phe Gln Ala Gly Gly Gly Gln Ser Pro Gln Gln Gln Gln Ser
1 5 10 15

Leu Ala Ala Pro Gly Gly Gly Gly Ala Ala Ala Gln Gln Leu Val Cys
20 25 30

Gly Gly Gln Phe Gly Gly Ala Gly Pro Gly Ala Gly Gly Gly Gly Gly
35 40 45

Pro Ser Gln Gln Leu Ala Gly Gly Pro Pro Gln Gln Phe Ala Leu Ser
50 55 60

Asn Ser Ala Ala Ile Arg Ala Glu Ile Gln Arg Phe Glu Ser Val His
65 70 75 80

Pro Asn Ile Tyr Ala Ile Tyr Asp Leu Ile Glu Arg Ile Glu Asp Leu
85 90 95

Ala Leu Gln Asn Gln Ile Arg Glu His Val Ile Ser Ile Glu Asp Ser
100 105 110

Phe Val Asn Ser Gln Glu Trp Thr Leu Ser Arg Ser Val Pro Glu Leu
115 120 125

Lys Val Gly Ile Val Gly Asn Leu Ser Ser Gly Lys Ser Ala Leu Val
130 135 140

```
His Arg Tyr Leu Thr Gly Thr Tyr Val Gln Glu Glu Ser Pro Glu Gly
145                 150                 155                 160

Gly Arg Phe Lys Lys Glu Ile Val Val Asp Gly Gln Ser Tyr Leu Leu
                165                 170                 175

Leu Ile Arg Asp Glu Gly Gly Pro Pro Glu Leu Gln Phe Ala Ala Trp
            180                 185                 190

Val Asp Ala Val Val Phe Val Phe Ser Leu Glu Asp Glu Ile Ser Phe
        195                 200                 205

Gln Thr Val Tyr Asn Tyr Phe Leu Arg Leu Cys Ser Phe Arg Asn Ala
    210                 215                 220

Ser Glu Val Pro Met Val Leu Val Gly Thr Gln Asp Ala Ile Ser Ala
225                 230                 235                 240

Ala Asn Pro Arg Val Ile Asp Asp Ser Arg Ala Arg Lys Leu Ser Thr
                245                 250                 255

Asp Leu Lys Arg Cys Thr Tyr Tyr Glu Thr Cys Ala Thr Tyr Gly Leu
            260                 265                 270

Asn Val Glu Arg Val Phe Gln Asp Val Ala Gln Lys Val Val Ala Leu
        275                 280                 285

Arg Lys Lys Gln Gln Leu Ala Ile Gly Pro Cys Lys Ser Leu Pro Asn
    290                 295                 300

Ser Pro Ser His Ser Ala Val Ser Ala Ala Ser Ile Pro Ala Val His
305                 310                 315                 320

Ile Asn Gln Ala Thr Asn Gly Gly Gly Ser Ala Phe Ser Asp Tyr Ser
                325                 330                 335

Ser Ser Val Pro Ser Thr Pro Ser Ile Ser Gln Arg Glu Leu Arg Ile
            340                 345                 350

Glu Thr Ile Ala Ala Ser Ser Thr Pro Thr Pro Ile Arg Lys Gln Ser
        355                 360                 365
```

```
Lys Arg Arg Ser Asn Ile Phe Thr Ser Arg Lys Gly Ala Asp Leu Asp
    370                 375                 380

Arg Glu Lys Lys Ala Ala Glu Cys Lys Val Asp Ser Ile Gly Ser Gly
385                 390                 395                 400

Arg Ala Ile Pro Ile Lys Gln Gly Ile Leu Leu Lys Arg Ser Gly Lys
                405                 410                 415

Ser Leu Asn Lys Glu Trp Lys Lys Lys Tyr Val Thr Leu Cys Asp Asn
            420                 425                 430

Gly Leu Leu Thr Tyr His Pro Ser Leu His Asp Tyr Met Gln Asn Ile
        435                 440                 445

His Gly Lys Glu Ile Asp Leu Leu Arg Thr Thr Val Lys Val Pro Gly
    450                 455                 460

Lys Arg Leu Pro Arg Ala Thr Pro Ala Thr Ala Pro Gly Thr Ser Pro
465                 470                 475                 480

Arg Ala Asn Gly Leu Ser Val Glu Arg Ser Asn Thr Gln Leu Gly Gly
                485                 490                 495

Gly Thr Gly Ala Pro His Ser Ala Ser Ser Ala Ser Leu His Ser Glu
            500                 505                 510

Arg Pro Leu Ser Ser Ser Ala Trp Ala Gly Pro Arg Pro Glu Gly Leu
        515                 520                 525

His Gln Arg Ser Cys Ser Val Ser Ser Ala Asp Gln Trp Ser Glu Ala
    530                 535                 540

Thr Thr Ser Leu Pro Pro Gly Met Gln His Pro Ala Ser Gly Pro Ala
545                 550                 555                 560

Glu Val Leu Ser Ser Ser Pro Lys Leu Asp Pro Pro Pro Ser Pro His
                565                 570                 575

Ser Asn Arg Lys Lys His Arg Arg Lys Lys Ser Thr Gly Thr Pro Arg
            580                 585                 590

Pro Asp Gly Pro Ser Ser Ala Thr Glu Glu Ala Glu Glu Ser Phe Glu
```

595 600 605

Phe Val Val Val Ser Leu Thr Gly Gln Thr Trp His Phe Glu Ala Ser
610 615 620

Thr Ala Glu Glu Arg Glu Leu Trp Val Gln Ser Val Gln Ala Gln Ile
625 630 635 640

Leu Ala Ser Leu Gln Gly Cys Arg Ser Ala Lys Asp Lys Thr Arg Leu
645 650 655

Gly Asn Gln Asn Ala Ala Leu Ala Val Gln Ala Val Arg Thr Val Arg
660 665 670

Gly Asn Ser Phe Cys Ile Asp Cys Asp Ala Pro Asn Pro Asp Trp Ala
675 680 685

Ser Leu Asn Leu Gly Ala Leu Met Cys Ile Glu Cys Ser Gly Ile His
690 695 700

Arg His Leu Gly Ala His Leu Ser Arg Val Arg Ser Leu Asp Leu Asp
705 710 715 720

Asp Trp Pro Pro Glu Leu Leu Ala Val Met Thr Ala Met Gly Asn Ala
725 730 735

Leu Ala Asn Ser Val Trp Glu Gly Ala Leu Gly Gly Tyr Ser Lys Pro
740 745 750

Gly Pro Asp Ala Cys Arg Glu Glu Lys Glu Arg Trp Ile Arg Ala Lys
755 760 765

Tyr Glu Gln Lys Leu Phe Leu Ala Pro Leu Pro Ser Ser Asp Val Pro
770 775 780

Leu Gly Gln Gln Leu Leu Arg Ala Val Val Glu Asp Asp Leu Arg Leu
785 790 795 800

Leu Val Met Leu Leu Ala His Gly Ser Lys Glu Glu Val Asn Glu Thr
805 810 815

Tyr Gly Asp Gly Asp Gly Arg Thr Ala Leu His Leu Ser Ser Ala Met
820 825 830

```
Ala Asn Val Val Phe Thr Gln Leu Leu Ile Trp Tyr Gly Val Asp Val
        835                 840                 845

Arg Ser Arg Asp Ala Arg Gly Leu Thr Pro Leu Ala Tyr Ala Arg Arg
    850                 855                 860

Ala Gly Ser Gln Glu Cys Ala Asp Ile Leu Ile Gln His Gly Cys Pro
865                 870                 875                 880

Gly Glu Gly Cys Gly Leu Ala Pro Thr Pro Asn Arg Glu Pro Ala Asn
                885                 890                 895

Gly Thr Asn Pro Ser Ala Glu Leu His Arg Ser Pro Ser Leu Leu
            900                 905                 910


<210> 6101
<211> 194
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1327; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP3; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with GTPase domain, ankyrin repeat and PH domain
      3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000417151"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6101
Xaa Glu Gly Glu Arg Ser Arg Gly Leu Arg Glu Pro Gly Arg Ser Gly
1               5                   10                  15

Leu Ser Gly Ala Gly Arg Gly Leu His Arg Pro Cys Leu Ala Met Leu
```

```
            20                  25                  30

Ser Leu Ser Gly Val Leu Ala Arg Leu Arg Thr Arg Pro Arg Asp Ser
        35                  40                  45

Phe Val Asn Ser Gln Glu Trp Thr Leu Ser Arg Ser Val Pro Glu Leu
    50                  55                  60

Lys Val Gly Ile Val Gly Asn Leu Ser Ser Gly Lys Ser Ala Leu Val
65                  70                  75                  80

His Arg Tyr Leu Thr Gly Thr Tyr Val Gln Glu Glu Ser Pro Glu Gly
                85                  90                  95

Gly Arg Phe Lys Lys Glu Ile Val Val Asp Gly Gln Ser Tyr Leu Leu
            100                 105                 110

Leu Ile Arg Asp Glu Gly Gly Pro Pro Glu Leu Gln Phe Ala Ala Trp
        115                 120                 125

Val Asp Ala Val Val Phe Val Phe Ser Leu Glu Asp Glu Ile Ser Phe
    130                 135                 140

Gln Thr Val Tyr Asn Tyr Phe Leu Arg Leu Cys Ser Phe Arg Asn Ala
145                 150                 155                 160

Ser Glu Val Pro Met Val Leu Val Gly Thr Gln Asp Ala Ile Ser Ala
                165                 170                 175

Ala Asn Pro Arg Val Ile Asp Asp Ser Arg Ala Arg Lys Leu Ser Thr
            180                 185                 190

Asp Leu
```

<210> 6102
<211> 404
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1327; "

<220>

<221> source
<223> /note="Gene Symbol: AGAP3; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with GTPase domain, ankyrin repeat and PH domain
3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000417910"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6102
Xaa Glu Ile Asp Leu Leu Arg Thr Thr Val Lys Val Pro Gly Lys Arg
1 5 10 15

Leu Pro Arg Ala Thr Pro Ala Thr Ala Pro Gly Thr Ser Pro Arg Ala
20 25 30

Asn Gly Leu Ser Val Glu Arg Ser Asn Thr Gln Leu Gly Gly Gly Thr
35 40 45

Ala Ser Gly Pro Ala Glu Val Leu Ser Ser Ser Pro Lys Leu Asp Pro
50 55 60

Pro Pro Ser Pro His Ser Asn Arg Lys Lys His Arg Arg Lys Lys Ser
65 70 75 80

Thr Gly Thr Pro Arg Pro Asp Gly Pro Ser Ser Ala Thr Glu Glu Ala
85 90 95

Glu Glu Ser Phe Glu Phe Val Val Val Ser Leu Thr Gly Gln Thr Trp
100 105 110

His Phe Glu Ala Ser Thr Ala Glu Glu Arg Glu Leu Trp Val Gln Ser
115 120 125

Val Gln Ala Gln Ile Leu Ala Ser Leu Gln Gly Cys Arg Ser Ala Lys
130 135 140

Asp Lys Thr Arg Leu Gly Asn Gln Asn Ala Ala Leu Ala Val Gln Ala

145 150 155 160

Val Arg Thr Val Arg Gly Asn Ser Phe Cys Ile Asp Cys Asp Ala Pro
165 170 175

Asn Pro Asp Trp Ala Ser Leu Asn Leu Gly Ala Leu Met Cys Ile Glu
180 185 190

Cys Ser Gly Ile His Arg His Leu Gly Ala His Leu Ser Arg Val Arg
195 200 205

Ser Leu Asp Leu Asp Asp Trp Pro Pro Glu Leu Leu Ala Val Met Thr
210 215 220

Ala Met Gly Asn Ala Leu Ala Asn Ser Val Trp Glu Gly Ala Leu Gly
225 230 235 240

Gly Tyr Ser Lys Pro Gly Pro Asp Ala Cys Arg Glu Glu Lys Glu Arg
245 250 255

Trp Ile Arg Ala Lys Tyr Glu Gln Lys Leu Phe Leu Ala Pro Leu Pro
260 265 270

Ser Ser Asp Val Pro Leu Gly Gln Gln Leu Leu Arg Ala Val Val Glu
275 280 285

Asp Asp Leu Arg Leu Leu Val Met Leu Leu Ala His Gly Ser Lys Glu
290 295 300

Glu Val Asn Glu Thr Tyr Gly Asp Gly Asp Gly Arg Thr Ala Leu His
305 310 315 320

Leu Ser Ser Ala Met Ala Asn Val Val Phe Thr Gln Leu Leu Ile Trp
325 330 335

Tyr Gly Val Asp Val Arg Ser Arg Asp Ala Arg Gly Leu Thr Pro Leu
340 345 350

Ala Tyr Ala Arg Arg Ala Gly Ser Gln Glu Cys Ala Asp Ile Leu Ile
355 360 365

Gln His Gly Cys Pro Gly Glu Gly Cys Gly Leu Ala Pro Thr Pro Asn
370 375 380

```
Arg Glu Pro Ala Asn Gly Thr Asn Pro Ser Ala Glu Leu His Arg Ser
385                 390                 395                 400


Pro Ser Leu Leu



<210> 6103
<211> 580
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1327; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP3; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with GTPase domain, ankyrin repeat and PH domain
      3; "

<220>
<221> source
<223> /note="Uniprot ID:  Q96P47; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000418016"

<400> 6103
Met Val Leu Val Gly Thr Gln Asp Ala Ile Ser Ala Ala Asn Pro Arg
1               5                   10                  15


Val Ile Asp Asp Ser Arg Ala Arg Lys Leu Ser Thr Asp Leu Lys Arg
            20                  25                  30


Cys Thr Tyr Tyr Glu Thr Cys Ala Thr Tyr Gly Leu Asn Val Glu Arg
        35                  40                  45


Val Phe Gln Asp Val Ala Gln Lys Val Val Ala Leu Arg Lys Lys Gln
    50                  55                  60


Gln Leu Ala Ile Gly Pro Cys Lys Ser Leu Pro Asn Ser Pro Ser His
65                  70                  75                  80
```

```
Ser Ala Val Ser Ala Ala Ser Ile Pro Ala Val His Ile Asn Gln Ala
                85                  90                  95

Thr Asn Gly Gly Gly Ser Ala Phe Ser Asp Tyr Ser Ser Ser Val Pro
            100                 105                 110

Ser Thr Pro Ser Ile Ser Gln Arg Glu Leu Arg Ile Glu Thr Ile Ala
        115                 120                 125

Ala Ser Ser Thr Pro Thr Pro Ile Arg Lys Gln Ser Lys Arg Arg Ser
    130                 135                 140

Asn Ile Phe Thr Ser Arg Lys Gly Ala Asp Leu Asp Arg Glu Lys Lys
145                 150                 155                 160

Ala Ala Glu Cys Lys Val Asp Ser Ile Gly Ser Gly Arg Ala Ile Pro
                165                 170                 175

Ile Lys Gln Gly Ile Leu Leu Lys Arg Ser Gly Lys Ser Leu Asn Lys
            180                 185                 190

Glu Trp Lys Lys Lys Tyr Val Thr Leu Cys Asp Asn Gly Leu Leu Thr
        195                 200                 205

Tyr His Pro Ser Leu His Asp Tyr Met Gln Asn Ile His Gly Lys Glu
    210                 215                 220

Ile Asp Leu Leu Arg Thr Thr Val Lys Val Pro Gly Lys Arg Leu Pro
225                 230                 235                 240

Arg Ala Thr Pro Ala Thr Ala Pro Gly Thr Ser Pro Arg Ala Asn Gly
                245                 250                 255

Leu Ser Val Glu Arg Ser Asn Thr Gln Leu Gly Gly Gly Thr Glu Ala
            260                 265                 270

Glu Glu Ser Phe Glu Phe Val Val Val Ser Leu Thr Gly Gln Thr Trp
        275                 280                 285

His Phe Glu Ala Ser Thr Ala Glu Glu Arg Glu Leu Trp Val Gln Ser
    290                 295                 300
```

```
Val Gln Ala Gln Ile Leu Ala Ser Leu Gln Gly Cys Arg Ser Ala Lys
305                 310                 315                 320

Asp Lys Thr Arg Leu Gly Asn Gln Asn Ala Ala Leu Ala Val Gln Ala
                325                 330                 335

Val Arg Thr Val Arg Gly Asn Ser Phe Cys Ile Asp Cys Asp Ala Pro
            340                 345                 350

Asn Pro Asp Trp Ala Ser Leu Asn Leu Gly Ala Leu Met Cys Ile Glu
        355                 360                 365

Cys Ser Gly Ile His Arg His Leu Gly Ala His Leu Ser Arg Val Arg
    370                 375                 380

Ser Leu Asp Leu Asp Asp Trp Pro Pro Glu Leu Leu Ala Val Met Thr
385                 390                 395                 400

Ala Met Gly Asn Ala Leu Ala Asn Ser Val Trp Glu Gly Ala Leu Gly
                405                 410                 415

Gly Tyr Ser Lys Pro Gly Pro Asp Ala Cys Arg Glu Glu Lys Glu Arg
            420                 425                 430

Trp Ile Arg Ala Lys Tyr Glu Gln Lys Leu Phe Leu Ala Pro Leu Pro
        435                 440                 445

Ser Ser Asp Val Pro Leu Gly Gln Gln Leu Leu Arg Ala Val Val Glu
    450                 455                 460

Asp Asp Leu Arg Leu Leu Val Met Leu Leu Ala His Gly Ser Lys Glu
465                 470                 475                 480

Glu Val Asn Glu Thr Tyr Gly Asp Gly Asp Gly Arg Thr Ala Leu His
                485                 490                 495

Leu Ser Ser Ala Met Ala Asn Val Val Phe Thr Gln Leu Leu Ile Trp
            500                 505                 510

Tyr Gly Val Asp Val Arg Ser Arg Asp Ala Arg Gly Leu Thr Pro Leu
        515                 520                 525

Ala Tyr Ala Arg Arg Ala Gly Ser Gln Glu Cys Ala Asp Ile Leu Ile
```

```
    530                 535                 540

Gln His Gly Cys Pro Gly Glu Gly Cys Gly Leu Ala Pro Thr Pro Asn
545                 550                 555                 560

Arg Glu Pro Ala Asn Gly Thr Asn Pro Ser Ala Glu Leu His Arg Ser
                565                 570                 575

Pro Ser Leu Leu
            580


<210> 6104
<211> 343
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1327; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP3; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with GTPase domain, ankyrin repeat and PH domain
      3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000418125"

<400> 6104
Met Asn Phe Gln Ala Gly Gly Gly Gln Ser Pro Gln Gln Gln Gln Ser
1               5                   10                  15

Leu Ala Ala Pro Gly Gly Gly Gly Ala Ala Ala Gln Gln Leu Val Cys
            20                  25                  30

Gly Gly Gln Phe Gly Gly Ala Gly Pro Gly Ala Gly Gly Gly Gly Gly
        35                  40                  45

Pro Ser Gln Gln Leu Ala Gly Gly Pro Pro Gln Gln Phe Ala Leu Ser
    50                  55                  60

Asn Ser Ala Ala Ile Arg Ala Glu Ile Gln Arg Phe Glu Ser Val His
65                  70                  75                  80
```

```
Pro Asn Ile Tyr Ala Ile Tyr Asp Leu Ile Glu Arg Ile Glu Asp Leu
                85                  90                  95

Ala Leu Gln Asn Gln Ile Arg Glu His Val Ile Ser Ile Glu Asp Ser
            100                 105                 110

Phe Val Asn Ser Gln Glu Trp Thr Leu Ser Arg Ser Val Pro Glu Leu
        115                 120                 125

Lys Val Gly Ile Val Gly Asn Leu Ser Ser Gly Lys Ser Ala Leu Val
    130                 135                 140

His Arg Tyr Leu Thr Gly Thr Tyr Val Gln Glu Glu Ser Pro Glu Gly
145                 150                 155                 160

Gly Arg Phe Lys Lys Glu Ile Val Val Asp Gly Gln Ser Tyr Leu Leu
                165                 170                 175

Leu Ile Arg Asp Glu Gly Gly Pro Pro Glu Leu Gln Phe Ala Ala Trp
            180                 185                 190

Val Asp Ala Val Val Phe Val Phe Ser Leu Glu Asp Glu Ile Ser Phe
        195                 200                 205

Gln Thr Val Tyr Asn Tyr Phe Leu Arg Leu Cys Ser Phe Arg Asn Ala
    210                 215                 220

Ser Glu Val Pro Met Val Leu Val Gly Thr Gln Asp Ala Ile Ser Ala
225                 230                 235                 240

Ala Asn Pro Arg Val Ile Asp Asp Ser Arg Ala Arg Lys Leu Ser Thr
                245                 250                 255

Asp Leu Lys Arg Cys Thr Tyr Tyr Glu Thr Cys Ala Thr Tyr Gly Leu
            260                 265                 270

Asn Val Glu Arg Val Phe Gln Asp Val Ala Gln Lys Val Val Ala Leu
        275                 280                 285

Arg Lys Lys Gln Gln Leu Ala Ile Gly Pro Cys Lys Ser Leu Pro Asn
    290                 295                 300
```

```
Ser Pro Ser His Ser Ala Val Ser Ala Ala Ser Ile Pro Ala Val His
305                 310                 315                 320


Ile Asn Gln Ile Cys Ala Thr Val Ser Asn Phe Ser Ser Thr Lys Arg
                325                 330                 335


Pro Phe Gln Leu Leu Pro Asn
            340


<210> 6105
<211> 177
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1327; "

<220>
<221> source
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<220>
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<223> /note="Gene Name:
      ArfGAP with GTPase domain, ankyrin repeat and PH domain
      3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000418159"

<400> 6105
Asp Ala Ile Ser Ala Ala Asn Pro Arg Val Ile Asp Asp Ser Arg Ala
1               5                   10                  15


Arg Lys Leu Ser Thr Asp Leu Lys Arg Cys Thr Tyr Tyr Glu Thr Cys
            20                  25                  30


Ala Thr Tyr Gly Leu Asn Val Glu Arg Val Phe Gln Asp Val Ala Gln
        35                  40                  45


Lys Val Val Ala Leu Arg Lys Lys Gln Gln Leu Ala Ile Gly Pro Cys
    50                  55                  60


Lys Ser Leu Pro Asn Ser Pro Ser His Ser Ala Val Ser Ala Ala Ser
65                  70                  75                  80
```

```
Ile Pro Ala Val His Ile Asn Gln Ala Thr Asn Gly Gly Gly Ser Ala
                85                  90                  95

Phe Ser Asp Tyr Ser Ser Ser Val Pro Ser Thr Pro Ser Ile Ser Gln
            100                 105                 110

Arg Glu Leu Arg Ile Glu Thr Ile Ala Ala Ser Ser Thr Pro Thr Pro
        115                 120                 125

Ile Arg Lys Gln Ser Lys Arg Arg Ser Asn Ile Phe Thr Leu Met Asn
    130                 135                 140

Arg Arg Pro Glu Gly Cys Leu Pro Lys Ala Thr Gln Arg Ile Cys Ala
145                 150                 155                 160

Thr Val Ser Asn Phe Ser Ser Thr Lys Arg Pro Phe Gln Leu Leu Pro
                165                 170                 175

Asn
```

<210> 6106
<211> 396
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1327; "

<220>
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<223> /note="Gene Symbol: AGAP3; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with GTPase domain, ankyrin repeat and PH domain
3; "

<220>
<221> source
<223> /note="Uniprot ID: Q96P47; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000418921"

<400> 6106

```
Met Asn Phe Gln Ala Gly Gly Gly Gln Ser Pro Gln Gln Gln Gln Ser
```

```
1               5                   10                  15

Leu Ala Ala Pro Gly Gly Gly Gly Ala Ala Ala Gln Gln Leu Val Cys
            20                  25                  30

Gly Gly Gln Phe Gly Gly Ala Gly Pro Gly Ala Gly Gly Gly Gly Gly
        35                  40                  45

Pro Ser Gln Gln Leu Ala Gly Gly Pro Pro Gln Gln Phe Ala Leu Ser
    50                  55                  60

Asn Ser Ala Ala Ile Arg Ala Glu Ile Gln Arg Phe Glu Ser Val His
65                  70                  75                  80

Pro Asn Ile Tyr Ala Ile Tyr Asp Leu Ile Glu Arg Ile Glu Asp Leu
                85                  90                  95

Ala Leu Gln Asn Gln Ile Arg Glu His Val Ile Ser Ile Glu Asp Ser
            100                 105                 110

Phe Val Asn Ser Gln Glu Trp Thr Leu Ser Arg Ser Val Pro Glu Leu
        115                 120                 125

Lys Val Gly Ile Val Gly Asn Leu Ser Ser Gly Lys Ser Ala Leu Val
    130                 135                 140

His Arg Tyr Leu Thr Gly Thr Tyr Val Gln Glu Glu Ser Pro Glu Gly
145                 150                 155                 160

Gly Arg Phe Lys Lys Glu Ile Val Val Asp Gly Gln Ser Tyr Leu Leu
                165                 170                 175

Leu Ile Arg Asp Glu Gly Gly Pro Pro Glu Leu Gln Phe Ala Ala Trp
            180                 185                 190

Val Asp Ala Val Val Phe Val Phe Ser Leu Glu Asp Glu Ile Ser Phe
        195                 200                 205

Gln Thr Val Tyr Asn Tyr Phe Leu Arg Leu Cys Ser Phe Arg Asn Ala
    210                 215                 220

Ser Glu Val Pro Met Val Leu Val Gly Thr Gln Asp Ala Ile Ser Ala
225                 230                 235                 240
```

```
Ala Asn Pro Arg Val Ile Asp Asp Ser Arg Ala Arg Lys Leu Ser Thr
                245                 250                 255

Asp Leu Lys Arg Cys Thr Tyr Tyr Glu Thr Cys Ala Thr Tyr Gly Leu
            260                 265                 270

Asn Val Glu Arg Val Phe Gln Asp Val Ala Gln Lys Val Val Ala Leu
        275                 280                 285

Arg Lys Lys Gln Gln Leu Ala Ile Gly Pro Cys Lys Ser Leu Pro Asn
    290                 295                 300

Ser Pro Ser His Ser Ala Val Ser Ala Ala Ser Ile Pro Ala Val His
305                 310                 315                 320

Ile Asn Gln Ala Thr Asn Gly Gly Gly Ser Ala Phe Ser Asp Tyr Ser
                325                 330                 335

Ser Ser Val Pro Ser Thr Pro Ser Ile Ser Gln Arg Glu Leu Arg Ile
            340                 345                 350

Glu Thr Ile Ala Ala Ser Ser Thr Pro Thr Pro Ile Arg Lys Gln Ser
        355                 360                 365

Lys Arg Arg Ser Asn Ile Phe Thr Ile Cys Ala Thr Val Ser Asn Phe
    370                 375                 380

Ser Ser Thr Lys Arg Pro Phe Gln Leu Leu Pro Asn
385                 390                 395


<210> 6107
<211> 170
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1327; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP3; "

<220>
<221> source
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<223> /note="Gene Name:
ArfGAP with GTPase domain, ankyrin repeat and PH domain
3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419801"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6107

```
Xaa Met Val Leu Val Gly Thr Gln Asp Ala Ile Ser Ala Ala Asn Pro
1               5                  10                  15

Arg Val Ile Asp Asp Ser Arg Ala Arg Lys Leu Ser Thr Asp Leu Lys
            20                  25                  30

Arg Cys Thr Tyr Tyr Glu Thr Cys Ala Thr Tyr Gly Leu Asn Val Glu
        35                  40                  45

Arg Val Phe Gln Asp Val Ala Gln Lys Val Val Ala Leu Arg Lys Lys
    50                  55                  60

Gln Gln Leu Ala Ile Gly Pro Cys Lys Ser Leu Pro Asn Ser Pro Ser
65                  70                  75                  80

His Ser Ala Val Ser Ala Ala Ser Ile Pro Ala Val His Ile Asn Gln
                85                  90                  95

Ala Thr Asn Gly Gly Gly Ser Ala Phe Ser Asp Tyr Ser Ser Ser Val
            100                 105                 110

Pro Ser Thr Pro Ser Ile Ser Gln Arg Glu Leu Arg Ile Glu Thr Ile
        115                 120                 125

Ala Ala Ser Ser Thr Pro Thr Pro Ile Arg Lys Gln Ser Lys Arg Arg
    130                 135                 140

Ser Asn Ile Phe Thr Leu Met Asn Arg Arg Pro Glu Gly Cys Leu Pro
145                 150                 155                 160

Lys Ala Thr Gln Arg Val Ser Trp Pro Ser
                165                 170
```

<210> 6108
<211> 875
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1327; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP3; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with GTPase domain, ankyrin repeat and PH domain
3; "

<220>
<221> source
<223> /note="Uniprot ID: Q96P47; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000480655"

<400> 6108
Met Asn Phe Gln Ala Gly Gly Gly Gln Ser Pro Gln Gln Gln Gln Gln
1   5   10   15

Leu Ala Gly Gly Pro Pro Gln Gln Phe Ala Leu Ser Asn Ser Ala Ala
            20   25   30

Ile Arg Ala Glu Ile Gln Arg Phe Glu Ser Val His Pro Asn Ile Tyr
        35   40   45

Ala Ile Tyr Asp Leu Ile Glu Arg Ile Glu Asp Leu Ala Leu Gln Asn
    50   55   60

Gln Ile Arg Glu His Val Ile Ser Ile Glu Asp Ser Phe Val Asn Ser
65   70   75   80

Gln Glu Trp Thr Leu Ser Arg Ser Val Pro Glu Leu Lys Val Gly Ile
                85   90   95

Val Gly Asn Leu Ser Ser Gly Lys Ser Ala Leu Val His Arg Tyr Leu
            100   105   110

```
Thr Gly Thr Tyr Val Gln Glu Glu Ser Pro Glu Gly Gly Arg Phe Lys
        115                 120                 125

Lys Glu Ile Val Val Asp Gly Gln Ser Tyr Leu Leu Leu Ile Arg Asp
    130                 135                 140

Glu Gly Gly Pro Pro Glu Leu Gln Phe Ala Ala Trp Val Asp Ala Val
145                 150                 155                 160

Val Phe Val Phe Ser Leu Glu Asp Glu Ile Ser Phe Gln Thr Val Tyr
                165                 170                 175

Asn Tyr Phe Leu Arg Leu Cys Ser Phe Arg Asn Ala Ser Glu Val Pro
            180                 185                 190

Met Val Leu Val Gly Thr Gln Asp Ala Ile Ser Ala Ala Asn Pro Arg
        195                 200                 205

Val Ile Asp Asp Ser Arg Ala Arg Lys Leu Ser Thr Asp Leu Lys Arg
    210                 215                 220

Cys Thr Tyr Tyr Glu Thr Cys Ala Thr Tyr Gly Leu Asn Val Glu Arg
225                 230                 235                 240

Val Phe Gln Asp Val Ala Gln Lys Val Val Ala Leu Arg Lys Lys Gln
                245                 250                 255

Gln Leu Ala Ile Gly Pro Cys Lys Ser Leu Pro Asn Ser Pro Ser His
            260                 265                 270

Ser Ala Val Ser Ala Ala Ser Ile Pro Ala Val His Ile Asn Gln Ala
        275                 280                 285

Thr Asn Gly Gly Gly Ser Ala Phe Ser Asp Tyr Ser Ser Ser Val Pro
    290                 295                 300

Ser Thr Pro Ser Ile Ser Gln Arg Glu Leu Arg Ile Glu Thr Ile Ala
305                 310                 315                 320

Ala Ser Ser Thr Pro Thr Pro Ile Arg Lys Gln Ser Lys Arg Arg Ser
                325                 330                 335
```

```
Asn Ile Phe Thr Ser Arg Lys Gly Ala Asp Leu Asp Arg Glu Lys Lys
            340                 345                 350

Ala Ala Glu Cys Lys Val Asp Ser Ile Gly Ser Gly Arg Ala Ile Pro
        355                 360                 365

Ile Lys Gln Gly Ile Leu Leu Lys Arg Ser Gly Lys Ser Leu Asn Lys
    370                 375                 380

Glu Trp Lys Lys Lys Tyr Val Thr Leu Cys Asp Asn Gly Leu Leu Thr
385                 390                 395                 400

Tyr His Pro Ser Leu His Asp Tyr Met Gln Asn Ile His Gly Lys Glu
                405                 410                 415

Ile Asp Leu Leu Arg Thr Thr Val Lys Val Pro Gly Lys Arg Leu Pro
            420                 425                 430

Arg Ala Thr Pro Ala Thr Ala Pro Gly Thr Ser Pro Arg Ala Asn Gly
        435                 440                 445

Leu Ser Val Glu Arg Ser Asn Thr Gln Leu Gly Gly Gly Thr Gly Ala
    450                 455                 460

Pro His Ser Ala Ser Ser Ala Ser Leu His Ser Glu Arg Pro Leu Ser
465                 470                 475                 480

Ser Ser Ala Trp Ala Gly Pro Arg Pro Glu Gly Leu His Gln Arg Ser
                485                 490                 495

Cys Ser Val Ser Ser Ala Asp Gln Trp Ser Glu Ala Thr Thr Ser Leu
            500                 505                 510

Pro Pro Gly Met Gln His Pro Ala Ser Gly Pro Ala Glu Val Leu Ser
        515                 520                 525

Ser Ser Pro Lys Leu Asp Pro Pro Pro Ser Pro His Ser Asn Arg Lys
    530                 535                 540

Lys His Arg Arg Lys Lys Ser Thr Gly Thr Pro Arg Pro Asp Gly Pro
545                 550                 555                 560

Ser Ser Ala Thr Glu Glu Ala Glu Glu Ser Phe Glu Phe Val Val Val
```

565 570 575

Ser Leu Thr Gly Gln Thr Trp His Phe Glu Ala Ser Thr Ala Glu Glu
580 585 590

Arg Glu Leu Trp Val Gln Ser Val Gln Ala Gln Ile Leu Ala Ser Leu
595 600 605

Gln Gly Cys Arg Ser Ala Lys Asp Lys Thr Arg Leu Gly Asn Gln Asn
610 615 620

Ala Ala Leu Ala Val Gln Ala Val Arg Thr Val Arg Gly Asn Ser Phe
625 630 635 640

Cys Ile Asp Cys Asp Ala Pro Asn Pro Asp Trp Ala Ser Leu Asn Leu
645 650 655

Gly Ala Leu Met Cys Ile Glu Cys Ser Gly Ile His Arg His Leu Gly
660 665 670

Ala His Leu Ser Arg Val Arg Ser Leu Asp Leu Asp Asp Trp Pro Pro
675 680 685

Glu Leu Leu Ala Val Met Thr Ala Met Gly Asn Ala Leu Ala Asn Ser
690 695 700

Val Trp Glu Gly Ala Leu Gly Gly Tyr Ser Lys Pro Gly Pro Asp Ala
705 710 715 720

Cys Arg Glu Glu Lys Glu Arg Trp Ile Arg Ala Lys Tyr Glu Gln Lys
725 730 735

Leu Phe Leu Ala Pro Leu Pro Ser Ser Asp Val Pro Leu Gly Gln Gln
740 745 750

Leu Leu Arg Ala Val Val Glu Asp Asp Leu Arg Leu Leu Val Met Leu
755 760 765

Leu Ala His Gly Ser Lys Glu Glu Val Asn Glu Thr Tyr Gly Asp Gly
770 775 780

Asp Gly Arg Thr Ala Leu His Leu Ser Ser Ala Met Ala Asn Val Val
785 790 795 800

```
Phe Thr Gln Leu Leu Ile Trp Tyr Gly Val Asp Val Arg Ser Arg Asp
                805                 810                 815

Ala Arg Gly Leu Thr Pro Leu Ala Tyr Ala Arg Arg Ala Gly Ser Gln
            820                 825                 830

Glu Cys Ala Asp Ile Leu Ile Gln His Gly Cys Pro Gly Glu Gly Cys
        835                 840                 845

Gly Leu Ala Pro Thr Pro Asn Arg Glu Pro Ala Asn Gly Thr Asn Pro
    850                 855                 860

Ser Ala Glu Leu His Arg Ser Pro Ser Leu Leu
865                 870                 875


<210> 6109
<211> 663
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1328; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP4; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with GTPase domain, ankyrin repeat and PH domain
      4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000309985"

<400> 6109
Met Gly Asn Ile Leu Thr Cys Arg Val His Pro Ser Val Ser Leu Glu
1               5                   10                  15

Phe Asp Gln Gln Gln Gly Ser Val Cys Pro Ser Glu Ser Glu Ile Tyr
            20                  25                  30

Glu Ala Gly Ala Gly Asp Arg Met Ala Gly Ala Pro Met Ala Ala Ala
        35                  40                  45
```

```
Val Gln Pro Ala Glu Val Thr Val Glu Val Gly Glu Asp Leu His Met
    50                  55                  60

His His Val Arg Asp Arg Glu Met Pro Glu Ala Leu Glu Phe Asn Leu
65                  70                  75                  80

Ser Ala Asn Pro Glu Ala Ser Thr Ile Phe Gln Arg Asn Ser Gln Thr
                85                  90                  95

Asp Val Val Glu Ile Arg Arg Ser Asn Cys Thr Asn His Val Ser Thr
            100                 105                 110

Val Arg Phe Ser Gln Gln Tyr Ser Leu Cys Ser Thr Ile Phe Leu Asp
        115                 120                 125

Asp Ser Thr Ala Ile Gln His Tyr Leu Thr Met Thr Ile Ile Ser Val
    130                 135                 140

Thr Leu Glu Ile Pro His His Ile Thr Gln Arg Asp Ala Asp Arg Ser
145                 150                 155                 160

Leu Ser Ile Pro Asp Glu Gln Leu His Ser Phe Ala Val Ser Thr Val
                165                 170                 175

His Ile Met Lys Lys Arg Asn Gly Gly Gly Ser Leu Asn Asn Tyr Ser
            180                 185                 190

Ser Ser Ile Pro Ser Thr Pro Ser Thr Ser Gln Glu Asp Pro Gln Phe
        195                 200                 205

Ser Val Pro Pro Thr Ala Asn Thr Pro Thr Pro Val Cys Lys Arg Ser
    210                 215                 220

Met Arg Trp Ser Asn Leu Phe Thr Ser Glu Lys Gly Ser Asp Pro Asp
225                 230                 235                 240

Lys Glu Arg Lys Ala Pro Glu Asn His Ala Asp Thr Ile Gly Ser Gly
                245                 250                 255

Arg Ala Ile Pro Ile Lys Gln Gly Met Leu Leu Lys Arg Ser Gly Lys
            260                 265                 270
```

```
Trp Leu Lys Thr Trp Lys Lys Lys Tyr Val Thr Leu Cys Ser Asn Gly
        275                 280                 285

Val Leu Thr Tyr Tyr Ser Ser Leu Gly Asp Tyr Met Lys Asn Ile His
    290                 295                 300

Lys Lys Glu Ile Asp Leu Gln Thr Ser Thr Ile Lys Val Pro Gly Lys
305                 310                 315                 320

Trp Pro Ser Leu Ala Thr Ser Ala Cys Thr Pro Ile Ser Thr Ser Lys
                325                 330                 335

Ser Asn Gly Leu Ser Lys Asp Met Asp Thr Gly Leu Gly Asp Ser Ile
            340                 345                 350

Cys Phe Ser Pro Ser Ile Ser Ser Thr Thr Ser Pro Lys Leu Asn Pro
        355                 360                 365

Pro Pro Ser Pro His Ala Asn Lys Lys Lys His Leu Lys Lys Lys Ser
    370                 375                 380

Thr Asn Asn Phe Met Ile Val Ser Ala Thr Gly Gln Thr Trp His Phe
385                 390                 395                 400

Glu Ala Thr Thr Tyr Glu Glu Arg Asp Ala Trp Val Gln Ala Ile Gln
                405                 410                 415

Ser Gln Ile Leu Ala Ser Leu Gln Ser Cys Glu Ser Ser Lys Ser Lys
            420                 425                 430

Ser Gln Leu Thr Ser Gln Ser Lys Ala Met Ala Leu Gln Ser Ile Gln
        435                 440                 445

Asn Met Arg Gly Asn Ala His Cys Val Asp Cys Glu Thr Gln Asn Pro
    450                 455                 460

Lys Trp Ala Ser Leu Asn Leu Gly Val Leu Met Cys Ile Glu Cys Ser
465                 470                 475                 480

Gly Ile His Arg Ser Leu Gly Thr Arg Leu Ser Arg Val Arg Ser Leu
                485                 490                 495

Glu Leu Asp Asp Trp Pro Val Glu Leu Arg Lys Val Met Ser Ser Ile
```

```
            500                 505                 510

Gly Asn Asp Leu Ala Asn Ser Ile Trp Glu Gly Ser Ser Gln Gly Gln
        515                 520                 525

Thr Lys Pro Ser Glu Lys Ser Thr Arg Glu Glu Lys Glu Arg Trp Ile
    530                 535                 540

Arg Ser Lys Tyr Glu Glu Lys Leu Phe Leu Ala Pro Leu Pro Cys Thr
545                 550                 555                 560

Glu Leu Ser Leu Gly Gln Gln Leu Leu Arg Ala Thr Ala Asp Glu Asp
                565                 570                 575

Leu Gln Thr Ala Ile Leu Leu Leu Ala His Gly Ser Arg Glu Glu Val
            580                 585                 590

Asn Glu Thr Cys Gly Glu Gly Asp Gly Cys Thr Ala Leu His Leu Ala
        595                 600                 605

Cys Arg Lys Gly Asn Val Val Leu Ala Gln Leu Leu Ile Trp Tyr Gly
    610                 615                 620

Val Asp Val Met Ala Arg Asp Ala His Gly Asn Thr Ala Leu Thr Tyr
625                 630                 635                 640

Ala Arg Gln Ala Ser Ser Gln Glu Cys Ile Asn Val Leu Leu Gln Tyr
                645                 650                 655

Gly Cys Pro Asp Lys Cys Val
            660


<210> 6110
<211> 663
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1328; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP4; "

<220>
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<221> source
<223> /note="Gene Name:
ArfGAP with GTPase domain, ankyrin repeat and PH domain
4; "

<220>
<221> source
<223> /note="Uniprot ID: Q96P64; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000392513"

<400> 6110

```
Met Gly Asn Ile Leu Thr Cys Arg Val His Pro Ser Val Ser Leu Glu
1               5                  10                  15

Phe Asp Gln Gln Gln Gly Ser Val Cys Pro Ser Glu Ser Glu Ile Tyr
            20                  25                  30

Glu Ala Gly Ala Gly Asp Arg Met Ala Gly Ala Pro Met Ala Ala Ala
        35                  40                  45

Val Gln Pro Ala Glu Val Thr Val Glu Val Gly Glu Asp Leu His Met
    50                  55                  60

His His Val Arg Asp Arg Glu Met Pro Glu Ala Leu Glu Phe Asn Pro
65                  70                  75                  80

Ser Ala Asn Pro Glu Ala Ser Thr Ile Phe Gln Arg Asn Ser Gln Thr
                85                  90                  95

Asp Val Val Glu Ile Arg Arg Ser Asn Cys Thr Asn His Val Ser Thr
            100                 105                 110

Val Arg Phe Ser Gln Gln Tyr Ser Leu Cys Ser Thr Ile Phe Leu Asp
        115                 120                 125

Asp Ser Thr Ala Ile Gln His Tyr Leu Thr Met Thr Ile Ile Ser Val
    130                 135                 140

Thr Leu Glu Ile Pro His His Ile Thr Gln Arg Asp Ala Asp Arg Ser
145                 150                 155                 160

Leu Ser Ile Pro Asp Glu Gln Leu His Ser Phe Ala Val Ser Thr Val
                165                 170                 175
```

```
His Ile Met Lys Lys Arg Asn Gly Gly Gly Ser Leu Asn Asn Tyr Ser
            180                 185                 190

Ser Ser Ile Pro Ser Thr Pro Ser Thr Ser Gln Glu Asp Pro Gln Phe
        195                 200                 205

Ser Val Pro Pro Thr Ala Asn Thr Pro Thr Pro Val Cys Lys Arg Ser
    210                 215                 220

Met Arg Trp Ser Asn Leu Phe Thr Ser Glu Lys Gly Ser Asp Pro Asp
225                 230                 235                 240

Lys Glu Arg Lys Ala Pro Glu Asn His Ala Asp Thr Ile Gly Ser Gly
                245                 250                 255

Arg Ala Ile Pro Ile Lys Gln Gly Met Leu Leu Lys Arg Ser Gly Lys
            260                 265                 270

Trp Leu Lys Thr Trp Lys Lys Lys Tyr Val Thr Leu Cys Ser Asn Gly
        275                 280                 285

Val Leu Thr Tyr Tyr Ser Ser Leu Gly Asp Tyr Met Lys Asn Ile His
    290                 295                 300

Lys Lys Glu Ile Asp Leu Gln Thr Ser Thr Ile Lys Val Pro Gly Lys
305                 310                 315                 320

Trp Pro Ser Leu Ala Thr Ser Ala Cys Thr Pro Ile Ser Thr Ser Lys
                325                 330                 335

Ser Asn Gly Leu Ser Lys Asp Met Asp Thr Gly Leu Gly Asp Ser Ile
            340                 345                 350

Cys Phe Ser Pro Ser Ile Ser Ser Thr Thr Ser Pro Lys Leu Asn Pro
        355                 360                 365

Pro Pro Ser Pro His Ala Asn Lys Lys Lys His Leu Lys Lys Lys Ser
    370                 375                 380

Thr Asn Asn Phe Met Ile Val Ser Ala Thr Gly Gln Thr Trp His Phe
385                 390                 395                 400
```

```
Glu Ala Thr Thr Tyr Glu Glu Arg Asp Ala Trp Val Gln Ala Ile Gln
                405                 410                 415

Ser Gln Ile Leu Ala Ser Leu Gln Ser Cys Glu Ser Ser Lys Ser Lys
            420                 425                 430

Ser Gln Leu Thr Ser Gln Ser Lys Ala Met Ala Leu Gln Ser Ile Gln
        435                 440                 445

Asn Met Arg Gly Asn Ala His Cys Val Asp Cys Glu Thr Gln Asn Pro
    450                 455                 460

Lys Trp Ala Ser Leu Asn Leu Gly Val Leu Met Cys Ile Glu Cys Ser
465                 470                 475                 480

Gly Ile His Arg Ser Leu Gly Thr Arg Leu Ser Arg Val Arg Ser Leu
                485                 490                 495

Glu Leu Asp Asp Trp Pro Val Glu Leu Arg Lys Val Met Ser Ser Ile
            500                 505                 510

Gly Asn Asp Leu Ala Asn Ser Ile Trp Glu Gly Ser Ser Gln Gly Gln
        515                 520                 525

Thr Lys Pro Ser Glu Lys Ser Thr Arg Glu Glu Lys Glu Arg Trp Ile
    530                 535                 540

Arg Ser Lys Tyr Glu Glu Lys Leu Phe Leu Ala Pro Leu Pro Cys Thr
545                 550                 555                 560

Glu Leu Ser Leu Gly Gln Gln Leu Leu Arg Ala Thr Ala Asp Glu Asp
                565                 570                 575

Leu Gln Thr Ala Ile Leu Leu Leu Ala His Gly Ser Arg Glu Glu Val
            580                 585                 590

Asn Glu Thr Cys Gly Glu Gly Asp Gly Cys Thr Ala Leu His Leu Ala
        595                 600                 605

Cys Arg Lys Gly Asn Val Val Leu Ala Gln Leu Leu Ile Trp Tyr Gly
    610                 615                 620

Val Asp Val Met Ala Arg Asp Ala His Gly Asn Thr Ala Leu Thr Tyr
```

625 630 635 640

Ala Arg Gln Ala Ser Ser Gln Glu Cys Ile Asn Val Leu Leu Gln Tyr
645 650 655

Gly Cys Pro Asp Lys Cys Val
660

<210> 6111
<211> 137
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1328; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP4; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with GTPase domain, ankyrin repeat and PH domain
4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000468160"

<400> 6111
Ala Gly Ala Pro Met Ala Ala Ala Val Gln Pro Ala Glu Val Thr Val
1 5 10 15

Glu Val Gly Glu Asp Leu His Met His His Val Arg Asp Arg Glu Met
20 25 30

Pro Glu Ala Leu Glu Phe Asn Leu Ser Ala Asn Pro Glu Ala Ser Thr
35 40 45

Ile Phe Gln Arg Asn Ser Gln Thr Asp Ala Leu Glu Phe Asn Pro Ser
50 55 60

Ala Asn Pro Glu Ala Ser Thr Ile Phe Gln Arg Asn Ser Gln Thr Asp
65 70 75 80

Val Val Glu Ile Arg Arg Ser Asn Cys Thr Asn His Val Ser Thr Val
85 90 95

```
Arg Phe Ser Gln Gln Tyr Ser Leu Cys Ser Thr Ile Phe Leu Asp Asp
            100                 105                 110

Ser Thr Ala Ile Gln His Tyr Leu Thr Met Thr Ile Ile Ser Val Thr
        115                 120                 125

Leu Glu Ile Pro His His Ile Thr Gln
    130                 135


<210> 6112
<211> 658
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1328; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP4; "

<220>
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<223> /note="Gene Name:
      ArfGAP with GTPase domain, ankyrin repeat and PH domain
      4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000478047"

<400> 6112
Met Gly Asn Ile Leu Thr Cys Arg Val His Pro Ser Val Ser Leu Glu
1               5                   10                  15

Phe Asp Gln Gln Gln Gly Ser Val Cys Pro Ser Glu Ser Glu Ile Tyr
            20                  25                  30

Glu Ala Gly Ala Gly Asp Arg Met Ala Gly Ala Pro Met Ala Ala Ala
        35                  40                  45

Val Gln Pro Ala Glu Val Thr Val Glu Val Gly Glu Asp Leu His Met
    50                  55                  60

His His Val Arg Asp Arg Glu Met Pro Glu Ala Leu Glu Phe Asn Leu
65                  70                  75                  80
```

```
Ser Ala Asn Pro Glu Ala Ser Thr Ile Phe Gln Arg Asn Ser Gln Thr
                85                  90                  95

Asp Ala Leu Glu Phe Asn Pro Ser Ala Asn Pro Glu Ala Ser Thr Ile
            100                 105                 110

Phe Gln Arg Asn Ser Gln Thr Asp Val Val Glu Ile Arg Arg Ser Asn
        115                 120                 125

Cys Thr Asn His Val Ser Thr Val Arg Phe Ser Gln Gln Tyr Ser Leu
    130                 135                 140

Cys Ser Thr Ile Phe Leu Asp Asp Ser Thr Ala Ile Gln His Tyr Leu
145                 150                 155                 160

Thr Met Thr Ile Ile Ser Val Thr Leu Glu Ile Pro His His Ile Thr
                165                 170                 175

Gln Arg Asp Ala Asp Arg Ser Leu Ser Ile Pro Asp Glu Gln Leu His
            180                 185                 190

Ser Phe Ala Val Ser Thr Val His Ile Met Lys Lys Arg Asn Gly Gly
        195                 200                 205

Gly Ser Leu Asn Asn Tyr Ser Ser Ser Ile Pro Ser Thr Pro Ser Thr
    210                 215                 220

Ser Gln Glu Asp Pro Gln Phe Ser Val Pro Pro Thr Ala Asn Thr Pro
225                 230                 235                 240

Thr Pro Val Cys Lys Arg Ser Met Arg Trp Ser Asn Leu Phe Thr Ser
                245                 250                 255

Glu Lys Gly Ser Asp Pro Asp Lys Glu Arg Lys Ala Pro Glu Asn His
            260                 265                 270

Ala Asp Thr Ile Gly Ser Gly Arg Ala Ile Pro Ile Lys Gln Gly Met
        275                 280                 285

Leu Leu Lys Arg Ser Gly Lys Trp Leu Lys Thr Trp Lys Lys Lys Tyr
    290                 295                 300
```

```
Val Thr Leu Cys Ser Asn Gly Val Leu Thr Tyr Tyr Ser Ser Leu Gly
305                 310                 315                 320

Asp Tyr Met Lys Asn Ile His Lys Lys Glu Ile Asp Leu Gln Thr Ser
                325                 330                 335

Thr Ile Lys Val Pro Gly Lys Trp Pro Ser Leu Ala Thr Ser Ala Cys
            340                 345                 350

Thr Pro Ile Ser Thr Ser Lys Ser Asn Gly Leu Ser Lys Asp Met Asp
        355                 360                 365

Thr Gly Leu Gly Asp Ser Ile Cys Phe Ser Pro Ser Ile Ser Ser Thr
    370                 375                 380

Thr Ser Pro Lys Leu Asn Pro Pro Pro Ser Pro His Ala Asn Lys Lys
385                 390                 395                 400

Lys His Leu Lys Lys Lys Ser Thr Asn Asn Phe Met Ile Val Ser Ala
                405                 410                 415

Thr Gly Gln Thr Trp His Phe Glu Ala Thr Thr Tyr Glu Glu Arg Asp
            420                 425                 430

Ala Trp Val Gln Ala Ile Gln Ser Gln Ile Leu Ala Ser Leu Gln Ser
        435                 440                 445

Cys Glu Ser Ser Lys Ser Lys Ser Gln Leu Thr Ser Gln Ser Lys Ala
    450                 455                 460

Met Ala Leu Gln Ser Ile Gln Asn Met Arg Gly Asn Ala His Cys Val
465                 470                 475                 480

Asp Cys Glu Thr Gln Asn Pro Lys Trp Ala Ser Leu Asn Leu Gly Val
                485                 490                 495

Leu Met Cys Ile Glu Cys Ser Gly Ile His Arg Ser Leu Gly Thr Arg
            500                 505                 510

Leu Ser Arg Val Arg Ser Leu Glu Leu Asp Asp Trp Pro Val Glu Leu
        515                 520                 525

Arg Lys Val Met Ser Ser Ile Gly Asn Asp Leu Ala Asn Ser Ile Trp
```

```
    530                 535                 540

Glu Gly Ser Ser Gln Gly Gln Thr Lys Pro Ser Glu Lys Ser Thr Arg
545                 550                 555                 560

Glu Glu Lys Glu Arg Trp Ile Arg Ser Lys Tyr Glu Glu Lys Leu Phe
                565                 570                 575

Leu Ala Pro Leu Pro Cys Thr Glu Leu Ser Leu Gly Gln Gln Leu Leu
            580                 585                 590

Arg Ala Thr Ala Asp Glu Asp Leu Gln Thr Ala Ile Leu Leu Leu Ala
        595                 600                 605

His Gly Ser Arg Glu Glu Val Asn Glu Thr Cys Gly Glu Gly Asp Gly
    610                 615                 620

Cys Thr Ala Leu His Leu Ala Cys Arg Lys Gly Asn Val Val Leu Ala
625                 630                 635                 640

Gln Leu Leu Thr Gly Trp Thr Ser Trp Pro Glu Met Pro Thr Gly Thr
                645                 650                 655

Gln Arg
```

<210> 6113
<211> 686
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1328; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP4; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with GTPase domain, ankyrin repeat and PH domain
4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000483751"

<400> 6113
Met Gly Asn Ile Leu Thr Cys Arg Val His Pro Ser Val Ser Leu Glu
1 5 10 15

Phe Asp Gln Gln Gln Gly Ser Val Cys Pro Ser Glu Ser Glu Ile Tyr
20 25 30

Glu Ala Gly Ala Gly Asp Arg Met Ala Gly Ala Pro Met Ala Ala Ala
35 40 45

Val Gln Pro Ala Glu Val Thr Val Glu Val Gly Glu Asp Leu His Met
50 55 60

His His Val Arg Asp Arg Glu Met Pro Glu Ala Leu Glu Phe Asn Leu
65 70 75 80

Ser Ala Asn Pro Glu Ala Ser Thr Ile Phe Gln Arg Asn Ser Gln Thr
85 90 95

Glu Ala Leu Glu Phe Asn Pro Ser Ala Asn Pro Glu Ala Ser Thr Ile
100 105 110

Phe Gln Arg Asn Ser Gln Thr Asp Val Val Glu Ile Arg Arg Ser Asn
115 120 125

Cys Thr Asn His Val Ser Thr Val Arg Phe Ser Gln Gln Tyr Ser Leu
130 135 140

Cys Ser Thr Ile Phe Leu Asp Asp Ser Thr Ala Ile Gln His Tyr Leu
145 150 155 160

Thr Met Thr Ile Ile Ser Val Thr Leu Glu Ile Pro His His Ile Thr
165 170 175

Gln Arg Asp Ala Asp Arg Ser Leu Ser Ile Pro Asp Glu Gln Leu His
180 185 190

Ser Phe Ala Val Ser Thr Val His Ile Met Lys Lys Arg Asn Gly Gly
195 200 205

Gly Ser Leu Asn Asn Tyr Ser Ser Ser Ile Pro Ser Thr Pro Ser Thr
210 215 220

```
Ser Gln Glu Asp Pro Gln Phe Ser Val Pro Pro Thr Ala Asn Thr Pro
225                 230                 235                 240

Thr Pro Val Cys Lys Arg Ser Met Arg Trp Ser Asn Leu Phe Thr Ser
                245                 250                 255

Glu Lys Gly Ser Asp Pro Asp Lys Glu Arg Lys Ala Pro Glu Asn His
            260                 265                 270

Ala Asp Thr Ile Gly Ser Gly Arg Ala Ile Pro Ile Lys Gln Gly Met
        275                 280                 285

Leu Leu Lys Arg Ser Gly Lys Trp Leu Lys Thr Trp Lys Lys Lys Tyr
    290                 295                 300

Val Thr Leu Cys Ser Asn Gly Val Leu Thr Tyr Tyr Ser Ser Leu Gly
305                 310                 315                 320

Asp Tyr Met Lys Asn Ile His Lys Lys Glu Ile Asp Leu Gln Thr Ser
                325                 330                 335

Thr Ile Lys Val Pro Gly Lys Trp Pro Ser Leu Ala Thr Ser Ala Cys
            340                 345                 350

Thr Pro Ile Ser Thr Ser Lys Ser Asn Gly Leu Ser Lys Asp Met Asp
        355                 360                 365

Thr Gly Leu Gly Asp Ser Ile Cys Phe Ser Pro Ser Ile Ser Ser Thr
    370                 375                 380

Thr Ser Pro Lys Leu Asn Pro Pro Pro Ser Pro His Ala Asn Lys Lys
385                 390                 395                 400

Lys His Leu Lys Lys Lys Ser Thr Asn Asn Phe Met Ile Val Ser Ala
                405                 410                 415

Thr Gly Gln Thr Trp His Phe Glu Ala Thr Thr Tyr Glu Glu Arg Asp
            420                 425                 430

Ala Trp Val Gln Ala Ile Gln Ser Gln Ile Leu Ala Ser Leu Gln Ser
        435                 440                 445
```

```
Cys Glu Ser Ser Lys Ser Lys Ser Gln Leu Thr Ser Gln Ser Lys Ala
    450                 455                 460

Met Ala Leu Gln Ser Ile Gln Asn Met Arg Gly Asn Ala His Cys Val
465                 470                 475                 480

Asp Cys Glu Thr Gln Asn Pro Lys Trp Ala Ser Leu Asn Leu Gly Val
                485                 490                 495

Leu Met Cys Ile Glu Cys Ser Gly Ile His Arg Ser Leu Gly Thr Arg
            500                 505                 510

Leu Ser Arg Val Arg Ser Leu Glu Leu Asp Asp Trp Pro Val Glu Leu
        515                 520                 525

Arg Lys Val Met Ser Ser Ile Gly Asn Asp Leu Ala Asn Ser Ile Trp
    530                 535                 540

Glu Gly Ser Ser Gln Gly Gln Thr Lys Pro Ser Glu Lys Ser Thr Arg
545                 550                 555                 560

Glu Glu Lys Glu Arg Trp Ile Arg Ser Lys Tyr Glu Glu Lys Leu Phe
                565                 570                 575

Leu Ala Pro Leu Pro Cys Thr Glu Leu Ser Leu Gly Gln Gln Leu Leu
            580                 585                 590

Arg Ala Thr Ala Asp Glu Asp Leu Gln Thr Ala Ile Leu Leu Leu Ala
        595                 600                 605

His Gly Ser Arg Glu Glu Val Asn Glu Thr Cys Gly Glu Gly Asp Gly
    610                 615                 620

Cys Thr Ala Leu His Leu Ala Cys Arg Lys Gly Asn Val Val Leu Ala
625                 630                 635                 640

Gln Leu Leu Ile Trp Tyr Gly Val Asp Val Met Ala Arg Asp Ala His
                645                 650                 655

Gly Asn Thr Ala Leu Thr Tyr Ala Arg Gln Ala Ser Ser Gln Glu Cys
            660                 665                 670

Ile Asn Val Leu Leu Gln Tyr Gly Cys Pro Asp Lys Cys Val
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675 680 685

<210> 6114
<211> 686
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1329; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP5; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with GTPase domain, ankyrin repeat and PH domain
5; "

<220>
<221> source
<223> /note="Uniprot ID: A6NIR3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000363207"

<400> 6114

```
Met Gly Asn Ile Leu Thr Cys Cys Val His Pro Ser Val Ser Leu Glu
1               5                  10                  15

Phe Asp Gln Gln Gln Gly Ser Val Cys Pro Ser Glu Ser Glu Ile Tyr
            20                  25                  30

Glu Ala Gly Ala Gly Asp Arg Met Ala Gly Ala Pro Met Ala Ala Ala
        35                  40                  45

Val Gln Pro Ala Glu Val Thr Val Glu Val Gly Glu Asp Leu His Met
    50                  55                  60

His His Ile Arg Asp Gln Glu Met Pro Glu Ala Leu Glu Phe Ser Leu
65                  70                  75                  80

Ser Ala Asn Pro Glu Ala Ser Thr Ile Phe Gln Arg Asn Ser Gln Thr
                85                  90                  95

Asp Ala Leu Glu Phe Asn Pro Ser Ala Asn Pro Glu Ala Ser Thr Ile
            100                 105                 110
```

```
Phe Gln Arg Asn Ser Gln Thr Asp Val Val Glu Ile Arg Arg Ser Asn
        115                 120                 125

Cys Thr Asn His Val Ser Thr Glu Arg Phe Ser Gln Gln Tyr Ser Ser
    130                 135                 140

Cys Ser Thr Ile Phe Leu Asp Asp Ser Thr Ala Ser Gln His Tyr Leu
145                 150                 155                 160

Thr Met Thr Ile Ile Ser Val Thr Leu Glu Ile Pro His His Ile Thr
                165                 170                 175

Gln Arg Asp Ala Asp Arg Ser Leu Ser Ile Pro Asp Glu Gln Leu His
            180                 185                 190

Ser Phe Ala Val Ser Thr Val His Ile Thr Lys Asn Arg Asn Gly Gly
        195                 200                 205

Gly Ser Leu Asn Asn Tyr Ser Ser Ser Ile Pro Ser Thr Pro Ser Thr
    210                 215                 220

Ser Gln Glu Asp Pro Gln Phe Ser Val Pro Pro Thr Ala Asn Thr Pro
225                 230                 235                 240

Thr Pro Val Cys Lys Arg Ser Met Arg Trp Ser Asn Leu Phe Thr Ser
                245                 250                 255

Glu Lys Gly Ser His Pro Asp Lys Glu Arg Lys Ala Pro Glu Asn His
            260                 265                 270

Ala Asp Thr Ile Gly Ser Gly Arg Ala Ile Pro Ile Lys Gln Gly Met
        275                 280                 285

Leu Leu Lys Arg Ser Gly Lys Trp Leu Lys Thr Trp Lys Lys Lys Tyr
    290                 295                 300

Val Thr Leu Cys Ser Asn Gly Val Leu Thr Tyr Tyr Ser Ser Leu Gly
305                 310                 315                 320

Asp Tyr Met Lys Asn Ile His Lys Lys Glu Ile Asp Leu Arg Thr Ser
                325                 330                 335
```

```
Thr Ile Lys Val Pro Gly Lys Trp Pro Ser Leu Ala Thr Ser Ala Cys
            340                 345                 350

Ala Pro Ile Ser Ser Ser Lys Ser Asn Gly Leu Ser Lys Asp Met Asp
        355                 360                 365

Thr Gly Leu Gly Asp Ser Ile Cys Phe Ser Pro Ser Ile Ser Ser Thr
    370                 375                 380

Thr Ser Pro Lys Leu Asn Pro Pro Pro Ser Pro His Ala Asn Lys Lys
385                 390                 395                 400

Lys His Leu Lys Lys Lys Ser Thr Asn Asn Phe Met Ile Val Ser Ala
                405                 410                 415

Thr Gly Gln Thr Trp His Phe Glu Ala Thr Thr Tyr Glu Glu Arg Asp
            420                 425                 430

Ala Trp Val Gln Ala Ile Gln Ser Gln Ile Leu Ala Ser Leu Gln Ser
        435                 440                 445

Cys Glu Ser Ser Lys Ser Lys Ser Gln Leu Thr Ser Gln Ser Glu Ala
    450                 455                 460

Met Ala Leu Gln Ser Ile Gln Asn Met Arg Gly Asn Ala His Cys Val
465                 470                 475                 480

Asp Tyr Glu Thr Gln Asn Pro Lys Trp Ala Ser Leu Asn Leu Gly Val
                485                 490                 495

Leu Met Cys Ile Glu Cys Ser Gly Ile His Arg Ser Leu Gly Thr Arg
            500                 505                 510

Leu Ser Arg Val Arg Ser Leu Glu Leu Asp Asp Trp Pro Val Glu Leu
        515                 520                 525

Arg Lys Val Met Ser Ser Ile Gly Asn Asp Leu Ala Asn Ser Ile Trp
    530                 535                 540

Glu Gly Ser Ser Gln Gly Gln Thr Lys Pro Ser Val Lys Ser Thr Arg
545                 550                 555                 560
```

```
Glu Glu Lys Glu Arg Trp Ile Arg Ser Lys Tyr Glu Glu Lys Leu Phe
                565                 570                 575

Leu Ala Pro Leu Pro Cys Thr Glu Leu Ser Leu Gly Gln His Leu Leu
            580                 585                 590

Arg Ala Thr Ala Asp Glu Asp Leu Gln Thr Ala Ile Leu Leu Leu Ala
        595                 600                 605

His Gly Ser Arg Glu Glu Val Asn Glu Thr Cys Gly Glu Gly Asp Gly
    610                 615                 620

Cys Thr Ala Leu His Leu Ala Cys Arg Lys Gly Asn Val Val Leu Ala
625                 630                 635                 640

Gln Leu Leu Ile Trp Tyr Gly Val Asp Val Met Ala Arg Asp Ala His
                645                 650                 655

Gly Asn Thr Ala Leu Thr Tyr Ala Arg Gln Ala Ser Ser Gln Glu Cys
            660                 665                 670

Ile Asn Val Leu Leu Gln Tyr Gly Cys Pro Asp Glu Cys Val
        675                 680                 685


<210> 6115
<211> 663
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1329; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP5; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with GTPase domain, ankyrin repeat and PH domain
      5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000402792"

<400> 6115
Met Gly Asn Ile Leu Thr Cys Cys Val His Pro Ser Val Ser Leu Glu
```

```
1               5                   10                  15

Phe Asp Gln Gln Gln Gly Ser Val Cys Pro Ser Glu Ser Glu Ile Tyr
            20                  25                  30

Glu Ala Gly Ala Gly Asp Arg Met Ala Gly Ala Pro Met Ala Ala Ala
        35                  40                  45

Val Gln Pro Ala Glu Val Thr Val Glu Val Gly Glu Asp Leu His Met
    50                  55                  60

His His Ile Arg Asp Gln Glu Met Pro Glu Ala Leu Glu Phe Asn Pro
65                  70                  75                  80

Ser Ala Asn Pro Glu Ala Ser Thr Ile Phe Gln Arg Asn Ser Gln Thr
                85                  90                  95

Asp Val Val Glu Ile Arg Arg Ser Asn Cys Thr Asn His Val Ser Thr
            100                 105                 110

Glu Arg Phe Ser Gln Gln Tyr Ser Ser Cys Ser Thr Ile Phe Leu Asp
        115                 120                 125

Asp Ser Thr Ala Ser Gln His Tyr Leu Thr Met Thr Ile Ile Ser Val
    130                 135                 140

Thr Leu Glu Ile Pro His His Ile Thr Gln Arg Asp Ala Asp Arg Ser
145                 150                 155                 160

Leu Ser Ile Pro Asp Glu Gln Leu His Ser Phe Ala Val Ser Thr Val
                165                 170                 175

His Ile Thr Lys Asn Arg Asn Gly Gly Gly Ser Leu Asn Asn Tyr Ser
            180                 185                 190

Ser Ser Ile Pro Ser Thr Pro Ser Thr Ser Gln Glu Asp Pro Gln Phe
        195                 200                 205

Ser Val Pro Pro Thr Ala Asn Thr Pro Thr Pro Val Cys Lys Arg Ser
    210                 215                 220

Met Arg Trp Ser Asn Leu Phe Thr Ser Glu Lys Gly Ser His Pro Asp
225                 230                 235                 240
```

```
Lys Glu Arg Lys Ala Pro Glu Asn His Ala Asp Thr Ile Gly Ser Gly
                245                 250                 255

Arg Ala Ile Pro Ile Lys Gln Gly Met Leu Leu Lys Arg Ser Gly Lys
            260                 265                 270

Trp Leu Lys Thr Trp Lys Lys Lys Tyr Val Thr Leu Cys Ser Asn Gly
        275                 280                 285

Val Leu Thr Tyr Tyr Ser Ser Leu Gly Asp Tyr Met Lys Asn Ile His
    290                 295                 300

Lys Lys Glu Ile Asp Leu Arg Thr Ser Thr Ile Lys Val Pro Gly Lys
305                 310                 315                 320

Trp Pro Ser Leu Ala Thr Ser Ala Cys Ala Pro Ile Ser Ser Ser Lys
                325                 330                 335

Ser Asn Gly Leu Ser Lys Asp Met Asp Thr Gly Leu Gly Asp Ser Ile
            340                 345                 350

Cys Phe Ser Pro Ser Ile Ser Ser Thr Thr Ser Pro Lys Leu Asn Pro
        355                 360                 365

Pro Pro Ser Pro His Ala Asn Lys Lys Lys His Leu Lys Lys Lys Ser
    370                 375                 380

Thr Asn Asn Phe Met Ile Val Ser Ala Thr Gly Gln Thr Trp His Phe
385                 390                 395                 400

Glu Ala Thr Thr Tyr Glu Glu Arg Asp Ala Trp Val Gln Ala Ile Gln
                405                 410                 415

Ser Gln Ile Leu Ala Ser Leu Gln Ser Cys Glu Ser Ser Lys Ser Lys
            420                 425                 430

Ser Gln Leu Thr Ser Gln Ser Glu Ala Met Ala Leu Gln Ser Ile Gln
        435                 440                 445

Asn Met Arg Gly Asn Ala His Cys Val Asp Tyr Glu Thr Gln Asn Pro
    450                 455                 460
```

```
Lys Trp Ala Ser Leu Asn Leu Gly Val Leu Met Cys Ile Glu Cys Ser
465                 470                 475                 480

Gly Ile His Arg Ser Leu Gly Thr Arg Leu Ser Arg Val Arg Ser Leu
                485                 490                 495

Glu Leu Asp Asp Trp Pro Val Glu Leu Arg Lys Val Met Ser Ser Ile
            500                 505                 510

Gly Asn Asp Leu Ala Asn Ser Ile Trp Glu Gly Ser Ser Gln Gly Gln
        515                 520                 525

Thr Lys Pro Ser Val Lys Ser Thr Arg Glu Glu Lys Glu Arg Trp Ile
    530                 535                 540

Arg Ser Lys Tyr Glu Glu Lys Leu Phe Leu Ala Pro Leu Pro Cys Thr
545                 550                 555                 560

Glu Leu Ser Leu Gly Gln His Leu Leu Arg Ala Thr Ala Asp Glu Asp
                565                 570                 575

Leu Gln Thr Ala Ile Leu Leu Leu Ala His Gly Ser Arg Glu Glu Val
            580                 585                 590

Asn Glu Thr Cys Gly Glu Gly Asp Gly Cys Thr Ala Leu His Leu Ala
        595                 600                 605

Cys Arg Lys Gly Asn Val Val Leu Ala Gln Leu Leu Ile Trp Tyr Gly
    610                 615                 620

Val Asp Val Met Ala Arg Asp Ala His Gly Asn Thr Ala Leu Thr Tyr
625                 630                 635                 640

Ala Arg Gln Ala Ser Ser Gln Glu Cys Ile Asn Val Leu Leu Gln Tyr
                645                 650                 655

Gly Cys Pro Asp Glu Cys Val
            660
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<210> 6116
<211> 27
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1329; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP5; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with GTPase domain, ankyrin repeat and PH domain
5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000475576"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6116
Xaa Tyr Ser Ser Cys Ser Thr Ile Phe Leu Asp Asp Ser Thr Ala Ser
1 5 10 15

Gln His Tyr Leu Thr Met Thr Ile Ile Ser His
20 25

<210> 6117
<211> 658
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1329; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP5; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with GTPase domain, ankyrin repeat and PH domain
5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000483632"

<400> 6117
Met Gly Asn Ile Leu Thr Cys Cys Val His Pro Ser Val Ser Leu Glu
1 5 10 15

Phe Asp Gln Gln Gln Gly Ser Val Cys Pro Ser Glu Ser Glu Ile Tyr
20 25 30

Glu Ala Gly Ala Gly Asp Arg Met Ala Gly Ala Pro Met Ala Ala Ala
35 40 45

Val Gln Pro Ala Glu Val Thr Val Glu Val Gly Glu Asp Leu His Met
50 55 60

His His Ile Arg Asp Gln Glu Met Pro Glu Ala Leu Glu Phe Ser Leu
65 70 75 80

Ser Ala Asn Pro Glu Ala Ser Thr Ile Phe Gln Arg Asn Ser Gln Thr
85 90 95

Asp Ala Leu Glu Phe Asn Pro Ser Ala Asn Pro Glu Ala Ser Thr Ile
100 105 110

Phe Gln Arg Asn Ser Gln Thr Asp Val Val Glu Ile Arg Arg Ser Asn
115 120 125

Cys Thr Asn His Val Ser Thr Glu Arg Phe Ser Gln Gln Tyr Ser Ser
130 135 140

Cys Ser Thr Ile Phe Leu Asp Asp Ser Thr Ala Ser Gln His Tyr Leu
145 150 155 160

Thr Met Thr Ile Ile Ser Val Thr Leu Glu Ile Pro His His Ile Thr
165 170 175

Gln Arg Asp Ala Asp Arg Ser Leu Ser Ile Pro Asp Glu Gln Leu His
180 185 190

Ser Phe Ala Val Ser Thr Val His Ile Thr Lys Asn Arg Asn Gly Gly
195 200 205

Gly Ser Leu Asn Asn Tyr Ser Ser Ser Ile Pro Ser Thr Pro Ser Thr
210 215 220

```
Ser Gln Glu Asp Pro Gln Phe Ser Val Pro Pro Thr Ala Asn Thr Pro
225                 230                 235                 240

Thr Pro Val Cys Lys Arg Ser Met Arg Trp Ser Asn Leu Phe Thr Ser
                245                 250                 255

Glu Lys Gly Ser His Pro Asp Lys Glu Arg Lys Ala Pro Glu Asn His
            260                 265                 270

Ala Asp Thr Ile Gly Ser Gly Arg Ala Ile Pro Ile Lys Gln Gly Met
        275                 280                 285

Leu Leu Lys Arg Ser Gly Lys Trp Leu Lys Thr Trp Lys Lys Lys Tyr
    290                 295                 300

Val Thr Leu Cys Ser Asn Gly Val Leu Thr Tyr Tyr Ser Ser Leu Gly
305                 310                 315                 320

Asp Tyr Met Lys Asn Ile His Lys Lys Glu Ile Asp Leu Arg Thr Ser
                325                 330                 335

Thr Ile Lys Val Pro Gly Lys Trp Pro Ser Leu Ala Thr Ser Ala Cys
            340                 345                 350

Ala Pro Ile Ser Ser Ser Lys Ser Asn Gly Leu Ser Lys Asp Met Asp
        355                 360                 365

Thr Gly Leu Gly Asp Ser Ile Cys Phe Ser Pro Ser Ile Ser Ser Thr
    370                 375                 380

Thr Ser Pro Lys Leu Asn Pro Pro Pro Ser Pro His Ala Asn Lys Lys
385                 390                 395                 400

Lys His Leu Lys Lys Lys Ser Thr Asn Asn Phe Met Ile Val Ser Ala
                405                 410                 415

Thr Gly Gln Thr Trp His Phe Glu Ala Thr Thr Tyr Glu Glu Arg Asp
            420                 425                 430

Ala Trp Val Gln Ala Ile Gln Ser Gln Ile Leu Ala Ser Leu Gln Ser
        435                 440                 445

Cys Glu Ser Ser Lys Ser Lys Ser Gln Leu Thr Ser Gln Ser Glu Ala
```

```
    450                 455                 460

Met Ala Leu Gln Ser Ile Gln Asn Met Arg Gly Asn Ala His Cys Val
465                 470                 475                 480

Asp Tyr Glu Thr Gln Asn Pro Lys Trp Ala Ser Leu Asn Leu Gly Val
                485                 490                 495

Leu Met Cys Ile Glu Cys Ser Gly Ile His Arg Ser Leu Gly Thr Arg
            500                 505                 510

Leu Ser Arg Val Arg Ser Leu Glu Leu Asp Asp Trp Pro Val Glu Leu
        515                 520                 525

Arg Lys Val Met Ser Ser Ile Gly Asn Asp Leu Ala Asn Ser Ile Trp
    530                 535                 540

Glu Gly Ser Ser Gln Gly Gln Thr Lys Pro Ser Val Lys Ser Thr Arg
545                 550                 555                 560

Glu Glu Lys Glu Arg Trp Ile Arg Ser Lys Tyr Glu Glu Lys Leu Phe
                565                 570                 575

Leu Ala Pro Leu Pro Cys Thr Glu Leu Ser Leu Gly Gln His Leu Leu
            580                 585                 590

Arg Ala Thr Ala Asp Glu Asp Leu Gln Thr Ala Ile Leu Leu Leu Ala
        595                 600                 605

His Gly Ser Arg Glu Glu Val Asn Glu Thr Cys Gly Glu Gly Asp Gly
    610                 615                 620

Cys Thr Ala Leu His Leu Ala Cys Arg Lys Gly Asn Val Val Leu Ala
625                 630                 635                 640

Gln Leu Leu Thr Gly Trp Thr Ser Trp Pro Glu Met Pro Thr Gly Thr
                645                 650                 655

Gln Arg
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<210> 6118
<211> 686

<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1329; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP5; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with GTPase domain, ankyrin repeat and PH domain 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000486918"

<400> 6118

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Met Gly Asn Ile Leu Thr Cys Cys Val His Pro Ser Val Ser Leu Glu
1               5                  10                  15

Phe Asp Gln Gln Gln Gly Ser Val Cys Pro Ser Glu Ser Glu Ile Tyr
            20                  25                  30

Glu Ala Gly Ala Gly Asp Arg Met Ala Gly Ala Pro Met Ala Ala Ala
        35                  40                  45

Val Gln Pro Ala Glu Val Thr Val Glu Val Gly Glu Asp Leu His Met
    50                  55                  60

His His Ile Arg Asp Gln Glu Met Pro Glu Ala Leu Glu Phe Ser Leu
65                  70                  75                  80

Ser Ala Asn Pro Glu Ala Ser Thr Ile Phe Gln Arg Asn Ser Gln Thr
                85                  90                  95

Glu Ala Leu Glu Phe Asn Pro Ser Ala Asn Pro Glu Ala Ser Thr Ile
            100                 105                 110

Phe Gln Arg Asn Ser Gln Thr Asp Val Val Glu Ile Arg Arg Ser Asn
        115                 120                 125

Cys Thr Asn His Val Ser Thr Glu Arg Phe Ser Gln Gln Tyr Ser Ser
    130                 135                 140
```

```
Cys Ser Thr Ile Phe Leu Asp Asp Ser Thr Ala Ser Gln His Tyr Leu
145                 150                 155                 160

Thr Met Thr Ile Ile Ser Val Thr Leu Glu Ile Pro His His Ile Thr
                165                 170                 175

Gln Arg Asp Ala Asp Arg Ser Leu Ser Ile Pro Asp Glu Gln Leu His
            180                 185                 190

Ser Phe Ala Val Ser Thr Val His Ile Thr Lys Asn Arg Asn Gly Gly
        195                 200                 205

Gly Ser Leu Asn Asn Tyr Ser Ser Ser Ile Pro Ser Thr Pro Ser Thr
    210                 215                 220

Ser Gln Glu Asp Pro Gln Phe Ser Val Pro Pro Thr Ala Asn Thr Pro
225                 230                 235                 240

Thr Pro Val Cys Lys Arg Ser Met Arg Trp Ser Asn Leu Phe Thr Ser
                245                 250                 255

Glu Lys Gly Ser His Pro Asp Lys Glu Arg Lys Ala Pro Glu Asn His
            260                 265                 270

Ala Asp Thr Ile Gly Ser Gly Arg Ala Ile Pro Ile Lys Gln Gly Met
        275                 280                 285

Leu Leu Lys Arg Ser Gly Lys Trp Leu Lys Thr Trp Lys Lys Lys Tyr
    290                 295                 300

Val Thr Leu Cys Ser Asn Gly Val Leu Thr Tyr Tyr Ser Ser Leu Gly
305                 310                 315                 320

Asp Tyr Met Lys Asn Ile His Lys Lys Glu Ile Asp Leu Arg Thr Ser
                325                 330                 335

Thr Ile Lys Val Pro Gly Lys Trp Pro Ser Leu Ala Thr Ser Ala Cys
            340                 345                 350

Ala Pro Ile Ser Ser Ser Lys Ser Asn Gly Leu Ser Lys Asp Met Asp
        355                 360                 365
```

```
Thr Gly Leu Gly Asp Ser Ile Cys Phe Ser Pro Ser Ile Ser Ser Thr
    370                 375                 380

Thr Ser Pro Lys Leu Asn Pro Pro Pro Ser Pro His Ala Asn Lys Lys
385                 390                 395                 400

Lys His Leu Lys Lys Lys Ser Thr Asn Asn Phe Met Ile Val Ser Ala
                405                 410                 415

Thr Gly Gln Thr Trp His Phe Glu Ala Thr Thr Tyr Glu Glu Arg Asp
            420                 425                 430

Ala Trp Val Gln Ala Ile Gln Ser Gln Ile Leu Ala Ser Leu Gln Ser
        435                 440                 445

Cys Glu Ser Ser Lys Ser Lys Ser Gln Leu Thr Ser Gln Ser Glu Ala
    450                 455                 460

Met Ala Leu Gln Ser Ile Gln Asn Met Arg Gly Asn Ala His Cys Val
465                 470                 475                 480

Asp Tyr Glu Thr Gln Asn Pro Lys Trp Ala Ser Leu Asn Leu Gly Val
                485                 490                 495

Leu Met Cys Ile Glu Cys Ser Gly Ile His Arg Ser Leu Gly Thr Arg
            500                 505                 510

Leu Ser Arg Val Arg Ser Leu Glu Leu Asp Asp Trp Pro Val Glu Leu
        515                 520                 525

Arg Lys Val Met Ser Ser Ile Gly Asn Asp Leu Ala Asn Ser Ile Trp
    530                 535                 540

Glu Gly Ser Ser Gln Gly Gln Thr Lys Pro Ser Val Lys Ser Thr Arg
545                 550                 555                 560

Glu Glu Lys Glu Arg Trp Ile Arg Ser Lys Tyr Glu Glu Lys Leu Phe
                565                 570                 575

Leu Ala Pro Leu Pro Cys Thr Glu Leu Ser Leu Gly Gln His Leu Leu
            580                 585                 590

Arg Ala Thr Ala Asp Glu Asp Leu Gln Thr Ala Ile Leu Leu Leu Ala
```

595 600 605

His Gly Ser Arg Glu Glu Val Asn Glu Thr Cys Gly Glu Gly Asp Gly
610 615 620

Cys Thr Ala Leu His Leu Ala Cys Arg Lys Gly Asn Val Val Leu Ala
625 630 635 640

Gln Leu Leu Ile Trp Tyr Gly Val Asp Val Met Ala Arg Asp Ala His
645 650 655

Gly Asn Thr Ala Leu Thr Tyr Ala Arg Gln Ala Ser Ser Gln Glu Cys
660 665 670

Ile Asn Val Leu Leu Gln Tyr Gly Cys Pro Asp Glu Cys Val
675 680 685

<210> 6119
<211> 663
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1330; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP6; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with GTPase domain, ankyrin repeat and PH domain
6; "

<220>
<221> source
<223> /note="Uniprot ID: Q5VW22; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000363168"

<400> 6119
Met Gly Asn Ile Leu Thr Cys Arg Val His Pro Ser Val Ser Leu Glu
1 5 10 15

Phe Asp Gln Gln Gln Gly Ser Val Cys Pro Ser Glu Ser Glu Thr Tyr
20 25 30

```
Glu Ala Gly Ala Arg Asp Arg Met Ala Gly Ala Pro Met Ala Ala Ala
        35                  40                  45

Val Gln Pro Ala Glu Val Thr Val Glu Val Gly Glu Asp Leu His Met
    50                  55                  60

His His Val Arg Asp Arg Glu Met Pro Glu Ala Leu Glu Phe Asn Pro
65                  70                  75                  80

Ser Ala Asn Pro Glu Ala Ser Thr Ile Phe Gln Arg Asn Ser Gln Thr
                85                  90                  95

Asp Val Val Glu Ile Arg Arg Ser Asn Cys Thr Asn His Val Ser Ala
            100                 105                 110

Val Arg Phe Ser Gln Gln Tyr Ser Leu Cys Ser Thr Ile Phe Leu Asp
        115                 120                 125

Asp Ser Thr Ala Ile Gln His Tyr Leu Thr Met Thr Ile Ile Ser Val
    130                 135                 140

Thr Leu Glu Ile Pro His His Ile Thr Gln Arg Asp Ala Asp Arg Thr
145                 150                 155                 160

Leu Ser Ile Pro Asp Glu Gln Leu His Ser Phe Ala Val Ser Thr Val
                165                 170                 175

His Ile Met Lys Lys Arg Asn Gly Gly Gly Ser Leu Asn Asn Tyr Ser
            180                 185                 190

Ser Ser Ile Pro Ser Thr Pro Ser Thr Ser Gln Glu Asp Pro Gln Phe
        195                 200                 205

Ser Val Pro Pro Thr Ala Asn Thr Pro Thr Pro Val Cys Lys Arg Ser
    210                 215                 220

Met Arg Trp Ser Asn Leu Phe Thr Ser Glu Lys Gly Ser Asp Pro Asp
225                 230                 235                 240

Lys Glu Arg Lys Ala Pro Glu Asn His Ala Asp Thr Ile Gly Ser Gly
                245                 250                 255
```

```
Arg Ala Ile Pro Ile Lys Gln Gly Met Leu Leu Lys Arg Ser Gly Lys
            260                 265                 270

Trp Leu Lys Thr Trp Lys Lys Lys Tyr Val Thr Leu Cys Ser Asn Gly
        275                 280                 285

Met Leu Thr Tyr Tyr Ser Ser Leu Gly Asp Tyr Met Lys Asn Ile His
    290                 295                 300

Lys Lys Glu Ile Asp Leu Gln Thr Ser Thr Ile Lys Val Pro Gly Lys
305                 310                 315                 320

Trp Pro Ser Leu Ala Thr Ser Ala Cys Thr Pro Ile Ser Ser Ser Lys
                325                 330                 335

Ser Asn Gly Leu Ser Lys Asp Met Asp Thr Gly Leu Gly Asp Ser Ile
            340                 345                 350

Cys Phe Ser Pro Ser Ile Ser Ser Thr Thr Ser Pro Lys Leu Asn Pro
        355                 360                 365

Pro Pro Ser Pro His Ala Asn Lys Lys Lys His Leu Lys Lys Lys Ser
    370                 375                 380

Thr Asn Asn Phe Met Ile Val Ser Ala Thr Gly Gln Thr Trp His Phe
385                 390                 395                 400

Glu Ala Thr Thr Tyr Glu Glu Arg Asp Ala Trp Val Gln Ala Ile Gln
                405                 410                 415

Ser Gln Ile Leu Ala Ser Leu Gln Ser Cys Glu Ser Ser Lys Ser Lys
            420                 425                 430

Ser Gln Leu Thr Ser Gln Ser Glu Ala Met Ala Leu Gln Ser Ile Gln
        435                 440                 445

Asn Met Arg Gly Asn Ala His Cys Val Asp Cys Glu Thr Gln Asn Pro
    450                 455                 460

Lys Trp Ala Ser Leu Asn Leu Gly Val Leu Met Cys Ile Glu Cys Ser
465                 470                 475                 480
```

```
Gly Ile His Arg Ser Leu Gly Pro His Leu Ser Arg Val Arg Ser Leu
                485                 490                 495

Glu Leu Asp Asp Trp Pro Val Glu Leu Arg Lys Val Met Ser Ser Ile
            500                 505                 510

Val Asn Asp Leu Ala Asn Ser Ile Trp Glu Gly Ser Ser Gln Gly Gln
        515                 520                 525

Thr Lys Pro Ser Glu Lys Ser Thr Arg Glu Glu Lys Glu Arg Trp Ile
    530                 535                 540

Arg Ser Lys Tyr Glu Glu Lys Leu Phe Leu Ala Pro Leu Pro Cys Thr
545                 550                 555                 560

Glu Leu Ser Leu Gly Gln Gln Leu Leu Arg Ala Thr Ala Asp Glu Asp
                565                 570                 575

Leu Gln Thr Ala Ile Leu Leu Leu Ala His Gly Ser Cys Glu Glu Val
            580                 585                 590

Asn Glu Thr Cys Gly Glu Gly Asp Gly Cys Thr Ala Leu His Leu Ala
        595                 600                 605

Cys Arg Lys Gly Asn Val Val Leu Ala Gln Leu Leu Ile Trp Tyr Gly
    610                 615                 620

Val Asp Val Met Ala Arg Asp Ala His Gly Asn Thr Ala Leu Thr Tyr
625                 630                 635                 640

Ala Arg Gln Ala Ser Ser Gln Glu Cys Ile Asn Val Leu Leu Gln Tyr
                645                 650                 655

Gly Cys Pro Asp Glu Cys Val
            660
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<210> 6120
<211> 686
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1330; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP6; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with GTPase domain, ankyrin repeat and PH domain
6; "

<220>
<221> source
<223> /note="Uniprot ID: Q5VW22; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000400972"

<400> 6120
Met Gly Asn Ile Leu Thr Cys Arg Val His Pro Ser Val Ser Leu Glu
1   5   10   15

Phe Asp Gln Gln Gln Gly Ser Val Cys Pro Ser Glu Ser Glu Thr Tyr
            20   25   30

Glu Ala Gly Ala Arg Asp Arg Met Ala Gly Ala Pro Met Ala Ala Ala
        35   40   45

Val Gln Pro Ala Glu Val Thr Val Glu Val Gly Glu Asp Leu His Met
    50   55   60

His His Val Arg Asp Arg Glu Met Pro Glu Ala Leu Glu Phe Asn Leu
65   70   75   80

Ser Ala Asn Pro Glu Ser Ser Thr Ile Phe Gln Arg Asn Ser Gln Thr
                85   90   95

Glu Ala Leu Glu Phe Asn Pro Ser Ala Asn Pro Glu Ala Ser Thr Ile
            100   105   110

Phe Gln Arg Asn Ser Gln Thr Asp Val Val Glu Ile Arg Arg Ser Asn
        115   120   125

Cys Thr Asn His Val Ser Ala Val Arg Phe Ser Gln Gln Tyr Ser Leu
    130   135   140

Cys Ser Thr Ile Phe Leu Asp Asp Ser Thr Ala Ile Gln His Tyr Leu
145   150   155   160

```
Thr Met Thr Ile Ile Ser Val Thr Leu Glu Ile Pro His His Ile Thr
                165                 170                 175

Gln Arg Asp Ala Asp Arg Thr Leu Ser Ile Pro Asp Glu Gln Leu His
            180                 185                 190

Ser Phe Ala Val Ser Thr Val His Ile Met Lys Lys Arg Asn Gly Gly
        195                 200                 205

Gly Ser Leu Asn Asn Tyr Ser Ser Ser Ile Pro Ser Thr Pro Ser Thr
    210                 215                 220

Ser Gln Glu Asp Pro Gln Phe Ser Val Pro Pro Thr Ala Asn Thr Pro
225                 230                 235                 240

Thr Pro Val Cys Lys Arg Ser Met Arg Trp Ser Asn Leu Phe Thr Ser
                245                 250                 255

Glu Lys Gly Ser Asp Pro Asp Lys Glu Arg Lys Ala Pro Glu Asn His
            260                 265                 270

Ala Asp Thr Ile Gly Ser Gly Arg Ala Ile Pro Ile Lys Gln Gly Met
        275                 280                 285

Leu Leu Lys Arg Ser Gly Lys Trp Leu Lys Thr Trp Lys Lys Lys Tyr
    290                 295                 300

Val Thr Leu Cys Ser Asn Gly Met Leu Thr Tyr Tyr Ser Ser Leu Gly
305                 310                 315                 320

Asp Tyr Met Lys Asn Ile His Lys Lys Glu Ile Asp Leu Gln Thr Ser
                325                 330                 335

Thr Ile Lys Val Pro Gly Lys Trp Pro Ser Leu Ala Thr Ser Ala Cys
            340                 345                 350

Thr Pro Ile Ser Ser Ser Lys Ser Asn Gly Leu Ser Lys Asp Met Asp
        355                 360                 365

Thr Gly Leu Gly Asp Ser Ile Cys Phe Ser Pro Ser Ile Ser Ser Thr
    370                 375                 380
```

Thr Ser Pro Lys Leu Asn Pro Pro Pro Ser Pro His Ala Asn Lys Lys
385 390 395 400

Lys His Leu Lys Lys Lys Ser Thr Asn Asn Phe Met Ile Val Ser Ala
405 410 415

Thr Gly Gln Thr Trp His Phe Glu Ala Thr Thr Tyr Glu Glu Arg Asp
420 425 430

Ala Trp Val Gln Ala Ile Gln Ser Gln Ile Leu Ala Ser Leu Gln Ser
435 440 445

Cys Glu Ser Ser Lys Ser Lys Ser Gln Leu Thr Ser Gln Ser Glu Ala
450 455 460

Met Ala Leu Gln Ser Ile Gln Asn Met Arg Gly Asn Ala His Cys Val
465 470 475 480

Asp Cys Glu Thr Gln Asn Pro Lys Trp Ala Ser Leu Asn Leu Gly Val
485 490 495

Leu Met Cys Ile Glu Cys Ser Gly Ile His Arg Ser Leu Gly Pro His
500 505 510

Leu Ser Arg Val Arg Ser Leu Glu Leu Asp Asp Trp Pro Val Glu Leu
515 520 525

Arg Lys Val Met Ser Ser Ile Val Asn Asp Leu Ala Asn Ser Ile Trp
530 535 540

Glu Gly Ser Ser Gln Gly Gln Thr Lys Pro Ser Glu Lys Ser Thr Arg
545 550 555 560

Glu Glu Lys Glu Arg Trp Ile Arg Ser Lys Tyr Glu Glu Lys Leu Phe
565 570 575

Leu Ala Pro Leu Pro Cys Thr Glu Leu Ser Leu Gly Gln Gln Leu Leu
580 585 590

Arg Ala Thr Ala Asp Glu Asp Leu Gln Thr Ala Ile Leu Leu Leu Ala
595 600 605

```
His Gly Ser Cys Glu Glu Val Asn Glu Thr Cys Gly Glu Gly Asp Gly
    610                 615                 620

Cys Thr Ala Leu His Leu Ala Cys Arg Lys Gly Asn Val Val Leu Ala
625                 630                 635                 640

Gln Leu Leu Ile Trp Tyr Gly Val Asp Val Met Ala Arg Asp Ala His
                645                 650                 655

Gly Asn Thr Ala Leu Thr Tyr Ala Arg Gln Ala Ser Ser Gln Glu Cys
            660                 665                 670

Ile Asn Val Leu Leu Gln Tyr Gly Cys Pro Asp Glu Cys Val
        675                 680                 685


<210> 6121
<211> 555
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1330; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP6; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with GTPase domain, ankyrin repeat and PH domain
      6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000483426"

<400> 6121
Met Val Ser Ala Val Arg Phe Ser Gln Gln Tyr Ser Leu Cys Ser Thr
1               5                   10                  15

Ile Phe Leu Asp Asp Ser Thr Ala Ile Gln His Tyr Leu Thr Met Thr
            20                  25                  30

Ile Ile Ser Val Thr Leu Glu Ile Pro His His Ile Thr Gln Arg Asp
        35                  40                  45

Ala Asp Arg Thr Leu Ser Ile Pro Asp Glu Gln Leu His Ser Phe Ala
```

```
    50                  55                  60

Val Ser Thr Val His Ile Met Lys Lys Arg Asn Gly Gly Gly Ser Leu
65                  70                  75                  80

Asn Asn Tyr Ser Ser Ser Ile Pro Ser Thr Pro Ser Thr Ser Gln Glu
                85                  90                  95

Asp Pro Gln Phe Ser Val Pro Pro Thr Ala Asn Thr Pro Thr Pro Val
            100                 105                 110

Cys Lys Arg Ser Met Arg Trp Ser Asn Leu Phe Thr Ser Glu Lys Gly
        115                 120                 125

Ser Asp Pro Asp Lys Glu Arg Lys Ala Pro Glu Asn His Ala Asp Thr
    130                 135                 140

Ile Gly Ser Gly Arg Ala Ile Pro Ile Lys Gln Gly Met Leu Leu Lys
145                 150                 155                 160

Arg Ser Gly Lys Trp Leu Lys Thr Trp Lys Lys Lys Tyr Val Thr Leu
                165                 170                 175

Cys Ser Asn Gly Met Leu Thr Tyr Tyr Ser Ser Leu Gly Asp Tyr Met
            180                 185                 190

Lys Asn Ile His Lys Lys Glu Ile Asp Leu Gln Thr Ser Thr Ile Lys
        195                 200                 205

Val Pro Gly Lys Trp Pro Ser Leu Ala Thr Ser Ala Cys Thr Pro Ile
    210                 215                 220

Ser Ser Ser Lys Ser Asn Gly Leu Ser Lys Asp Met Asp Thr Gly Leu
225                 230                 235                 240

Gly Asp Ser Ile Cys Phe Ser Pro Ser Ile Ser Ser Thr Thr Ser Pro
                245                 250                 255

Lys Leu Asn Pro Pro Pro Ser Pro His Ala Asn Lys Lys Lys His Leu
            260                 265                 270

Lys Lys Lys Ser Thr Asn Asn Phe Met Ile Val Ser Ala Thr Gly Gln
        275                 280                 285
```

```
Thr Trp His Phe Glu Ala Thr Thr Tyr Glu Glu Arg Asp Ala Trp Val
    290                 295                 300

Gln Ala Ile Gln Ser Gln Ile Leu Ala Ser Leu Gln Ser Cys Glu Ser
305                 310                 315                 320

Ser Lys Ser Lys Ser Gln Leu Thr Ser Gln Ser Glu Ala Met Ala Leu
                325                 330                 335

Gln Ser Ile Gln Asn Met Arg Gly Asn Ala His Cys Val Asp Cys Glu
            340                 345                 350

Thr Gln Asn Pro Lys Trp Ala Ser Leu Asn Leu Gly Val Leu Met Cys
        355                 360                 365

Ile Glu Cys Ser Gly Ile His Arg Ser Leu Gly Pro His Leu Ser Arg
    370                 375                 380

Val Arg Ser Leu Glu Leu Asp Asp Trp Pro Val Glu Leu Arg Lys Val
385                 390                 395                 400

Met Ser Ser Ile Val Asn Asp Leu Ala Asn Ser Ile Trp Glu Gly Ser
                405                 410                 415

Ser Gln Gly Gln Thr Lys Pro Ser Glu Lys Ser Thr Arg Glu Glu Lys
            420                 425                 430

Glu Arg Trp Ile Arg Ser Lys Tyr Glu Glu Lys Leu Phe Leu Ala Pro
        435                 440                 445

Leu Pro Cys Thr Glu Leu Ser Leu Gly Gln Gln Leu Leu Arg Ala Thr
    450                 455                 460

Ala Asp Glu Asp Leu Gln Thr Ala Ile Leu Leu Leu Ala His Gly Ser
465                 470                 475                 480

Cys Glu Glu Val Asn Glu Thr Cys Gly Glu Gly Asp Gly Cys Thr Ala
                485                 490                 495

Leu His Leu Ala Cys Arg Lys Gly Asn Val Val Leu Ala Gln Leu Leu
            500                 505                 510
```

```
Ile Trp Tyr Gly Val Asp Val Met Ala Arg Asp Ala His Gly Asn Thr
        515                 520                 525


Ala Leu Thr Tyr Ala Arg Gln Ala Ser Ser Gln Glu Cys Ile Asn Val
    530                 535                 540


Leu Leu Gln Tyr Gly Cys Pro Asp Glu Cys Val
545                 550                 555


<210> 6122
<211> 658
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1330; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP6; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with GTPase domain, ankyrin repeat and PH domain
      6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000485012"

<400> 6122
Met Gly Asn Ile Leu Thr Cys Arg Val His Pro Ser Val Ser Leu Glu
1               5                   10                  15


Phe Asp Gln Gln Gln Gly Ser Val Cys Pro Ser Glu Ser Glu Thr Tyr
            20                  25                  30


Glu Ala Gly Ala Arg Asp Arg Met Ala Gly Ala Pro Met Ala Ala Ala
        35                  40                  45


Val Gln Pro Ala Glu Val Thr Val Glu Val Gly Glu Asp Leu His Met
    50                  55                  60


His His Val Arg Asp Arg Glu Met Pro Glu Ala Leu Glu Phe Asn Leu
65                  70                  75                  80
```

```
Ser Ala Asn Pro Glu Ser Ser Thr Ile Phe Gln Arg Asn Ser Gln Thr
                85                  90                  95

Glu Ala Leu Glu Phe Asn Pro Ser Ala Asn Pro Glu Ala Ser Thr Ile
            100                 105                 110

Phe Gln Arg Asn Ser Gln Thr Asp Val Val Glu Ile Arg Arg Ser Asn
        115                 120                 125

Cys Thr Asn His Val Ser Ala Val Arg Phe Ser Gln Gln Tyr Ser Leu
    130                 135                 140

Cys Ser Thr Ile Phe Leu Asp Asp Ser Thr Ala Ile Gln His Tyr Leu
145                 150                 155                 160

Thr Met Thr Ile Ile Ser Val Thr Leu Glu Ile Pro His His Ile Thr
                165                 170                 175

Gln Arg Asp Ala Asp Arg Thr Leu Ser Ile Pro Asp Glu Gln Leu His
            180                 185                 190

Ser Phe Ala Val Ser Thr Val His Ile Met Lys Lys Arg Asn Gly Gly
        195                 200                 205

Gly Ser Leu Asn Asn Tyr Ser Ser Ser Ile Pro Ser Thr Pro Ser Thr
    210                 215                 220

Ser Gln Glu Asp Pro Gln Phe Ser Val Pro Pro Thr Ala Asn Thr Pro
225                 230                 235                 240

Thr Pro Val Cys Lys Arg Ser Met Arg Trp Ser Asn Leu Phe Thr Ser
                245                 250                 255

Glu Lys Gly Ser Asp Pro Asp Lys Glu Arg Lys Ala Pro Glu Asn His
            260                 265                 270

Ala Asp Thr Ile Gly Ser Gly Arg Ala Ile Pro Ile Lys Gln Gly Met
        275                 280                 285

Leu Leu Lys Arg Ser Gly Lys Trp Leu Lys Thr Trp Lys Lys Lys Tyr
    290                 295                 300

Val Thr Leu Cys Ser Asn Gly Met Leu Thr Tyr Tyr Ser Ser Leu Gly
```

305 310 315 320

Asp Tyr Met Lys Asn Ile His Lys Lys Glu Ile Asp Leu Gln Thr Ser
325 330 335

Thr Ile Lys Val Pro Gly Lys Trp Pro Ser Leu Ala Thr Ser Ala Cys
340 345 350

Thr Pro Ile Ser Ser Ser Lys Ser Asn Gly Leu Ser Lys Asp Met Asp
355 360 365

Thr Gly Leu Gly Asp Ser Ile Cys Phe Ser Pro Ser Ile Ser Ser Thr
370 375 380

Thr Ser Pro Lys Leu Asn Pro Pro Pro Ser Pro His Ala Asn Lys Lys
385 390 395 400

Lys His Leu Lys Lys Lys Ser Thr Asn Asn Phe Met Ile Val Ser Ala
405 410 415

Thr Gly Gln Thr Trp His Phe Glu Ala Thr Thr Tyr Glu Glu Arg Asp
420 425 430

Ala Trp Val Gln Ala Ile Gln Ser Gln Ile Leu Ala Ser Leu Gln Ser
435 440 445

Cys Glu Ser Ser Lys Ser Lys Ser Gln Leu Thr Ser Gln Ser Glu Ala
450 455 460

Met Ala Leu Gln Ser Ile Gln Asn Met Arg Gly Asn Ala His Cys Val
465 470 475 480

Asp Cys Glu Thr Gln Asn Pro Lys Trp Ala Ser Leu Asn Leu Gly Val
485 490 495

Leu Met Cys Ile Glu Cys Ser Gly Ile His Arg Ser Leu Gly Pro His
500 505 510

Leu Ser Arg Val Arg Ser Leu Glu Leu Asp Asp Trp Pro Val Glu Leu
515 520 525

Arg Lys Val Met Ser Ser Ile Val Asn Asp Leu Ala Asn Ser Ile Trp
530 535 540

```
Glu Gly Ser Ser Gln Gly Gln Thr Lys Pro Ser Glu Lys Ser Thr Arg
545                 550                 555                 560

Glu Glu Lys Glu Arg Trp Ile Arg Ser Lys Tyr Glu Glu Lys Leu Phe
                565                 570                 575

Leu Ala Pro Leu Pro Cys Thr Glu Leu Ser Leu Gly Gln Gln Leu Leu
            580                 585                 590

Arg Ala Thr Ala Asp Glu Asp Leu Gln Thr Ala Ile Leu Leu Leu Ala
        595                 600                 605

His Gly Ser Cys Glu Glu Val Asn Glu Thr Cys Gly Glu Gly Asp Gly
    610                 615                 620

Cys Thr Ala Leu His Leu Ala Cys Arg Lys Gly Asn Val Val Leu Ala
625                 630                 635                 640

Gln Leu Leu Thr Gly Trp Thr Ser Trp Pro Glu Met Pro Thr Gly Thr
                645                 650                 655

Gln Arg
```

<210> 6123
<211> 658
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1331; "

<220>
<221> source
<223> /note="Gene Symbol: AGAP9; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with GTPase domain, ankyrin repeat and PH domain
9; "

<220>
<221> source
<223> /note="Uniprot ID: Q5VTM2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000392206"

<400> 6123
Met Gly Asn Ile Leu Thr Cys Arg Val His Pro Ser Val Ser Leu Glu
1 5 10 15

Phe Asp Gln Gln Gln Gly Ser Val Cys Pro Ser Glu Ser Glu Ile Tyr
20 25 30

Glu Ala Gly Ala Glu Asp Arg Met Ala Gly Ala Pro Met Ala Ala Ala
35 40 45

Val Gln Pro Ala Glu Val Thr Val Glu Val Gly Glu Asp Leu His Met
50 55 60

His Gln Val Arg Asp Arg Glu Met Pro Glu Ala Leu Glu Phe Asn Leu
65 70 75 80

Ser Ala Asn Pro Glu Ala Ser Thr Ile Phe Gln Arg Asn Ser Gln Thr
85 90 95

Asp Ala Leu Glu Phe Asn Ser Ser Ala Asn Pro Glu Ala Ser Thr Ile
100 105 110

Phe Gln Arg Asn Ser Gln Thr Asp Val Val Glu Ile Arg Arg Ser Asn
115 120 125

Cys Thr Asn His Val Ser Thr Glu Arg Phe Ser Gln Gln Tyr Ser Ser
130 135 140

Cys Ser Thr Ile Phe Leu Asp Asp Ser Thr Ala Ile Gln His Tyr Leu
145 150 155 160

Thr Met Thr Ile Ile Ser Val Thr Leu Glu Ile Pro His His Ile Thr
165 170 175

Gln Arg Asp Ala Asp Arg Ser Leu Ser Ile Pro Asp Glu Gln Leu His
180 185 190

Ser Phe Ala Val Ser Thr Val His Ile Met Lys Lys Arg Asn Gly Gly
195 200 205

```
Gly Ser Leu Asn Asn Tyr Ser Ser Ser Ile Pro Pro Thr Pro Ser Thr
    210                 215                 220

Ser Gln Glu Asp Pro Gln Phe Ser Val Pro Pro Thr Ala Asn Thr Pro
225                 230                 235                 240

Thr Pro Val Cys Lys Arg Ser Met Arg Trp Ser Asn Leu Phe Thr Ser
                245                 250                 255

Glu Lys Gly Ser Asp Pro Asp Lys Glu Arg Lys Ala Pro Glu Asn His
            260                 265                 270

Ala Asp Thr Ile Gly Ser Gly Arg Ala Ile Pro Ile Lys Gln Gly Met
        275                 280                 285

Leu Leu Lys Arg Ser Gly Lys Trp Leu Lys Thr Trp Lys Lys Lys Tyr
    290                 295                 300

Val Thr Leu Cys Ser Asn Gly Val Leu Thr Tyr Tyr Ser Ser Leu Gly
305                 310                 315                 320

Asp Tyr Met Lys Asn Ile His Lys Lys Glu Ile Asp Leu Arg Thr Ser
                325                 330                 335

Thr Ile Lys Val Pro Gly Lys Trp Pro Ser Leu Ala Thr Ser Ala Cys
            340                 345                 350

Ala Pro Ile Ser Ser Ser Lys Ser Asn Gly Leu Ser Lys Asp Met Asp
        355                 360                 365

Thr Gly Leu Gly Asp Ser Ile Cys Phe Ser Pro Gly Ile Ser Ser Thr
    370                 375                 380

Thr Ser Pro Lys Leu Asn Pro Pro Pro Ser Pro His Ala Asn Lys Lys
385                 390                 395                 400

Lys His Leu Lys Lys Lys Ser Thr Asn Asn Phe Met Ile Val Ser Ala
                405                 410                 415

Thr Gly Gln Thr Trp His Phe Glu Ala Thr Thr Tyr Glu Glu Arg Asp
            420                 425                 430

Ala Trp Val Gln Ala Ile Gln Ser Gln Ile Leu Ala Ser Leu Gln Ser
```

```
        435                 440                 445

Cys Lys Ser Ser Lys Ser Lys Ser Gln Leu Thr Ser Gln Ser Glu Ala
    450                 455                 460

Met Ala Leu Gln Ser Ile Gln Asn Met Arg Gly Asn Ala His Cys Val
465                 470                 475                 480

Asp Cys Glu Thr Gln Asn Pro Lys Trp Ala Ser Leu Asn Leu Gly Val
                485                 490                 495

Leu Met Cys Ile Glu Cys Ser Gly Ile His Arg Ser Phe Gly Thr Arg
            500                 505                 510

Leu Ser Arg Val Arg Ser Leu Glu Leu Asp Asp Trp Pro Val Glu Leu
        515                 520                 525

Arg Lys Val Met Ser Ser Ile Gly Asn Glu Leu Ala Asn Ser Ile Trp
    530                 535                 540

Glu Gly Ser Ser Gln Gly Gln Thr Lys Pro Ser Ile Lys Ser Thr Arg
545                 550                 555                 560

Glu Glu Lys Glu Trp Trp Ile Arg Ser Lys Tyr Glu Glu Lys Leu Phe
                565                 570                 575

Leu Ala Pro Leu Pro Cys Thr Glu Leu Ser Leu Gly Gln Gln Leu Leu
            580                 585                 590

Arg Ala Thr Thr Asp Glu Asp Leu Gln Thr Ala Ile Leu Leu Leu Ala
        595                 600                 605

His Gly Ser Arg Glu Glu Val Asn Glu Thr Cys Gly Glu Gly Asp Gly
    610                 615                 620

Cys Thr Ala Leu His Leu Ala Cys Arg Lys Gly Asn Val Val Leu Glu
625                 630                 635                 640

Gln Leu Leu Thr Gly Trp Thr Ser Trp Pro Glu Met Pro Thr Gly Thr
                645                 650                 655

Gln Arg
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<210> 6124
<211> 1205
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1332; "

<220>
<221> source
<223> /note="Gene Symbol: ARAP1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with RhoGAP domain, ankyrin repeat and PH domain
1; "

<220>
<221> source
<223> /note="Uniprot ID: Q96P48; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000335506"

<400> 6124
Met Thr Lys Lys Glu Glu Pro Pro Pro Ser Arg Val Pro Arg Ala Val
1   5   10   15

Arg Val Ala Ser Leu Leu Ser Glu Gly Glu Glu Leu Ser Gly Asp Asp
            20   25   30

Gln Gly Asp Glu Glu Glu Asp Asp His Ala Tyr Glu Gly Val Pro Asn
        35   40   45

Gly Gly Trp His Thr Ser Ser Leu Ser Leu Ser Leu Pro Ser Thr Ile
    50   55   60

Ala Ala Pro His Pro Met Asp Gly Pro Pro Gly Gly Ser Thr Pro Val
65   70   75   80

Thr Pro Val Ile Lys Ala Gly Trp Leu Asp Lys Asn Pro Pro Gln Gly
                85   90   95

Ser Tyr Ile Tyr Gln Lys Arg Trp Val Arg Leu Asp Thr Asp His Leu
            100   105   110

```
Arg Tyr Phe Asp Ser Asn Lys Asp Ala Tyr Ser Lys Arg Phe Ile Ser
        115                 120                 125

Val Ala Cys Ile Ser His Val Ala Ala Ile Gly Asp Gln Lys Phe Glu
    130                 135                 140

Val Ile Thr Asn Asn Arg Thr Phe Ala Phe Arg Ala Glu Ser Asp Val
145                 150                 155                 160

Glu Arg Lys Glu Trp Met Gln Ala Leu Gln Gln Ala Met Ala Glu Gln
                165                 170                 175

Arg Ala Arg Ala Arg Leu Ser Ser Ala Tyr Leu Leu Gly Val Pro Gly
            180                 185                 190

Ser Glu Gln Pro Asp Arg Ala Gly Ser Leu Glu Leu Arg Gly Phe Lys
        195                 200                 205

Asn Lys Leu Tyr Val Ala Val Val Gly Asp Lys Val Gln Leu Tyr Lys
    210                 215                 220

Asn Leu Glu Glu Tyr His Leu Gly Ile Gly Ile Thr Phe Ile Asp Met
225                 230                 235                 240

Ser Val Gly Asn Val Lys Glu Val Asp Arg Arg Ser Phe Asp Leu Thr
                245                 250                 255

Thr Pro Tyr Arg Ile Phe Ser Phe Ser Ala Asp Ser Glu Leu Glu Lys
            260                 265                 270

Glu Gln Trp Leu Glu Ala Met Gln Gly Ala Ile Ala Glu Ala Leu Ser
        275                 280                 285

Thr Ser Glu Val Ala Glu Arg Ile Trp Ala Ala Ala Pro Asn Arg Phe
    290                 295                 300

Cys Ala Asp Cys Gly Ala Pro Gln Pro Asp Trp Ala Ser Ile Asn Leu
305                 310                 315                 320

Cys Val Val Ile Cys Lys Arg Cys Ala Gly Glu His Arg Gly Leu Gly
                325                 330                 335
```

```
Ala Gly Val Ser Lys Val Arg Ser Leu Lys Met Asp Arg Lys Val Trp
            340                 345                 350

Thr Glu Thr Leu Ile Glu Leu Phe Leu Gln Leu Gly Asn Gly Ala Gly
        355                 360                 365

Asn Arg Phe Trp Ala Ala Asn Val Pro Pro Ser Glu Ala Leu Gln Pro
    370                 375                 380

Ser Ser Ser Pro Ser Thr Arg Arg Cys His Leu Glu Ala Lys Tyr Arg
385                 390                 395                 400

Glu Gly Lys Tyr Arg Arg Tyr His Pro Leu Phe Gly Asn Gln Glu Glu
                405                 410                 415

Leu Asp Lys Ala Leu Cys Ala Ala Val Thr Thr Thr Asp Leu Ala Glu
            420                 425                 430

Thr Gln Ala Leu Leu Gly Cys Gly Ala Gly Ile Asn Cys Phe Ser Gly
        435                 440                 445

Asp Pro Glu Ala Pro Thr Pro Leu Ala Leu Ala Glu Gln Ala Gly Gln
    450                 455                 460

Thr Leu Gln Met Glu Phe Leu Arg Asn Asn Arg Thr Thr Glu Val Pro
465                 470                 475                 480

Arg Leu Asp Ser Met Lys Pro Leu Glu Lys His Tyr Ser Val Val Leu
                485                 490                 495

Pro Thr Val Ser His Ser Gly Phe Leu Tyr Lys Thr Ala Ser Ala Gly
            500                 505                 510

Lys Leu Leu Gln Asp Arg Arg Ala Arg Glu Glu Phe Ser Arg Arg Trp
        515                 520                 525

Cys Val Leu Gly Asp Gly Val Leu Ser Tyr Phe Glu Asn Glu Arg Ala
    530                 535                 540

Val Thr Pro Asn Gly Glu Ile Arg Ala Ser Glu Ile Val Cys Leu Ala
545                 550                 555                 560

Val Pro Pro Pro Asp Thr His Gly Phe Glu His Thr Phe Glu Val Tyr
```

565 570 575

Thr Glu Gly Glu Arg Leu Tyr Leu Phe Gly Leu Glu Ser Ala Glu Gln
580 585 590

Ala His Glu Trp Val Lys Cys Ile Ala Lys Ala Phe Val Pro Pro Leu
595 600 605

Ala Glu Asp Leu Leu Ala Arg Asp Phe Glu Arg Leu Gly Arg Leu Pro
610 615 620

Tyr Lys Ala Gly Leu Ser Leu Gln Arg Ala Gln Glu Gly Trp Phe Ser
625 630 635 640

Leu Ser Gly Ser Glu Leu Arg Ala Val Phe Pro Glu Gly Pro Cys Glu
645 650 655

Glu Pro Leu Gln Leu Arg Lys Leu Gln Glu Leu Ser Ile Gln Gly Asp
660 665 670

Ser Glu Asn Gln Val Leu Val Leu Val Glu Arg Arg Arg Thr Leu Tyr
675 680 685

Ile Gln Gly Glu Arg Arg Leu Asp Phe Met Gly Trp Leu Gly Ala Ile
690 695 700

Gln Lys Ala Ala Ala Ser Met Gly Asp Thr Leu Ser Glu Gln Gln Leu
705 710 715 720

Gly Asp Ser Asp Ile Pro Val Ile Val Tyr Arg Cys Val Asp Tyr Ile
725 730 735

Thr Gln Cys Gly Leu Thr Ser Glu Gly Ile Tyr Arg Lys Cys Gly Gln
740 745 750

Thr Ser Lys Thr Gln Arg Leu Leu Glu Ser Leu Arg Gln Asp Ala Arg
755 760 765

Ser Val His Leu Lys Glu Gly Glu Gln His Val Asp Asp Val Ser Ser
770 775 780

Ala Leu Lys Arg Phe Leu Arg Asp Leu Pro Asp Gly Leu Phe Thr Arg
785 790 795 800

```
Ala Gln Arg Leu Thr Trp Leu Glu Ala Ser Glu Ile Glu Asp Glu Glu
                805                 810                 815

Glu Lys Val Ser Arg Tyr Arg Glu Leu Leu Val Arg Leu Pro Pro Val
            820                 825                 830

Asn Arg Ala Thr Val Lys Ala Leu Ile Ser His Leu Tyr Cys Val Gln
        835                 840                 845

Cys Phe Ser Asp Thr Asn Gln Met Asn Val His Asn Leu Ala Ile Val
    850                 855                 860

Phe Gly Pro Thr Leu Phe Gln Thr Asp Gly Gln Asp Tyr Lys Ala Gly
865                 870                 875                 880

Arg Val Val Glu Asp Leu Ile Asn His Tyr Val Val Val Phe Ser Val
                885                 890                 895

Asp Glu Glu Glu Leu Arg Lys Gln Arg Glu Glu Ile Thr Ala Ile Val
            900                 905                 910

Lys Met Arg Val Ala Gly Thr Ala Ser Gly Thr Gln His Ala Gly Asp
        915                 920                 925

Phe Ile Cys Thr Val Tyr Leu Glu Glu Lys Lys Ala Glu Thr Glu Gln
    930                 935                 940

His Ile Lys Val Pro Ala Ser Met Thr Ala Glu Glu Leu Thr Leu Glu
945                 950                 955                 960

Ile Leu Asp Arg Arg Asn Val Gly Ile Arg Glu Lys Asp Tyr Trp Thr
                965                 970                 975

Cys Phe Glu Val Asn Glu Arg Glu Glu Ala Glu Arg Pro Leu His Phe
            980                 985                 990

Ala Glu Lys Val Leu Pro Ile Leu  His Gly Leu Gly Thr  Asp Ser
His
        995                 1000                1005

Leu Val  Val Lys Lys His Gln  Ala Met Glu Ala Met  Leu Leu Tyr
    1010                1015                1020
```

```
Leu Ala  Ser Arg Val Gly Asp  Thr Lys His Gly Met  Met Lys Phe
    1025                1030                1035

Arg Glu  Asp Arg Ser Leu Leu  Gly Leu Gly Leu Pro  Ser Gly Gly
    1040                1045                1050

Phe His  Asp Arg Tyr Phe Ile  Leu Asn Ser Ser Cys  Leu Arg Leu
    1055                1060                1065

Tyr Lys  Glu Val Arg Ser Gln  Arg Pro Trp Ser Gly  Ala Pro Glu
    1070                1075                1080

Thr Ser  His Arg Pro Glu Lys  Glu Trp Pro Ile Lys  Ser Leu Lys
    1085                1090                1095

Val Tyr  Leu Gly Val Lys Lys  Lys Leu Arg Pro Pro  Thr Cys Trp
    1100                1105                1110

Gly Phe  Thr Val Val His Glu  Thr Glu Lys His Glu  Lys Gln Gln
    1115                1120                1125

Trp Tyr  Leu Cys Cys Asp Thr  Gln Met Glu Leu Arg  Glu Trp Phe
    1130                1135                1140

Ala Thr  Phe Leu Phe Val Gln  His Asp Gly Leu Val  Trp Pro Ser
    1145                1150                1155

Glu Pro  Ser Arg Val Ser Arg  Ala Val Pro Glu Val  Arg Leu Gly
    1160                1165                1170

Ser Val  Ser Leu Ile Pro Leu  Arg Gly Ser Glu Asn  Glu Met Arg
    1175                1180                1185

Arg Ser  Val Ala Ala Phe Thr  Ala Asp Pro Leu Ser  Leu Leu Arg
    1190                1195                1200

Asn Val
    1205
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<210> 6125
<211> 1439
<212> PRT

<213> Homo sapiens

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<220>
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ArfGAP with RhoGAP domain, ankyrin repeat and PH domain
1; "

<220>
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<400> 6125

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Met Ala Glu Ala Gly Asp Ala Ala Leu Ser Val Ala Glu Trp Leu Arg
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Ala Leu His Leu Glu Gln Tyr Thr Gly Leu Phe Glu Gln His Gly Leu
            20                  25                  30

Val Trp Ala Thr Glu Cys Gln Gly Leu Ser Asp Thr Arg Leu Met Asp
        35                  40                  45

Met Gly Met Leu Leu Pro Gly His Arg Arg Arg Ile Leu Ala Gly Leu
    50                  55                  60

Leu Arg Ala His Thr Ser Pro Ala Pro Ala Pro Arg Pro Thr Pro Arg
65                  70                  75                  80

Pro Val Pro Met Lys Arg His Ile Phe Arg Ser Pro Pro Val Pro Ala
                85                  90                  95

Thr Pro Pro Glu Pro Leu Pro Thr Thr Thr Glu Asp Glu Gly Leu Pro
            100                 105                 110

Ala Ala Pro Pro Ile Pro Pro Arg Arg Ser Cys Leu Pro Pro Thr Cys
        115                 120                 125
```

```
Phe Thr Thr Pro Ser Thr Ala Ala Pro Asp Pro Val Leu Pro Pro Leu
    130                 135                 140

Pro Ala Lys Arg His Leu Ala Glu Leu Ser Val Pro Pro Val Pro Pro
145                 150                 155                 160

Arg Thr Gly Pro Pro Arg Leu Leu Val Ser Leu Pro Thr Lys Glu Glu
                165                 170                 175

Glu Ser Leu Leu Pro Ser Leu Ser Ser Pro Pro Gln Pro Gln Ser Glu
            180                 185                 190

Glu Pro Leu Ser Thr Leu Pro Gln Gly Pro Pro Gln Pro Pro Ser Pro
        195                 200                 205

Pro Pro Cys Pro Pro Glu Ile Pro Pro Lys Pro Val Arg Leu Phe Pro
    210                 215                 220

Glu Phe Asp Asp Ser Asp Tyr Asp Glu Val Pro Glu Glu Gly Pro Gly
225                 230                 235                 240

Ala Pro Ala Arg Val Met Thr Lys Lys Glu Glu Pro Pro Pro Ser Arg
                245                 250                 255

Val Pro Arg Ala Val Arg Val Ala Ser Leu Leu Ser Glu Gly Glu Glu
            260                 265                 270

Leu Ser Gly Asp Asp Gln Gly Asp Glu Glu Glu Asp Asp His Ala Tyr
        275                 280                 285

Glu Gly Val Pro Asn Gly Gly Trp His Thr Ser Ser Leu Ser Leu Ser
    290                 295                 300

Leu Pro Ser Thr Ile Ala Ala Pro His Pro Met Asp Gly Pro Pro Gly
305                 310                 315                 320

Gly Ser Thr Pro Val Thr Pro Val Ile Lys Ala Gly Trp Leu Asp Lys
                325                 330                 335

Asn Pro Pro Gln Gly Ser Tyr Ile Tyr Gln Lys Arg Trp Val Arg Leu
            340                 345                 350

Asp Thr Asp His Leu Arg Tyr Phe Asp Ser Asn Lys Asp Ala Tyr Ser
```

```
        355                 360                 365

Lys Arg Phe Ile Ser Val Ala Cys Ile Ser His Val Ala Ala Ile Gly
    370                 375                 380

Asp Gln Lys Phe Glu Val Ile Thr Asn Asn Arg Thr Phe Ala Phe Arg
385                 390                 395                 400

Ala Glu Ser Asp Val Glu Arg Lys Glu Trp Met Gln Ala Leu Gln Gln
                405                 410                 415

Ala Met Ala Glu Gln Arg Ala Arg Ala Arg Leu Ser Ser Ala Tyr Leu
            420                 425                 430

Leu Gly Val Pro Gly Ser Glu Gln Pro Asp Arg Ala Gly Ser Leu Glu
        435                 440                 445

Leu Arg Gly Phe Lys Asn Lys Leu Tyr Val Ala Val Val Gly Asp Lys
    450                 455                 460

Val Gln Leu Tyr Lys Asn Leu Glu Glu Tyr His Leu Gly Ile Gly Ile
465                 470                 475                 480

Thr Phe Ile Asp Met Ser Val Gly Asn Val Lys Glu Val Asp Arg Arg
                485                 490                 495

Ser Phe Asp Leu Thr Thr Pro Tyr Arg Ile Phe Ser Phe Ser Ala Asp
            500                 505                 510

Ser Glu Leu Glu Lys Glu Gln Trp Leu Glu Ala Met Gln Gly Ala Ile
        515                 520                 525

Ala Glu Ala Leu Ser Thr Ser Glu Val Ala Glu Arg Ile Trp Ala Ala
    530                 535                 540

Ala Pro Asn Arg Phe Cys Ala Asp Cys Gly Ala Pro Gln Pro Asp Trp
545                 550                 555                 560

Ala Ser Ile Asn Leu Cys Val Val Ile Cys Lys Arg Cys Ala Gly Glu
                565                 570                 575

His Arg Gly Leu Gly Ala Gly Val Ser Lys Val Arg Ser Leu Lys Met
            580                 585                 590
```

```
Asp Arg Lys Val Trp Thr Glu Thr Leu Ile Glu Leu Phe Leu Gln Leu
        595                 600                 605

Gly Asn Gly Ala Gly Asn Arg Phe Trp Ala Ala Asn Val Pro Pro Ser
    610                 615                 620

Glu Ala Leu Gln Pro Ser Ser Ser Pro Ser Thr Arg Arg Cys His Leu
625                 630                 635                 640

Glu Ala Lys Tyr Arg Glu Gly Lys Tyr Arg Arg Tyr His Pro Leu Phe
                645                 650                 655

Gly Asn Gln Glu Glu Leu Asp Lys Ala Leu Cys Ala Ala Val Thr Thr
            660                 665                 670

Thr Asp Leu Ala Glu Thr Gln Ala Leu Leu Gly Cys Gly Ala Gly Ile
        675                 680                 685

Asn Cys Phe Ser Gly Asp Pro Glu Ala Pro Thr Pro Leu Ala Leu Ala
    690                 695                 700

Glu Gln Ala Gly Gln Thr Leu Gln Met Glu Phe Leu Arg Asn Asn Arg
705                 710                 715                 720

Thr Thr Glu Val Pro Arg Leu Asp Ser Met Lys Pro Leu Glu Lys His
                725                 730                 735

Tyr Ser Val Val Leu Pro Thr Val Ser His Ser Gly Phe Leu Tyr Lys
            740                 745                 750

Thr Ala Ser Ala Gly Lys Leu Leu Gln Asp Arg Arg Ala Arg Glu Glu
        755                 760                 765

Phe Ser Arg Arg Trp Cys Val Leu Gly Asp Gly Val Leu Ser Tyr Phe
    770                 775                 780

Glu Asn Glu Arg Ala Val Thr Pro Asn Gly Glu Ile Arg Ala Ser Glu
785                 790                 795                 800

Ile Val Cys Leu Ala Val Pro Pro Pro Asp Thr His Gly Phe Glu His
                805                 810                 815
```

```
Thr Phe Glu Val Tyr Thr Glu Gly Glu Arg Leu Tyr Leu Phe Gly Leu
            820                 825                 830

Glu Ser Ala Glu Gln Ala His Glu Trp Val Lys Cys Ile Ala Lys Ala
        835                 840                 845

Phe Val Pro Pro Leu Ala Glu Asp Leu Leu Ala Arg Asp Phe Glu Arg
    850                 855                 860

Leu Gly Arg Leu Pro Tyr Lys Ala Gly Leu Ser Leu Gln Arg Ala Gln
865                 870                 875                 880

Glu Gly Trp Phe Ser Leu Ser Gly Ser Glu Leu Arg Ala Val Phe Pro
                885                 890                 895

Glu Gly Pro Cys Glu Glu Pro Leu Gln Leu Arg Lys Leu Gln Glu Leu
            900                 905                 910

Ser Ile Gln Gly Asp Ser Glu Asn Gln Val Leu Val Leu Val Glu Arg
        915                 920                 925

Arg Arg Thr Leu Tyr Ile Gln Gly Glu Arg Arg Leu Asp Phe Met Gly
    930                 935                 940

Trp Leu Gly Ala Ile Gln Lys Ala Ala Ala Ser Met Gly Asp Thr Leu
945                 950                 955                 960

Ser Glu Gln Gln Leu Gly Asp Ser Asp Ile Pro Val Ile Val Tyr Arg
                965                 970                 975

Cys Val Asp Tyr Ile Thr Gln Cys Gly Leu Thr Ser Glu Gly Ile Tyr
            980                 985                 990

Arg Lys Cys Gly Gln Thr Ser Lys  Thr Gln Arg Leu Leu  Glu Ser
Leu
        995                 1000                1005

Arg Gln  Asp Ala Arg Ser Val  His Leu Lys Glu Gly  Glu Gln His
    1010                1015                1020

Val Asp  Asp Val Ser Ser Ala  Leu Lys Arg Phe Leu  Arg Asp Leu
    1025                1030                1035
```

```
Pro Asp  Gly Leu Phe Thr Arg  Ala Gln Arg Leu Thr  Trp Leu Glu
    1040                1045                1050

Ala Ser  Glu Ile Glu Asp Glu  Glu Glu Lys Val Ser  Arg Tyr Arg
    1055                1060                1065

Glu Leu  Leu Val Arg Leu Pro  Pro Val Asn Arg Ala  Thr Val Lys
    1070                1075                1080

Ala Leu  Ile Ser His Leu Tyr  Cys Val Gln Cys Phe  Ser Asp Thr
    1085                1090                1095

Asn Gln  Met Asn Val His Asn  Leu Ala Ile Val Phe  Gly Pro Thr
    1100                1105                1110

Leu Phe  Gln Thr Asp Gly Gln  Asp Tyr Lys Ala Gly  Arg Val Val
    1115                1120                1125

Glu Asp  Leu Ile Asn His Tyr  Val Val Val Phe Ser  Val Asp Glu
    1130                1135                1140

Glu Glu  Leu Arg Lys Gln Arg  Glu Glu Ile Thr Ala  Ile Val Lys
    1145                1150                1155

Met Arg  Val Ala Gly Thr Ala  Ser Gly Thr Gln His  Ala Gly Asp
    1160                1165                1170

Phe Ile  Cys Thr Val Tyr Leu  Glu Glu Lys Lys Ala  Glu Thr Glu
    1175                1180                1185

Gln His  Ile Lys Val Pro Ala  Ser Met Thr Ala Glu  Glu Leu Thr
    1190                1195                1200

Leu Glu  Ile Leu Asp Arg Arg  Asn Val Gly Ile Arg  Glu Lys Asp
    1205                1210                1215

Tyr Trp  Thr Cys Phe Glu Val  Asn Glu Arg Glu Glu  Ala Glu Arg
    1220                1225                1230

Pro Leu  His Phe Ala Glu Lys  Val Leu Pro Ile Leu  His Gly Leu
    1235                1240                1245
```

```
Gly Thr  Asp Ser His Leu Val  Val Lys Lys His Gln  Ala Met Glu
    1250                1255                1260

Ala Met  Leu Leu Tyr Leu Ala  Ser Arg Val Gly Asp  Thr Lys His
    1265                1270                1275

Gly Met  Met Lys Phe Arg Glu  Asp Arg Ser Leu Leu  Gly Leu Gly
    1280                1285                1290

Leu Pro  Ser Gly Gly Phe His  Asp Arg Tyr Phe Ile  Leu Asn Ser
    1295                1300                1305

Ser Cys  Leu Arg Leu Tyr Lys  Glu Val Arg Ser His  Arg Pro Glu
    1310                1315                1320

Lys Glu  Trp Pro Ile Lys Ser  Leu Lys Val Tyr Leu  Gly Val Lys
    1325                1330                1335

Lys Lys  Leu Arg Pro Pro Thr  Cys Trp Gly Phe Thr  Val Val His
    1340                1345                1350

Glu Thr  Glu Lys His Glu Lys  Gln Gln Trp Tyr Leu  Cys Cys Asp
    1355                1360                1365

Thr Gln  Met Glu Leu Arg Glu  Trp Phe Ala Thr Phe  Leu Phe Val
    1370                1375                1380

Gln His  Asp Gly Leu Val Trp  Pro Ser Glu Pro Ser  Arg Val Ser
    1385                1390                1395

Arg Ala  Val Pro Glu Val Arg  Leu Gly Ser Val Ser  Leu Ile Pro
    1400                1405                1410

Leu Arg  Gly Ser Glu Asn Glu  Met Arg Arg Ser Val  Ala Ala Phe
    1415                1420                1425

Thr Ala  Asp Pro Leu Ser Leu  Leu Arg Asn Val
    1430                1435
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ArfGAP with RhoGAP domain, ankyrin repeat and PH domain
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<220>
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<400> 6126

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Met Thr Leu Ser Gly Ser Arg Gly Gln Glu Glu Pro Pro Pro Ser Arg
1               5                   10                  15


Val Pro Arg Ala Val Arg Val Ala Ser Leu Leu Ser Glu Gly Glu Glu
            20                  25                  30


Leu Ser Gly Asp Asp Gln Gly Asp Glu Glu Glu Asp Asp His Ala Tyr
        35                  40                  45


Glu Gly Val Pro Asn Gly Gly Trp His Thr Ser Ser Leu Ser Leu Ser
    50                  55                  60


Leu Pro Ser Thr Ile Ala Ala Pro His Pro Met Asp Gly Pro Pro Gly
65                  70                  75                  80


Gly Ser Thr Pro Val Thr Pro Val Ile Lys Ala Gly Trp Leu Asp Lys
                85                  90                  95


Asn Pro Pro Gln Gly Ser Tyr Ile Tyr Gln Lys Arg Trp Val Arg Leu
            100                 105                 110


Asp Thr Asp His Leu Arg Tyr Phe Asp Ser Asn Lys Asp Ala Tyr Ser
        115                 120                 125


Lys Arg Phe Ile Ser Val Ala Cys Ile Ser His Val Ala Ala Ile Gly
    130                 135                 140
```

```
Asp Gln Lys Phe Glu Val Ile Thr Asn Asn Arg Thr Phe Ala Phe Arg
145                 150                 155                 160

Ala Glu Ser Asp Val Glu Arg Lys Glu Trp Met Gln Ala Leu Gln Gln
                165                 170                 175

Ala Met Ala Glu Gln Arg Ala Arg Ala Arg Leu Ser Ser Ala Tyr Leu
            180                 185                 190

Leu Gly Val Pro Gly Ser Glu Gln Pro Asp Arg Ala Gly Ser Leu Glu
        195                 200                 205

Leu Arg Gly Phe Lys Asn Lys Leu Tyr Val Ala Val Val Gly Asp Lys
    210                 215                 220

Val Gln Leu Tyr Lys Asn Leu Glu Glu Tyr His Leu Gly Ile Gly Ile
225                 230                 235                 240

Thr Phe Ile Asp Met Ser Val Gly Asn Val Lys Glu Val Asp Arg Arg
                245                 250                 255

Ser Phe Asp Leu Thr Thr Pro Tyr Arg Ile Phe Ser Phe Ser Ala Asp
            260                 265                 270

Ser Glu Leu Glu Lys Glu Gln Trp Leu Glu Ala Met Gln Gly Ala Ile
        275                 280                 285

Ala Glu Ala Leu Ser Thr Ser Glu Val Ala Glu Arg Ile Trp Ala Ala
    290                 295                 300

Ala Pro Asn Arg Phe Cys Ala Asp Cys Gly Ala Pro Gln Pro Asp Trp
305                 310                 315                 320

Ala Ser Ile Asn Leu Cys Val Val Ile Cys Lys Arg Cys Ala Gly Glu
                325                 330                 335

His Arg Gly Leu Gly Ala Gly Val Ser Lys Val Arg Ser Leu Lys Met
            340                 345                 350

Asp Arg Lys Val Trp Thr Glu Thr Leu Ile Glu Leu Phe Leu Gln Leu
        355                 360                 365
```

```
Gly Asn Gly Ala Gly Asn Arg Phe Trp Ala Ala Asn Val Pro Pro Ser
    370                 375                 380

Glu Ala Leu Gln Pro Ser Ser Ser Pro Ser Thr Arg Arg Cys His Leu
385                 390                 395                 400

Glu Ala Lys Tyr Arg Glu Gly Lys Tyr Arg Arg Tyr His Pro Leu Phe
                405                 410                 415

Gly Asn Gln Glu Glu Leu Asp Lys Ala Leu Cys Ala Ala Val Thr Thr
            420                 425                 430

Thr Asp Leu Ala Glu Thr Gln Ala Leu Leu Gly Cys Gly Ala Gly Ile
        435                 440                 445

Asn Cys Phe Ser Gly Asp Pro Glu Ala Pro Thr Pro Leu Ala Leu Ala
    450                 455                 460

Glu Gln Ala Gly Gln Thr Leu Gln Met Glu Phe Leu Arg Asn Asn Arg
465                 470                 475                 480

Thr Thr Glu Val Pro Arg Leu Asp Ser Met Lys Pro Leu Glu Lys His
                485                 490                 495

Tyr Ser Val Val Leu Pro Thr Val Ser His Ser Gly Phe Leu Tyr Lys
            500                 505                 510

Thr Ala Ser Ala Gly Lys Leu Leu Gln Asp Arg Arg Ala Arg Glu Glu
        515                 520                 525

Phe Ser Arg Arg Trp Cys Val Leu Gly Asp Gly Val Leu Ser Tyr Phe
    530                 535                 540

Glu Asn Glu Arg Ala Val Thr Pro Asn Gly Glu Ile Arg Ala Ser Glu
545                 550                 555                 560

Ile Val Cys Leu Ala Val Pro Pro Pro Asp Thr His Gly Phe Glu His
                565                 570                 575

Thr Phe Glu Val Tyr Thr Glu Gly Glu Arg Leu Tyr Leu Phe Gly Leu
            580                 585                 590
```

```
Glu Ser Ala Glu Gln Ala His Glu Trp Val Lys Cys Ile Ala Lys Ala
        595                 600                 605

Phe Val Pro Pro Leu Ala Glu Asp Leu Leu Ala Arg Asp Phe Glu Arg
    610                 615                 620

Leu Gly Arg Leu Pro Tyr Lys Ala Gly Leu Ser Leu Gln Arg Ala Gln
625                 630                 635                 640

Glu Gly Trp Phe Ser Leu Ser Gly Ser Glu Leu Arg Ala Val Phe Pro
                645                 650                 655

Glu Gly Pro Cys Glu Glu Pro Leu Gln Leu Arg Lys Leu Gln Glu Leu
            660                 665                 670

Ser Ile Gln Gly Asp Ser Glu Asn Gln Val Leu Val Leu Val Glu Arg
        675                 680                 685

Arg Arg Thr Leu Tyr Ile Gln Gly Glu Arg Arg Leu Asp Phe Met Gly
    690                 695                 700

Trp Leu Gly Ala Ile Gln Lys Ala Ala Ala Ser Met Gly Asp Thr Leu
705                 710                 715                 720

Ser Glu Gln Gln Leu Gly Asp Ser Asp Ile Pro Val Ile Val Tyr Arg
                725                 730                 735

Cys Val Asp Tyr Ile Thr Gln Cys Gly Leu Thr Ser Glu Gly Ile Tyr
            740                 745                 750

Arg Lys Cys Gly Gln Thr Ser Lys Thr Gln Arg Leu Leu Glu Ser Leu
        755                 760                 765

Arg Gln Asp Ala Arg Ser Val His Leu Lys Glu Gly Glu Gln His Val
    770                 775                 780

Asp Asp Val Ser Ser Ala Leu Lys Arg Phe Leu Arg Asp Leu Pro Asp
785                 790                 795                 800

Gly Leu Phe Thr Arg Ala Gln Arg Leu Thr Trp Leu Glu Ala Ser Glu
                805                 810                 815

Ile Glu Asp Glu Glu Glu Lys Val Ser Arg Tyr Arg Glu Leu Leu Val
```

820 825 830

Arg Leu Pro Pro Val Asn Arg Ala Thr Val Lys Ala Leu Ile Ser His
835 840 845

Leu Tyr Cys Val Gln Cys Phe Ser Asp Thr Asn Gln Met Asn Val His
850 855 860

Asn Leu Ala Ile Val Phe Gly Pro Thr Leu Phe Gln Thr Asp Gly Gln
865 870 875 880

Asp Tyr Lys Ala Gly Arg Val Val Glu Asp Leu Ile Asn His Tyr Val
885 890 895

Val Val Phe Ser Val Asp Glu Glu Glu Leu Arg Lys Gln Arg Glu Glu
900 905 910

Ile Thr Ala Ile Val Lys Met Arg Val Ala Gly Thr Ala Ser Gly Thr
915 920 925

Gln His Ala Gly Asp Phe Ile Cys Thr Val Tyr Leu Glu Glu Lys Lys
930 935 940

Ala Glu Thr Glu Gln His Ile Lys Val Pro Ala Ser Met Thr Ala Glu
945 950 955 960

Glu Leu Thr Leu Glu Ile Leu Asp Arg Arg Asn Val Gly Ile Arg Glu
965 970 975

Lys Asp Tyr Trp Thr Cys Phe Glu Val Asn Glu Arg Glu Glu Ala Glu
980 985 990

Arg Pro Leu His Phe Ala Glu Lys Val Leu Pro Ile Leu His Gly
Leu
995 1000 1005

Gly Thr Asp Ser His Leu Val Val Lys Lys His Gln Ala Met Glu
1010 1015 1020

Ala Met Leu Leu Tyr Leu Ala Ser Arg Val Gly Asp Thr Lys His
1025 1030 1035

Gly Met Met Lys Phe Arg Glu Asp Arg Ser Leu Leu Gly Leu Gly

```
    1040                1045                1050

Leu Pro  Ser Gly Gly Phe His  Asp Arg Tyr Phe Ile  Leu Asn Ser
    1055                1060                1065

Ser Cys  Leu Arg Leu Tyr Lys  Glu Val Arg Ser Gln  Arg Pro Trp
    1070                1075                1080

Ser Gly  Ala Pro Glu Thr Ser  His Arg Pro Glu Lys  Glu Trp Pro
    1085                1090                1095

Ile Lys  Ser Leu Lys Val Tyr  Leu Gly Val Lys Lys  Lys Leu Arg
    1100                1105                1110

Pro Pro  Thr Cys Trp Gly Phe  Thr Val Val His Glu  Thr Glu Lys
    1115                1120                1125

His Glu  Lys Gln Gln Trp Tyr  Leu Cys Cys Asp Thr  Gln Met Glu
    1130                1135                1140

Leu Arg  Glu Trp Phe Ala Thr  Phe Leu Phe Val Gln  His Asp Gly
    1145                1150                1155

Leu Val  Trp Pro Ser Glu Pro  Ser Arg Val Ser Arg  Ala Val Pro
    1160                1165                1170

Glu Val  Arg Leu Gly Ser Val  Ser Leu Ile Pro Leu  Arg Gly Ser
    1175                1180                1185

Glu Asn  Glu Met Arg Arg Ser  Val Ala Ala Phe Thr  Ala Asp Pro
    1190                1195                1200

Leu Ser  Leu Leu Arg Asn Val
    1205                1210


<210> 6127
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ArfGAP with RhoGAP domain, ankyrin repeat and PH domain
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<400> 6127

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Met Ala Glu Ala Gly Asp Ala Ala Leu Ser Val Ala Glu Trp Leu Arg
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Ala Leu His Leu Glu Gln Tyr Thr Gly Leu Phe Glu Gln His Gly Leu
            20                  25                  30

Val Trp Ala Thr Glu Cys Gln Gly Leu Ser Asp Thr Arg Leu Met Asp
        35                  40                  45

Met Gly Met Leu Leu Pro Gly His Arg Arg Arg Ile Leu Ala Gly Leu
    50                  55                  60

Leu Arg Ala His Thr Ser Pro Ala Pro Ala Pro Arg Pro Thr Pro Arg
65                  70                  75                  80

Pro Val Pro Met Lys Arg His Ile Phe Arg Ser Pro Pro Val Pro Ala
                85                  90                  95

Thr Pro Pro Glu Pro Leu Pro Thr Thr Thr Glu Asp Glu Gly Leu Pro
            100                 105                 110

Ala Ala Pro Pro Ile Pro Pro Arg Arg Ser Cys Leu Pro Pro Thr Cys
        115                 120                 125

Phe Thr Thr Pro Ser Thr Ala Ala Pro Asp Pro Val Leu Pro Pro Leu
    130                 135                 140

Pro Ala Lys Arg His Leu Ala Glu Leu Ser Val Pro Pro Val Pro Pro
145                 150                 155                 160
```

```
Arg Thr Gly Pro Pro Arg Leu Leu Val Ser Leu Pro Thr Lys Glu Glu
                165                 170                 175

Glu Ser Leu Leu Pro Ser Leu Ser Ser Pro Pro Gln Pro Gln Ser Glu
            180                 185                 190

Glu Pro Leu Ser Thr Leu Pro Gln Gly Pro Pro Gln Pro Pro Ser Pro
        195                 200                 205

Pro Pro Cys Pro Pro Glu Ile Pro Pro Lys Pro Val Arg Leu Phe Pro
    210                 215                 220

Glu Phe Asp Asp Ser Asp Tyr Asp Glu Val Pro Glu Glu Gly Pro Gly
225                 230                 235                 240

Ala Pro Ala Arg Val Met Thr Lys Lys Glu Glu Pro Pro Pro Ser Arg
                245                 250                 255

Val Pro Arg Ala Val Arg Val Ala Ser Leu Leu Ser Glu Gly Glu Glu
            260                 265                 270

Leu Ser Gly Asp Asp Gln Gly Asp Glu Glu Glu Asp Asp His Ala Tyr
        275                 280                 285

Glu Gly Val Pro Asn Gly Gly Trp His Thr Ser Ser Leu Ser Leu Ser
    290                 295                 300

Leu Pro Ser Thr Ile Ala Ala Pro His Pro Met Asp Gly Pro Pro Gly
305                 310                 315                 320

Gly Ser Thr Pro Val Thr Pro Val Ile Lys Ala Gly Trp Leu Asp Lys
                325                 330                 335

Asn Pro Pro Gln Gly Ser Tyr Ile Tyr Gln Lys Arg Trp Val Arg Leu
            340                 345                 350

Asp Thr Asp His Leu Arg Tyr Phe Asp Ser Asn Lys Asp Ala Tyr Ser
        355                 360                 365

Lys Arg Phe Ile Ser Val Ala Cys Ile Ser His Val Ala Ala Ile Gly
    370                 375                 380
```

```
Asp Gln Lys Phe Glu Val Ile Thr Asn Asn Arg Thr Phe Ala Phe Arg
385                 390                 395                 400

Ala Glu Ser Asp Val Glu Arg Lys Glu Trp Met Gln Ala Leu Gln Gln
                405                 410                 415

Ala Met Ala Glu Gln Arg Ala Arg Ala Arg Leu Ser Ser Ala Tyr Leu
            420                 425                 430

Leu Gly Val Pro Gly Ser Glu Gln Pro Asp Arg Ala Gly Ser Leu Glu
        435                 440                 445

Leu Arg Gly Phe Lys Asn Lys Leu Tyr Val Ala Val Val Gly Asp Lys
    450                 455                 460

Val Gln Leu Tyr Lys Asn Leu Glu Glu Tyr His Leu Gly Ile Gly Ile
465                 470                 475                 480

Thr Phe Ile Asp Met Ser Val Gly Asn Val Lys Glu Val Asp Arg Arg
                485                 490                 495

Ser Phe Asp Leu Thr Thr Pro Tyr Arg Ile Phe Ser Phe Ser Ala Asp
            500                 505                 510

Ser Glu Leu Glu Lys Glu Gln Trp Leu Glu Ala Met Gln Gly Ala Ile
        515                 520                 525

Ala Glu Ala Leu Ser Thr Ser Glu Val Ala Glu Arg Ile Trp Ala Ala
    530                 535                 540

Ala Pro Asn Arg Phe Cys Ala Asp Cys Gly Ala Pro Gln Pro Asp Trp
545                 550                 555                 560

Ala Ser Ile Asn Leu Cys Val Val Ile Cys Lys Arg Cys Ala Gly Glu
                565                 570                 575

His Arg Gly Leu Gly Ala Gly Val Ser Lys Val Arg Ser Leu Lys Met
            580                 585                 590

Asp Arg Lys Val Trp Thr Glu Thr Leu Ile Glu Leu Phe Leu Gln Leu
        595                 600                 605

Gly Asn Gly Ala Gly Asn Arg Phe Trp Ala Ala Asn Val Pro Pro Ser
```

610 615 620

Glu Ala Leu Gln Pro Ser Ser Ser Pro Ser Thr Arg Arg Cys His Leu
625 630 635 640

Glu Ala Lys Tyr Arg Glu Gly Lys Tyr Arg Arg Tyr His Pro Leu Phe
645 650 655

Gly Asn Gln Glu Glu Leu Asp Lys Ala Leu Cys Ala Ala Val Thr Thr
660 665 670

Thr Asp Leu Ala Glu Thr Gln Ala Leu Leu Gly Cys Gly Ala Gly Ile
675 680 685

Asn Cys Phe Ser Gly Asp Pro Glu Ala Pro Thr Pro Leu Ala Leu Ala
690 695 700

Glu Gln Ala Gly Gln Thr Leu Gln Met Glu Phe Leu Arg Asn Asn Arg
705 710 715 720

Thr Thr Glu Val Pro Arg Leu Asp Ser Met Lys Pro Leu Glu Lys His
725 730 735

Tyr Ser Val Val Leu Pro Thr Val Ser His Ser Gly Phe Leu Tyr Lys
740 745 750

Thr Ala Ser Ala Gly Lys Leu Leu Gln Asp Arg Arg Ala Arg Glu Glu
755 760 765

Phe Ser Arg Arg Trp Cys Val Leu Gly Asp Gly Val Leu Ser Tyr Phe
770 775 780

Glu Asn Glu Arg Ala Val Thr Pro Asn Gly Glu Ile Arg Ala Ser Glu
785 790 795 800

Ile Val Cys Leu Ala Val Pro Pro Pro Asp Thr His Gly Phe Glu His
805 810 815

Thr Phe Glu Val Tyr Thr Glu Gly Glu Arg Leu Tyr Leu Phe Gly Leu
820 825 830

Glu Ser Ala Glu Gln Ala His Glu Trp Val Lys Cys Ile Ala Lys Ala
835 840 845

```
Phe Val Pro Pro Leu Ala Glu Asp Leu Leu Ala Arg Asp Phe Glu Arg
    850                 855                 860

Leu Gly Arg Leu Pro Tyr Lys Ala Gly Leu Ser Leu Gln Arg Ala Gln
865                 870                 875                 880

Glu Gly Trp Phe Ser Leu Ser Gly Ser Glu Leu Arg Ala Val Phe Pro
                885                 890                 895

Glu Gly Pro Cys Glu Glu Pro Leu Gln Leu Arg Lys Leu Gln Glu Leu
            900                 905                 910

Ser Ile Gln Gly Asp Ser Glu Asn Gln Val Leu Val Leu Val Glu Arg
        915                 920                 925

Arg Arg Thr Leu Tyr Ile Gln Gly Glu Arg Arg Leu Asp Phe Met Gly
    930                 935                 940

Trp Leu Gly Ala Ile Gln Lys Ala Ala Ala Ser Met Gly Asp Thr Leu
945                 950                 955                 960

Ser Glu Gln Gln Leu Gly Asp Ser Asp Ile Pro Val Ile Val Tyr Arg
                965                 970                 975

Cys Val Asp Tyr Ile Thr Gln Cys Gly Leu Thr Ser Glu Gly Ile Tyr
            980                 985                 990

Arg Lys Cys Gly Gln Thr Ser Lys  Thr Gln Arg Leu Leu  Glu Ser
Leu
        995                 1000                1005

Arg Gln  Asp Ala Arg Ser Val  His Leu Lys Glu Gly  Glu Gln His
    1010                1015                1020

Val Asp  Asp Val Ser Ser Ala  Leu Lys Arg Phe Leu  Arg Asp Leu
    1025                1030                1035

Pro Asp  Gly Leu Phe Thr Arg  Ala Gln Arg Leu Thr  Trp Leu Glu
    1040                1045                1050

Ala Ser  Glu Ile Glu Asp Glu  Glu Glu Lys Val Ser  Arg Tyr Arg
    1055                1060                1065
```

```
Glu Leu  Leu Val Arg Leu Pro  Pro Val Asn Arg Ala  Thr Val Lys
    1070                1075                1080

Ala Leu  Ile Ser His Leu Tyr  Cys Val Gln Cys Phe  Ser Asp Thr
    1085                1090                1095

Asn Gln  Met Asn Val His Asn  Leu Ala Ile Val Phe  Gly Pro Thr
    1100                1105                1110

Leu Phe  Gln Thr Asp Gly Gln  Asp Tyr Lys Ala Gly  Arg Val Val
    1115                1120                1125

Glu Asp  Leu Ile Asn His Tyr  Val Val Val Phe Ser  Val Asp Glu
    1130                1135                1140

Glu Glu  Leu Arg Lys Gln Arg  Glu Glu Ile Thr Ala  Ile Val Lys
    1145                1150                1155

Met Arg  Val Ala Gly Thr Ala  Ser Gly Thr Gln His  Ala Gly Asp
    1160                1165                1170

Phe Ile  Cys Thr Val Tyr Leu  Glu Glu Lys Lys Ala  Glu Thr Glu
    1175                1180                1185

Gln His  Ile Lys Val Pro Ala  Ser Met Thr Ala Glu  Glu Leu Thr
    1190                1195                1200

Leu Glu  Ile Leu Asp Arg Arg  Asn Val Gly Ile Arg  Glu Lys Asp
    1205                1210                1215

Tyr Trp  Thr Cys Phe Glu Val  Asn Glu Arg Glu Glu  Ala Glu Arg
    1220                1225                1230

Pro Leu  His Phe Ala Glu Lys  Val Leu Pro Ile Leu  His Gly Leu
    1235                1240                1245

Gly Thr  Asp Ser His Leu Val  Val Lys Lys His Gln  Ala Met Glu
    1250                1255                1260

Ala Met  Leu Leu Tyr Leu Ala  Ser Arg Val Gly Asp  Thr Lys His
    1265                1270                1275
```

```
Gly Met  Met Lys Phe Arg Glu  Asp Arg Ser Leu Leu  Gly Leu Gly
    1280                1285                1290

Leu Pro  Ser Gly Gly Phe His  Asp Arg Tyr Phe Ile  Leu Asn Ser
    1295                1300                1305

Ser Cys  Leu Arg Leu Tyr Lys  Glu Val Arg Ser Gln  Arg Pro Trp
    1310                1315                1320

Ser Gly  Ala Pro Glu Thr Ser  His Arg Pro Glu Lys  Glu Trp Pro
    1325                1330                1335

Ile Lys  Ser Leu Lys Val Tyr  Leu Gly Val Lys Lys  Lys Leu Arg
    1340                1345                1350

Pro Pro  Thr Cys Trp Gly Phe  Thr Val Val His Glu  Thr Glu Lys
    1355                1360                1365

His Glu  Lys Gln Gln Trp Tyr  Leu Cys Cys Asp Thr  Gln Met Glu
    1370                1375                1380

Leu Arg  Glu Trp Phe Ala Thr  Phe Leu Phe Val Gln  His Asp Gly
    1385                1390                1395

Leu Val  Trp Pro Ser Glu Pro  Ser Arg Val Ser Arg  Ala Val Pro
    1400                1405                1410

Glu Val  Arg Leu Gly Ser Val  Ser Leu Ile Pro Leu  Arg Gly Ser
    1415                1420                1425

Glu Asn  Glu Met Arg Arg Ser  Val Ala Ala Phe Thr  Ala Asp Pro
    1430                1435                1440

Leu Ser  Leu Leu Arg Asn Val
    1445                1450


<210> 6128
<211> 679
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1332; "
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<220>
<221> source
<223> /note="Gene Symbol: ARAP1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with RhoGAP domain, ankyrin repeat and PH domain
1; "

<220>
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<223> /note="ENSP ID: ENSP00000390461"

<400> 6128
Ile Asp Ala Ser Gly Lys Gly Glu Phe Ser Arg Arg Trp Cys Val Leu
1 5 10 15

Gly Asp Gly Val Leu Ser Tyr Phe Glu Asn Glu Arg Ala Val Thr Pro
20 25 30

Asn Gly Glu Ile Arg Ala Ser Glu Ile Val Cys Leu Ala Val Pro Pro
35 40 45

Pro Asp Thr His Gly Phe Glu His Thr Phe Glu Val Tyr Thr Glu Gly
50 55 60

Glu Arg Leu Tyr Leu Phe Gly Leu Glu Ser Ala Glu Gln Ala His Glu
65 70 75 80

Trp Val Lys Cys Ile Ala Lys Ala Phe Val Pro Pro Leu Ala Glu Asp
85 90 95

Leu Leu Ala Arg Asp Phe Glu Arg Leu Gly Arg Leu Pro Tyr Lys Ala
100 105 110

Gly Leu Ser Leu Gln Arg Ala Gln Glu Gly Trp Phe Ser Leu Ser Gly
115 120 125

Ser Glu Leu Arg Ala Val Phe Pro Glu Gly Pro Cys Glu Glu Pro Leu
130 135 140

Gln Leu Arg Lys Leu Gln Glu Leu Ser Ile Gln Gly Asp Ser Glu Asn
145 150 155 160

Gln Val Leu Val Leu Val Glu Arg Arg Arg Thr Leu Tyr Ile Gln Gly

```
                165                 170                 175

Glu Arg Arg Leu Asp Phe Met Gly Trp Leu Gly Ala Ile Gln Lys Ala
            180                 185                 190

Ala Ala Ser Met Gly Asp Thr Leu Ser Glu Gln Gln Leu Gly Asp Ser
        195                 200                 205

Asp Ile Pro Val Ile Val Tyr Arg Cys Val Asp Tyr Ile Thr Gln Cys
    210                 215                 220

Gly Leu Thr Ser Glu Gly Ile Tyr Arg Lys Cys Gly Gln Thr Ser Lys
225                 230                 235                 240

Thr Gln Arg Leu Leu Glu Ser Leu Arg Gln Asp Ala Arg Ser Val His
                245                 250                 255

Leu Lys Glu Gly Glu Gln His Val Asp Asp Val Ser Ser Ala Leu Lys
            260                 265                 270

Arg Phe Leu Arg Asp Leu Pro Asp Gly Leu Phe Thr Arg Ala Gln Arg
        275                 280                 285

Leu Thr Trp Leu Glu Ala Ser Glu Ile Glu Asp Glu Glu Glu Lys Val
    290                 295                 300

Ser Arg Tyr Arg Glu Leu Leu Val Arg Leu Pro Pro Val Asn Arg Ala
305                 310                 315                 320

Thr Val Lys Ala Leu Ile Ser His Leu Tyr Cys Val Gln Cys Phe Ser
                325                 330                 335

Asp Thr Asn Gln Met Asn Val His Asn Leu Ala Ile Val Phe Gly Pro
            340                 345                 350

Thr Leu Phe Gln Thr Asp Gly Gln Asp Tyr Lys Ala Gly Arg Val Val
        355                 360                 365

Glu Asp Leu Ile Asn His Tyr Val Val Val Phe Ser Val Asp Glu Glu
    370                 375                 380

Glu Leu Arg Lys Gln Arg Glu Glu Ile Thr Ala Ile Val Lys Met Arg
385                 390                 395                 400
```

Val Ala Gly Thr Ala Ser Gly Thr Gln His Ala Gly Asp Phe Ile Cys
405 410 415

Thr Val Tyr Leu Glu Glu Lys Lys Ala Glu Thr Glu Gln His Ile Lys
420 425 430

Val Pro Ala Ser Met Thr Ala Glu Glu Leu Thr Leu Glu Ile Leu Asp
435 440 445

Arg Arg Asn Val Gly Ile Arg Glu Lys Asp Tyr Trp Thr Cys Phe Glu
450 455 460

Val Asn Glu Arg Glu Glu Ala Glu Arg Pro Leu His Phe Ala Glu Lys
465 470 475 480

Val Leu Pro Ile Leu His Gly Leu Gly Thr Asp Ser His Leu Val Val
485 490 495

Lys Lys His Gln Ala Met Glu Ala Met Leu Leu Tyr Leu Ala Ser Arg
500 505 510

Val Gly Asp Thr Lys His Gly Met Met Lys Phe Arg Glu Asp Arg Ser
515 520 525

Leu Leu Gly Leu Gly Leu Pro Ser Gly Gly Phe His Asp Arg Tyr Phe
530 535 540

Ile Leu Asn Ser Ser Cys Leu Arg Leu Tyr Lys Glu Val Arg Ser His
545 550 555 560

Arg Pro Glu Lys Glu Trp Pro Ile Lys Ser Leu Lys Val Tyr Leu Gly
565 570 575

Val Lys Lys Lys Leu Arg Pro Pro Thr Cys Trp Gly Phe Thr Val Val
580 585 590

His Glu Thr Glu Lys His Glu Lys Gln Gln Trp Tyr Leu Cys Cys Asp
595 600 605

Thr Gln Met Glu Leu Arg Glu Trp Phe Ala Thr Phe Leu Phe Val Gln
610 615 620

```
His Asp Gly Leu Val Trp Pro Ser Glu Pro Ser Arg Val Ser Arg Ala
625                 630                 635                 640


Val Pro Glu Val Arg Leu Gly Ser Val Ser Leu Ile Pro Leu Arg Gly
                645                 650                 655


Ser Glu Asn Glu Met Arg Arg Ser Val Ala Ala Phe Thr Ala Asp Pro
            660                 665                 670


Leu Ser Leu Leu Arg Asn Val
        675


<210> 6129
<211> 1194
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1332; "

<220>
<221> source
<223> /note="Gene Symbol: ARAP1; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with RhoGAP domain, ankyrin repeat and PH domain
      1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000392264"

<400> 6129
Met Thr Lys Lys Glu Glu Pro Pro Pro Ser Arg Val Pro Arg Ala Val
1               5                   10                  15


Arg Val Ala Ser Leu Leu Ser Glu Gly Glu Glu Leu Ser Gly Asp Asp
            20                  25                  30


Gln Gly Asp Glu Glu Glu Asp Asp His Ala Tyr Glu Gly Val Pro Asn
        35                  40                  45


Gly Gly Trp His Thr Ser Ser Leu Ser Leu Ser Leu Pro Ser Thr Ile
    50                  55                  60
```

```
Ala Ala Pro His Pro Met Asp Gly Pro Pro Gly Gly Ser Thr Pro Val
65                  70                  75                  80

Thr Pro Val Ile Lys Ala Gly Trp Leu Asp Lys Asn Pro Pro Gln Gly
                85                  90                  95

Ser Tyr Ile Tyr Gln Lys Arg Trp Val Arg Leu Asp Thr Asp His Leu
            100                 105                 110

Arg Tyr Phe Asp Ser Asn Lys Asp Ala Tyr Ser Lys Arg Phe Ile Ser
        115                 120                 125

Val Ala Cys Ile Ser His Val Ala Ala Ile Gly Asp Gln Lys Phe Glu
    130                 135                 140

Val Ile Thr Asn Asn Arg Thr Phe Ala Phe Arg Ala Glu Ser Asp Val
145                 150                 155                 160

Glu Arg Lys Glu Trp Met Gln Ala Leu Gln Gln Ala Met Ala Glu Gln
                165                 170                 175

Arg Ala Arg Ala Arg Leu Ser Ser Ala Tyr Leu Leu Gly Val Pro Gly
            180                 185                 190

Ser Glu Gln Pro Asp Arg Ala Gly Ser Leu Glu Leu Arg Gly Phe Lys
        195                 200                 205

Asn Lys Leu Tyr Val Ala Val Val Gly Asp Lys Val Gln Leu Tyr Lys
    210                 215                 220

Asn Leu Glu Glu Tyr His Leu Gly Ile Gly Ile Thr Phe Ile Asp Met
225                 230                 235                 240

Ser Val Gly Asn Val Lys Glu Val Asp Arg Arg Ser Phe Asp Leu Thr
                245                 250                 255

Thr Pro Tyr Arg Ile Phe Ser Phe Ser Ala Asp Ser Glu Leu Glu Lys
            260                 265                 270

Glu Gln Trp Leu Glu Ala Met Gln Gly Ala Ile Ala Glu Ala Leu Ser
        275                 280                 285

Thr Ser Glu Val Ala Glu Arg Ile Trp Ala Ala Ala Pro Asn Arg Phe
```

```
    290                 295                 300

Cys Ala Asp Cys Gly Ala Pro Gln Pro Asp Trp Ala Ser Ile Asn Leu
305                 310                 315                 320

Cys Val Val Ile Cys Lys Arg Cys Ala Gly Glu His Arg Gly Leu Gly
                325                 330                 335

Ala Gly Val Ser Lys Val Arg Ser Leu Lys Met Asp Arg Lys Val Trp
            340                 345                 350

Thr Glu Thr Leu Ile Glu Leu Phe Leu Gln Leu Gly Asn Gly Ala Gly
        355                 360                 365

Asn Arg Phe Trp Ala Ala Asn Val Pro Pro Ser Glu Ala Leu Gln Pro
    370                 375                 380

Ser Ser Ser Pro Ser Thr Arg Arg Cys His Leu Glu Ala Lys Tyr Arg
385                 390                 395                 400

Glu Gly Lys Tyr Arg Arg Tyr His Pro Leu Phe Gly Asn Gln Glu Glu
                405                 410                 415

Leu Asp Lys Ala Leu Cys Ala Ala Val Thr Thr Thr Asp Leu Ala Glu
            420                 425                 430

Thr Gln Ala Leu Leu Gly Cys Gly Ala Gly Ile Asn Cys Phe Ser Gly
        435                 440                 445

Asp Pro Glu Ala Pro Thr Pro Leu Ala Leu Ala Glu Gln Ala Gly Gln
    450                 455                 460

Thr Leu Gln Met Glu Phe Leu Arg Asn Asn Arg Thr Thr Glu Val Pro
465                 470                 475                 480

Arg Leu Asp Ser Met Lys Pro Leu Glu Lys His Tyr Ser Val Val Leu
                485                 490                 495

Pro Thr Val Ser His Ser Gly Phe Leu Tyr Lys Thr Ala Ser Ala Gly
            500                 505                 510

Lys Leu Leu Gln Asp Arg Arg Ala Arg Glu Glu Phe Ser Arg Arg Trp
        515                 520                 525
```

```
Cys Val Leu Gly Asp Gly Val Leu Ser Tyr Phe Glu Asn Glu Arg Ala
    530                 535                 540

Val Thr Pro Asn Gly Glu Ile Arg Ala Ser Glu Ile Val Cys Leu Ala
545                 550                 555                 560

Val Pro Pro Pro Asp Thr His Gly Phe Glu His Thr Phe Glu Val Tyr
                565                 570                 575

Thr Glu Gly Glu Arg Leu Tyr Leu Phe Gly Leu Glu Ser Ala Glu Gln
            580                 585                 590

Ala His Glu Trp Val Lys Cys Ile Ala Lys Ala Phe Val Pro Pro Leu
        595                 600                 605

Ala Glu Asp Leu Leu Ala Arg Asp Phe Glu Arg Leu Gly Arg Leu Pro
    610                 615                 620

Tyr Lys Ala Gly Leu Ser Leu Gln Arg Ala Gln Glu Gly Trp Phe Ser
625                 630                 635                 640

Leu Ser Gly Ser Glu Leu Arg Ala Val Phe Pro Glu Gly Pro Cys Glu
                645                 650                 655

Glu Pro Leu Gln Leu Arg Lys Leu Gln Glu Leu Ser Ile Gln Gly Asp
            660                 665                 670

Ser Glu Asn Gln Val Leu Val Leu Val Glu Arg Arg Arg Thr Leu Tyr
        675                 680                 685

Ile Gln Gly Glu Arg Arg Leu Asp Phe Met Gly Trp Leu Gly Ala Ile
    690                 695                 700

Gln Lys Ala Ala Ala Ser Met Gly Asp Thr Leu Ser Glu Gln Gln Leu
705                 710                 715                 720

Gly Asp Ser Asp Ile Pro Val Ile Val Tyr Arg Cys Val Asp Tyr Ile
                725                 730                 735

Thr Gln Cys Gly Leu Thr Ser Glu Gly Ile Tyr Arg Lys Cys Gly Gln
            740                 745                 750
```

```
Thr Ser Lys Thr Gln Arg Leu Leu Glu Ser Leu Arg Gln Asp Ala Arg
        755                 760                 765

Ser Val His Leu Lys Glu Gly Glu Gln His Val Asp Asp Val Ser Ser
    770                 775                 780

Ala Leu Lys Arg Phe Leu Arg Asp Leu Pro Asp Gly Leu Phe Thr Arg
785                 790                 795                 800

Ala Gln Arg Leu Thr Trp Leu Glu Ala Ser Glu Ile Glu Asp Glu Glu
                805                 810                 815

Glu Lys Val Ser Arg Tyr Arg Glu Leu Leu Val Arg Leu Pro Pro Val
            820                 825                 830

Asn Arg Ala Thr Val Lys Ala Leu Ile Ser His Leu Tyr Cys Val Gln
        835                 840                 845

Cys Phe Ser Asp Thr Asn Gln Met Asn Val His Asn Leu Ala Ile Val
    850                 855                 860

Phe Gly Pro Thr Leu Phe Gln Thr Asp Gly Gln Asp Tyr Lys Ala Gly
865                 870                 875                 880

Arg Val Val Glu Asp Leu Ile Asn His Tyr Val Val Val Phe Ser Val
                885                 890                 895

Asp Glu Glu Glu Leu Arg Lys Gln Arg Glu Glu Ile Thr Ala Ile Val
            900                 905                 910

Lys Met Arg Val Ala Gly Thr Ala Ser Gly Thr Gln His Ala Gly Asp
        915                 920                 925

Phe Ile Cys Thr Val Tyr Leu Glu Glu Lys Lys Ala Glu Thr Glu Gln
    930                 935                 940

His Ile Lys Val Pro Ala Ser Met Thr Ala Glu Glu Leu Thr Leu Glu
945                 950                 955                 960

Ile Leu Asp Arg Arg Asn Val Gly Ile Arg Glu Lys Asp Tyr Trp Thr
                965                 970                 975
```

```
Cys Phe Glu Val Asn Glu Arg Glu Glu Ala Glu Arg Pro Leu His Phe
            980                 985                 990

Ala Glu Lys Val Leu Pro Ile Leu  His Gly Leu Gly Thr  Asp Ser
His
        995                1000                1005

Leu Val  Val Lys Lys His Gln  Ala Met Glu Ala Met  Leu Leu Tyr
    1010                1015                1020

Leu Ala  Ser Arg Val Gly Asp  Thr Lys His Gly Met  Met Lys Phe
    1025                1030                1035

Arg Glu  Asp Arg Ser Leu Leu  Gly Leu Gly Leu Pro  Ser Gly Gly
    1040                1045                1050

Phe His  Asp Arg Tyr Phe Ile  Leu Asn Ser Ser Cys  Leu Arg Leu
    1055                1060                1065

Tyr Lys  Glu Val Arg Ser His  Arg Pro Glu Lys Glu  Trp Pro Ile
    1070                1075                1080

Lys Ser  Leu Lys Val Tyr Leu  Gly Val Lys Lys Lys  Leu Arg Pro
    1085                1090                1095

Pro Thr  Cys Trp Gly Phe Thr  Val Val His Glu Thr  Glu Lys His
    1100                1105                1110

Glu Lys  Gln Gln Trp Tyr Leu  Cys Cys Asp Thr Gln  Met Glu Leu
    1115                1120                1125

Arg Glu  Trp Phe Ala Thr Phe  Leu Phe Val Gln His  Asp Gly Leu
    1130                1135                1140

Val Trp  Pro Ser Glu Pro Ser  Arg Val Ser Arg Ala  Val Pro Glu
    1145                1150                1155

Val Arg  Leu Gly Ser Val Ser  Leu Ile Pro Leu Arg  Gly Ser Glu
    1160                1165                1170

Asn Glu  Met Arg Arg Ser Val  Ala Ala Phe Thr Ala  Asp Pro Leu
    1175                1180                1185
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Ser Leu Leu Arg Asn Val
    1190

<210> 6130
<211> 254
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1332; "

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<221> source
<223> /note="Gene Symbol: ARAP1; "

<220>
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<223> /note="Gene Name:
      ArfGAP with RhoGAP domain, ankyrin repeat and PH domain
      1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000399118"

<400> 6130
Met Glu Phe Leu Arg Asn Asn Arg Thr Thr Glu Val Pro Arg Leu Asp
1   5   10   15

Ser Met Lys Pro Leu Glu Lys His Tyr Ser Val Val Leu Pro Thr Val
            20   25   30

Ser His Ser Gly Phe Leu Tyr Lys Thr Ala Ser Ala Gly Lys Leu Leu
        35   40   45

Gln Asp Arg Arg Ala Arg Glu Glu Phe Ser Arg Arg Trp Cys Val Leu
    50   55   60

Gly Asp Gly Val Leu Ser Tyr Phe Glu Asn Glu Arg Ala Val Thr Pro
65   70   75   80

Asn Gly Glu Ile Arg Ala Ser Glu Ile Val Cys Leu Ala Val Pro Pro
                85   90   95

Pro Asp Thr His Gly Phe Glu His Thr Phe Glu Val Tyr Thr Glu Gly
            100   105   110

Glu Arg Leu Tyr Leu Phe Gly Leu Glu Ser Ala Glu Gln Ala His Glu

```
        115                 120                 125

Trp Val Lys Cys Ile Ala Lys Ala Phe Val Pro Pro Leu Ala Glu Asp
    130                 135                 140

Leu Leu Ala Arg Asp Phe Glu Arg Leu Gly Arg Leu Pro Tyr Lys Ala
145                 150                 155                 160

Gly Leu Ser Leu Gln Arg Ala Gln Glu Gly Trp Phe Ser Leu Ser Gly
                165                 170                 175

Ser Glu Leu Arg Ala Val Phe Pro Glu Gly Pro Cys Glu Glu Pro Leu
            180                 185                 190

Gln Leu Arg Lys Leu Gln Glu Leu Ser Ile Gln Gly Asp Ser Glu Asn
        195                 200                 205

Gln Val Leu Val Leu Val Glu Arg Arg Arg Thr Leu Tyr Ile Gln Gly
    210                 215                 220

Glu Arg Arg Leu Asp Phe Met Gly Trp Leu Gly Ala Ile Gln Lys Ala
225                 230                 235                 240

Ala Ala Ser Met Gly Asp Thr Leu Ser Glu Gln Gln Leu Gly
                245                 250


<210> 6131
<211> 1133
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<220>
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<223> /note="Gene Name:
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      1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q96P48; "
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<220>
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<400> 6131
Met Thr Lys Lys Glu Glu Pro Pro Pro Ser Arg Val Pro Arg Ala Val
1 5 10 15

Arg Val Ala Ser Leu Leu Ser Glu Gly Glu Glu Leu Ser Gly Asp Asp
20 25 30

Gln Gly Asp Glu Glu Glu Asp Asp His Ala Tyr Glu Gly Val Pro Asn
35 40 45

Gly Gly Trp His Thr Ser Ser Leu Ser Leu Ser Leu Pro Ser Thr Ile
50 55 60

Ala Ala Pro His Pro Met Asp Gly Pro Pro Gly Gly Ser Thr Pro Val
65 70 75 80

Thr Pro Val Ile Lys Ala Gly Trp Leu Asp Lys Asn Pro Pro Gln Gly
85 90 95

Ser Tyr Ile Tyr Gln Lys Arg Trp Val Arg Leu Asp Thr Asp His Leu
100 105 110

Arg Tyr Phe Asp Ser Asn Lys Asp Ala Tyr Ser Lys Arg Phe Ile Ser
115 120 125

Val Ala Cys Ile Ser His Val Ala Ala Ile Gly Asp Gln Lys Phe Glu
130 135 140

Val Ile Thr Asn Asn Arg Thr Phe Ala Phe Arg Ala Glu Ser Asp Val
145 150 155 160

Glu Arg Lys Glu Trp Met Gln Ala Leu Gln Gln Ala Met Ala Glu Gln
165 170 175

Arg Ala Arg Ala Arg Leu Ser Ser Ala Tyr Leu Leu Gly Val Pro Gly
180 185 190

Ser Glu Gln Pro Asp Arg Ala Gly Ser Leu Glu Leu Arg Gly Phe Lys
195 200 205

```
Asn Lys Leu Tyr Val Ala Val Val Gly Asp Lys Val Gln Leu Tyr Lys
    210                 215                 220

Asn Leu Glu Glu Tyr His Leu Gly Ile Gly Ile Thr Phe Ile Asp Met
225                 230                 235                 240

Ser Val Gly Asn Val Lys Glu Val Asp Arg Arg Ser Phe Asp Leu Thr
                245                 250                 255

Thr Pro Tyr Arg Ile Phe Ser Phe Ser Ala Asp Ser Glu Leu Glu Lys
            260                 265                 270

Glu Gln Trp Leu Glu Ala Met Gln Gly Ala Ile Ala Glu Ala Leu Ser
        275                 280                 285

Thr Ser Glu Val Ala Glu Arg Ile Trp Ala Ala Ala Pro Asn Arg Phe
    290                 295                 300

Cys Ala Asp Cys Gly Ala Pro Gln Pro Asp Trp Ala Ser Ile Asn Leu
305                 310                 315                 320

Cys Val Val Ile Cys Lys Arg Cys Ala Gly Glu His Arg Gly Leu Gly
                325                 330                 335

Ala Gly Val Ser Lys Val Arg Ser Leu Lys Met Asp Arg Lys Val Trp
            340                 345                 350

Thr Glu Thr Leu Ile Glu Ala Leu Cys Ala Ala Val Thr Thr Thr Asp
        355                 360                 365

Leu Ala Glu Thr Gln Ala Leu Leu Gly Cys Gly Ala Gly Ile Asn Cys
    370                 375                 380

Phe Ser Gly Asp Pro Glu Ala Pro Thr Pro Leu Ala Leu Ala Glu Gln
385                 390                 395                 400

Ala Gly Gln Thr Leu Gln Met Glu Phe Leu Arg Asn Asn Arg Thr Thr
                405                 410                 415

Glu Val Pro Arg Leu Asp Ser Met Lys Pro Leu Glu Lys His Tyr Ser
            420                 425                 430
```

```
Val Val Leu Pro Thr Val Ser His Ser Gly Phe Leu Tyr Lys Thr Ala
        435                 440                 445

Ser Ala Gly Lys Leu Leu Gln Asp Arg Arg Ala Arg Glu Glu Phe Ser
    450                 455                 460

Arg Arg Trp Cys Val Leu Gly Asp Gly Val Leu Ser Tyr Phe Glu Asn
465                 470                 475                 480

Glu Arg Ala Val Thr Pro Asn Gly Glu Ile Arg Ala Ser Glu Ile Val
                485                 490                 495

Cys Leu Ala Val Pro Pro Pro Asp Thr His Gly Phe Glu His Thr Phe
            500                 505                 510

Glu Val Tyr Thr Glu Gly Glu Arg Leu Tyr Leu Phe Gly Leu Glu Ser
        515                 520                 525

Ala Glu Gln Ala His Glu Trp Val Lys Cys Ile Ala Lys Ala Phe Val
    530                 535                 540

Pro Pro Leu Ala Glu Asp Leu Leu Ala Arg Asp Phe Glu Arg Leu Gly
545                 550                 555                 560

Arg Leu Pro Tyr Lys Ala Gly Leu Ser Leu Gln Arg Ala Gln Glu Gly
                565                 570                 575

Trp Phe Ser Leu Ser Gly Ser Glu Leu Arg Ala Val Phe Pro Glu Gly
            580                 585                 590

Pro Cys Glu Glu Pro Leu Gln Leu Arg Lys Leu Gln Glu Leu Ser Ile
        595                 600                 605

Gln Gly Asp Ser Glu Asn Gln Val Leu Val Leu Val Glu Arg Arg Arg
    610                 615                 620

Thr Leu Tyr Ile Gln Gly Glu Arg Arg Leu Asp Phe Met Gly Trp Leu
625                 630                 635                 640

Gly Ala Ile Gln Lys Ala Ala Ala Ser Met Gly Asp Thr Leu Ser Glu
                645                 650                 655

Gln Gln Leu Gly Asp Ser Asp Ile Pro Val Ile Val Tyr Arg Cys Val
```

660 665 670

Asp Tyr Ile Thr Gln Cys Gly Leu Thr Ser Glu Gly Ile Tyr Arg Lys
675 680 685

Cys Gly Gln Thr Ser Lys Thr Gln Arg Leu Leu Glu Ser Leu Arg Gln
690 695 700

Asp Ala Arg Ser Val His Leu Lys Glu Gly Glu Gln His Val Asp Asp
705 710 715 720

Val Ser Ser Ala Leu Lys Arg Phe Leu Arg Asp Leu Pro Asp Gly Leu
725 730 735

Phe Thr Arg Ala Gln Arg Leu Thr Trp Leu Glu Ala Ser Glu Ile Glu
740 745 750

Asp Glu Glu Glu Lys Val Ser Arg Tyr Arg Glu Leu Leu Val Arg Leu
755 760 765

Pro Pro Val Asn Arg Ala Thr Val Lys Ala Leu Ile Ser His Leu Tyr
770 775 780

Cys Val Gln Cys Phe Ser Asp Thr Asn Gln Met Asn Val His Asn Leu
785 790 795 800

Ala Ile Val Phe Gly Pro Thr Leu Phe Gln Thr Asp Gly Gln Asp Tyr
805 810 815

Lys Ala Gly Arg Val Val Glu Asp Leu Ile Asn His Tyr Val Val Val
820 825 830

Phe Ser Val Asp Glu Glu Glu Leu Arg Lys Gln Arg Glu Glu Ile Thr
835 840 845

Ala Ile Val Lys Met Arg Val Ala Gly Thr Ala Ser Gly Thr Gln His
850 855 860

Ala Gly Asp Phe Ile Cys Thr Val Tyr Leu Glu Glu Lys Lys Ala Glu
865 870 875 880

Thr Glu Gln His Ile Lys Val Pro Ala Ser Met Thr Ala Glu Glu Leu
885 890 895

Thr Leu Glu Ile Leu Asp Arg Arg Asn Val Gly Ile Arg Glu Lys Asp
900 905 910

Tyr Trp Thr Cys Phe Glu Val Asn Glu Arg Glu Glu Ala Glu Arg Pro
915 920 925

Leu His Phe Ala Glu Lys Val Leu Pro Ile Leu His Gly Leu Gly Thr
930 935 940

Asp Ser His Leu Val Val Lys Lys His Gln Ala Met Glu Ala Met Leu
945 950 955 960

Leu Tyr Leu Ala Ser Arg Val Gly Asp Thr Lys His Gly Met Met Lys
965 970 975

Phe Arg Glu Asp Arg Ser Leu Leu Gly Leu Gly Leu Pro Ser Gly Gly
980 985 990

Phe His Asp Arg Tyr Phe Ile Leu Asn Ser Ser Cys Leu Arg Leu
Tyr
995 1000 1005

Lys Glu Val Arg Ser His Arg Pro Glu Lys Glu Trp Pro Ile Lys
1010 1015 1020

Ser Leu Lys Val Tyr Leu Gly Val Lys Lys Lys Leu Arg Pro Pro
1025 1030 1035

Thr Cys Trp Gly Phe Thr Val Val His Glu Thr Glu Lys His Glu
1040 1045 1050

Lys Gln Gln Trp Tyr Leu Cys Cys Asp Thr Gln Met Glu Leu Arg
1055 1060 1065

Glu Trp Phe Ala Thr Phe Leu Phe Val Gln His Asp Gly Leu Val
1070 1075 1080

Trp Pro Ser Glu Pro Ser Arg Val Ser Arg Ala Val Pro Glu Val
1085 1090 1095

Arg Leu Gly Ser Val Ser Leu Ile Pro Leu Arg Gly Ser Glu Asn
1100 1105 1110

Glu Met Arg Arg Ser Val Ala Ala Phe Thr Ala Asp Pro Leu Ser
1115 1120 1125

Leu Leu Arg Asn Val
1130

<210> 6132
<211> 307
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1332; "

<220>
<221> source
<223> /note="Gene Symbol: ARAP1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with RhoGAP domain, ankyrin repeat and PH domain
1; "

<220>
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<223> /note="ENSP ID: ENSP00000411452"

<400> 6132
Met Glu Phe Leu Arg Asn Asn Arg Thr Thr Glu Val Pro Arg Leu Asp
1 5 10 15

Ser Met Lys Pro Leu Glu Lys His Tyr Ser Val Val Leu Pro Thr Val
20 25 30

Ser His Ser Gly Phe Leu Tyr Lys Thr Ala Ser Ala Gly Lys Leu Leu
35 40 45

Gln Asp Arg Arg Ala Arg Glu Glu Phe Ser Arg Arg Trp Cys Val Leu
50 55 60

Gly Asp Gly Val Leu Ser Tyr Phe Glu Asn Glu Arg Ala Val Thr Pro
65 70 75 80

Asn Gly Glu Ile Arg Ala Ser Glu Ile Val Cys Leu Ala Val Pro Pro
85 90 95

```
Pro Asp Thr His Gly Phe Glu His Thr Phe Glu Val Tyr Thr Glu Gly
            100                 105                 110

Glu Arg Leu Tyr Leu Phe Gly Leu Glu Ser Ala Glu Gln Ala His Glu
        115                 120                 125

Trp Val Lys Cys Ile Ala Lys Ala Phe Val Pro Pro Leu Ala Glu Asp
    130                 135                 140

Leu Leu Ala Arg Asp Phe Glu Arg Leu Gly Arg Leu Pro Tyr Lys Ala
145                 150                 155                 160

Gly Leu Ser Leu Gln Arg Ala Gln Glu Gly Trp Phe Ser Leu Ser Gly
                165                 170                 175

Ser Glu Leu Arg Ala Val Phe Pro Glu Gly Pro Cys Glu Glu Pro Leu
            180                 185                 190

Gln Leu Arg Lys Leu Gln Glu Leu Ser Ile Gln Gly Asp Ser Glu Asn
        195                 200                 205

Gln Val Leu Val Leu Val Glu Arg Arg Arg Thr Leu Tyr Ile Gln Gly
    210                 215                 220

Glu Arg Arg Leu Asp Phe Met Gly Trp Leu Gly Ala Ile Gln Lys Ala
225                 230                 235                 240

Ala Ala Ser Met Gly Asp Thr Leu Ser Glu Gln Gln Leu Gly Asp Ser
                245                 250                 255

Asp Ile Pro Val Ile Val Tyr Arg Cys Val Asp Tyr Ile Thr Gln Cys
            260                 265                 270

Gly Leu Thr Ser Glu Gly Ile Tyr Arg Lys Cys Gly Gln Thr Ser Lys
        275                 280                 285

Thr Gln Arg Leu Leu Glu Ser Leu Arg Gln Asp Ala Arg Ser Val His
    290                 295                 300

Leu Lys Glu
305
```

<210> 6133
<211> 233
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1332; "

<220>
<221> source
<223> /note="Gene Symbol: ARAP1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with RhoGAP domain, ankyrin repeat and PH domain
1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000441741"

<400> 6133

```
Met Thr Ala Glu Glu Leu Thr Leu Glu Ile Leu Asp Arg Arg Asn Val
1               5                  10                  15

Gly Ile Arg Glu Lys Asp Tyr Trp Thr Cys Phe Glu Val Asn Glu Arg
            20                  25                  30

Glu Glu Ala Glu Arg Pro Leu His Phe Ala Glu Lys Val Leu Pro Ile
        35                  40                  45

Leu His Gly Leu Gly Thr Asp Ser His Leu Val Val Lys Lys His Gln
    50                  55                  60

Ala Met Glu Ala Met Leu Leu Tyr Leu Ala Ser Arg Val Gly Asp Thr
65                  70                  75                  80

Lys His Gly Met Met Lys Phe Arg Glu Asp Arg Ser Leu Leu Gly Leu
                85                  90                  95

Gly Leu Pro Ser Gly Gly Phe His Asp Arg Tyr Phe Ile Leu Asn Ser
            100                 105                 110

Ser Cys Leu Arg Leu Tyr Lys Glu Val Arg Ser His Arg Pro Glu Lys
        115                 120                 125

Glu Trp Pro Ile Lys Ser Leu Lys Val Tyr Leu Gly Val Lys Lys Lys
```

```
    130                 135                 140

Leu Arg Pro Pro Thr Cys Trp Gly Phe Thr Val Val His Glu Thr Glu
145                 150                 155                 160

Lys His Glu Lys Gln Gln Trp Tyr Leu Cys Cys Asp Thr Gln Met Glu
                165                 170                 175

Leu Arg Glu Trp Phe Ala Thr Phe Leu Phe Val Gln His Asp Gly Leu
            180                 185                 190

Val Trp Pro Ser Glu Pro Ser Arg Val Ser Arg Ala Val Pro Glu Val
        195                 200                 205

Arg Leu Gly Ser Val Ser Leu Ile Pro Leu Arg Gly Thr Ser Ala Gln
    210                 215                 220

Arg Leu Ser Thr Gly Ala His Pro Trp
225                 230


<210> 6134
<211> 178
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1332; "

<220>
<221> source
<223> /note="Gene Symbol: ARAP1; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with RhoGAP domain, ankyrin repeat and PH domain
      1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000442746"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6134
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```
Xaa Lys Lys Lys Leu Arg Pro Pro Thr Cys Trp Gly Phe Thr Val Val
1               5                  10                  15

His Glu Thr Glu Lys His Glu Lys Gln Gln Trp Tyr Leu Cys Cys Asp
            20                  25                  30

Thr Gln Met Glu Leu Arg Glu Trp Phe Ala Thr Phe Leu Phe Val Gln
        35                  40                  45

His Asp Gly Leu Val Trp Pro Ser Glu Pro Ser Arg Val Ser Arg Ala
    50                  55                  60

Val Pro Glu Val Arg Leu Gly Ser Val Ser Leu Ile Pro Leu Arg Gly
65                  70                  75                  80

Ser Glu Asn Glu Met Arg Arg Ser Val Ala Ala Phe Thr Ala Asp Pro
                85                  90                  95

Leu Ser Val Ser Gly Ser Pro Cys Leu Trp Ala Gly Gly Trp Gly Pro
            100                 105                 110

Gly Trp Val Pro Ala Phe Tyr Ser Thr Val Asp Asp Cys Pro Asp Cys
        115                 120                 125

Pro Pro Arg Leu Pro Ser Gly Pro Leu Pro Pro Ala Leu Val Gly Ala
    130                 135                 140

Leu Ile Gly Leu Phe Gly Ser His His Ser Lys Glu Pro Leu Leu Pro
145                 150                 155                 160

Gly Pro Gly Ser Trp Glu Ser Pro Leu Pro Gly Pro Gly Ser Trp Glu
                165                 170                 175

Pro Gly
```

<210> 6135
<211> 1704
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1333; "

<220>
<221> source
<223> /note="Gene Symbol: ARAP2; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with RhoGAP domain, ankyrin repeat and PH domain
2; "

<220>
<221> source
<223> /note="Uniprot ID: Q8WZ64; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000302895"

<400> 6135
Met Ser Ser Val Ser Glu Val Asn Val Asp Ile Lys Asp Phe Leu Met
1   5   10   15

Ser Ile Asn Leu Glu Gln Tyr Leu Leu His Phe His Glu Ser Gly Phe
            20   25   30

Thr Thr Val Lys Asp Cys Ala Ala Ile Asn Asp Ser Leu Leu Gln Lys
        35   40   45

Ile Gly Ile Ser Pro Thr Gly His Arg Arg Arg Ile Leu Lys Gln Leu
    50   55   60

Gln Ile Ile Leu Ser Lys Met Gln Asp Ile Pro Ile Tyr Ala Asn Val
65   70   75   80

His Lys Thr Lys Lys Asn Asp Asp Pro Ser Lys Asp Tyr His Val Pro
                85   90   95

Ser Ser Asp Gln Asn Ile Cys Ile Glu Leu Ser Asn Ser Gly Ser Val
            100   105   110

Gln Thr Ser Ser Pro Pro Gln Leu Glu Thr Val Arg Lys Asn Leu Glu
        115   120   125

Asp Ser Asp Ala Ser Val Glu Arg Ser Gln Tyr Pro Gln Ser Asp Asp
    130   135   140

Lys Leu Ser Pro Pro Lys Arg Asp Phe Pro Thr Ala Glu Glu Pro His
145   150   155   160

```
Leu Asn Leu Gly Ser Leu Asn Asp Ser Leu Phe Gly Ser Asp Asn Ile
                165                 170                 175

Lys Ile Glu Ser Leu Ile Thr Lys Lys Thr Val Asp His Thr Val Glu
            180                 185                 190

Glu Gln Gln Thr Glu Lys Val Lys Leu Ile Thr Glu Asn Leu Ser Lys
        195                 200                 205

Leu Pro Asn Ala Asp Ser Glu Cys Leu Ser Phe Val Gly Cys Ser Thr
    210                 215                 220

Ser Gly Thr Asn Ser Gly Asn Gly Thr Asn Gly Leu Leu Glu Gly Ser
225                 230                 235                 240

Pro Pro Ser Pro Phe Phe Lys Phe Gln Gly Glu Met Ile Val Asn Asp
                245                 250                 255

Leu Tyr Val Pro Ser Ser Pro Ile Leu Ala Pro Val Arg Ser Arg Ser
            260                 265                 270

Lys Leu Val Ser Arg Pro Ser Arg Ser Phe Leu Leu Arg His Arg Pro
        275                 280                 285

Val Pro Glu Ile Pro Gly Ser Thr Lys Gly Val Ser Gly Ser Tyr Phe
    290                 295                 300

Arg Glu Arg Arg Asn Val Ala Thr Ser Thr Glu Lys Ser Val Ala Trp
305                 310                 315                 320

Gln Asn Ser Asn Glu Glu Asn Ser Ser Ser Ile Phe Pro Tyr Gly Glu
                325                 330                 335

Thr Phe Leu Phe Gln Arg Leu Glu Asn Ser Lys Lys Arg Ser Ile Lys
            340                 345                 350

Asn Glu Phe Leu Thr Gln Gly Glu Ala Leu Lys Gly Glu Ala Ala Thr
        355                 360                 365

Ala Thr Asn Ser Phe Ile Ile Lys Ser Ser Ile Tyr Asp Asn Arg Lys
    370                 375                 380
```

```
Glu Lys Ile Ser Glu Asp Lys Val Glu Asp Ile Trp Ile Pro Arg Glu
385                 390                 395                 400

Asp Lys Asn Asn Phe Leu Ile Asp Thr Ala Ser Glu Ser Glu Tyr Ser
                405                 410                 415

Thr Val Glu Glu Cys Phe Gln Ser Leu Arg Arg Lys Asn Ser Lys Ala
            420                 425                 430

Ser Lys Ser Arg Thr Gln Lys Ala Leu Ile Leu Asp Ser Val Asn Arg
        435                 440                 445

His Ser Tyr Pro Leu Ser Ser Thr Ser Gly Asn Ala Asp Ser Ser Ala
    450                 455                 460

Val Ser Ser Gln Ala Ile Ser Pro Tyr Ala Cys Phe Tyr Gly Ala Ser
465                 470                 475                 480

Ala Lys Lys Val Lys Ser Gly Trp Leu Asp Lys Leu Ser Pro Gln Gly
                485                 490                 495

Lys Arg Met Phe Gln Lys Arg Trp Val Lys Phe Asp Gly Leu Ser Ile
            500                 505                 510

Ser Tyr Tyr Asn Asn Glu Lys Glu Met Tyr Ser Lys Gly Ile Ile Pro
        515                 520                 525

Leu Ser Ala Ile Ser Thr Val Arg Val Gln Gly Asp Asn Lys Phe Glu
    530                 535                 540

Val Val Thr Thr Gln Arg Thr Phe Val Phe Arg Val Glu Lys Glu Glu
545                 550                 555                 560

Glu Arg Asn Asp Trp Ile Ser Ile Leu Leu Asn Ala Leu Lys Ser Gln
                565                 570                 575

Ser Leu Thr Ser Gln Ser Gln Ala Val Val Thr Pro Glu Lys Cys Gly
            580                 585                 590

Tyr Leu Glu Leu Arg Gly Tyr Lys Ala Lys Ile Phe Thr Val Leu Ser
        595                 600                 605
```

```
Gly Asn Ser Val Trp Leu Cys Lys Asn Glu Gln Asp Phe Lys Ser Gly
    610                 615                 620

Leu Gly Ile Thr Ile Ile Pro Met Asn Val Ala Asn Val Lys Gln Val
625                 630                 635                 640

Asp Arg Thr Val Lys Gln Ser Phe Glu Ile Ile Thr Pro Tyr Arg Ser
                645                 650                 655

Phe Ser Phe Thr Ala Glu Thr Glu Lys Glu Lys Gln Asp Trp Ile Glu
            660                 665                 670

Ala Val Gln Gln Ser Ile Ala Glu Thr Leu Ser Asp Tyr Glu Val Ala
        675                 680                 685

Glu Lys Ile Trp Phe Asn Glu Ser Asn Arg Ser Cys Ala Asp Cys Lys
    690                 695                 700

Ala Pro Asp Pro Asp Trp Ala Ser Ile Asn Leu Cys Val Val Ile Cys
705                 710                 715                 720

Lys Lys Cys Ala Gly Gln His Arg Ser Leu Gly Pro Lys Asp Ser Lys
                725                 730                 735

Val Arg Ser Leu Lys Met Asp Ala Ser Ile Trp Ser Asn Glu Leu Ile
            740                 745                 750

Glu Leu Phe Ile Val Ile Gly Asn Lys Arg Ala Asn Asp Phe Trp Ala
        755                 760                 765

Gly Asn Leu Gln Lys Asp Glu Glu Leu His Met Asp Ser Pro Val Glu
    770                 775                 780

Lys Arg Lys Asn Phe Ile Thr Gln Lys Tyr Lys Glu Gly Lys Phe Arg
785                 790                 795                 800

Lys Thr Leu Leu Ala Ser Leu Thr Lys Glu Glu Leu Asn Lys Ala Leu
                805                 810                 815

Cys Ala Ala Val Val Lys Pro Asp Val Leu Glu Thr Met Ala Leu Leu
            820                 825                 830

Phe Ser Gly Ala Asp Val Met Cys Ala Thr Gly Asp Pro Val His Ser
```

835 840 845

Thr Pro Tyr Leu Leu Ala Lys Lys Ala Gly Gln Ser Leu Gln Met Glu
850 855 860

Phe Leu Tyr His Asn Lys Phe Ser Asp Phe Pro Gln His Asp Ile His
865 870 875 880

Ser Glu Gly Val Leu Ser Gln Glu Ser Ser Gln Ser Thr Phe Leu Cys
885 890 895

Asp Phe Leu Tyr Gln Ala Pro Ser Ala Ala Ser Lys Leu Ser Ser Glu
900 905 910

Lys Lys Leu Leu Glu Glu Thr Asn Lys Lys Trp Cys Val Leu Glu Gly
915 920 925

Gly Phe Leu Ser Tyr Tyr Glu Asn Asp Lys Ser Thr Thr Pro Asn Gly
930 935 940

Thr Ile Asn Ile Asn Glu Val Ile Cys Leu Ala Ile His Lys Glu Asp
945 950 955 960

Phe Tyr Leu Asn Thr Gly Pro Ile Phe Ile Phe Glu Ile Tyr Leu Pro
965 970 975

Ser Glu Arg Val Phe Leu Phe Gly Ala Glu Thr Ser Gln Ala Gln Arg
980 985 990

Lys Trp Thr Glu Ala Ile Ala Lys His Phe Val Pro Leu Phe Ala
Glu
995 1000 1005

Asn Leu Thr Glu Ala Asp Tyr Asp Leu Ile Gly Gln Leu Phe Tyr
1010 1015 1020

Lys Asp Cys His Ala Leu Asp Gln Trp Arg Lys Gly Trp Phe Ala
1025 1030 1035

Met Asp Lys Ser Ser Leu His Phe Cys Leu Gln Met Gln Glu Val
1040 1045 1050

Gln Gly Asp Arg Met His Leu Arg Arg Leu Gln Glu Leu Thr Ile

1055 1060 1065

Ser Thr Met Val Gln Asn Gly Glu Lys Leu Asp Val Leu Leu Leu
1070 1075 1080

Val Glu Lys Gly Arg Thr Leu Tyr Ile His Gly His Thr Lys Leu
1085 1090 1095

Asp Phe Thr Val Trp His Thr Ala Ile Glu Lys Ala Ala Gly Thr
1100 1105 1110

Asp Gly Asn Ala Leu Gln Asp Gln Gln Leu Ser Lys Asn Asp Val
1115 1120 1125

Pro Ile Ile Val Asn Ser Cys Ile Ala Phe Val Thr Gln Tyr Gly
1130 1135 1140

Leu Gly Cys Lys Tyr Ile Tyr Gln Lys Asn Gly Asp Pro Leu His
1145 1150 1155

Ile Ser Glu Leu Leu Glu Ser Phe Lys Lys Asp Ala Arg Ser Phe
1160 1165 1170

Lys Leu Arg Ala Gly Lys His Gln Leu Glu Asp Val Thr Ala Val
1175 1180 1185

Leu Lys Ser Phe Leu Ser Asp Ile Asp Asp Ala Leu Leu Thr Lys
1190 1195 1200

Glu Leu Tyr Pro Tyr Trp Ile Ser Ala Leu Asp Thr Gln Asp Asp
1205 1210 1215

Lys Glu Arg Ile Lys Lys Tyr Gly Ala Phe Ile Arg Ser Leu Pro
1220 1225 1230

Gly Val Asn Arg Ala Thr Leu Ala Ala Ile Ile Glu His Leu Tyr
1235 1240 1245

Arg Val Gln Lys Cys Ser Glu Ile Asn His Met Asn Ala His Asn
1250 1255 1260

Leu Ala Leu Val Phe Ser Ser Cys Leu Phe Gln Thr Lys Gly Gln
1265 1270 1275

```
Thr Ser  Glu Glu Val Asn Val  Ile Glu Asp Leu Ile  Asn Asn Tyr
    1280                 1285                 1290

Val Glu  Ile Phe Glu Val Lys  Glu Asp Gln Val Lys  Gln Met Asp
    1295                 1300                 1305

Ile Glu  Asn Ser Phe Ile Thr  Lys Trp Lys Asp Thr  Gln Val Ser
    1310                 1315                 1320

Gln Ala  Gly Asp Leu Leu Ile  Glu Val Tyr Val Glu  Arg Lys Glu
    1325                 1330                 1335

Pro Asp  Cys Ser Ile Ile Ile  Arg Ile Ser Pro Val  Met Glu Ala
    1340                 1345                 1350

Glu Glu  Leu Thr Asn Asp Ile  Leu Ala Ile Lys Asn  Ile Ile Pro
    1355                 1360                 1365

Thr Lys  Gly Asp Ile Trp Ala  Thr Phe Glu Val Ile  Glu Asn Glu
    1370                 1375                 1380

Glu Leu  Glu Arg Pro Leu His  Tyr Lys Glu Asn Val  Leu Glu Gln
    1385                 1390                 1395

Val Leu  Arg Trp Ser Ser Leu  Ala Glu Pro Gly Ser  Ala Tyr Leu
    1400                 1405                 1410

Val Val  Lys Arg Phe Leu Thr  Ala Asp Thr Ile Lys  His Cys Ser
    1415                 1420                 1425

Asp Arg  Ser Thr Leu Gly Ser  Ile Lys Glu Gly Ile  Leu Lys Ile
    1430                 1435                 1440

Lys Glu  Glu Pro Ser Lys Ile  Leu Ser Gly Asn Lys  Phe Gln Asp
    1445                 1450                 1455

Arg Tyr  Phe Val Leu Arg Asp  Gly Phe Leu Phe Leu  Tyr Lys Asp
    1460                 1465                 1470

Val Lys  Ser Ser Lys His Asp  Lys Met Phe Ser Leu  Ser Ser Met
    1475                 1480                 1485
```

```
Lys Phe  Tyr Arg Gly Val Lys  Lys Lys Met Lys Pro  Pro Thr Ser
    1490                1495                1500

Trp Gly  Leu Thr Ala Tyr Ser  Glu Lys His His Trp  His Leu Cys
    1505                1510                1515

Cys Asp  Ser Ser Arg Thr Gln  Thr Glu Trp Met Thr  Ser Ile Phe
    1520                1525                1530

Ile Ala  Gln His Glu Tyr Asp  Ile Trp Pro Pro Ala  Gly Lys Glu
    1535                1540                1545

Arg Lys  Arg Ser Ile Thr Lys  Asn Pro Lys Ile Gly  Gly Leu Pro
    1550                1555                1560

Leu Ile  Pro Ile Gln His Glu  Gly Asn Ala Thr Leu  Ala Arg Lys
    1565                1570                1575

Asn Ile  Glu Ser Ala Arg Ala  Glu Leu Glu Arg Leu  Arg Leu Ser
    1580                1585                1590

Glu Lys  Cys Asp Lys Glu Ser  Val Asp Ser Ser Leu  Lys Glu Arg
    1595                1600                1605

Ala Ser  Met Val Ala His Cys  Leu Glu His Lys Asp  Asp Lys Leu
    1610                1615                1620

Arg Asn  Arg Pro Arg Lys His  Arg Ser Phe Asn Cys  Leu Glu Asp
    1625                1630                1635

Thr Glu  Pro Glu Ala Pro Leu  Gly Gln Pro Lys Gly  His Lys Gly
    1640                1645                1650

Leu Lys  Thr Leu Arg Lys Thr  Glu Asp Arg Asn Ser  Lys Ala Thr
    1655                1660                1665

Leu Asp  Ser Asp His Lys Leu  Pro Ser Arg Val Ile  Glu Glu Leu
    1670                1675                1680

Asn Val  Val Leu Gln Arg Ser  Arg Thr Leu Pro Lys  Glu Leu Gln
    1685                1690                1695
```

Asp Glu Gln Ile Leu Lys
    1700

<210> 6136
<211> 47
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1333; "

<220>
<221> source
<223> /note="Gene Symbol: ARAP2; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with RhoGAP domain, ankyrin repeat and PH domain
      2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000422731"

<400> 6136
Met Ser Ser Val Ser Glu Val Asn Val Asp Ile Lys Asp Phe Leu Met
1   5   10   15

Ser Ile Asn Leu Glu Gln Tyr Leu Leu His Phe His Glu Ser Gly Phe
            20   25   30

Thr Thr Val Lys Asp Cys Ala Ala Ile Asn Asp Ser Leu Leu Gln
        35   40   45

<210> 6137
<211> 50
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1333; "

<220>
<221> source
<223> /note="Gene Symbol: ARAP2; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with RhoGAP domain, ankyrin repeat and PH domain

2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000423886"

<400> 6137
Met Leu Ile His Gln Pro Phe Leu His Arg Gln Tyr Leu Pro Met Pro
1 5 10 15

Ala Phe Met Glu His Leu Gln Arg Arg Leu Asn Gln Asp Gly Trp Ile
20 25 30

Asn Ser Leu Leu Lys Gly Asn Leu Ile Leu Asn Lys Pro Lys Gln Ile
35 40 45

Thr Ser
50

<210> 6138
<211> 863
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1333; "

<220>
<221> source
<223> /note="Gene Symbol: ARAP2; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with RhoGAP domain, ankyrin repeat and PH domain
2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000481036"

<400> 6138
Met Asp Ala Ser Ile Trp Ser Asn Glu Leu Ile Glu Leu Phe Ile Val
1 5 10 15

Ile Gly Asn Lys Arg Ala Asn Asp Phe Trp Ala Gly Asn Leu Gln Lys
20 25 30

Asp Glu Glu Leu His Met Asp Ser Pro Val Glu Lys Arg Lys Asn Phe
35 40 45

```
Ile Thr Gln Lys Tyr Lys Glu Gly Lys Phe Arg Lys Thr Leu Leu Ala
    50                  55                  60

Ser Leu Thr Lys Glu Glu Leu Asn Lys Ala Leu Cys Ala Ala Val Val
65                  70                  75                  80

Lys Pro Asp Val Leu Glu Thr Met Ala Leu Leu Phe Ser Gly Ala Asp
                85                  90                  95

Val Met Cys Ala Thr Gly Asp Pro Val His Ser Thr Pro Tyr Leu Leu
            100                 105                 110

Ala Lys Lys Ala Gly Gln Ser Leu Gln Met Glu Phe Leu Tyr His Asn
        115                 120                 125

Lys Phe Ser Asp Phe Pro Gln His Asp Ile His Ser Glu Gly Val Leu
    130                 135                 140

Ser Gln Glu Ser Ser Gln Ser Thr Phe Leu Cys Asp Phe Leu Tyr Gln
145                 150                 155                 160

Ala Pro Ser Ala Ala Ser Lys Leu Ser Ser Glu Lys Lys Leu Leu Glu
                165                 170                 175

Glu Thr Asn Lys Lys Trp Cys Val Leu Glu Gly Gly Phe Leu Ser Tyr
            180                 185                 190

Tyr Glu Asn Asp Lys Ser Thr Thr Pro Asn Gly Thr Ile Asn Ile Asn
        195                 200                 205

Glu Val Ile Cys Leu Ala Ile His Lys Glu Asp Phe Tyr Leu Asn Thr
    210                 215                 220

Gly Pro Ile Phe Ile Phe Glu Ile Tyr Leu Pro Ser Glu Arg Val Phe
225                 230                 235                 240

Leu Phe Gly Ala Glu Thr Ser Gln Ala Gln Arg Lys Trp Thr Glu Ala
                245                 250                 255

Ile Ala Lys His Phe Val Pro Leu Phe Ala Glu Asn Leu Thr Glu Ala
            260                 265                 270
```

```
Asp Tyr Asp Leu Ile Gly Gln Leu Phe Tyr Lys Asp Cys His Ala Leu
        275                 280                 285

Asp Gln Trp Arg Lys Gly Trp Phe Ala Met Asp Lys Ser Ser Leu His
    290                 295                 300

Phe Cys Leu Gln Met Gln Glu Val Gln Gly Asp Arg Met His Leu Arg
305                 310                 315                 320

Arg Leu Gln Glu Leu Thr Ile Ser Thr Met Val Gln Asn Gly Glu Lys
                325                 330                 335

Leu Asp Val Leu Leu Leu Val Glu Lys Gly Arg Thr Leu Tyr Ile His
            340                 345                 350

Gly His Thr Lys Leu Asp Phe Thr Val Trp His Thr Ala Ile Glu Lys
        355                 360                 365

Ala Ala Gly Thr Asp Gly Asn Ala Leu Gln Asp Gln Gln Leu Ser Lys
    370                 375                 380

Asn Asp Val Pro Ile Ile Val Asn Ser Cys Ile Ala Phe Val Thr Gln
385                 390                 395                 400

Tyr Gly Leu Gly Cys Lys Tyr Ile Tyr Gln Lys Asn Gly Asp Pro Leu
                405                 410                 415

His Ile Ser Glu Leu Leu Glu Ser Phe Lys Lys Asp Ala Arg Ser Phe
            420                 425                 430

Lys Leu Arg Ala Gly Lys His Gln Leu Glu Asp Val Thr Ala Val Leu
        435                 440                 445

Lys Ser Phe Leu Ser Asp Ile Asp Asp Ala Leu Leu Thr Lys Glu Leu
    450                 455                 460

Tyr Pro Tyr Trp Ile Ser Ala Leu Asp Thr Gln Asp Asp Lys Glu Arg
465                 470                 475                 480

Ile Lys Lys Tyr Gly Ala Phe Ile Arg Ser Leu Pro Gly Val Asn Arg
                485                 490                 495
```

```
Ala Thr Leu Ala Ala Ile Ile Glu His Leu Tyr Arg Val Gln Lys Cys
            500                 505                 510

Ser Glu Ile Asn His Met Asn Ala His Asn Leu Ala Leu Val Phe Ser
        515                 520                 525

Ser Cys Leu Phe Gln Thr Lys Gly Gln Thr Ser Glu Glu Val Asn Val
    530                 535                 540

Ile Glu Asp Leu Ile Asn Asn Tyr Val Glu Ile Phe Glu Val Lys Glu
545                 550                 555                 560

Asp Gln Val Lys Gln Met Asp Ile Glu Asn Ser Phe Ile Thr Lys Trp
                565                 570                 575

Lys Asp Thr Gln Val Ser Gln Ala Gly Asp Leu Leu Ile Glu Val Tyr
            580                 585                 590

Val Glu Arg Lys Glu Pro Asp Cys Ser Ile Ile Ile Arg Ile Ser Pro
        595                 600                 605

Val Met Glu Ala Glu Glu Leu Thr Asn Asp Ile Leu Ala Ile Lys Asn
    610                 615                 620

Ile Ile Pro Thr Lys Gly Asp Ile Trp Ala Thr Phe Glu Val Ile Glu
625                 630                 635                 640

Asn Glu Glu Leu Glu Arg Pro Leu His Tyr Lys Glu Asn Val Leu Glu
                645                 650                 655

Gln Val Leu Arg Trp Ser Ser Leu Ala Glu Pro Gly Ser Ala Tyr Leu
            660                 665                 670

Val Val Lys Arg Phe Leu Thr Ala Asp Thr Ile Lys His Cys Ser Asp
        675                 680                 685

Arg Ser Thr Leu Gly Ser Ile Lys Glu Gly Ile Leu Lys Ile Lys Glu
    690                 695                 700

Glu Pro Ser Lys Ile Leu Ser Gly Asn Lys Phe Gln Asp Arg Tyr Phe
705                 710                 715                 720

Val Leu Arg Asp Gly Phe Leu Phe Leu Tyr Lys Asp Val Lys Ser Ser
```

```
                725                 730                 735

Lys His Asp Lys Met Phe Ser Leu Ser Ser Met Lys Phe Tyr Arg Gly
            740                 745                 750

Val Lys Lys Lys Met Lys Pro Pro Thr Ser Trp Gly Leu Thr Ala Tyr
        755                 760                 765

Ser Glu Lys His His Trp His Leu Cys Cys Asp Ser Ser Arg Thr Gln
    770                 775                 780

Thr Glu Trp Met Thr Ser Ile Phe Ile Ala Gln His Glu Tyr Asp Ile
785                 790                 795                 800

Trp Pro Pro Ala Gly Lys Glu Arg Lys Arg Ser Ile Thr Lys Asn Pro
                805                 810                 815

Lys Ile Gly Gly Leu Pro Leu Ile Pro Ile Gln His Glu Gly Asn Ala
            820                 825                 830

Thr Leu Ala Arg Lys Ile Leu Arg Val Gln Glu Gln Asn Leu Lys Gly
        835                 840                 845

Cys Gly Ser Val Lys Ser Val Ile Lys Ser Pro Trp Thr Leu Ala
    850                 855                 860


<210> 6139
<211> 1544
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1334; "

<220>
<221> source
<223> /note="Gene Symbol: ARAP3; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with RhoGAP domain, ankyrin repeat and PH domain
      3; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8WWN8; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000239440"

<400> 6139
Met Ala Ala Pro Gln Asp Leu Asp Ile Ala Val Trp Leu Ala Thr Val
1   5   10   15

His Leu Glu Gln Tyr Ala Asp Thr Phe Arg Arg His Gly Leu Ala Thr
            20   25   30

Ala Gly Ala Ala Arg Gly Leu Gly His Glu Glu Leu Lys Gln Leu Gly
        35   40   45

Ile Ser Ala Thr Gly His Arg Lys Arg Ile Leu Arg Leu Leu Gln Thr
    50   55   60

Gly Thr Glu Glu Gly Ser Leu Asp Pro Lys Ser Asp Ser Ala Met Glu
65   70   75   80

Pro Ser Pro Ser Pro Ala Pro Gln Ala Gln Pro Pro Lys Pro Val Pro
                85   90   95

Lys Pro Arg Thr Val Phe Gly Gly Leu Ser Gly Pro Ala Thr Thr Gln
            100   105   110

Arg Pro Gly Leu Ser Pro Ala Leu Gly Gly Pro Gly Val Ser Arg Ser
        115   120   125

Pro Glu Pro Ser Pro Arg Pro Pro Pro Leu Pro Thr Ser Ser Ser Glu
    130   135   140

Gln Ser Ser Ala Leu Asn Thr Val Glu Met Met Pro Asn Ser Ile Tyr
145   150   155   160

Phe Gly Leu Asp Ser Arg Gly Arg Ala Gln Ala Ala Gln Asp Lys Ala
                165   170   175

Pro Asp Ser Ser Gln Ile Ser Ala Pro Thr Pro Ala Leu Arg Pro Thr
            180   185   190

Thr Gly Thr Val His Ile Met Asp Pro Gly Cys Leu Tyr Tyr Gly Val
        195   200   205

```
Gln Pro Val Gly Thr Pro Gly Ala Pro Asp Arg Arg Glu Ser Arg Gly
    210                 215                 220

Val Cys Gln Gly Arg Ala Glu His Arg Leu Ser Arg Gln Asp Leu Glu
225                 230                 235                 240

Ala Arg Glu Asp Ala Gly Tyr Ala Ser Leu Glu Leu Pro Gly Asp Ser
                245                 250                 255

Thr Leu Leu Ser Pro Thr Leu Glu Thr Glu Glu Thr Ser Asp Asp Leu
            260                 265                 270

Ile Ser Pro Tyr Ala Ser Phe Ser Phe Thr Ala Asp Arg Leu Thr Pro
        275                 280                 285

Leu Leu Ser Gly Trp Leu Asp Lys Leu Ser Pro Gln Gly Asn Tyr Val
    290                 295                 300

Phe Gln Arg Arg Phe Val Gln Phe Asn Gly Arg Ser Leu Met Tyr Phe
305                 310                 315                 320

Gly Ser Asp Lys Asp Pro Phe Pro Lys Gly Val Ile Pro Leu Thr Ala
                325                 330                 335

Ile Glu Met Thr Arg Ser Ser Lys Asp Asn Lys Phe Gln Val Ile Thr
            340                 345                 350

Gly Gln Arg Val Phe Val Phe Arg Thr Glu Ser Glu Ala Gln Arg Asp
        355                 360                 365

Met Trp Cys Ser Thr Leu Gln Ser Cys Leu Lys Glu Gln Arg Leu Leu
    370                 375                 380

Gly His Pro Arg Pro Pro Gln Pro Pro Arg Pro Leu Arg Thr Gly Met
385                 390                 395                 400

Leu Glu Leu Arg Gly His Lys Ala Lys Val Phe Ala Ala Leu Ser Pro
                405                 410                 415

Gly Glu Leu Ala Leu Tyr Lys Ser Glu Gln Ala Phe Ser Leu Gly Ile
            420                 425                 430
```

```
Gly Ile Cys Phe Ile Glu Leu Gln Gly Cys Ser Val Arg Glu Thr Lys
        435                 440                 445

Ser Arg Ser Phe Asp Leu Leu Thr Pro His Arg Cys Phe Ser Phe Thr
    450                 455                 460

Ala Glu Ser Gly Gly Ala Arg Gln Ser Trp Ala Ala Ala Leu Gln Glu
465                 470                 475                 480

Ala Val Thr Glu Thr Leu Ser Asp Tyr Glu Val Ala Glu Lys Ile Trp
                485                 490                 495

Ser Asn Arg Ala Asn Arg Gln Cys Ala Asp Cys Gly Ser Ser Arg Pro
            500                 505                 510

Asp Trp Ala Ala Val Asn Leu Gly Val Val Ile Cys Lys Gln Cys Ala
        515                 520                 525

Gly Gln His Arg Ala Leu Gly Ser Gly Ile Ser Lys Val Gln Ser Leu
    530                 535                 540

Lys Leu Asp Thr Ser Val Trp Ser Asn Glu Ile Val Gln Leu Phe Ile
545                 550                 555                 560

Val Leu Gly Asn Asp Arg Ala Asn Arg Phe Trp Ala Gly Thr Leu Pro
                565                 570                 575

Pro Gly Glu Gly Leu His Pro Asp Ala Thr Pro Gly Pro Arg Gly Glu
            580                 585                 590

Phe Ile Ser Arg Lys Tyr Arg Leu Gly Leu Phe Arg Lys Pro His Pro
        595                 600                 605

Gln Tyr Pro Asp His Ser Gln Leu Leu Gln Ala Leu Cys Ala Ala Val
    610                 615                 620

Ala Arg Pro Asn Leu Leu Lys Asn Met Thr Gln Leu Leu Cys Val Glu
625                 630                 635                 640

Ala Phe Glu Gly Glu Glu Pro Trp Phe Pro Pro Ala Pro Asp Gly Ser
                645                 650                 655

Cys Pro Gly Leu Leu Pro Ser Asp Pro Ser Pro Gly Val Tyr Asn Glu
```

660 665 670

Val Val Val Arg Ala Thr Tyr Ser Gly Phe Leu Tyr Cys Ser Pro Val
675 680 685

Ser Asn Lys Ala Gly Pro Ser Pro Pro Arg Arg Gly Arg Asp Ala Pro
690 695 700

Pro Arg Leu Trp Cys Val Leu Gly Ala Ala Leu Glu Met Phe Ala Ser
705 710 715 720

Glu Asn Ser Pro Glu Pro Leu Ser Leu Ile Gln Pro Gln Asp Ile Val
725 730 735

Cys Leu Gly Val Ser Pro Pro Pro Thr Asp Pro Gly Asp Arg Phe Pro
740 745 750

Phe Ser Phe Glu Leu Ile Leu Ala Gly Gly Arg Ile Gln His Phe Gly
755 760 765

Thr Asp Gly Ala Asp Ser Leu Glu Ala Trp Thr Ser Ala Val Gly Lys
770 775 780

Trp Phe Ser Pro Leu Ser Cys His Gln Leu Leu Gly Pro Gly Leu Leu
785 790 795 800

Arg Leu Gly Arg Leu Trp Leu Arg Ser Pro Ser His Thr Ala Pro Ala
805 810 815

Pro Gly Leu Trp Leu Ser Gly Phe Gly Leu Leu Arg Gly Asp His Leu
820 825 830

Phe Leu Cys Ser Ala Pro Gly Pro Gly Pro Pro Ala Pro Glu Asp Met
835 840 845

Val His Leu Arg Arg Leu Gln Glu Ile Ser Val Val Ser Ala Ala Asp
850 855 860

Thr Pro Asp Lys Lys Glu His Leu Val Leu Val Glu Thr Gly Arg Thr
865 870 875 880

Leu Tyr Leu Gln Gly Glu Gly Arg Leu Asp Phe Thr Ala Trp Asn Ala
885 890 895

```
Ala Ile Gly Gly Ala Ala Gly Gly Gly Gly Thr Gly Leu Gln Glu Gln
            900                 905                 910

Gln Met Ser Arg Gly Asp Ile Pro Ile Ile Val Asp Ala Cys Ile Ser
        915                 920                 925

Phe Val Thr Gln His Gly Leu Arg Leu Glu Gly Val Tyr Arg Lys Gly
    930                 935                 940

Gly Ala Arg Ala Arg Ser Leu Arg Leu Leu Ala Glu Phe Arg Arg Asp
945                 950                 955                 960

Ala Arg Ser Val Lys Leu Arg Pro Gly Glu His Phe Val Glu Asp Val
                965                 970                 975

Thr Asp Thr Leu Lys Arg Phe Phe Arg Glu Leu Asp Asp Pro Val Thr
            980                 985                 990

Ser Ala Arg Leu Leu Pro Arg Trp  Arg Glu Ala Ala Glu  Leu Pro
Gln
        995                 1000                1005

Lys Asn  Gln Arg Leu Glu Lys  Tyr Lys Asp Val Ile  Gly Cys Leu
    1010                1015                1020

Pro Arg  Val Asn Arg Arg Thr  Leu Ala Thr Leu Ile  Gly His Leu
    1025                1030                1035

Tyr Arg  Val Gln Lys Cys Ala  Ala Leu Asn Gln Met  Cys Thr Arg
    1040                1045                1050

Asn Leu  Ala Leu Leu Phe Ala  Pro Ser Val Phe Gln  Thr Asp Gly
    1055                1060                1065

Arg Gly  Glu His Glu Val Arg  Val Leu Gln Glu Leu  Ile Asp Gly
    1070                1075                1080

Tyr Ile  Ser Val Phe Asp Ile  Asp Ser Asp Gln Val  Ala Gln Ile
    1085                1090                1095

Asp Leu  Glu Val Ser Leu Ile  Thr Thr Trp Lys Asp  Val Gln Leu
    1100                1105                1110
```

```
Ser Gln  Ala Gly Asp Leu Ile  Met Glu Val Tyr Ile  Glu Gln Gln
    1115                1120                1125

Leu Pro  Asp Asn Cys Val Thr  Leu Lys Val Ser Pro  Thr Leu Thr
    1130                1135                1140

Ala Glu  Glu Leu Thr Asn Gln  Val Leu Glu Met Arg  Gly Thr Ala
    1145                1150                1155

Ala Gly  Met Asp Leu Trp Val  Thr Phe Glu Ile Arg  Glu His Gly
    1160                1165                1170

Glu Leu  Glu Arg Pro Leu His  Pro Lys Glu Lys Val  Leu Glu Gln
    1175                1180                1185

Ala Leu  Gln Trp Cys Gln Leu  Pro Glu Pro Cys Ser  Ala Ser Leu
    1190                1195                1200

Leu Leu  Lys Lys Val Pro Leu  Ala Gln Ala Gly Cys  Leu Phe Thr
    1205                1210                1215

Gly Ile  Arg Arg Glu Ser Pro  Arg Val Gly Leu Leu  Arg Cys Arg
    1220                1225                1230

Glu Glu  Pro Pro Arg Leu Leu  Gly Ser Arg Phe Gln  Glu Arg Phe
    1235                1240                1245

Phe Leu  Leu Arg Gly Arg Cys  Leu Leu Leu Leu Lys  Glu Lys Lys
    1250                1255                1260

Ser Ser  Lys Pro Glu Arg Glu  Trp Pro Leu Glu Gly  Ala Lys Val
    1265                1270                1275

Tyr Leu  Gly Ile Arg Lys Lys  Leu Lys Pro Pro Thr  Pro Trp Gly
    1280                1285                1290

Phe Thr  Leu Ile Leu Glu Lys  Met His Leu Tyr Leu  Ser Cys Thr
    1295                1300                1305

Asp Glu  Asp Glu Met Trp Asp  Trp Thr Thr Ser Ile  Leu Lys Ala
    1310                1315                1320
```

```
Gln His  Asp Asp Gln Gln Pro  Val Val Leu Arg Arg  His Ser Ser
    1325                1330                1335

Ser Asp  Leu Ala Arg Gln Lys  Phe Gly Thr Met Pro  Leu Leu Pro
    1340                1345                1350

Ile Arg  Gly Asp Asp Ser Gly  Ala Thr Leu Leu Ser  Ala Asn Gln
    1355                1360                1365

Thr Leu  Arg Arg Leu His Asn  Arg Arg Thr Leu Ser  Met Phe Phe
    1370                1375                1380

Pro Met  Lys Ser Ser Gln Gly  Ser Val Glu Glu Gln  Glu Glu Leu
    1385                1390                1395

Glu Glu  Pro Val Tyr Glu Glu  Pro Val Tyr Glu Glu  Val Gly Ala
    1400                1405                1410

Phe Pro  Glu Leu Ile Gln Asp  Thr Ser Thr Ser Phe  Ser Thr Thr
    1415                1420                1425

Arg Glu  Trp Thr Val Lys Pro  Glu Asn Pro Leu Thr  Ser Gln Lys
    1430                1435                1440

Ser Leu  Asp Gln Pro Phe Leu  Ser Lys Ser Ser Thr  Leu Gly Gln
    1445                1450                1455

Glu Glu  Arg Pro Pro Glu Pro  Pro Pro Gly Pro Pro  Ser Lys Ser
    1460                1465                1470

Ser Pro  Gln Ala Arg Gly Ser  Leu Glu Glu Gln Leu  Leu Gln Glu
    1475                1480                1485

Leu Ser  Ser Leu Ile Leu Arg  Lys Gly Glu Thr Thr  Ala Gly Leu
    1490                1495                1500

Gly Ser  Pro Ser Gln Pro Ser  Ser Pro Gln Ser Pro  Ser Pro Thr
    1505                1510                1515

Gly Leu  Pro Thr Gln Thr Pro  Gly Phe Pro Thr Gln  Pro Pro Cys
    1520                1525                1530
```

Thr Ser Ser Pro Pro Ser Ser Gln Pro Leu Thr
1535 1540

<210> 6140
<211> 473
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1334; "

<220>
<221> source
<223> /note="Gene Symbol: ARAP3; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with RhoGAP domain, ankyrin repeat and PH domain
3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000421148"

<400> 6140
Met Ala Ala Pro Gln Asp Leu Asp Ile Ala Val Trp Leu Ala Thr Val
1 5 10 15

His Leu Glu Gln Tyr Ala Asp Thr Phe Arg Arg His Gly Leu Ala Thr
20 25 30

Ala Gly Ala Ala Arg Gly Leu Gly His Glu Glu Leu Lys Gln Leu Gly
35 40 45

Ile Ser Ala Thr Gly His Arg Lys Arg Ile Leu Arg Leu Leu Gln Thr
50 55 60

Gly Thr Glu Glu Gly Ser Leu Asp Pro Lys Ser Asp Ser Ala Met Glu
65 70 75 80

Pro Ser Pro Ser Pro Ala Pro Gln Ala Gln Pro Pro Lys Pro Val Pro
85 90 95

Lys Pro Arg Thr Val Phe Gly Gly Leu Ser Gly Pro Ala Thr Thr Gln
100 105 110

Arg Pro Gly Leu Ser Pro Ala Leu Gly Gly Pro Gly Val Ser Arg Ser

```
        115                 120                 125

Pro Glu Pro Ser Pro Arg Pro Pro Pro Leu Pro Thr Ser Ser Ser Glu
    130                 135                 140

Gln Ser Ser Ala Leu Asn Thr Val Glu Met Met Pro Asn Ser Ile Tyr
145                 150                 155                 160

Phe Gly Leu Asp Ser Arg Gly Arg Ala Gln Ala Ala Gln Asp Lys Ala
                165                 170                 175

Pro Asp Ser Ser Gln Ile Ser Ala Pro Thr Pro Ala Leu Arg Pro Thr
            180                 185                 190

Thr Gly Thr Val His Ile Met Asp Pro Gly Cys Leu Tyr Tyr Gly Val
        195                 200                 205

Gln Pro Val Gly Thr Pro Gly Ala Pro Asp Arg Arg Glu Ser Arg Gly
    210                 215                 220

Val Cys Gln Gly Arg Ala Glu His Arg Leu Ser Arg Gln Asp Leu Glu
225                 230                 235                 240

Ala Arg Glu Asp Ala Gly Tyr Ala Ser Leu Glu Leu Pro Gly Asp Ser
                245                 250                 255

Thr Leu Leu Ser Pro Thr Leu Glu Thr Glu Glu Thr Ser Asp Asp Leu
            260                 265                 270

Ile Ser Pro Tyr Ala Ser Phe Ser Phe Thr Ala Asp Arg Leu Thr Pro
        275                 280                 285

Leu Leu Ser Gly Trp Leu Asp Lys Leu Ser Pro Gln Gly Asn Tyr Val
    290                 295                 300

Phe Gln Arg Arg Phe Val Gln Phe Asn Gly Arg Ser Leu Met Tyr Phe
305                 310                 315                 320

Gly Ser Asp Lys Asp Pro Phe Pro Lys Gly Val Ile Pro Leu Thr Ala
                325                 330                 335

Ile Glu Met Thr Arg Ser Ser Lys Asp Asn Lys Phe Gln Val Ile Thr
            340                 345                 350
```

```
Gly Gln Arg Val Phe Val Phe Arg Thr Glu Ser Glu Ala Gln Arg Asp
        355                 360                 365

Met Trp Cys Ser Thr Leu Gln Ser Cys Leu Lys Glu Gln Arg Leu Leu
    370                 375                 380

Gly His Pro Arg Pro Pro Gln Pro Pro Arg Pro Leu Arg Thr Gly Met
385                 390                 395                 400

Leu Glu Leu Arg Gly His Lys Ala Lys Val Phe Ala Ala Leu Ser Pro
                405                 410                 415

Gly Glu Leu Ala Leu Tyr Lys Ser Glu Gln Ala Phe Ser Leu Gly Ile
            420                 425                 430

Gly Ile Cys Phe Ile Glu Leu Gln Gly Cys Ser Val Arg Glu Thr Lys
        435                 440                 445

Ser Arg Ser Phe Asp Leu Leu Thr Pro His Arg Cys Phe Ser Phe Thr
    450                 455                 460

Ala Glu Ser Gly Gly Ala Arg Gln Ser
465                 470


<210> 6141
<211> 1193
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1334; "

<220>
<221> source
<223> /note="Gene Symbol: ARAP3; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with RhoGAP domain, ankyrin repeat and PH domain
      3; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8WWN8; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000421468"

<400> 6141
Met Thr Arg Ser Ser Lys Asp Asn Lys Phe Gln Val Ile Thr Gly Gln
1   5   10   15

Arg Val Phe Val Phe Arg Thr Glu Ser Glu Ala Gln Arg Asp Met Trp
            20   25   30

Cys Ser Thr Leu Gln Ser Cys Leu Lys Glu Gln Arg Leu Leu Gly His
        35   40   45

Pro Arg Pro Pro Gln Pro Pro Arg Pro Leu Arg Thr Gly Met Leu Glu
    50   55   60

Leu Arg Gly His Lys Ala Lys Val Phe Ala Ala Leu Ser Pro Gly Glu
65   70   75   80

Leu Ala Leu Tyr Lys Ser Glu Gln Ala Phe Ser Leu Gly Ile Gly Ile
                85   90   95

Cys Phe Ile Glu Leu Gln Gly Cys Ser Val Arg Glu Thr Lys Ser Arg
            100   105   110

Ser Phe Asp Leu Leu Thr Pro His Arg Cys Phe Ser Phe Thr Ala Glu
        115   120   125

Ser Gly Gly Ala Arg Gln Ser Trp Ala Ala Ala Leu Gln Glu Ala Val
    130   135   140

Thr Glu Thr Leu Ser Asp Tyr Glu Val Ala Glu Lys Ile Trp Ser Asn
145   150   155   160

Arg Ala Asn Arg Gln Cys Ala Asp Cys Gly Ser Ser Arg Pro Asp Trp
                165   170   175

Ala Ala Val Asn Leu Gly Val Val Ile Cys Lys Gln Cys Ala Gly Gln
            180   185   190

His Arg Ala Leu Gly Ser Gly Ile Ser Lys Val Gln Ser Leu Lys Leu
        195   200   205

```
Asp Thr Ser Val Trp Ser Asn Glu Ile Val Gln Leu Phe Ile Val Leu
    210                 215                 220

Gly Asn Asp Arg Ala Asn Arg Phe Trp Ala Gly Thr Leu Pro Pro Gly
225                 230                 235                 240

Glu Gly Leu His Pro Asp Ala Thr Pro Gly Pro Arg Gly Glu Phe Ile
                245                 250                 255

Ser Arg Lys Tyr Arg Leu Gly Leu Phe Arg Lys Pro His Pro Gln Tyr
            260                 265                 270

Pro Asp His Ser Gln Leu Leu Gln Ala Leu Cys Ala Ala Val Ala Arg
        275                 280                 285

Pro Asn Leu Leu Lys Asn Met Thr Gln Leu Leu Cys Val Glu Ala Phe
    290                 295                 300

Glu Gly Glu Glu Pro Trp Phe Pro Pro Ala Pro Asp Gly Ser Cys Pro
305                 310                 315                 320

Gly Leu Leu Pro Ser Asp Pro Ser Pro Gly Val Tyr Asn Glu Val Val
                325                 330                 335

Val Arg Ala Thr Tyr Ser Gly Phe Leu Tyr Cys Ser Pro Val Ser Asn
            340                 345                 350

Lys Ala Gly Pro Ser Pro Pro Arg Arg Gly Arg Asp Ala Pro Pro Arg
        355                 360                 365

Leu Trp Cys Val Leu Gly Ala Ala Leu Glu Met Phe Ala Ser Glu Asn
    370                 375                 380

Ser Pro Glu Pro Leu Ser Leu Ile Gln Pro Gln Asp Ile Val Cys Leu
385                 390                 395                 400

Gly Val Ser Pro Pro Pro Thr Asp Pro Gly Asp Arg Phe Pro Phe Ser
                405                 410                 415

Phe Glu Leu Ile Leu Ala Gly Gly Arg Ile Gln His Phe Gly Thr Asp
            420                 425                 430

Gly Ala Asp Ser Leu Glu Ala Trp Thr Ser Ala Val Gly Lys Trp Phe
```

```
        435                 440                 445

Ser Pro Leu Ser Cys His Gln Leu Leu Gly Pro Gly Leu Leu Arg Leu
    450                 455                 460

Gly Arg Leu Trp Leu Arg Ser Pro Ser His Thr Ala Pro Ala Pro Gly
465                 470                 475                 480

Leu Trp Leu Ser Gly Phe Gly Leu Leu Arg Gly Asp His Leu Phe Leu
                485                 490                 495

Cys Ser Ala Pro Gly Pro Gly Pro Pro Ala Pro Glu Asp Met Val His
            500                 505                 510

Leu Arg Arg Leu Gln Glu Ile Ser Val Val Ser Ala Ala Asp Thr Pro
        515                 520                 525

Asp Lys Lys Glu His Leu Val Leu Val Glu Thr Gly Arg Thr Leu Tyr
    530                 535                 540

Leu Gln Gly Glu Gly Arg Leu Asp Phe Thr Ala Trp Asn Ala Ala Ile
545                 550                 555                 560

Gly Gly Ala Ala Gly Gly Gly Gly Thr Gly Leu Gln Glu Gln Gln Met
                565                 570                 575

Ser Arg Gly Asp Ile Pro Ile Ile Val Asp Ala Cys Ile Ser Phe Val
            580                 585                 590

Thr Gln His Gly Leu Arg Leu Glu Gly Val Tyr Arg Lys Gly Gly Ala
        595                 600                 605

Arg Ala Arg Ser Leu Arg Leu Leu Ala Glu Phe Arg Arg Asp Ala Arg
    610                 615                 620

Ser Val Lys Leu Arg Pro Gly Glu His Phe Val Glu Asp Val Thr Asp
625                 630                 635                 640

Thr Leu Lys Arg Phe Phe Arg Glu Leu Asp Asp Pro Val Thr Ser Ala
                645                 650                 655

Arg Leu Leu Pro Arg Trp Arg Glu Ala Ala Glu Leu Pro Gln Lys Asn
            660                 665                 670
```

```
Gln Arg Leu Glu Lys Tyr Lys Asp Val Ile Gly Cys Leu Pro Arg Val
        675                 680                 685

Asn Arg Arg Thr Leu Ala Thr Leu Ile Gly His Leu Tyr Arg Val Gln
    690                 695                 700

Lys Cys Ala Ala Leu Asn Gln Met Cys Thr Arg Asn Leu Ala Leu Leu
705                 710                 715                 720

Phe Ala Pro Ser Val Phe Gln Thr Asp Gly Arg Gly Glu His Glu Val
                725                 730                 735

Arg Val Leu Gln Glu Leu Ile Asp Gly Tyr Ile Ser Val Phe Asp Ile
            740                 745                 750

Asp Ser Asp Gln Val Ala Gln Ile Asp Leu Glu Val Ser Leu Ile Thr
        755                 760                 765

Thr Trp Lys Asp Val Gln Leu Ser Gln Ala Gly Asp Leu Ile Met Glu
    770                 775                 780

Val Tyr Ile Glu Gln Gln Leu Pro Asp Asn Cys Val Thr Leu Lys Val
785                 790                 795                 800

Ser Pro Thr Leu Thr Ala Glu Glu Leu Thr Asn Gln Val Leu Glu Met
                805                 810                 815

Arg Gly Thr Ala Ala Gly Met Asp Leu Trp Val Thr Phe Glu Ile Arg
            820                 825                 830

Glu His Gly Glu Leu Glu Arg Pro Leu His Pro Lys Glu Lys Val Leu
        835                 840                 845

Glu Gln Ala Leu Gln Trp Cys Gln Leu Pro Glu Pro Cys Ser Ala Ser
    850                 855                 860

Leu Leu Leu Lys Lys Val Pro Leu Ala Gln Ala Gly Cys Leu Phe Thr
865                 870                 875                 880

Gly Ile Arg Arg Glu Ser Pro Arg Val Gly Leu Leu Arg Cys Arg Glu
                885                 890                 895
```

```
Glu Pro Pro Arg Leu Leu Gly Ser Arg Phe Gln Glu Arg Phe Phe Leu
            900                 905                 910

Leu Arg Gly Arg Cys Leu Leu Leu Leu Lys Glu Lys Lys Ser Ser Lys
        915                 920                 925

Pro Glu Arg Glu Trp Pro Leu Glu Gly Ala Lys Val Tyr Leu Gly Ile
    930                 935                 940

Arg Lys Lys Leu Lys Pro Pro Thr Pro Trp Gly Phe Thr Leu Ile Leu
945                 950                 955                 960

Glu Lys Met His Leu Tyr Leu Ser Cys Thr Asp Glu Asp Glu Met Trp
                965                 970                 975

Asp Trp Thr Thr Ser Ile Leu Lys Ala Gln His Asp Asp Gln Gln Pro
            980                 985                 990

Val Val Leu Arg Arg His Ser Ser  Ser Asp Leu Ala Arg  Gln Lys
Phe
        995                 1000                1005

Gly Thr  Met Pro Leu Leu Pro  Ile Arg Gly Asp Asp  Ser Gly Ala
    1010                1015                1020

Thr Leu  Leu Ser Ala Asn Gln  Thr Leu Pro Met Lys  Ser Ser Gln
    1025                1030                1035

Gly Ser  Val Glu Glu Gln Glu  Glu Leu Glu Glu Pro  Val Tyr Glu
    1040                1045                1050

Glu Pro  Val Tyr Glu Glu Val  Gly Ala Phe Pro Glu  Leu Ile Gln
    1055                1060                1065

Asp Thr  Ser Thr Ser Phe Ser  Thr Thr Arg Glu Trp  Thr Val Lys
    1070                1075                1080

Pro Glu  Asn Pro Leu Thr Ser  Gln Lys Ser Leu Asp  Gln Pro Phe
    1085                1090                1095

Leu Ser  Lys Ser Ser Thr Leu  Gly Gln Glu Glu Arg  Pro Pro Glu
    1100                1105                1110
```

```
Pro Pro  Pro Gly Pro Pro Ser  Lys Ser Ser Pro Gln  Ala Arg Gly
    1115                1120                1125

Ser Leu  Glu Glu Gln Leu Leu  Gln Glu Leu Ser Ser  Leu Ile Leu
    1130                1135                1140

Arg Lys  Gly Glu Thr Thr Ala  Gly Leu Gly Ser Pro  Ser Gln Pro
    1145                1150                1155

Ser Ser  Pro Gln Ser Pro Ser  Pro Thr Gly Leu Pro  Thr Gln Thr
    1160                1165                1170

Pro Gly  Phe Pro Thr Gln Pro  Pro Cys Thr Ser Ser  Pro Pro Ser
    1175                1180                1185

Ser Gln  Pro Leu Thr
    1190


<210> 6142
<211> 1375
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1334; "

<220>
<221> source
<223> /note="Gene Symbol: ARAP3; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with RhoGAP domain, ankyrin repeat and PH domain
      3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000421826"

<400> 6142
Met Glu Pro Ser Pro Ser Pro Ala Pro Gln Ala Gln Pro Pro Lys Pro
1               5                  10                  15

Val Pro Lys Pro Arg Thr Val Phe Gly Gly Leu Ser Gly Pro Ala Thr
            20                  25                  30
```

```
Thr Gln Arg Pro Gly Leu Ser Pro Ala Leu Gly Gly Pro Gly Val Ser
        35                  40                  45

Arg Ser Pro Glu Pro Ser Pro Arg Pro Pro Pro Leu Pro Thr Ser Ser
    50                  55                  60

Ser Glu Gln Ser Ser Ala Leu Asn Thr Val Glu Met Met Pro Asn Ser
65                  70                  75                  80

Ile Tyr Phe Gly Leu Asp Ser Arg Gly Arg Ala Gln Ala Ala Gln Asp
                85                  90                  95

Lys Ala Pro Asp Ser Ser Gln Ile Ser Ala Pro Thr Pro Ala Leu Arg
            100                 105                 110

Pro Thr Thr Gly Thr Val His Ile Met Asp Pro Gly Cys Leu Tyr Tyr
        115                 120                 125

Gly Val Gln Pro Val Gly Thr Pro Gly Ala Pro Asp Arg Arg Glu Ser
    130                 135                 140

Arg Gly Val Cys Gln Gly Arg Ala Glu His Arg Leu Ser Arg Gln Asp
145                 150                 155                 160

Leu Glu Ala Arg Glu Asp Ala Gly Tyr Ala Ser Leu Glu Leu Pro Gly
                165                 170                 175

Asp Ser Thr Leu Leu Ser Pro Thr Leu Glu Thr Glu Glu Thr Ser Asp
            180                 185                 190

Asp Leu Ile Ser Pro Tyr Ala Ser Phe Ser Phe Thr Ala Asp Arg Leu
        195                 200                 205

Thr Pro Leu Leu Ser Gly Trp Leu Asp Lys Leu Ser Pro Gln Gly Asn
    210                 215                 220

Tyr Val Phe Gln Arg Arg Phe Val Gln Phe Asn Gly Arg Ser Leu Met
225                 230                 235                 240

Tyr Phe Gly Ser Asp Lys Asp Pro Phe Pro Lys Gly Val Ile Pro Leu
                245                 250                 255

Thr Ala Ile Glu Met Thr Arg Ser Ser Lys Asp Asn Lys Phe Gln Val
```

```
            260                 265                 270

Ile Thr Gly Gln Arg Val Phe Val Phe Arg Thr Glu Ser Glu Ala Gln
        275                 280                 285

Arg Asp Met Trp Cys Ser Thr Leu Gln Ser Cys Leu Lys Glu Gln Arg
    290                 295                 300

Leu Leu Gly His Pro Arg Pro Pro Gln Pro Pro Arg Pro Leu Arg Thr
305                 310                 315                 320

Gly Met Leu Glu Leu Arg Gly His Lys Ala Lys Val Phe Ala Ala Leu
                325                 330                 335

Ser Pro Gly Glu Leu Ala Leu Tyr Lys Ser Glu Gln Ala Phe Ser Leu
            340                 345                 350

Gly Ile Gly Ile Cys Phe Ile Glu Leu Gln Gly Cys Ser Val Arg Glu
        355                 360                 365

Thr Lys Ser Arg Ser Phe Asp Leu Leu Thr Pro His Arg Cys Phe Ser
    370                 375                 380

Phe Thr Ala Glu Ser Gly Gly Ala Arg Gln Ser Trp Ala Ala Ala Leu
385                 390                 395                 400

Gln Glu Ala Val Thr Glu Thr Leu Ser Asp Tyr Glu Val Ala Glu Lys
                405                 410                 415

Ile Trp Ser Asn Arg Ala Asn Arg Gln Cys Ala Asp Cys Gly Ser Ser
            420                 425                 430

Arg Pro Asp Trp Ala Ala Val Asn Leu Gly Val Val Ile Cys Lys Gln
        435                 440                 445

Cys Ala Gly Gln His Arg Ala Leu Gly Ser Gly Ile Ser Lys Val Gln
    450                 455                 460

Ser Leu Lys Leu Asp Thr Ser Val Trp Ser Asn Glu Ile Val Gln Leu
465                 470                 475                 480

Phe Ile Val Leu Gly Asn Asp Arg Ala Asn Arg Phe Trp Ala Gly Thr
                485                 490                 495
```

```
Leu Pro Pro Gly Glu Gly Leu His Pro Asp Ala Thr Pro Gly Pro Arg
            500                 505                 510

Gly Glu Phe Ile Ser Arg Lys Tyr Arg Leu Gly Leu Phe Arg Lys Pro
        515                 520                 525

His Pro Gln Tyr Pro Asp His Ser Gln Leu Leu Gln Ala Leu Cys Ala
    530                 535                 540

Ala Val Ala Arg Pro Asn Leu Leu Lys Asn Met Thr Gln Leu Leu Cys
545                 550                 555                 560

Val Glu Ala Phe Glu Asp Pro Ser Pro Gly Val Tyr Asn Glu Val Val
                565                 570                 575

Val Arg Ala Thr Tyr Ser Gly Phe Leu Tyr Cys Ser Pro Val Ser Asn
            580                 585                 590

Lys Ala Gly Pro Ser Pro Pro Arg Arg Gly Arg Asp Ala Pro Pro Arg
        595                 600                 605

Leu Trp Cys Val Leu Gly Ala Ala Leu Glu Met Phe Ala Ser Glu Asn
    610                 615                 620

Ser Pro Glu Pro Leu Ser Leu Ile Gln Pro Gln Asp Ile Val Cys Leu
625                 630                 635                 640

Gly Val Ser Pro Pro Pro Thr Asp Pro Gly Asp Arg Phe Pro Phe Ser
                645                 650                 655

Phe Glu Leu Ile Leu Ala Gly Gly Arg Ile Gln His Phe Gly Thr Asp
            660                 665                 670

Gly Ala Asp Ser Leu Glu Ala Trp Thr Ser Ala Val Gly Lys Trp Phe
        675                 680                 685

Ser Pro Leu Ser Cys His Gln Leu Leu Gly Pro Gly Leu Leu Arg Leu
    690                 695                 700

Gly Arg Leu Trp Leu Arg Ser Pro Ser His Thr Ala Pro Ala Pro Gly
705                 710                 715                 720
```

```
Leu Trp Leu Ser Gly Phe Gly Leu Leu Arg Gly Asp His Leu Phe Leu
                725                 730                 735

Cys Ser Ala Pro Gly Pro Gly Pro Pro Ala Pro Glu Asp Met Val His
            740                 745                 750

Leu Arg Arg Leu Gln Glu Ile Ser Val Val Ser Ala Ala Asp Thr Pro
        755                 760                 765

Asp Lys Lys Glu His Leu Val Leu Val Glu Thr Gly Arg Thr Leu Tyr
    770                 775                 780

Leu Gln Gly Glu Gly Arg Leu Asp Phe Thr Ala Trp Asn Ala Ala Ile
785                 790                 795                 800

Gly Gly Ala Ala Gly Gly Gly Gly Thr Gly Leu Gln Glu Gln Gln Met
                805                 810                 815

Ser Arg Gly Asp Ile Pro Ile Ile Val Asp Ala Cys Ile Ser Phe Val
            820                 825                 830

Thr Gln His Glu Leu Pro Gln Lys Asn Gln Arg Leu Glu Lys Tyr Lys
        835                 840                 845

Asp Val Ile Gly Cys Leu Pro Arg Val Asn Arg Arg Thr Leu Ala Thr
    850                 855                 860

Leu Ile Gly His Leu Tyr Arg Val Gln Lys Cys Ala Ala Leu Asn Gln
865                 870                 875                 880

Met Cys Thr Arg Asn Leu Ala Leu Leu Phe Ala Pro Ser Val Phe Gln
                885                 890                 895

Thr Asp Gly Arg Gly Glu His Glu Val Arg Val Leu Gln Glu Leu Ile
            900                 905                 910

Asp Gly Tyr Ile Ser Val Phe Asp Ile Asp Ser Asp Gln Val Ala Gln
        915                 920                 925

Ile Asp Leu Glu Val Ser Leu Ile Thr Thr Trp Lys Asp Val Gln Leu
    930                 935                 940
```

```
Ser Gln Ala Gly Asp Leu Ile Met Glu Val Tyr Ile Glu Gln Gln Leu
945                 950                 955                 960

Pro Asp Asn Cys Val Thr Leu Lys Val Ser Pro Thr Leu Thr Ala Glu
                965                 970                 975

Glu Leu Thr Asn Gln Val Leu Glu Met Arg Gly Thr Ala Ala Gly Met
            980                 985                 990

Asp Leu Trp Val Thr Phe Glu Ile  Arg Glu His Gly Glu  Leu Glu
Arg
        995                 1000                1005

Pro Leu  His Pro Lys Glu Lys  Val Leu Glu Gln Ala  Leu Gln Trp
    1010                1015                1020

Cys Gln  Leu Pro Glu Pro Cys  Ser Ala Ser Leu Leu  Leu Lys Lys
    1025                1030                1035

Val Pro  Leu Ala Gln Ala Gly  Cys Leu Phe Thr Gly  Ile Arg Arg
    1040                1045                1050

Glu Ser  Pro Arg Val Gly Leu  Leu Arg Cys Arg Glu  Glu Pro Pro
    1055                1060                1065

Arg Leu  Leu Gly Ser Arg Phe  Gln Glu Arg Phe Phe  Leu Leu Arg
    1070                1075                1080

Gly Arg  Cys Leu Leu Leu Leu  Lys Glu Lys Lys Ser  Ser Lys Pro
    1085                1090                1095

Glu Arg  Glu Trp Pro Leu Glu  Gly Ala Lys Val Tyr  Leu Gly Ile
    1100                1105                1110

Arg Lys  Lys Leu Lys Pro Pro  Thr Pro Trp Gly Phe  Thr Leu Ile
    1115                1120                1125

Leu Glu  Lys Met His Leu Tyr  Leu Ser Cys Thr Asp  Glu Asp Glu
    1130                1135                1140

Met Trp  Asp Trp Thr Thr Ser  Ile Leu Lys Ala Gln  His Asp Asp
    1145                1150                1155
```

```
Gln Gln  Pro Val Val Leu Arg  Arg His Ser Ser Ser  Asp Leu Ala
    1160                 1165                 1170

Arg Gln  Lys Phe Gly Thr Met  Pro Leu Leu Pro Ile  Arg Gly Asp
    1175                 1180                 1185

Asp Ser  Gly Ala Thr Leu Leu  Ser Ala Asn Gln Thr  Leu Arg Arg
    1190                 1195                 1200

Leu His  Asn Arg Arg Thr Leu  Ser Met Phe Phe Pro  Met Lys Ser
    1205                 1210                 1215

Ser Gln  Gly Ser Val Glu Glu  Gln Glu Glu Leu Glu  Glu Pro Val
    1220                 1225                 1230

Tyr Glu  Glu Pro Val Tyr Glu  Glu Val Gly Ala Phe  Pro Glu Leu
    1235                 1240                 1245

Ile Gln  Asp Thr Ser Thr Ser  Phe Ser Thr Thr Arg  Glu Trp Thr
    1250                 1255                 1260

Val Lys  Pro Glu Asn Pro Leu  Thr Ser Gln Lys Ser  Leu Asp Gln
    1265                 1270                 1275

Pro Phe  Leu Ser Lys Ser Ser  Thr Leu Gly Gln Glu  Glu Arg Pro
    1280                 1285                 1290

Pro Glu  Pro Pro Pro Gly Pro  Pro Ser Lys Ser Ser  Pro Gln Ala
    1295                 1300                 1305

Arg Gly  Ser Leu Glu Glu Gln  Leu Leu Gln Glu Leu  Ser Ser Leu
    1310                 1315                 1320

Ile Leu  Arg Lys Gly Glu Thr  Thr Ala Gly Leu Gly  Ser Pro Ser
    1325                 1330                 1335

Gln Pro  Ser Ser Pro Gln Ser  Pro Ser Pro Thr Gly  Leu Pro Thr
    1340                 1345                 1350

Gln Thr  Pro Gly Phe Pro Thr  Gln Pro Pro Cys Thr  Ser Ser Pro
    1355                 1360                 1365

Pro Ser  Ser Gln Pro Leu Thr
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1370 1375

<210> 6143
<211> 1375
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1334; "

<220>
<221> source
<223> /note="Gene Symbol: ARAP3; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with RhoGAP domain, ankyrin repeat and PH domain
3; "

<220>
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<400> 6143
Met Glu Pro Ser Pro Ser Pro Ala Pro Gln Ala Gln Pro Pro Lys Pro
1 5 10 15

Val Pro Lys Pro Arg Thr Val Phe Gly Gly Leu Ser Gly Pro Ala Thr
20 25 30

Thr Gln Arg Pro Gly Leu Ser Pro Ala Leu Gly Gly Pro Gly Val Ser
35 40 45

Arg Ser Pro Glu Pro Ser Pro Arg Pro Pro Pro Leu Pro Thr Ser Ser
50 55 60

Ser Glu Gln Ser Ser Ala Leu Asn Thr Val Glu Met Met Pro Asn Ser
65 70 75 80

Ile Tyr Phe Gly Leu Asp Ser Arg Gly Arg Ala Gln Ala Ala Gln Asp
85 90 95

Lys Ala Pro Asp Ser Ser Gln Ile Ser Ala Pro Thr Pro Ala Leu Arg
100 105 110

Pro Thr Thr Gly Thr Val His Ile Met Asp Pro Gly Cys Leu Tyr Tyr
115 120 125

```
Gly Val Gln Pro Val Gly Thr Pro Gly Ala Pro Asp Arg Arg Glu Ser
    130                 135                 140

Arg Gly Val Cys Gln Gly Arg Ala Glu His Arg Leu Ser Arg Gln Asp
145                 150                 155                 160

Leu Glu Ala Arg Glu Asp Ala Gly Tyr Ala Ser Leu Glu Leu Pro Gly
                165                 170                 175

Asp Ser Thr Leu Leu Ser Pro Thr Leu Glu Thr Glu Glu Thr Ser Asp
            180                 185                 190

Asp Leu Ile Ser Pro Tyr Ala Ser Phe Ser Phe Thr Ala Asp Arg Leu
        195                 200                 205

Thr Pro Leu Leu Ser Gly Trp Leu Asp Lys Leu Ser Pro Gln Gly Asn
    210                 215                 220

Tyr Val Phe Gln Arg Arg Phe Val Gln Phe Asn Gly Arg Ser Leu Met
225                 230                 235                 240

Tyr Phe Gly Ser Asp Lys Asp Pro Phe Pro Lys Gly Val Ile Pro Leu
                245                 250                 255

Thr Ala Ile Glu Met Thr Arg Ser Ser Lys Asp Asn Lys Phe Gln Val
            260                 265                 270

Ile Thr Gly Gln Arg Val Phe Val Phe Arg Thr Glu Ser Glu Ala Gln
        275                 280                 285

Arg Asp Met Trp Cys Ser Thr Leu Gln Ser Cys Leu Lys Glu Gln Arg
    290                 295                 300

Leu Leu Gly His Pro Arg Pro Pro Gln Pro Pro Arg Pro Leu Arg Thr
305                 310                 315                 320

Gly Met Leu Glu Leu Arg Gly His Lys Ala Lys Val Phe Ala Ala Leu
                325                 330                 335

Ser Pro Gly Glu Leu Ala Leu Tyr Lys Ser Glu Gln Ala Phe Ser Leu
            340                 345                 350
```

```
Gly Ile Gly Ile Cys Phe Ile Glu Leu Gln Gly Cys Ser Val Arg Glu
        355                 360                 365

Thr Lys Ser Arg Ser Phe Asp Leu Leu Thr Pro His Arg Cys Phe Ser
    370                 375                 380

Phe Thr Ala Glu Ser Gly Gly Ala Arg Gln Ser Trp Ala Ala Ala Leu
385                 390                 395                 400

Gln Glu Ala Val Thr Glu Thr Leu Ser Asp Tyr Glu Val Ala Glu Lys
                405                 410                 415

Ile Trp Ser Asn Arg Ala Asn Arg Gln Cys Ala Asp Cys Gly Ser Ser
            420                 425                 430

Arg Pro Asp Trp Ala Ala Val Asn Leu Gly Val Val Ile Cys Lys Gln
        435                 440                 445

Cys Ala Gly Gln His Arg Ala Leu Gly Ser Gly Ile Ser Lys Val Gln
    450                 455                 460

Ser Leu Lys Leu Asp Thr Ser Val Trp Ser Asn Glu Ile Val Gln Leu
465                 470                 475                 480

Phe Ile Val Leu Gly Asn Asp Arg Ala Asn Arg Phe Trp Ala Gly Thr
                485                 490                 495

Leu Pro Pro Gly Glu Gly Leu His Pro Asp Ala Thr Pro Gly Pro Arg
            500                 505                 510

Gly Glu Phe Ile Ser Arg Lys Tyr Arg Leu Gly Leu Phe Arg Lys Pro
        515                 520                 525

His Pro Gln Tyr Pro Asp His Ser Gln Leu Leu Gln Ala Leu Cys Ala
    530                 535                 540

Ala Val Ala Arg Pro Asn Leu Leu Lys Asn Met Thr Gln Leu Leu Cys
545                 550                 555                 560

Val Glu Ala Phe Glu Asp Pro Ser Pro Gly Val Tyr Asn Glu Val Val
                565                 570                 575
```

```
Val Arg Ala Thr Tyr Ser Gly Phe Leu Tyr Cys Ser Pro Val Ser Asn
            580                 585                 590

Lys Ala Gly Pro Ser Pro Pro Arg Arg Gly Arg Asp Ala Pro Pro Arg
        595                 600                 605

Leu Trp Cys Val Leu Gly Ala Ala Leu Glu Met Phe Ala Ser Glu Asn
    610                 615                 620

Ser Pro Glu Pro Leu Ser Leu Ile Gln Pro Gln Asp Ile Val Cys Leu
625                 630                 635                 640

Gly Val Ser Pro Pro Pro Thr Asp Pro Gly Asp Arg Phe Pro Phe Ser
                645                 650                 655

Phe Glu Leu Ile Leu Ala Gly Gly Arg Ile Gln His Phe Gly Thr Asp
            660                 665                 670

Gly Ala Asp Ser Leu Glu Ala Trp Thr Ser Ala Val Gly Lys Trp Phe
        675                 680                 685

Ser Pro Leu Ser Cys His Gln Leu Leu Gly Pro Gly Leu Leu Arg Leu
    690                 695                 700

Gly Arg Leu Trp Leu Arg Ser Pro Ser His Thr Ala Pro Ala Pro Gly
705                 710                 715                 720

Leu Trp Leu Ser Gly Phe Gly Leu Leu Arg Gly Asp His Leu Phe Leu
                725                 730                 735

Cys Ser Ala Pro Gly Pro Gly Pro Pro Ala Pro Glu Asp Met Val His
            740                 745                 750

Leu Arg Arg Leu Gln Glu Ile Ser Val Val Ser Ala Ala Asp Thr Pro
        755                 760                 765

Asp Lys Lys Glu His Leu Val Leu Val Glu Thr Gly Arg Thr Leu Tyr
    770                 775                 780

Leu Gln Gly Glu Gly Arg Leu Asp Phe Thr Ala Trp Asn Ala Ala Ile
785                 790                 795                 800

Gly Gly Ala Ala Gly Gly Gly Gly Thr Gly Leu Gln Glu Gln Gln Met
```

```
                805                 810                 815

Ser Arg Gly Asp Ile Pro Ile Ile Val Asp Ala Cys Ile Ser Phe Val
            820                 825                 830

Thr Gln His Glu Leu Pro Gln Lys Asn Gln Arg Leu Glu Lys Tyr Lys
        835                 840                 845

Asp Val Ile Gly Cys Leu Pro Arg Val Asn Arg Arg Thr Leu Ala Thr
    850                 855                 860

Leu Ile Gly His Leu Tyr Arg Val Gln Lys Cys Ala Ala Leu Asn Gln
865                 870                 875                 880

Met Cys Thr Arg Asn Leu Ala Leu Leu Phe Ala Pro Ser Val Phe Gln
                885                 890                 895

Thr Asp Gly Arg Gly Glu His Glu Val Arg Val Leu Gln Glu Leu Ile
            900                 905                 910

Asp Gly Tyr Ile Ser Val Phe Asp Ile Asp Ser Asp Gln Val Ala Gln
        915                 920                 925

Ile Asp Leu Glu Val Ser Leu Ile Thr Thr Trp Lys Asp Val Gln Leu
    930                 935                 940

Ser Gln Ala Gly Asp Leu Ile Met Glu Val Tyr Ile Glu Gln Gln Leu
945                 950                 955                 960

Pro Asp Asn Cys Val Thr Leu Lys Val Ser Pro Thr Leu Thr Ala Glu
                965                 970                 975

Glu Leu Thr Asn Gln Val Leu Glu Met Arg Gly Thr Ala Ala Gly Met
            980                 985                 990

Asp Leu Trp Val Thr Phe Glu Ile  Arg Glu His Gly Glu  Leu Glu
Arg
        995                 1000                1005

Pro Leu  His Pro Lys Glu Lys  Val Leu Glu Gln Ala  Leu Gln Trp
    1010                1015                1020

Cys Gln  Leu Pro Glu Pro Cys  Ser Ala Ser Leu Leu  Leu Lys Lys
```

1025 1030 1035

Val Pro Leu Ala Gln Ala Gly Cys Leu Phe Thr Gly Ile Arg Arg
1040 1045 1050

Glu Ser Pro Arg Val Gly Leu Leu Arg Cys Arg Glu Glu Pro Pro
1055 1060 1065

Arg Leu Leu Gly Ser Arg Phe Gln Glu Arg Phe Phe Leu Leu Arg
1070 1075 1080

Gly Arg Cys Leu Leu Leu Leu Lys Glu Lys Lys Ser Ser Lys Pro
1085 1090 1095

Glu Arg Glu Trp Pro Leu Glu Gly Ala Lys Val Tyr Leu Gly Ile
1100 1105 1110

Arg Lys Lys Leu Lys Pro Pro Thr Pro Trp Gly Phe Thr Leu Ile
1115 1120 1125

Leu Glu Lys Met His Leu Tyr Leu Ser Cys Thr Asp Glu Asp Glu
1130 1135 1140

Met Trp Asp Trp Thr Thr Ser Ile Leu Lys Ala Gln His Asp Asp
1145 1150 1155

Gln Gln Pro Val Val Leu Arg Arg His Ser Ser Ser Asp Leu Ala
1160 1165 1170

Arg Gln Lys Phe Gly Thr Met Pro Leu Leu Pro Ile Arg Gly Asp
1175 1180 1185

Asp Ser Gly Ala Thr Leu Leu Ser Ala Asn Gln Thr Leu Arg Arg
1190 1195 1200

Leu His Asn Arg Arg Thr Leu Ser Met Phe Phe Pro Met Lys Ser
1205 1210 1215

Ser Gln Gly Ser Val Glu Glu Gln Glu Glu Leu Glu Glu Pro Val
1220 1225 1230

Tyr Glu Glu Pro Val Tyr Glu Glu Val Gly Ala Phe Pro Glu Leu
1235 1240 1245

```
Ile Gln  Asp Thr Ser Thr Ser  Phe Ser Thr Thr Arg  Glu Trp Thr
    1250                1255                1260

Val Lys  Pro Glu Asn Pro Leu  Thr Ser Gln Lys Ser  Leu Asp Gln
    1265                1270                1275

Pro Phe  Leu Ser Lys Ser Ser  Thr Leu Gly Gln Glu  Glu Arg Pro
    1280                1285                1290

Pro Glu  Pro Pro Pro Gly Pro  Pro Ser Lys Ser Ser  Pro Gln Ala
    1295                1300                1305

Arg Gly  Ser Leu Glu Glu Gln  Leu Leu Gln Glu Leu  Ser Ser Leu
    1310                1315                1320

Ile Leu  Arg Lys Gly Glu Thr  Thr Ala Gly Leu Gly  Ser Pro Ser
    1325                1330                1335

Gln Pro  Ser Ser Pro Gln Ser  Pro Ser Pro Thr Gly  Leu Pro Thr
    1340                1345                1350

Gln Thr  Pro Gly Phe Pro Thr  Gln Pro Pro Cys Thr  Ser Ser Pro
    1355                1360                1365

Pro Ser  Ser Gln Pro Leu Thr
    1370                1375
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<210> 6144
<211> 1122
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1335; "

<220>
<221> source
<223> /note="Gene Symbol: ASAP1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with SH3 domain, ankyrin repeat and PH domain
1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000350297"

<400> 6144
Met Val Ser Asn Leu Lys Arg Ile Met Ala Gln Lys Trp Met Pro Asp
1   5   10   15

Gln Ile Ser Val Ser Glu Phe Ile Ala Glu Thr Thr Glu Asp Tyr Asn
            20   25   30

Ser Pro Thr Thr Ser Ser Phe Thr Thr Arg Leu His Asn Cys Arg Asn
        35   40   45

Thr Val Thr Leu Leu Glu Glu Ala Leu Asp Gln Asp Arg Thr Ala Leu
    50   55   60

Gln Lys Val Lys Lys Ser Val Lys Ala Ile Tyr Asn Ser Gly Gln Asp
65   70   75   80

His Val Gln Asn Glu Glu Asn Tyr Ala Gln Val Leu Asp Lys Phe Gly
                85   90   95

Ser Asn Phe Leu Ser Arg Asp Asn Pro Asp Leu Gly Thr Ala Phe Val
            100   105   110

Lys Phe Ser Thr Leu Thr Lys Glu Leu Ser Thr Leu Leu Lys Asn Leu
        115   120   125

Leu Gln Gly Leu Ser His Asn Val Ile Phe Thr Leu Asp Ser Leu Leu
    130   135   140

Lys Gly Asp Leu Lys Gly Val Lys Gly Asp Leu Lys Lys Pro Phe Asp
145   150   155   160

Lys Ala Trp Lys Asp Tyr Glu Thr Lys Phe Thr Lys Ile Glu Lys Glu
                165   170   175

Lys Arg Glu His Ala Lys Gln His Gly Met Ile Arg Thr Glu Ile Thr
            180   185   190

Gly Ala Glu Ile Ala Glu Glu Met Glu Lys Glu Arg Arg Leu Phe Gln
        195   200   205

```
Leu Gln Met Cys Glu Tyr Leu Ile Lys Val Asn Glu Ile Lys Thr Lys
    210                 215                 220

Lys Gly Val Asp Leu Leu Gln Asn Leu Ile Lys Tyr Tyr His Ala Gln
225                 230                 235                 240

Cys Asn Phe Phe Gln Asp Gly Leu Lys Thr Ala Asp Lys Leu Lys Gln
                245                 250                 255

Tyr Ile Glu Lys Leu Ala Ala Asp Leu Tyr Asn Ile Lys Gln Thr Gln
            260                 265                 270

Asp Glu Glu Lys Lys Gln Leu Thr Ala Leu Arg Asp Leu Ile Lys Ser
        275                 280                 285

Ser Leu Gln Leu Asp Gln Lys Glu Asp Ser Gln Ser Arg Gln Gly Gly
    290                 295                 300

Tyr Ser Met His Gln Leu Gln Gly Asn Lys Glu Tyr Gly Ser Glu Lys
305                 310                 315                 320

Lys Gly Tyr Leu Leu Lys Lys Ser Asp Gly Ile Arg Lys Val Trp Gln
                325                 330                 335

Arg Arg Lys Cys Ser Val Lys Asn Gly Ile Leu Thr Ile Ser His Ala
            340                 345                 350

Thr Ser Asn Arg Gln Pro Ala Lys Leu Asn Leu Leu Thr Cys Gln Val
        355                 360                 365

Lys Pro Asn Ala Glu Asp Lys Lys Ser Phe Asp Leu Ile Ser His Asn
    370                 375                 380

Arg Thr Tyr His Phe Gln Ala Glu Asp Glu Gln Asp Tyr Val Ala Trp
385                 390                 395                 400

Ile Ser Val Leu Thr Asn Ser Lys Glu Glu Ala Leu Thr Met Ala Phe
                405                 410                 415

Arg Gly Glu Gln Ser Ala Gly Glu Asn Ser Leu Glu Asp Leu Thr Lys
            420                 425                 430

Ala Ile Ile Glu Asp Val Gln Arg Leu Pro Gly Asn Asp Ile Cys Cys
```

```
        435                 440                 445

Asp Cys Gly Ser Ser Glu Pro Thr Trp Leu Ser Thr Asn Leu Gly Ile
    450                 455                 460

Leu Thr Cys Ile Glu Cys Ser Gly Ile His Arg Glu Met Gly Val His
465                 470                 475                 480

Ile Ser Arg Ile Gln Ser Leu Glu Leu Asp Lys Leu Gly Thr Ser Glu
                485                 490                 495

Leu Leu Leu Ala Lys Asn Val Gly Asn Asn Ser Phe Asn Asp Ile Met
            500                 505                 510

Glu Ala Asn Leu Pro Ser Pro Ser Pro Lys Pro Thr Pro Ser Ser Asp
        515                 520                 525

Met Thr Val Arg Lys Glu Tyr Ile Thr Ala Lys Tyr Val Asp His Arg
    530                 535                 540

Phe Ser Arg Lys Thr Cys Ser Thr Ser Ser Ala Lys Leu Asn Glu Leu
545                 550                 555                 560

Leu Glu Ala Ile Lys Ser Arg Asp Leu Leu Ala Leu Ile Gln Val Tyr
                565                 570                 575

Ala Glu Gly Val Glu Leu Met Glu Pro Leu Leu Glu Pro Gly Gln Glu
            580                 585                 590

Leu Gly Glu Thr Ala Leu His Leu Ala Val Arg Thr Ala Asp Gln Thr
        595                 600                 605

Ser Leu His Leu Val Asp Phe Leu Val Gln Asn Cys Gly Asn Leu Asp
    610                 615                 620

Lys Gln Thr Ala Leu Gly Asn Thr Val Leu His Tyr Cys Ser Met Tyr
625                 630                 635                 640

Ser Lys Pro Glu Cys Leu Lys Leu Leu Leu Arg Ser Lys Pro Thr Val
                645                 650                 655

Asp Ile Val Asn Gln Ala Gly Glu Thr Ala Leu Asp Ile Ala Lys Arg
            660                 665                 670
```

```
Leu Lys Ala Thr Gln Cys Glu Asp Leu Leu Ser Gln Ala Lys Ser Gly
        675                 680                 685

Lys Phe Asn Pro His Val His Val Glu Tyr Glu Trp Asn Leu Arg Gln
    690                 695                 700

Glu Glu Ile Asp Glu Ser Asp Asp Asp Leu Asp Asp Lys Pro Ser Pro
705                 710                 715                 720

Ile Lys Lys Glu Arg Ser Pro Arg Pro Gln Ser Phe Cys His Ser Ser
                725                 730                 735

Ser Ile Ser Pro Gln Asp Lys Leu Ala Leu Pro Gly Phe Ser Thr Pro
            740                 745                 750

Arg Asp Lys Gln Arg Leu Ser Tyr Gly Ala Phe Thr Asn Gln Ile Phe
        755                 760                 765

Val Ser Thr Ser Thr Asp Ser Pro Thr Ser Pro Thr Thr Glu Ala Pro
    770                 775                 780

Pro Leu Pro Pro Arg Asn Ala Gly Lys Gly Pro Thr Gly Pro Pro Ser
785                 790                 795                 800

Thr Leu Pro Leu Ser Thr Gln Thr Ser Ser Gly Ser Ser Thr Leu Ser
                805                 810                 815

Lys Lys Arg Pro Pro Pro Pro Pro Pro Gly His Lys Arg Thr Leu Ser
            820                 825                 830

Asp Pro Pro Ser Pro Leu Pro His Gly Pro Pro Asn Lys Gly Ala Val
        835                 840                 845

Pro Trp Gly Asn Asp Gly Gly Pro Ser Ser Ser Ser Lys Thr Thr Asn
    850                 855                 860

Lys Phe Glu Gly Leu Ser Gln Gln Ser Ser Thr Ser Ser Ala Lys Thr
865                 870                 875                 880

Ala Leu Gly Pro Arg Val Leu Pro Lys Leu Pro Gln Lys Val Ala Leu
                885                 890                 895
```

```
Arg Lys Thr Asp His Leu Ser Leu Asp Lys Ala Thr Ile Pro Pro Glu
            900                 905                 910

Ile Phe Gln Lys Ser Ser Gln Leu Ala Glu Leu Pro Gln Lys Pro Pro
        915                 920                 925

Pro Gly Asp Leu Pro Pro Lys Pro Thr Glu Leu Ala Pro Lys Pro Gln
    930                 935                 940

Ile Gly Asp Leu Pro Pro Lys Pro Gly Glu Leu Pro Pro Lys Pro Gln
945                 950                 955                 960

Leu Gly Asp Leu Pro Pro Lys Pro Gln Leu Ser Asp Leu Pro Pro Lys
                965                 970                 975

Pro Gln Met Lys Asp Leu Pro Pro Lys Pro Gln Leu Gly Asp Leu Leu
            980                 985                 990

Ala Lys Ser Gln Thr Gly Asp Val  Ser Pro Lys Ala Gln  Gln Pro
Ser
        995                 1000                1005

Glu Val  Thr Leu Lys Ser His  Pro Leu Asp Leu Ser  Pro Asn Val
    1010                1015                1020

Gln Ser  Arg Asp Ala Ile Gln  Lys Gln Ala Ser Glu  Asp Ser Asn
    1025                1030                1035

Asp Leu  Thr Pro Thr Leu Pro  Glu Thr Pro Val Pro  Leu Pro Arg
    1040                1045                1050

Lys Ile  Asn Thr Gly Lys Asn  Lys Val Arg Arg Val  Lys Thr Ile
    1055                1060                1065

Tyr Asp  Cys Gln Ala Asp Asn  Asp Asp Glu Leu Thr  Phe Ile Glu
    1070                1075                1080

Gly Glu  Val Ile Ile Val Thr  Gly Glu Glu Asp Gln  Glu Trp Trp
    1085                1090                1095

Ile Gly  His Ile Glu Gly Gln  Pro Glu Arg Lys Gly  Val Phe Pro
    1100                1105                1110
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Val Ser Phe Val His Ile Leu Ser Asp
    1115   1120

<210> 6145
<211> 39
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1335; "

<220>
<221> source
<223> /note="Gene Symbol: ASAP1; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with SH3 domain, ankyrin repeat and PH domain
      1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000428463"

<400> 6145
Met Arg Ser Ser Ala Ser Arg Leu Ser Ser Phe Ser Ser Arg Asp Ser
1   5   10   15

Leu Trp Asn Arg Tyr Pro Gly Met Ile Phe Arg Val Phe Glu Lys Met
            20   25   30

Arg Gly Ala Asp Gly Phe His
        35

<210> 6146
<211> 39
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:

ArfGAP with SH3 domain, ankyrin repeat and PH domain
1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000428629"

<400> 6146
Met Arg Ser Ser Ala Ser Arg Leu Ser Ser Phe Ser Ser Arg Asp Ser
1 5 10 15

Leu Trp Asn Arg Tyr Pro Gly Met Ile Phe Arg Val Phe Glu Lys Met
20 25 30

Arg Gly Ala Asp Gly Phe His
35

<210> 6147
<211> 33
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1335; "

<220>
<221> source
<223> /note="Gene Symbol: ASAP1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with SH3 domain, ankyrin repeat and PH domain
1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000428936"

<400> 6147
Met Ile Arg Thr Glu Ile Thr Gly Ala Glu Ile Ala Glu Glu Met Glu
1 5 10 15

Lys Glu Arg Arg Leu Phe Gln Leu Gln Met Cys Glu Tyr Leu Ile Lys
20 25 30

Val

<210> 6148

<211> 950
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1335; "

<220>
<221> source
<223> /note="Gene Symbol: ASAP1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with SH3 domain, ankyrin repeat and PH domain
1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429391"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6148
Xaa Lys Arg Glu His Ala Lys Gln His Gly Met Ile Arg Thr Glu Ile
1 5 10 15

Thr Gly Ala Glu Ile Ala Glu Glu Met Glu Lys Glu Arg Arg Leu Phe
20 25 30

Gln Leu Gln Met Cys Glu Tyr Leu Ile Lys Val Asn Glu Ile Lys Thr
35 40 45

Lys Lys Gly Val Asp Leu Leu Gln Asn Leu Ile Lys Tyr Tyr His Ala
50 55 60

Gln Cys Asn Phe Phe Gln Asp Gly Leu Lys Thr Ala Asp Lys Leu Lys
65 70 75 80

Gln Tyr Ile Glu Lys Leu Ala Ala Asp Leu Tyr Asn Ile Lys Gln Thr
85 90 95

Gln Asp Glu Glu Lys Lys Gln Leu Thr Ala Leu Arg Asp Leu Ile Lys
100 105 110

```
Ser Ser Leu Gln Leu Asp Gln Lys Glu Ser Arg Arg Asp Ser Gln Ser
        115                 120                 125

Arg Gln Gly Gly Tyr Ser Met His Gln Leu Gln Gly Asn Lys Glu Tyr
    130                 135                 140

Gly Ser Glu Lys Lys Gly Tyr Leu Leu Lys Lys Ser Asp Gly Ile Arg
145                 150                 155                 160

Lys Val Trp Gln Arg Arg Lys Cys Ser Val Lys Asn Gly Ile Leu Thr
                165                 170                 175

Ile Ser His Ala Thr Ser Asn Arg Gln Pro Ala Lys Leu Asn Leu Leu
            180                 185                 190

Thr Cys Gln Val Lys Pro Asn Ala Glu Asp Lys Lys Ser Phe Asp Leu
        195                 200                 205

Ile Ser His Asn Arg Thr Tyr His Phe Gln Ala Glu Asp Glu Gln Asp
    210                 215                 220

Tyr Val Ala Trp Ile Ser Val Leu Thr Asn Ser Lys Glu Glu Ala Leu
225                 230                 235                 240

Thr Met Ala Phe Arg Gly Glu Gln Ser Ala Gly Glu Asn Ser Leu Glu
                245                 250                 255

Asp Leu Thr Lys Ala Ile Ile Glu Asp Val Gln Arg Leu Pro Gly Asn
            260                 265                 270

Asp Ile Cys Cys Asp Cys Gly Ser Ser Glu Pro Thr Trp Leu Ser Thr
        275                 280                 285

Asn Leu Gly Ile Leu Thr Cys Ile Glu Cys Ser Gly Ile His Arg Glu
    290                 295                 300

Met Gly Val His Ile Ser Arg Ile Gln Ser Leu Glu Leu Asp Lys Leu
305                 310                 315                 320

Gly Thr Ser Glu Leu Leu Leu Ala Lys Asn Val Gly Asn Asn Ser Phe
                325                 330                 335

Asn Asp Ile Met Glu Ala Asn Leu Pro Ser Pro Ser Pro Lys Pro Thr
```

```
            340                 345                 350

Pro Ser Ser Asp Met Thr Val Arg Lys Glu Tyr Ile Thr Ala Lys Tyr
        355                 360                 365

Val Asp His Arg Phe Ser Arg Lys Thr Cys Ser Thr Ser Ser Ala Lys
    370                 375                 380

Leu Asn Glu Leu Leu Glu Ala Ile Lys Ser Arg Asp Leu Leu Ala Leu
385                 390                 395                 400

Ile Gln Val Tyr Ala Glu Gly Val Glu Leu Met Glu Pro Leu Leu Glu
                405                 410                 415

Pro Gly Gln Glu Leu Gly Glu Thr Ala Leu His Leu Ala Val Arg Thr
            420                 425                 430

Ala Asp Gln Thr Ser Leu His Leu Val Asp Phe Leu Val Gln Asn Cys
        435                 440                 445

Gly Asn Leu Asp Lys Gln Thr Ala Leu Gly Asn Thr Val Leu His Tyr
    450                 455                 460

Cys Ser Met Tyr Ser Lys Pro Glu Cys Leu Lys Leu Leu Leu Arg Ser
465                 470                 475                 480

Lys Pro Thr Val Asp Ile Val Asn Gln Ala Gly Glu Thr Ala Leu Asp
                485                 490                 495

Ile Ala Lys Arg Leu Lys Ala Thr Gln Cys Glu Asp Leu Leu Ser Gln
            500                 505                 510

Ala Lys Ser Gly Lys Phe Asn Pro His Val His Val Glu Tyr Glu Trp
        515                 520                 525

Asn Leu Arg Gln Glu Glu Ile Asp Glu Ser Asp Asp Asp Leu Asp Asp
    530                 535                 540

Lys Pro Ser Pro Ile Lys Lys Glu Arg Ser Pro Arg Pro Gln Ser Phe
545                 550                 555                 560

Cys His Ser Ser Ser Ile Ser Pro Gln Asp Lys Leu Ala Leu Pro Gly
                565                 570                 575
```

```
Phe Ser Thr Pro Arg Asp Lys Gln Arg Leu Ser Tyr Gly Ala Phe Thr
            580                 585                 590

Asn Gln Ile Phe Val Ser Thr Ser Thr Asp Ser Pro Thr Ser Pro Thr
        595                 600                 605

Thr Glu Ala Pro Pro Leu Pro Pro Arg Asn Ala Gly Lys Gly Pro Thr
    610                 615                 620

Gly Pro Pro Ser Thr Leu Pro Leu Ser Thr Gln Thr Ser Ser Gly Ser
625                 630                 635                 640

Ser Thr Leu Ser Lys Lys Arg Pro Pro Pro Pro Pro Pro Gly His Lys
                645                 650                 655

Arg Thr Leu Ser Asp Pro Pro Ser Pro Leu Pro His Gly Pro Pro Asn
            660                 665                 670

Lys Gly Ala Val Pro Trp Gly Asn Asp Gly Gly Pro Ser Ser Ser Ser
        675                 680                 685

Lys Thr Thr Asn Lys Phe Glu Gly Leu Ser Gln Gln Ser Ser Thr Ser
    690                 695                 700

Ser Ala Lys Thr Ala Leu Gly Pro Arg Val Leu Pro Lys Leu Pro Gln
705                 710                 715                 720

Lys Val Ala Leu Arg Lys Thr Asp His Leu Ser Leu Asp Lys Ala Thr
                725                 730                 735

Ile Pro Pro Glu Ile Phe Gln Lys Ser Ser Gln Leu Ala Glu Leu Pro
            740                 745                 750

Gln Lys Pro Pro Pro Gly Asp Leu Pro Pro Lys Pro Thr Glu Leu Ala
        755                 760                 765

Pro Lys Pro Gln Ile Gly Asp Leu Pro Pro Lys Pro Gly Glu Leu Pro
    770                 775                 780

Pro Lys Pro Gln Leu Gly Asp Leu Pro Pro Lys Pro Gln Leu Ser Asp
785                 790                 795                 800
```

```
Leu Pro Pro Lys Pro Gln Met Lys Asp Leu Pro Pro Lys Pro Gln Leu
                805                 810                 815

Gly Asp Leu Leu Ala Lys Ser Gln Thr Gly Asp Val Ser Pro Lys Ala
            820                 825                 830

Gln Gln Pro Ser Glu Val Thr Leu Lys Ser His Pro Leu Asp Leu Ser
        835                 840                 845

Pro Asn Val Gln Ser Arg Asp Ala Ile Gln Lys Gln Ala Ser Glu Asp
    850                 855                 860

Ser Asn Asp Leu Thr Pro Thr Leu Pro Glu Thr Pro Val Pro Leu Pro
865                 870                 875                 880

Arg Lys Ile Asn Thr Gly Lys Asn Lys Val Arg Arg Val Lys Thr Ile
                885                 890                 895

Tyr Asp Cys Gln Ala Asp Asn Asp Asp Glu Leu Thr Phe Ile Glu Gly
            900                 905                 910

Glu Val Ile Ile Val Thr Gly Glu Glu Asp Gln Glu Trp Trp Ile Gly
        915                 920                 925

His Ile Glu Gly Gln Pro Glu Arg Lys Gly Val Phe Pro Val Ser Phe
    930                 935                 940

Val His Ile Leu Ser Asp
945                 950


<210> 6149
<211> 39
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1335; "

<220>
<221> source
<223> /note="Gene Symbol: ASAP1; "

<220>
<221> source
<223> /note="Gene Name:
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ArfGAP with SH3 domain, ankyrin repeat and PH domain
1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429614"

<400> 6149
Met Arg Ser Ser Ala Ser Arg Leu Ser Ser Phe Ser Ser Arg Asp Ser
1 5 10 15

Leu Trp Asn Arg Tyr Pro Gly Met Ile Phe Arg Val Phe Glu Lys Met
20 25 30

Arg Gly Ala Asp Gly Phe His
35

<210> 6150
<211> 483
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1335; "

<220>
<221> source
<223> /note="Gene Symbol: ASAP1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with SH3 domain, ankyrin repeat and PH domain
1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429829"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6150
Xaa Glu Leu Met Glu Pro Leu Leu Glu Pro Gly Gln Glu Leu Gly Glu
1 5 10 15

Thr Ala Leu His Leu Ala Val Arg Thr Ala Asp Gln Thr Ser Leu His
20 25 30

```
Leu Val Asp Phe Leu Val Gln Asn Cys Gly Asn Leu Asp Lys Gln Thr
        35                  40                  45

Ala Leu Gly Asn Thr Val Leu His Tyr Cys Ser Met Tyr Ser Lys Pro
    50                  55                  60

Glu Cys Leu Lys Leu Leu Leu Arg Ser Lys Pro Thr Val Asp Ile Val
65                  70                  75                  80

Asn Gln Ala Gly Glu Thr Ala Leu Asp Ile Ala Lys Arg Leu Lys Ala
                85                  90                  95

Thr Gln Cys Glu Asp Leu Leu Ser Gln Ala Lys Ser Gly Lys Phe Asn
            100                 105                 110

Pro His Val His Val Glu Tyr Glu Trp Asn Leu Arg Gln Glu Glu Ile
        115                 120                 125

Asp Glu Ser Asp Asp Asp Leu Asp Asp Lys Pro Ser Pro Ile Lys Lys
    130                 135                 140

Glu Arg Ser Pro Arg Pro Gln Ser Phe Cys His Ser Ser Ser Ile Ser
145                 150                 155                 160

Pro Gln Asp Lys Leu Ala Leu Pro Gly Phe Ser Thr Pro Arg Asp Lys
                165                 170                 175

Gln Arg Leu Ser Tyr Gly Ala Phe Thr Asn Gln Ile Phe Val Ser Thr
            180                 185                 190

Ser Thr Asp Ser Pro Thr Ser Pro Thr Thr Glu Ala Pro Pro Leu Pro
        195                 200                 205

Pro Arg Asn Ala Gly Lys Gly Asn Asp Gly Gly Pro Ser Ser Ser Ser
    210                 215                 220

Lys Thr Thr Asn Lys Phe Glu Gly Leu Ser Gln Gln Ser Ser Thr Ser
225                 230                 235                 240

Ser Ala Lys Thr Ala Leu Gly Pro Arg Val Leu Pro Lys Leu Pro Gln
                245                 250                 255
```

```
Lys Val Ala Leu Arg Lys Thr Asp His Leu Ser Leu Asp Lys Ala Thr
            260                 265                 270

Ile Pro Pro Glu Ile Phe Gln Lys Ser Ser Gln Leu Ala Glu Leu Pro
        275                 280                 285

Gln Lys Pro Pro Pro Gly Asp Leu Pro Pro Lys Pro Thr Glu Leu Ala
    290                 295                 300

Pro Lys Pro Gln Ile Gly Asp Leu Pro Pro Lys Pro Gly Glu Leu Pro
305                 310                 315                 320

Pro Lys Pro Gln Leu Gly Asp Leu Pro Pro Lys Pro Gln Leu Ser Asp
                325                 330                 335

Leu Pro Pro Lys Pro Gln Met Lys Asp Leu Pro Pro Lys Pro Gln Leu
            340                 345                 350

Gly Asp Leu Leu Ala Lys Ser Gln Thr Gly Asp Val Ser Pro Lys Ala
        355                 360                 365

Gln Gln Pro Ser Glu Val Thr Leu Lys Ser His Pro Leu Asp Leu Ser
    370                 375                 380

Pro Asn Val Gln Ser Arg Asp Ala Ile Gln Lys Gln Ala Ser Glu Asp
385                 390                 395                 400

Ser Asn Asp Leu Thr Pro Thr Leu Pro Glu Thr Pro Val Pro Leu Pro
                405                 410                 415

Arg Lys Ile Asn Thr Gly Lys Asn Lys Val Arg Arg Val Lys Thr Ile
            420                 425                 430

Tyr Asp Cys Gln Ala Asp Asn Asp Asp Glu Leu Thr Phe Ile Glu Gly
        435                 440                 445

Glu Val Ile Ile Val Thr Gly Glu Glu Asp Gln Glu Trp Trp Ile Gly
    450                 455                 460

His Ile Glu Gly Gln Pro Glu Arg Lys Gly Val Phe Pro Val Ser Phe
465                 470                 475                 480

Val His Ile
```

<210> 6151
<211> 1129
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1335; "

<220>
<221> source
<223> /note="Gene Symbol: ASAP1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with SH3 domain, ankyrin repeat and PH domain
1; "

<220>
<221> source
<223> /note="Uniprot ID: Q9ULH1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429900"

<400> 6151
Met Arg Ser Ser Ala Ser Arg Leu Ser Ser Phe Ser Ser Arg Asp Ser
1   5   10   15

Leu Trp Asn Arg Met Pro Asp Gln Ile Ser Val Ser Glu Phe Ile Ala
            20   25   30

Glu Thr Thr Glu Asp Tyr Asn Ser Pro Thr Thr Ser Ser Phe Thr Thr
        35   40   45

Arg Leu His Asn Cys Arg Asn Thr Val Thr Leu Leu Glu Glu Ala Leu
    50   55   60

Asp Gln Asp Arg Thr Ala Leu Gln Lys Val Lys Lys Ser Val Lys Ala
65   70   75   80

Ile Tyr Asn Ser Gly Gln Asp His Val Gln Asn Glu Glu Asn Tyr Ala
                85   90   95

Gln Val Leu Asp Lys Phe Gly Ser Asn Phe Leu Ser Arg Asp Asn Pro
            100   105   110

```
Asp Leu Gly Thr Ala Phe Val Lys Phe Ser Thr Leu Thr Lys Glu Leu
        115                 120                 125

Ser Thr Leu Leu Lys Asn Leu Leu Gln Gly Leu Ser His Asn Val Ile
    130                 135                 140

Phe Thr Leu Asp Ser Leu Leu Lys Gly Asp Leu Lys Gly Val Lys Gly
145                 150                 155                 160

Asp Leu Lys Lys Pro Phe Asp Lys Ala Trp Lys Asp Tyr Glu Thr Lys
                165                 170                 175

Phe Thr Lys Ile Glu Lys Glu Lys Arg Glu His Ala Lys Gln His Gly
            180                 185                 190

Met Ile Arg Thr Glu Ile Thr Gly Ala Glu Ile Ala Glu Glu Met Glu
        195                 200                 205

Lys Glu Arg Arg Leu Phe Gln Leu Gln Met Cys Glu Tyr Leu Ile Lys
    210                 215                 220

Val Asn Glu Ile Lys Thr Lys Lys Gly Val Asp Leu Leu Gln Asn Leu
225                 230                 235                 240

Ile Lys Tyr Tyr His Ala Gln Cys Asn Phe Phe Gln Asp Gly Leu Lys
                245                 250                 255

Thr Ala Asp Lys Leu Lys Gln Tyr Ile Glu Lys Leu Ala Ala Asp Leu
            260                 265                 270

Tyr Asn Ile Lys Gln Thr Gln Asp Glu Glu Lys Lys Gln Leu Thr Ala
        275                 280                 285

Leu Arg Asp Leu Ile Lys Ser Ser Leu Gln Leu Asp Gln Lys Glu Asp
    290                 295                 300

Ser Gln Ser Arg Gln Gly Gly Tyr Ser Met His Gln Leu Gln Gly Asn
305                 310                 315                 320

Lys Glu Tyr Gly Ser Glu Lys Lys Gly Tyr Leu Leu Lys Lys Ser Asp
                325                 330                 335
```

```
Gly Ile Arg Lys Val Trp Gln Arg Arg Lys Cys Ser Val Lys Asn Gly
            340                 345                 350

Ile Leu Thr Ile Ser His Ala Thr Ser Asn Arg Gln Pro Ala Lys Leu
        355                 360                 365

Asn Leu Leu Thr Cys Gln Val Lys Pro Asn Ala Glu Asp Lys Lys Ser
    370                 375                 380

Phe Asp Leu Ile Ser His Asn Arg Thr Tyr His Phe Gln Ala Glu Asp
385                 390                 395                 400

Glu Gln Asp Tyr Val Ala Trp Ile Ser Val Leu Thr Asn Ser Lys Glu
                405                 410                 415

Glu Ala Leu Thr Met Ala Phe Arg Gly Glu Gln Ser Ala Gly Glu Asn
            420                 425                 430

Ser Leu Glu Asp Leu Thr Lys Ala Ile Ile Glu Asp Val Gln Arg Leu
        435                 440                 445

Pro Gly Asn Asp Ile Cys Cys Asp Cys Gly Ser Ser Glu Pro Thr Trp
    450                 455                 460

Leu Ser Thr Asn Leu Gly Ile Leu Thr Cys Ile Glu Cys Ser Gly Ile
465                 470                 475                 480

His Arg Glu Met Gly Val His Ile Ser Arg Ile Gln Ser Leu Glu Leu
                485                 490                 495

Asp Lys Leu Gly Thr Ser Glu Leu Leu Leu Ala Lys Asn Val Gly Asn
            500                 505                 510

Asn Ser Phe Asn Asp Ile Met Glu Ala Asn Leu Pro Ser Pro Ser Pro
        515                 520                 525

Lys Pro Thr Pro Ser Ser Asp Met Thr Val Arg Lys Glu Tyr Ile Thr
    530                 535                 540

Ala Lys Tyr Val Asp His Arg Phe Ser Arg Lys Thr Cys Ser Thr Ser
545                 550                 555                 560
```

```
Ser Ala Lys Leu Asn Glu Leu Leu Glu Ala Ile Lys Ser Arg Asp Leu
                565                 570                 575

Leu Ala Leu Ile Gln Val Tyr Ala Glu Gly Val Glu Leu Met Glu Pro
            580                 585                 590

Leu Leu Glu Pro Gly Gln Glu Leu Gly Glu Thr Ala Leu His Leu Ala
        595                 600                 605

Val Arg Thr Ala Asp Gln Thr Ser Leu His Leu Val Asp Phe Leu Val
    610                 615                 620

Gln Asn Cys Gly Asn Leu Asp Lys Gln Thr Ala Leu Gly Asn Thr Val
625                 630                 635                 640

Leu His Tyr Cys Ser Met Tyr Ser Lys Pro Glu Cys Leu Lys Leu Leu
                645                 650                 655

Leu Arg Ser Lys Pro Thr Val Asp Ile Val Asn Gln Ala Gly Glu Thr
            660                 665                 670

Ala Leu Asp Ile Ala Lys Arg Leu Lys Ala Thr Gln Cys Glu Asp Leu
        675                 680                 685

Leu Ser Gln Ala Lys Ser Gly Lys Phe Asn Pro His Val His Val Glu
    690                 695                 700

Tyr Glu Trp Asn Leu Arg Gln Glu Glu Ile Asp Glu Ser Asp Asp Asp
705                 710                 715                 720

Leu Asp Asp Lys Pro Ser Pro Ile Lys Lys Glu Arg Ser Pro Arg Pro
                725                 730                 735

Gln Ser Phe Cys His Ser Ser Ser Ile Ser Pro Gln Asp Lys Leu Ala
            740                 745                 750

Leu Pro Gly Phe Ser Thr Pro Arg Asp Lys Gln Arg Leu Ser Tyr Gly
        755                 760                 765

Ala Phe Thr Asn Gln Ile Phe Val Ser Thr Ser Thr Asp Ser Pro Thr
    770                 775                 780

Ser Pro Thr Thr Glu Ala Pro Pro Leu Pro Pro Arg Asn Ala Gly Lys
```

785 790 795 800

Gly Pro Thr Gly Pro Pro Ser Thr Leu Pro Leu Ser Thr Gln Thr Ser
805 810 815

Ser Gly Ser Ser Thr Leu Ser Lys Lys Arg Pro Pro Pro Pro Pro Pro
820 825 830

Gly His Lys Arg Thr Leu Ser Asp Pro Pro Ser Pro Leu Pro His Gly
835 840 845

Pro Pro Asn Lys Gly Ala Val Pro Trp Gly Asn Asp Gly Gly Pro Ser
850 855 860

Ser Ser Ser Lys Thr Thr Asn Lys Phe Glu Gly Leu Ser Gln Gln Ser
865 870 875 880

Ser Thr Ser Ser Ala Lys Thr Ala Leu Gly Pro Arg Val Leu Pro Lys
885 890 895

Leu Pro Gln Lys Val Ala Leu Arg Lys Thr Asp His Leu Ser Leu Asp
900 905 910

Lys Ala Thr Ile Pro Pro Glu Ile Phe Gln Lys Ser Ser Gln Leu Ala
915 920 925

Glu Leu Pro Gln Lys Pro Pro Pro Gly Asp Leu Pro Pro Lys Pro Thr
930 935 940

Glu Leu Ala Pro Lys Pro Gln Ile Gly Asp Leu Pro Pro Lys Pro Gly
945 950 955 960

Glu Leu Pro Pro Lys Pro Gln Leu Gly Asp Leu Pro Pro Lys Pro Gln
965 970 975

Leu Ser Asp Leu Pro Pro Lys Pro Gln Met Lys Asp Leu Pro Pro Lys
980 985 990

Pro Gln Leu Gly Asp Leu Leu Ala Lys Ser Gln Thr Gly Asp Val
Ser
995 1000 1005

Pro Lys Ala Gln Gln Pro Ser Glu Val Thr Leu Lys Ser His Pro

```
    1010                1015                1020

Leu Asp  Leu Ser Pro Asn Val  Gln Ser Arg Asp Ala  Ile Gln Lys
    1025                1030                1035

Gln Ala  Ser Glu Asp Ser Asn  Asp Leu Thr Pro Thr  Leu Pro Glu
    1040                1045                1050

Thr Pro  Val Pro Leu Pro Arg  Lys Ile Asn Thr Gly  Lys Asn Lys
    1055                1060                1065

Val Arg  Arg Val Lys Thr Ile  Tyr Asp Cys Gln Ala  Asp Asn Asp
    1070                1075                1080

Asp Glu  Leu Thr Phe Ile Glu  Gly Glu Val Ile Ile  Val Thr Gly
    1085                1090                1095

Glu Glu  Asp Gln Glu Trp Trp  Ile Gly His Ile Glu  Gly Gln Pro
    1100                1105                1110

Glu Arg  Lys Gly Val Phe Pro  Val Ser Phe Val His  Ile Leu Ser
    1115                1120                1125

Asp
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<210> 6152
<211> 98
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1335; "

<220>
<221> source
<223> /note="Gene Symbol: ASAP1; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with SH3 domain, ankyrin repeat and PH domain
1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430917"

<400> 6152
Met Val Ser Asn Leu Lys Arg Ile Met Ala Gln Lys Trp Met Pro Asp
1   5   10   15

Gln Ile Ser Val Ser Glu Phe Ile Ala Glu Thr Thr Glu Asp Tyr Asn
            20   25   30

Ser Pro Thr Thr Ser Ser Phe Thr Thr Arg Leu His Asn Cys Arg Asn
        35   40   45

Thr Val Thr Leu Leu Glu Glu Ala Leu Asp Gln Asp Arg Thr Ala Leu
    50   55   60

Gln Lys Val Lys Lys Ser Val Lys Ala Ile Tyr Asn Ser Gly Gln Asp
65   70   75   80

His Val Gln Asn Glu Glu Asn Tyr Ala Gln Val Leu Asp Lys Phe Gly
                85   90   95

Ser Asn

<210> 6153
<211> 1006
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1336; "

<220>
<221> source
<223> /note="Gene Symbol: ASAP2; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with SH3 domain, ankyrin repeat and PH domain
      2; "

<220>
<221> source
<223> /note="Uniprot ID: O43150; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000281419"

<400> 6153

```
Met Pro Asp Gln Ile Ser Val Ser Glu Phe Val Ala Glu Thr His Glu
1               5                  10                  15

Asp Tyr Lys Ala Pro Thr Ala Ser Ser Phe Thr Thr Arg Thr Ala Gln
            20                  25                  30

Cys Arg Asn Thr Val Ala Ala Ile Glu Glu Ala Leu Asp Val Asp Arg
        35                  40                  45

Met Val Leu Tyr Lys Met Lys Lys Ser Val Lys Ala Ile Asn Ser Ser
    50                  55                  60

Gly Leu Ala His Val Glu Asn Glu Glu Gln Tyr Thr Gln Ala Leu Glu
65                  70                  75                  80

Lys Phe Gly Gly Asn Cys Val Cys Arg Asp Asp Pro Asp Leu Gly Ser
                85                  90                  95

Ala Phe Leu Lys Phe Ser Val Phe Thr Lys Glu Leu Thr Ala Leu Phe
            100                 105                 110

Lys Asn Leu Ile Gln Asn Met Asn Asn Ile Ile Ser Phe Pro Leu Asp
        115                 120                 125

Ser Leu Leu Lys Gly Asp Leu Lys Gly Val Lys Gly Asp Leu Lys Lys
    130                 135                 140

Pro Phe Asp Lys Ala Trp Lys Asp Tyr Glu Thr Lys Ile Thr Lys Ile
145                 150                 155                 160

Glu Lys Glu Lys Lys Glu His Ala Lys Leu His Gly Met Ile Arg Thr
                165                 170                 175

Glu Ile Ser Gly Ala Glu Ile Ala Glu Glu Met Glu Lys Glu Arg Arg
            180                 185                 190

Phe Phe Gln Leu Gln Met Cys Glu Tyr Leu Leu Lys Val Asn Glu Ile
        195                 200                 205

Lys Ile Lys Lys Gly Val Asp Leu Leu Gln Asn Leu Ile Lys Tyr Phe
    210                 215                 220
```

```
His Ala Gln Cys Asn Phe Phe Gln Asp Gly Leu Lys Ala Val Glu Ser
225                 230                 235                 240

Leu Lys Pro Ser Ile Glu Thr Leu Ser Thr Asp Leu His Thr Ile Lys
                245                 250                 255

Gln Ala Gln Asp Glu Glu Arg Arg Gln Leu Ile Gln Leu Arg Asp Ile
            260                 265                 270

Leu Lys Ser Ala Leu Gln Val Glu Gln Lys Glu Asp Ser Gln Ile Arg
        275                 280                 285

Gln Ser Thr Ala Tyr Ser Leu His Gln Pro Gln Gly Asn Lys Glu His
    290                 295                 300

Gly Thr Glu Arg Asn Gly Ser Leu Tyr Lys Lys Ser Asp Gly Ile Arg
305                 310                 315                 320

Lys Val Trp Gln Lys Arg Lys Cys Ser Val Lys Asn Gly Phe Leu Thr
                325                 330                 335

Ile Ser His Gly Thr Ala Asn Arg Pro Pro Ala Lys Leu Asn Leu Leu
            340                 345                 350

Thr Cys Gln Val Lys Thr Asn Pro Glu Glu Lys Lys Cys Phe Asp Leu
        355                 360                 365

Ile Ser His Asp Arg Thr Tyr His Phe Gln Ala Glu Asp Glu Gln Glu
    370                 375                 380

Cys Gln Ile Trp Met Ser Val Leu Gln Asn Ser Lys Glu Glu Ala Leu
385                 390                 395                 400

Asn Asn Ala Phe Lys Gly Asp Asp Asn Thr Gly Glu Asn Asn Ile Val
                405                 410                 415

Gln Glu Leu Thr Lys Glu Ile Ile Ser Glu Val Gln Arg Met Thr Gly
            420                 425                 430

Asn Asp Val Cys Cys Asp Cys Gly Ala Pro Asp Pro Thr Trp Leu Ser
        435                 440                 445

Thr Asn Leu Gly Ile Leu Thr Cys Ile Glu Cys Ser Gly Ile His Arg
```

```
    450                 455                 460

Glu Leu Gly Val His Tyr Ser Arg Met Gln Ser Leu Thr Leu Asp Val
465                 470                 475                 480

Leu Gly Thr Ser Glu Leu Leu Leu Ala Lys Asn Ile Gly Asn Ala Gly
                485                 490                 495

Phe Asn Glu Ile Met Glu Cys Cys Leu Pro Ala Glu Asp Ser Val Lys
            500                 505                 510

Pro Asn Pro Gly Ser Asp Met Asn Ala Arg Lys Asp Tyr Ile Thr Ala
        515                 520                 525

Lys Tyr Ile Glu Arg Arg Tyr Ala Arg Lys Lys His Ala Asp Asn Ala
    530                 535                 540

Ala Lys Leu His Ser Leu Cys Glu Ala Val Lys Thr Arg Asp Ile Phe
545                 550                 555                 560

Gly Leu Leu Gln Ala Tyr Ala Asp Gly Val Asp Leu Thr Glu Lys Ile
                565                 570                 575

Pro Leu Ala Asn Gly His Glu Pro Asp Glu Thr Ala Leu His Leu Ala
            580                 585                 590

Val Arg Ser Val Asp Arg Thr Ser Leu His Ile Val Asp Phe Leu Val
        595                 600                 605

Gln Asn Ser Gly Asn Leu Asp Lys Gln Thr Gly Lys Gly Ser Thr Ala
    610                 615                 620

Leu His Tyr Cys Cys Leu Thr Asp Asn Ala Glu Cys Leu Lys Leu Leu
625                 630                 635                 640

Leu Arg Gly Lys Ala Ser Ile Glu Ile Ala Asn Glu Ser Gly Glu Thr
                645                 650                 655

Pro Leu Asp Ile Ala Lys Arg Leu Lys His Glu His Cys Glu Glu Leu
            660                 665                 670

Leu Thr Gln Ala Leu Ser Gly Arg Phe Asn Ser His Val His Val Glu
        675                 680                 685
```

```
Tyr Glu Trp Arg Leu Leu His Glu Asp Leu Asp Glu Ser Asp Asp Asp
    690                 695                 700

Met Asp Glu Lys Leu Gln Pro Ser Pro Asn Arg Arg Glu Asp Arg Pro
705                 710                 715                 720

Ile Ser Phe Tyr Gln Leu Gly Ser Asn Gln Leu Gln Ser Asn Ala Val
                725                 730                 735

Ser Leu Ala Arg Asp Ala Ala Asn Leu Ala Lys Glu Lys Gln Arg Ala
            740                 745                 750

Phe Met Pro Ser Ile Leu Gln Asn Glu Thr Tyr Gly Ala Leu Leu Ser
        755                 760                 765

Gly Ser Pro Pro Pro Ala Gln Pro Ala Ala Pro Ser Thr Thr Ser Ala
    770                 775                 780

Pro Pro Leu Pro Pro Arg Asn Val Gly Lys Val Gln Thr Ala Ser Ser
785                 790                 795                 800

Ala Asn Thr Leu Trp Lys Thr Asn Ser Val Ser Val Asp Gly Gly Ser
                805                 810                 815

Arg Gln Arg Ser Ser Ser Asp Pro Pro Ala Val His Pro Pro Leu Pro
            820                 825                 830

Pro Leu Arg Val Thr Ser Thr Asn Pro Leu Thr Pro Thr Pro Pro Pro
        835                 840                 845

Pro Val Ala Lys Thr Pro Ser Val Met Glu Ala Leu Ser Gln Pro Ser
    850                 855                 860

Lys Pro Ala Pro Pro Gly Ile Ser Gln Ile Arg Pro Pro Pro Leu Pro
865                 870                 875                 880

Pro Gln Pro Pro Ser Arg Leu Pro Gln Lys Lys Pro Ala Pro Gly Ala
                885                 890                 895

Asp Lys Ser Thr Pro Leu Thr Asn Lys Gly Gln Pro Arg Gly Pro Val
            900                 905                 910
```

```
Asp Leu Ser Ala Thr Glu Ala Leu Gly Pro Leu Ser Asn Ala Met Val
        915                 920                 925

Leu Gln Pro Pro Ala Pro Met Pro Arg Lys Ser Gln Ala Thr Lys Leu
    930                 935                 940

Lys Pro Lys Arg Val Lys Ala Leu Tyr Asn Cys Val Ala Asp Asn Pro
945                 950                 955                 960

Asp Glu Leu Thr Phe Ser Glu Gly Asp Val Ile Ile Val Asp Gly Glu
                965                 970                 975

Glu Asp Gln Glu Trp Trp Ile Gly His Ile Asp Gly Asp Pro Gly Arg
            980                 985                 990

Lys Gly Ala Phe Pro Val Ser Phe  Val His Phe Ile Ala  Asp
        995                 1000                1005


<210> 6154
<211> 961
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1336; "

<220>
<221> source
<223> /note="Gene Symbol: ASAP2; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with SH3 domain, ankyrin repeat and PH domain
      2; "

<220>
<221> source
<223> /note="Uniprot ID:  O43150; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000316404"

<400> 6154
Met Pro Asp Gln Ile Ser Val Ser Glu Phe Val Ala Glu Thr His Glu
1               5                   10                  15
```

```
Asp Tyr Lys Ala Pro Thr Ala Ser Ser Phe Thr Thr Arg Thr Ala Gln
            20                  25                  30

Cys Arg Asn Thr Val Ala Ala Ile Glu Glu Ala Leu Asp Val Asp Arg
        35                  40                  45

Met Val Leu Tyr Lys Met Lys Lys Ser Val Lys Ala Ile Asn Ser Ser
    50                  55                  60

Gly Leu Ala His Val Glu Asn Glu Glu Gln Tyr Thr Gln Ala Leu Glu
65                  70                  75                  80

Lys Phe Gly Gly Asn Cys Val Cys Arg Asp Asp Pro Asp Leu Gly Ser
                85                  90                  95

Ala Phe Leu Lys Phe Ser Val Phe Thr Lys Glu Leu Thr Ala Leu Phe
            100                 105                 110

Lys Asn Leu Ile Gln Asn Met Asn Asn Ile Ile Ser Phe Pro Leu Asp
        115                 120                 125

Ser Leu Leu Lys Gly Asp Leu Lys Gly Val Lys Gly Asp Leu Lys Lys
    130                 135                 140

Pro Phe Asp Lys Ala Trp Lys Asp Tyr Glu Thr Lys Ile Thr Lys Ile
145                 150                 155                 160

Glu Lys Glu Lys Lys Glu His Ala Lys Leu His Gly Met Ile Arg Thr
                165                 170                 175

Glu Ile Ser Gly Ala Glu Ile Ala Glu Glu Met Glu Lys Glu Arg Arg
            180                 185                 190

Phe Phe Gln Leu Gln Met Cys Glu Tyr Leu Leu Lys Val Asn Glu Ile
        195                 200                 205

Lys Ile Lys Lys Gly Val Asp Leu Leu Gln Asn Leu Ile Lys Tyr Phe
    210                 215                 220

His Ala Gln Cys Asn Phe Phe Gln Asp Gly Leu Lys Ala Val Glu Ser
225                 230                 235                 240

Leu Lys Pro Ser Ile Glu Thr Leu Ser Thr Asp Leu His Thr Ile Lys
```

```
                245                 250                 255

Gln Ala Gln Asp Glu Glu Arg Arg Gln Leu Ile Gln Leu Arg Asp Ile
            260                 265                 270

Leu Lys Ser Ala Leu Gln Val Glu Gln Lys Glu Asp Ser Gln Ile Arg
        275                 280                 285

Gln Ser Thr Ala Tyr Ser Leu His Gln Pro Gln Gly Asn Lys Glu His
    290                 295                 300

Gly Thr Glu Arg Asn Gly Ser Leu Tyr Lys Lys Ser Asp Gly Ile Arg
305                 310                 315                 320

Lys Val Trp Gln Lys Arg Lys Cys Ser Val Lys Asn Gly Phe Leu Thr
                325                 330                 335

Ile Ser His Gly Thr Ala Asn Arg Pro Pro Ala Lys Leu Asn Leu Leu
            340                 345                 350

Thr Cys Gln Val Lys Thr Asn Pro Glu Glu Lys Lys Cys Phe Asp Leu
        355                 360                 365

Ile Ser His Asp Arg Thr Tyr His Phe Gln Ala Glu Asp Glu Gln Glu
    370                 375                 380

Cys Gln Ile Trp Met Ser Val Leu Gln Asn Ser Lys Glu Glu Ala Leu
385                 390                 395                 400

Asn Asn Ala Phe Lys Gly Asp Asp Asn Thr Gly Glu Asn Asn Ile Val
                405                 410                 415

Gln Glu Leu Thr Lys Glu Ile Ile Ser Glu Val Gln Arg Met Thr Gly
            420                 425                 430

Asn Asp Val Cys Cys Asp Cys Gly Ala Pro Asp Pro Thr Trp Leu Ser
        435                 440                 445

Thr Asn Leu Gly Ile Leu Thr Cys Ile Glu Cys Ser Gly Ile His Arg
    450                 455                 460

Glu Leu Gly Val His Tyr Ser Arg Met Gln Ser Leu Thr Leu Asp Val
465                 470                 475                 480
```

```
Leu Gly Thr Ser Glu Leu Leu Leu Ala Lys Asn Ile Gly Asn Ala Gly
                485                 490                 495

Phe Asn Glu Ile Met Glu Cys Cys Leu Pro Ala Glu Asp Ser Val Lys
            500                 505                 510

Pro Asn Pro Gly Ser Asp Met Asn Ala Arg Lys Asp Tyr Ile Thr Ala
        515                 520                 525

Lys Tyr Ile Glu Arg Arg Tyr Ala Arg Lys Lys His Ala Asp Asn Ala
    530                 535                 540

Ala Lys Leu His Ser Leu Cys Glu Ala Val Lys Thr Arg Asp Ile Phe
545                 550                 555                 560

Gly Leu Leu Gln Ala Tyr Ala Asp Gly Val Asp Leu Thr Glu Lys Ile
                565                 570                 575

Pro Leu Ala Asn Gly His Glu Pro Asp Glu Thr Ala Leu His Leu Ala
            580                 585                 590

Val Arg Ser Val Asp Arg Thr Ser Leu His Ile Val Asp Phe Leu Val
        595                 600                 605

Gln Asn Ser Gly Asn Leu Asp Lys Gln Thr Gly Lys Gly Ser Thr Ala
    610                 615                 620

Leu His Tyr Cys Cys Leu Thr Asp Asn Ala Glu Cys Leu Lys Leu Leu
625                 630                 635                 640

Leu Arg Gly Lys Ala Ser Ile Glu Ile Ala Asn Glu Ser Gly Glu Thr
                645                 650                 655

Pro Leu Asp Ile Ala Lys Arg Leu Lys His Glu His Cys Glu Glu Leu
            660                 665                 670

Leu Thr Gln Ala Leu Ser Gly Arg Phe Asn Ser His Val His Val Glu
        675                 680                 685

Tyr Glu Trp Arg Leu Leu His Glu Asp Leu Asp Glu Ser Asp Asp Asp
    690                 695                 700
```

Met Asp Glu Lys Leu Gln Pro Ser Pro Asn Arg Arg Glu Asp Arg Pro
705 710 715 720

Ile Ser Phe Tyr Gln Leu Gly Ser Asn Gln Leu Gln Ser Asn Ala Val
725 730 735

Ser Leu Ala Arg Asp Ala Ala Asn Leu Ala Lys Glu Lys Gln Arg Ala
740 745 750

Phe Met Pro Ser Ile Leu Gln Asn Glu Thr Tyr Gly Ala Leu Leu Ser
755 760 765

Gly Ser Pro Pro Pro Ala Gln Pro Ala Ala Pro Ser Thr Thr Ser Ala
770 775 780

Pro Pro Leu Pro Pro Arg Asn Val Gly Lys Asp Pro Leu Thr Pro Thr
785 790 795 800

Pro Pro Pro Pro Val Ala Lys Thr Pro Ser Val Met Glu Ala Leu Ser
805 810 815

Gln Pro Ser Lys Pro Ala Pro Pro Gly Ile Ser Gln Ile Arg Pro Pro
820 825 830

Pro Leu Pro Pro Gln Pro Pro Ser Arg Leu Pro Gln Lys Lys Pro Ala
835 840 845

Pro Gly Ala Asp Lys Ser Thr Pro Leu Thr Asn Lys Gly Gln Pro Arg
850 855 860

Gly Pro Val Asp Leu Ser Ala Thr Glu Ala Leu Gly Pro Leu Ser Asn
865 870 875 880

Ala Met Val Leu Gln Pro Pro Ala Pro Met Pro Arg Lys Ser Gln Ala
885 890 895

Thr Lys Leu Lys Pro Lys Arg Val Lys Ala Leu Tyr Asn Cys Val Ala
900 905 910

Asp Asn Pro Asp Glu Leu Thr Phe Ser Glu Gly Asp Val Ile Ile Val
915 920 925

Asp Gly Glu Glu Asp Gln Glu Trp Trp Ile Gly His Ile Asp Gly Asp
930 935 940

Pro Gly Arg Lys Gly Ala Phe Pro Val Ser Phe Val His Phe Ile Ala
945 950 955 960

Asp

<210> 6155
<211> 903
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1337; "

<220>
<221> source
<223> /note="Gene Symbol: ASAP3; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with SH3 domain, ankyrin repeat and PH domain
3; "

<220>
<221> source
<223> /note="Uniprot ID: Q8TDY4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000338769"

<400> 6155
Met Pro Glu Gln Phe Ser Val Ala Glu Phe Leu Ala Val Thr Ala Glu
1 5 10 15

Asp Leu Ser Ser Pro Ala Gly Ala Ala Ala Phe Ala Ala Lys Met Pro
20 25 30

Arg Tyr Arg Gly Ala Ala Leu Ala Arg Glu Glu Ile Leu Glu Gly Asp
35 40 45

Gln Ala Ile Leu Gln Arg Ile Lys Lys Ala Val Arg Ala Ile His Ser
50 55 60

Ser Gly Leu Gly His Val Glu Asn Glu Glu Gln Tyr Arg Glu Ala Val

65 70 75 80

Glu Ser Leu Gly Asn Ser His Leu Ser Gln Asn Ser His Glu Leu Ser
85 90 95

Thr Gly Phe Leu Asn Leu Ala Val Phe Thr Arg Glu Val Ala Ala Leu
100 105 110

Phe Lys Asn Leu Ile Gln Asn Leu Asn Asn Ile Val Ser Phe Pro Leu
115 120 125

Asp Ser Leu Met Lys Gly Gln Leu Arg Asp Gly Arg Gln Asp Ser Lys
130 135 140

Lys Gln Leu Glu Lys Ala Trp Lys Asp Tyr Glu Ala Lys Met Ala Lys
145 150 155 160

Leu Glu Lys Glu Arg Asp Arg Ala Arg Val Thr Gly Gly Ile Pro Gly
165 170 175

Glu Val Ala Gln Asp Met Gln Arg Glu Arg Arg Ile Phe Gln Leu His
180 185 190

Met Cys Glu Tyr Leu Leu Lys Ala Gly Glu Ser Gln Met Lys Gln Gly
195 200 205

Pro Asp Phe Leu Gln Ser Leu Ile Lys Phe Phe His Ala Gln His Asn
210 215 220

Phe Phe Gln Asp Gly Trp Lys Ala Ala Gln Ser Leu Phe Pro Phe Ile
225 230 235 240

Glu Lys Leu Ala Ala Ser Val His Ala Leu His Gln Ala Gln Glu Asp
245 250 255

Glu Leu Gln Lys Leu Thr Gln Leu Arg Asp Ser Leu Arg Gly Thr Leu
260 265 270

Gln Leu Glu Ser Arg Glu Glu His Leu Ser Arg Lys Asn Ser Gly Cys
275 280 285

Gly Tyr Ser Ile His Gln His Gln Gly Asn Lys Gln Phe Gly Thr Glu
290 295 300

```
Lys Val Gly Phe Leu Tyr Lys Lys Ser Asp Gly Ile Arg Arg Val Trp
305                 310                 315                 320

Gln Lys Arg Lys Cys Gly Val Lys Tyr Gly Cys Leu Thr Ile Ser His
                325                 330                 335

Ser Thr Ile Asn Arg Pro Pro Val Lys Leu Thr Leu Leu Thr Cys Gln
            340                 345                 350

Val Arg Pro Asn Pro Glu Glu Lys Lys Cys Phe Asp Leu Val Thr His
        355                 360                 365

Asn Arg Thr Tyr His Phe Gln Ala Glu Asp Glu His Glu Cys Glu Ala
    370                 375                 380

Trp Val Ser Val Leu Gln Asn Ser Lys Asp Glu Ala Leu Ser Ser Ala
385                 390                 395                 400

Phe Leu Gly Glu Pro Ser Ala Gly Pro Gly Ser Trp Gly Ser Ala Gly
                405                 410                 415

His Asp Gly Glu Pro His Asp Leu Thr Lys Leu Leu Ile Ala Glu Val
            420                 425                 430

Lys Ser Arg Pro Gly Asn Ser Gln Cys Cys Asp Cys Gly Ala Ala Asp
        435                 440                 445

Pro Thr Trp Leu Ser Thr Asn Leu Gly Val Leu Thr Cys Ile Gln Cys
    450                 455                 460

Ser Gly Val His Arg Glu Leu Gly Val Arg Phe Ser Arg Met Gln Ser
465                 470                 475                 480

Leu Thr Leu Asp Leu Leu Gly Pro Ser Glu Leu Leu Leu Ala Leu Asn
                485                 490                 495

Met Gly Asn Thr Ser Phe Asn Glu Val Met Glu Ala Gln Leu Pro Ser
            500                 505                 510

His Gly Gly Pro Lys Pro Ser Ala Glu Ser Asp Met Gly Thr Arg Arg
        515                 520                 525
```

```
Asp Tyr Ile Met Ala Lys Tyr Val Glu His Arg Phe Ala Arg Arg Cys
    530                 535                 540

Thr Pro Glu Pro Gln Arg Leu Trp Thr Ala Ile Cys Asn Arg Asp Leu
545                 550                 555                 560

Leu Ser Val Leu Glu Ala Phe Ala Asn Gly Gln Asp Phe Gly Gln Pro
                565                 570                 575

Leu Pro Gly Pro Asp Ala Gln Ala Pro Glu Glu Leu Val Leu His Leu
            580                 585                 590

Ala Val Lys Val Ala Asn Gln Ala Ser Leu Pro Leu Val Asp Phe Ile
        595                 600                 605

Ile Gln Asn Gly Gly His Leu Asp Ala Lys Ala Ala Asp Gly Asn Thr
    610                 615                 620

Ala Leu His Tyr Ala Ala Leu Tyr Asn Gln Pro Asp Cys Leu Lys Leu
625                 630                 635                 640

Leu Leu Lys Gly Arg Ala Leu Val Gly Thr Val Asn Glu Ala Gly Glu
                645                 650                 655

Thr Ala Leu Asp Ile Ala Arg Lys Lys His His Lys Glu Cys Glu Glu
            660                 665                 670

Leu Leu Glu Gln Ala Gln Ala Gly Thr Phe Ala Phe Pro Leu His Val
        675                 680                 685

Asp Tyr Ser Trp Val Ile Ser Thr Glu Pro Gly Ser Asp Ser Glu Glu
    690                 695                 700

Asp Glu Glu Glu Lys Arg Cys Leu Leu Lys Leu Pro Ala Gln Ala His
705                 710                 715                 720

Trp Ala Ser Gly Arg Leu Asp Ile Ser Asn Lys Thr Tyr Glu Thr Val
                725                 730                 735

Ala Ser Leu Gly Ala Ala Thr Pro Gln Gly Glu Ser Glu Asp Cys Pro
            740                 745                 750
```

```
Pro Pro Leu Pro Val Lys Asn Ser Ser Arg Thr Leu Val Gln Gly Cys
        755                 760                 765

Ala Arg His Ala Ser Gly Asp Arg Ser Glu Val Ser Ser Leu Ser Ser
    770                 775                 780

Glu Ala Pro Glu Thr Pro Glu Ser Leu Gly Ser Pro Ala Ser Ser Ser
785                 790                 795                 800

Ser Leu Met Ser Pro Leu Glu Pro Gly Asp Pro Ser Gln Ala Pro Pro
                805                 810                 815

Asn Ser Glu Glu Gly Leu Arg Glu Pro Pro Gly Thr Ser Arg Pro Ser
            820                 825                 830

Leu Thr Ser Gly Thr Thr Pro Ser Glu Met Tyr Leu Pro Val Arg Phe
        835                 840                 845

Ser Ser Glu Ser Thr Arg Ser Tyr Arg Arg Gly Ala Arg Ser Pro Glu
    850                 855                 860

Asp Gly Pro Ser Ala Arg Gln Pro Leu Pro Arg Arg Asn Val Pro Val
865                 870                 875                 880

Gly Ile Thr Glu Gly Asp Gly Ser Arg Thr Gly Ser Leu Pro Ala Ser
                885                 890                 895

Ser Val Gln Leu Leu Gln Asp
            900
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<210> 6156
<211> 894
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1337; "

<220>
<221> source
<223> /note="Gene Symbol: ASAP3; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with SH3 domain, ankyrin repeat and PH domain

3; "

<220>
<221> source
<223> /note="Uniprot ID: Q8TDY4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000408826"

<400> 6156
Met Pro Glu Gln Phe Ser Val Ala Glu Phe Leu Ala Val Thr Ala Glu
1   5   10   15

Asp Leu Ser Ser Pro Ala Gly Ala Ala Ala Phe Ala Ala Lys Met Pro
            20   25   30

Arg Tyr Arg Gly Ala Ala Leu Ala Arg Glu Glu Ile Leu Glu Gly Asp
        35   40   45

Gln Ala Ile Leu Gln Arg Ile Lys Lys Ala Val Arg Ala Ile His Ser
    50   55   60

Ser Gly Leu Gly His Val Glu Asn Glu Glu Gln Tyr Arg Glu Ala Val
65   70   75   80

Glu Ser Leu Gly Asn Ser His Leu Ser Gln Asn Ser His Glu Leu Ser
                85   90   95

Thr Gly Phe Leu Asn Leu Ala Val Phe Thr Arg Glu Val Ala Ala Leu
            100   105   110

Phe Lys Asn Leu Ile Gln Asn Leu Asn Asn Ile Val Ser Phe Pro Leu
        115   120   125

Asp Ser Leu Met Lys Gly Gln Leu Arg Asp Gly Arg Gln Ala Ser Leu
    130   135   140

Ser Leu Gly Ser Arg Ala Lys Leu Glu Lys Glu Arg Asp Arg Ala Arg
145   150   155   160

Val Thr Gly Gly Ile Pro Gly Glu Val Ala Gln Asp Met Gln Arg Glu
                165   170   175

Arg Arg Ile Phe Gln Leu His Met Cys Glu Tyr Leu Leu Lys Ala Gly
            180   185   190

```
Glu Ser Gln Met Lys Gln Gly Pro Asp Phe Leu Gln Ser Leu Ile Lys
        195                 200                 205

Phe Phe His Ala Gln His Asn Phe Phe Gln Asp Gly Trp Lys Ala Ala
    210                 215                 220

Gln Ser Leu Phe Pro Phe Ile Glu Lys Leu Ala Ala Ser Val His Ala
225                 230                 235                 240

Leu His Gln Ala Gln Glu Asp Glu Leu Gln Lys Leu Thr Gln Leu Arg
                245                 250                 255

Asp Ser Leu Arg Gly Thr Leu Gln Leu Glu Ser Arg Glu Glu His Leu
            260                 265                 270

Ser Arg Lys Asn Ser Gly Cys Gly Tyr Ser Ile His Gln His Gln Gly
        275                 280                 285

Asn Lys Gln Phe Gly Thr Glu Lys Val Gly Phe Leu Tyr Lys Lys Ser
    290                 295                 300

Asp Gly Ile Arg Arg Val Trp Gln Lys Arg Lys Cys Gly Val Lys Tyr
305                 310                 315                 320

Gly Cys Leu Thr Ile Ser His Ser Thr Ile Asn Arg Pro Pro Val Lys
                325                 330                 335

Leu Thr Leu Leu Thr Cys Gln Val Arg Pro Asn Pro Glu Glu Lys Lys
            340                 345                 350

Cys Phe Asp Leu Val Thr His Asn Arg Thr Tyr His Phe Gln Ala Glu
        355                 360                 365

Asp Glu His Glu Cys Glu Ala Trp Val Ser Val Leu Gln Asn Ser Lys
    370                 375                 380

Asp Glu Ala Leu Ser Ser Ala Phe Leu Gly Glu Pro Ser Ala Gly Pro
385                 390                 395                 400

Gly Ser Trp Gly Ser Ala Gly His Asp Gly Glu Pro His Asp Leu Thr
                405                 410                 415
```

```
Lys Leu Leu Ile Ala Glu Val Lys Ser Arg Pro Gly Asn Ser Gln Cys
            420                 425                 430

Cys Asp Cys Gly Ala Ala Asp Pro Thr Trp Leu Ser Thr Asn Leu Gly
        435                 440                 445

Val Leu Thr Cys Ile Gln Cys Ser Gly Val His Arg Glu Leu Gly Val
    450                 455                 460

Arg Phe Ser Arg Met Gln Ser Leu Thr Leu Asp Leu Leu Gly Pro Ser
465                 470                 475                 480

Glu Leu Leu Leu Ala Leu Asn Met Gly Asn Thr Ser Phe Asn Glu Val
                485                 490                 495

Met Glu Ala Gln Leu Pro Ser His Gly Gly Pro Lys Pro Ser Ala Glu
            500                 505                 510

Ser Asp Met Gly Thr Arg Arg Asp Tyr Ile Met Ala Lys Tyr Val Glu
        515                 520                 525

His Arg Phe Ala Arg Arg Cys Thr Pro Glu Pro Gln Arg Leu Trp Thr
    530                 535                 540

Ala Ile Cys Asn Arg Asp Leu Leu Ser Val Leu Glu Ala Phe Ala Asn
545                 550                 555                 560

Gly Gln Asp Phe Gly Gln Pro Leu Pro Gly Pro Asp Ala Gln Ala Pro
                565                 570                 575

Glu Glu Leu Val Leu His Leu Ala Val Lys Val Ala Asn Gln Ala Ser
            580                 585                 590

Leu Pro Leu Val Asp Phe Ile Ile Gln Asn Gly Gly His Leu Asp Ala
        595                 600                 605

Lys Ala Ala Asp Gly Asn Thr Ala Leu His Tyr Ala Ala Leu Tyr Asn
    610                 615                 620

Gln Pro Asp Cys Leu Lys Leu Leu Leu Lys Gly Arg Ala Leu Val Gly
625                 630                 635                 640
```

```
Thr Val Asn Glu Ala Gly Glu Thr Ala Leu Asp Ile Ala Arg Lys Lys
                645                 650                 655

His His Lys Glu Cys Glu Glu Leu Leu Glu Gln Ala Gln Ala Gly Thr
            660                 665                 670

Phe Ala Phe Pro Leu His Val Asp Tyr Ser Trp Val Ile Ser Thr Glu
        675                 680                 685

Pro Gly Ser Asp Ser Glu Glu Asp Glu Glu Glu Lys Arg Cys Leu Leu
    690                 695                 700

Lys Leu Pro Ala Gln Ala His Trp Ala Ser Gly Arg Leu Asp Ile Ser
705                 710                 715                 720

Asn Lys Thr Tyr Glu Thr Val Ala Ser Leu Gly Ala Ala Thr Pro Gln
                725                 730                 735

Gly Glu Ser Glu Asp Cys Pro Pro Pro Leu Pro Val Lys Asn Ser Ser
            740                 745                 750

Arg Thr Leu Val Gln Gly Cys Ala Arg His Ala Ser Gly Asp Arg Ser
        755                 760                 765

Glu Val Ser Ser Leu Ser Ser Glu Ala Pro Glu Thr Pro Glu Ser Leu
    770                 775                 780

Gly Ser Pro Ala Ser Ser Ser Ser Leu Met Ser Pro Leu Glu Pro Gly
785                 790                 795                 800

Asp Pro Ser Gln Ala Pro Pro Asn Ser Glu Glu Gly Leu Arg Glu Pro
                805                 810                 815

Pro Gly Thr Ser Arg Pro Ser Leu Thr Ser Gly Thr Thr Pro Ser Glu
            820                 825                 830

Met Tyr Leu Pro Val Arg Phe Ser Ser Glu Ser Thr Arg Ser Tyr Arg
        835                 840                 845

Arg Gly Ala Arg Ser Pro Glu Asp Gly Pro Ser Ala Arg Gln Pro Leu
    850                 855                 860

Pro Arg Arg Asn Val Pro Val Gly Ile Thr Glu Gly Asp Gly Ser Arg
```

865 870 875 880

Thr Gly Ser Leu Pro Ala Ser Ser Val Gln Leu Leu Gln Asp
885 890

<210> 6157
<211> 124
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1337; "

<220>
<221> source
<223> /note="Gene Symbol: ASAP3; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with SH3 domain, ankyrin repeat and PH domain
3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000434897"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6157
Xaa Arg Phe Ser Arg Met Gln Ser Leu Thr Leu Asp Leu Leu Gly Pro
1 5 10 15

Ser Glu Leu Leu Leu Ala Leu Asn Met Gly Asn Thr Ser Phe Asn Glu
20 25 30

Val Met Glu Ala Gln Leu Pro Ser His Gly Gly Pro Lys Pro Ser Ala
35 40 45

Glu Ser Asp Met Gly Thr Arg Arg Asp Tyr Ile Met Ala Lys Tyr Val
50 55 60

Glu His Arg Phe Ala Arg Arg Cys Thr Pro Glu Pro Gln Arg Leu Trp
65 70 75 80

```
Thr Ala Ile Cys Asn Arg Asp Leu Leu Ser Val Leu Glu Ala Phe Ala
                85                  90                  95

Asn Gly Gln Asp Phe Gly Gln Pro Leu Pro Gly Pro Asp Ala Gln Val
            100                 105                 110

Arg Thr Pro Pro Arg Ala Thr Tyr Asn Pro Pro Val
        115                 120


<210> 6158
<211> 203
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1337; "

<220>
<221> source
<223> /note="Gene Symbol: ASAP3; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with SH3 domain, ankyrin repeat and PH domain
      3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000435394"

<400> 6158
Leu Glu Gln Ala Gln Ala Gly Thr Phe Ala Phe Pro Leu His Val Asp
1               5                   10                  15

Tyr Ser Trp Val Ile Ser Thr Glu Pro Gly Ser Asp Ser Glu Glu Asp
            20                  25                  30

Glu Glu Glu Lys Arg Cys Leu Leu Lys Leu Pro Ala Gln Ala His Trp
        35                  40                  45

Ala Ser Gly Arg Leu Asp Ile Ser Asn Lys Thr Tyr Glu Thr Val Ala
    50                  55                  60

Ser Leu Gly Ala Ala Thr Pro Gln Gly Glu Asn Arg Ser Glu Val Ser
65                  70                  75                  80

Ser Leu Ser Ser Glu Ala Pro Glu Thr Pro Glu Ser Leu Gly Ser Pro
```

```
                85                  90                  95

Ala Ser Ser Ser Ser Leu Met Ser Pro Leu Glu Pro Gly Asp Pro Ser
            100                 105                 110

Gln Ala Pro Pro Asn Ser Glu Glu Gly Leu Arg Glu Pro Pro Gly Thr
        115                 120                 125

Ser Arg Pro Ser Leu Thr Ser Gly Thr Thr Pro Ser Glu Met Tyr Leu
    130                 135                 140

Pro Val Arg Phe Ser Ser Glu Ser Thr Arg Ser Tyr Arg Arg Gly Ala
145                 150                 155                 160

Arg Ser Pro Glu Asp Gly Pro Ser Ala Arg Gln Pro Leu Pro Arg Arg
                165                 170                 175

Asn Val Pro Val Gly Ile Thr Glu Gly Asp Gly Ser Arg Thr Gly Ser
            180                 185                 190

Leu Pro Ala Ser Ser Val Gln Leu Leu Gln Asp
        195                 200


<210> 6159
<211> 44
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1337; "

<220>
<221> source
<223> /note="Gene Symbol: ASAP3; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with SH3 domain, ankyrin repeat and PH domain
      3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000435858"

<400> 6159
Met Pro Glu Gln Phe Ser Val Ala Glu Phe Leu Ala Val Thr Ala Glu
1               5                   10                  15
```

Asp Leu Ser Ser Pro Ala Gly Ala Ala Ala Phe Ala Ala Lys Met Pro
            20   25   30

Arg Ser Trp Lys Glu Thr Lys Pro Ser Cys Arg Glu
        35   40

<210> 6160
<211> 407
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1337; "

<220>
<221> source
<223> /note="Gene Symbol: ASAP3; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with SH3 domain, ankyrin repeat and PH domain
      3; "

<220>
<221> source
<223> /note="Uniprot ID: Q8TDY4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436150"

<400> 6160
Met Gly Asn Thr Ser Phe Asn Glu Val Met Glu Ala Gln Leu Pro Ser
1   5   10   15

His Gly Gly Pro Lys Pro Ser Ala Glu Ser Asp Met Gly Thr Arg Arg
            20   25   30

Asp Tyr Ile Met Ala Lys Tyr Val Glu His Arg Phe Ala Arg Arg Cys
        35   40   45

Thr Pro Glu Pro Gln Arg Leu Trp Thr Ala Ile Cys Asn Arg Asp Leu
    50   55   60

Leu Ser Val Leu Glu Ala Phe Ala Asn Gly Gln Asp Phe Gly Gln Pro
65   70   75   80

```
Leu Pro Gly Pro Asp Ala Gln Ala Pro Glu Glu Leu Val Leu His Leu
                85                  90                  95

Ala Val Lys Val Ala Asn Gln Ala Ser Leu Pro Leu Val Asp Phe Ile
            100                 105                 110

Ile Gln Asn Gly Gly His Leu Asp Ala Lys Ala Ala Asp Gly Asn Thr
        115                 120                 125

Ala Leu His Tyr Ala Ala Leu Tyr Asn Gln Pro Asp Cys Leu Lys Leu
    130                 135                 140

Leu Leu Lys Gly Arg Ala Leu Val Gly Thr Val Asn Glu Ala Gly Glu
145                 150                 155                 160

Thr Ala Leu Asp Ile Ala Arg Lys Lys His His Lys Glu Cys Glu Glu
                165                 170                 175

Leu Leu Glu Gln Ala Gln Ala Gly Thr Phe Ala Phe Pro Leu His Val
            180                 185                 190

Asp Tyr Ser Trp Val Ile Ser Thr Glu Pro Gly Ser Asp Ser Glu Glu
        195                 200                 205

Asp Glu Glu Glu Lys Arg Cys Leu Leu Lys Leu Pro Ala Gln Ala His
    210                 215                 220

Trp Ala Ser Gly Arg Leu Asp Ile Ser Asn Lys Thr Tyr Glu Thr Val
225                 230                 235                 240

Ala Ser Leu Gly Ala Ala Thr Pro Gln Gly Glu Ser Glu Asp Cys Pro
                245                 250                 255

Pro Pro Leu Pro Val Lys Asn Ser Ser Arg Thr Leu Val Gln Gly Cys
            260                 265                 270

Ala Arg His Ala Ser Gly Asp Arg Ser Glu Val Ser Ser Leu Ser Ser
        275                 280                 285

Glu Ala Pro Glu Thr Pro Glu Ser Leu Gly Ser Pro Ala Ser Ser Ser
    290                 295                 300
```

Ser Leu Met Ser Pro Leu Glu Pro Gly Asp Pro Ser Gln Ala Pro Pro
305 310 315 320

Asn Ser Glu Glu Gly Leu Arg Glu Pro Pro Gly Thr Ser Arg Pro Ser
325 330 335

Leu Thr Ser Gly Thr Thr Pro Ser Glu Met Tyr Leu Pro Val Arg Phe
340 345 350

Ser Ser Glu Ser Thr Arg Ser Tyr Arg Arg Gly Ala Arg Ser Pro Glu
355 360 365

Asp Gly Pro Ser Ala Arg Gln Pro Leu Pro Arg Arg Asn Val Pro Val
370 375 380

Gly Ile Thr Glu Gly Asp Gly Ser Arg Thr Gly Ser Leu Pro Ala Ser
385 390 395 400

Ser Val Gln Leu Leu Gln Asp
405

<210> 6161
<211> 120
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1337; "

<220>
<221> source
<223> /note="Gene Symbol: ASAP3; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with SH3 domain, ankyrin repeat and PH domain
3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436439"

<400> 6161
Tyr Leu Leu Lys Ala Gly Glu Ser Gln Met Lys Gln Gly Pro Asp Phe
1 5 10 15

Leu Gln Ser Leu Ile Lys Phe Phe His Ala Gln His Asn Phe Phe Gln

```
            20                  25                  30

Asp Gly Trp Lys Ala Ala Gln Ser Leu Phe Pro Phe Ile Glu Lys Leu
        35                  40                  45

Ala Ala Ser Val His Ala Leu His Gln Ala Gln Glu Asp Glu Leu Gln
    50                  55                  60

Lys Leu Thr Gln Leu Arg Asp Ser Leu Arg Gly Thr Leu Gln Leu Glu
65                  70                  75                  80

Ser Arg Glu Glu His Leu Ser Arg Lys Asn Ser Gly Cys Gly Tyr Ser
                85                  90                  95

Ile His Gln His Gln Gly Asn Lys Gln Phe Gly Thr Glu Lys Val Gly
            100                 105                 110

Phe Leu Tyr Lys Lys Ser Asp Gly
        115                 120


<210> 6162
<211> 157
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1337; "

<220>
<221> source
<223> /note="Gene Symbol: ASAP3; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with SH3 domain, ankyrin repeat and PH domain
      3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000476400"

<400> 6162
Met Pro Glu Gln Phe Ser Val Ala Glu Phe Leu Ala Val Thr Ala Glu
1               5                   10                  15

Asp Leu Ser Ser Pro Ala Gly Ala Ala Ala Phe Ala Ala Lys Met Pro
            20                  25                  30
```

```
Arg Tyr Arg Gly Ala Ala Leu Ala Arg Glu Glu Ile Leu Glu Gly Asp
        35                  40                  45

Gln Ala Ile Leu Gln Arg Ile Lys Lys Ala Val Arg Ala Ile His Ser
    50                  55                  60

Ser Gly Leu Gly His Val Glu Asn Glu Glu Gln Tyr Arg Glu Ala Val
65                  70                  75                  80

Glu Ser Leu Gly Asn Ser His Leu Ser Gln Asn Ser His Glu Leu Ser
                85                  90                  95

Thr Gly Phe Leu Asn Leu Ala Val Phe Thr Arg Glu Val Ala Ala Leu
            100                 105                 110

Phe Lys Asn Leu Ile Gln Asn Leu Asn Asn Ile Val Ser Phe Pro Leu
        115                 120                 125

Asp Ser Leu Met Lys Gly Gln Leu Arg Asp Gly Arg Gln Asp Ser Lys
    130                 135                 140

Lys Gln Leu Glu Lys Ala Trp Lys Asp Tyr Glu Ala Lys
145                 150                 155


<210> 6163
<211> 202
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1337; "

<220>
<221> source
<223> /note="Gene Symbol: ASAP3; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with SH3 domain, ankyrin repeat and PH domain
      3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000483740"
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<400> 6163
Met Pro Glu Gln Phe Ser Val Ala Glu Phe Leu Ala Val Thr Ala Glu
1 5 10 15

Asp Leu Ser Ser Pro Ala Gly Ala Ala Ala Phe Ala Ala Lys Met Pro
20 25 30

Arg Tyr Arg Gly Ala Ala Leu Ala Arg Glu Glu Ile Leu Glu Gly Asp
35 40 45

Gln Ala Ile Leu Gln Arg Ile Lys Lys Ala Val Arg Ala Ile His Ser
50 55 60

Ser Gly Leu Gly His Val Glu Asn Glu Glu Gln Tyr Arg Glu Ala Val
65 70 75 80

Glu Ser Leu Gly Asn Ser His Leu Ser Gln Asn Ser His Glu Leu Ser
85 90 95

Thr Gly Phe Leu Asn Leu Ala Val Phe Thr Arg Glu Val Ala Ala Leu
100 105 110

Phe Lys Asn Leu Ile Gln Asn Leu Asn Asn Ile Val Ser Phe Pro Leu
115 120 125

Asp Ser Leu Met Lys Gly Gln Leu Arg Asp Gly Arg Gln Asp Ser Lys
130 135 140

Lys Gln Leu Glu Lys Ala Trp Lys Asp Tyr Glu Ala Lys Met Ala Lys
145 150 155 160

Leu Glu Lys Glu Arg Asp Arg Ala Arg Val Thr Gly Gly Ile Pro Gly
165 170 175

Asn Leu Gly Ile Pro Ala Lys Pro His Pro Thr Leu Lys Arg Ala Ser
180 185 190

Glu Ser Pro Gln Ala Pro Pro Asp Pro Ala
195 200

<210> 6164
<211> 407
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1337; "

<220>
<221> source
<223> /note="Gene Symbol: ASAP3; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with SH3 domain, ankyrin repeat and PH domain
3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000488934"

<400> 6164

```
Met Gly Asn Thr Ser Phe Asn Glu Val Met Glu Ala Gln Leu Pro Ser
1               5                   10                  15

His Gly Gly Pro Lys Pro Ser Ala Glu Ser Asp Met Gly Thr Arg Arg
            20                  25                  30

Asp Tyr Ile Met Ala Lys Tyr Val Glu His Arg Phe Ala Arg Arg Cys
        35                  40                  45

Thr Pro Glu Pro Gln Arg Leu Trp Thr Ala Ile Cys Asn Arg Asp Leu
    50                  55                  60

Leu Ser Val Leu Glu Ala Phe Ala Asn Gly Gln Asp Phe Gly Gln Pro
65                  70                  75                  80

Leu Pro Gly Pro Asp Ala Gln Ala Pro Glu Glu Leu Val Leu His Leu
                85                  90                  95

Ala Val Lys Val Ala Asn Gln Ala Ser Leu Pro Leu Val Asp Phe Ile
            100                 105                 110

Ile Gln Asn Gly Gly His Leu Asp Ala Lys Ala Ala Asp Gly Asn Thr
        115                 120                 125

Ala Leu His Tyr Ala Ala Leu Tyr Asn Gln Pro Asp Cys Leu Lys Leu
    130                 135                 140

Leu Leu Lys Gly Arg Ala Leu Val Gly Thr Val Asn Glu Ala Gly Glu
```

145 150 155 160

Thr Ala Leu Asp Ile Ala Arg Lys Lys His His Lys Glu Cys Glu Glu
165 170 175

Leu Leu Glu Gln Ala Gln Ala Gly Thr Phe Ala Phe Pro Leu His Val
180 185 190

Asp Tyr Ser Trp Val Ile Ser Thr Glu Pro Gly Ser Asp Ser Glu Glu
195 200 205

Asp Glu Glu Glu Lys Arg Cys Leu Leu Lys Leu Pro Ala Gln Ala His
210 215 220

Trp Ala Ser Gly Arg Leu Asp Ile Ser Asn Lys Thr Tyr Glu Thr Val
225 230 235 240

Ala Ser Leu Gly Ala Ala Thr Pro Gln Gly Glu Ser Glu Asp Cys Pro
245 250 255

Pro Pro Leu Pro Val Lys Asn Ser Ser Arg Thr Leu Val Gln Gly Cys
260 265 270

Ala Arg His Ala Ser Gly Asp Arg Ser Glu Val Ser Ser Leu Ser Ser
275 280 285

Glu Ala Pro Glu Thr Pro Glu Ser Leu Gly Ser Pro Ala Ser Ser Ser
290 295 300

Ser Leu Met Ser Pro Leu Glu Pro Gly Asp Pro Ser Gln Ala Pro Pro
305 310 315 320

Asn Ser Glu Glu Gly Leu Arg Glu Pro Pro Gly Thr Ser Arg Pro Ser
325 330 335

Leu Thr Ser Gly Thr Thr Pro Ser Glu Met Tyr Leu Pro Val Arg Phe
340 345 350

Ser Ser Glu Ser Thr Arg Ser Tyr Arg Arg Gly Ala Arg Ser Pro Glu
355 360 365

Asp Gly Pro Ser Ala Arg Gln Pro Leu Pro Arg Arg Asn Val Pro Val
370 375 380

```
Gly Ile Thr Glu Gly Asp Gly Ser Arg Thr Gly Ser Leu Pro Ala Ser
385                 390                 395                 400


Ser Val Gln Leu Leu Gln Asp
                405


<210> 6165
<211> 903
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1337; "

<220>
<221> source
<223> /note="Gene Symbol: ASAP3; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with SH3 domain, ankyrin repeat and PH domain
      3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000488946"

<400> 6165
Met Pro Glu Gln Phe Ser Val Ala Glu Phe Leu Ala Val Thr Ala Glu
1               5                   10                  15


Asp Leu Ser Ser Pro Ala Gly Ala Ala Ala Phe Ala Ala Lys Met Pro
            20                  25                  30


Arg Tyr Arg Gly Ala Ala Leu Ala Arg Glu Glu Ile Leu Glu Gly Asp
        35                  40                  45


Gln Ala Ile Leu Gln Arg Ile Lys Lys Ala Val Arg Ala Ile His Ser
    50                  55                  60


Ser Gly Leu Gly His Val Glu Asn Glu Glu Gln Tyr Arg Glu Ala Val
65                  70                  75                  80


Glu Ser Leu Gly Asn Ser His Leu Ser Gln Asn Ser His Glu Leu Ser
                85                  90                  95
```

```
Thr Gly Phe Leu Asn Leu Ala Val Phe Thr Arg Glu Val Ala Ala Leu
            100                 105                 110

Phe Lys Asn Leu Ile Gln Asn Leu Asn Asn Ile Val Ser Phe Pro Leu
        115                 120                 125

Asp Ser Leu Met Lys Gly Gln Leu Arg Asp Gly Arg Gln Asp Ser Lys
    130                 135                 140

Lys Gln Leu Glu Lys Ala Trp Lys Asp Tyr Glu Ala Lys Met Ala Lys
145                 150                 155                 160

Leu Glu Lys Glu Arg Asp Arg Ala Arg Val Thr Gly Gly Ile Pro Gly
                165                 170                 175

Glu Val Ala Gln Asp Met Gln Arg Glu Arg Arg Ile Phe Gln Leu His
            180                 185                 190

Met Cys Glu Tyr Leu Leu Lys Ala Gly Glu Ser Gln Met Lys Gln Gly
        195                 200                 205

Pro Asp Phe Leu Gln Ser Leu Ile Lys Phe Phe His Ala Gln His Asn
    210                 215                 220

Phe Phe Gln Asp Gly Trp Lys Ala Ala Gln Ser Leu Phe Pro Phe Ile
225                 230                 235                 240

Glu Lys Leu Ala Ala Ser Val His Ala Leu His Gln Ala Gln Glu Asp
                245                 250                 255

Glu Leu Gln Lys Leu Thr Gln Leu Arg Asp Ser Leu Arg Gly Thr Leu
            260                 265                 270

Gln Leu Glu Ser Arg Glu Glu His Leu Ser Arg Lys Asn Ser Gly Cys
        275                 280                 285

Gly Tyr Ser Ile His Gln His Gln Gly Asn Lys Gln Phe Gly Thr Glu
    290                 295                 300

Lys Val Gly Phe Leu Tyr Lys Lys Ser Asp Gly Ile Arg Arg Val Trp
305                 310                 315                 320
```

```
Gln Lys Arg Lys Cys Gly Val Lys Tyr Gly Cys Leu Thr Ile Ser His
                325                 330                 335

Ser Thr Ile Asn Arg Pro Pro Val Lys Leu Thr Leu Leu Thr Cys Gln
            340                 345                 350

Val Arg Pro Asn Pro Glu Glu Lys Lys Cys Phe Asp Leu Val Thr His
        355                 360                 365

Asn Arg Thr Tyr His Phe Gln Ala Glu Asp Glu His Glu Cys Glu Ala
    370                 375                 380

Trp Val Ser Val Leu Gln Asn Ser Lys Asp Glu Ala Leu Ser Ser Ala
385                 390                 395                 400

Phe Leu Gly Glu Pro Ser Ala Gly Pro Gly Ser Trp Gly Ser Ala Gly
                405                 410                 415

His Asp Gly Glu Pro His Asp Leu Thr Lys Leu Leu Ile Ala Glu Val
            420                 425                 430

Lys Ser Arg Pro Gly Asn Ser Gln Cys Cys Asp Cys Gly Ala Ala Asp
        435                 440                 445

Pro Thr Trp Leu Ser Thr Asn Leu Gly Val Leu Thr Cys Ile Gln Cys
    450                 455                 460

Ser Gly Val His Arg Glu Leu Gly Val Arg Phe Ser Arg Met Gln Ser
465                 470                 475                 480

Leu Thr Leu Asp Leu Leu Gly Pro Ser Glu Leu Leu Leu Ala Leu Asn
                485                 490                 495

Met Gly Asn Thr Ser Phe Asn Glu Val Met Glu Ala Gln Leu Pro Ser
            500                 505                 510

His Gly Gly Pro Lys Pro Ser Ala Glu Ser Asp Met Gly Thr Arg Arg
        515                 520                 525

Asp Tyr Ile Met Ala Lys Tyr Val Glu His Arg Phe Ala Arg Arg Cys
    530                 535                 540

Thr Pro Glu Pro Gln Arg Leu Trp Thr Ala Ile Cys Asn Arg Asp Leu
```

545 550 555 560

Leu Ser Val Leu Glu Ala Phe Ala Asn Gly Gln Asp Phe Gly Gln Pro
565 570 575

Leu Pro Gly Pro Asp Ala Gln Ala Pro Glu Glu Leu Val Leu His Leu
580 585 590

Ala Val Lys Val Ala Asn Gln Ala Ser Leu Pro Leu Val Asp Phe Ile
595 600 605

Ile Gln Asn Gly Gly His Leu Asp Ala Lys Ala Ala Asp Gly Asn Thr
610 615 620

Ala Leu His Tyr Ala Ala Leu Tyr Asn Gln Pro Asp Cys Leu Lys Leu
625 630 635 640

Leu Leu Lys Gly Arg Ala Leu Val Gly Thr Val Asn Glu Ala Gly Glu
645 650 655

Thr Ala Leu Asp Ile Ala Arg Lys Lys His His Lys Glu Cys Glu Glu
660 665 670

Leu Leu Glu Gln Ala Gln Ala Gly Thr Phe Ala Phe Pro Leu His Val
675 680 685

Asp Tyr Ser Trp Val Ile Ser Thr Glu Pro Gly Ser Asp Ser Glu Glu
690 695 700

Asp Glu Glu Glu Lys Arg Cys Leu Leu Lys Leu Pro Ala Gln Ala His
705 710 715 720

Trp Ala Ser Gly Arg Leu Asp Ile Ser Asn Lys Thr Tyr Glu Thr Val
725 730 735

Ala Ser Leu Gly Ala Ala Thr Pro Gln Gly Glu Ser Glu Asp Cys Pro
740 745 750

Pro Pro Leu Pro Val Lys Asn Ser Ser Arg Thr Leu Val Gln Gly Cys
755 760 765

Ala Arg His Ala Ser Gly Asp Arg Ser Glu Val Ser Ser Leu Ser Ser
770 775 780

```
Glu Ala Pro Glu Thr Pro Glu Ser Leu Gly Ser Pro Ala Ser Ser Ser
785                 790                 795                 800

Ser Leu Met Ser Pro Leu Glu Pro Gly Asp Pro Ser Gln Ala Pro Pro
                805                 810                 815

Asn Ser Glu Glu Gly Leu Arg Glu Pro Pro Gly Thr Ser Arg Pro Ser
            820                 825                 830

Leu Thr Ser Gly Thr Thr Pro Ser Glu Met Tyr Leu Pro Val Arg Phe
        835                 840                 845

Ser Ser Glu Ser Thr Arg Ser Tyr Arg Arg Gly Ala Arg Ser Pro Glu
    850                 855                 860

Asp Gly Pro Ser Ala Arg Gln Pro Leu Pro Arg Arg Asn Val Pro Val
865                 870                 875                 880

Gly Ile Thr Glu Gly Asp Gly Ser Arg Thr Gly Ser Leu Pro Ala Ser
                885                 890                 895

Ser Val Gln Leu Leu Gln Asp
            900


<210> 6166
<211> 894
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1337; "

<220>
<221> source
<223> /note="Gene Symbol: ASAP3; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with SH3 domain, ankyrin repeat and PH domain
      3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000488953"
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<400> 6166
Met Pro Glu Gln Phe Ser Val Ala Glu Phe Leu Ala Val Thr Ala Glu
1 5 10 15

Asp Leu Ser Ser Pro Ala Gly Ala Ala Ala Phe Ala Ala Lys Met Pro
20 25 30

Arg Tyr Arg Gly Ala Ala Leu Ala Arg Glu Glu Ile Leu Glu Gly Asp
35 40 45

Gln Ala Ile Leu Gln Arg Ile Lys Lys Ala Val Arg Ala Ile His Ser
50 55 60

Ser Gly Leu Gly His Val Glu Asn Glu Glu Gln Tyr Arg Glu Ala Val
65 70 75 80

Glu Ser Leu Gly Asn Ser His Leu Ser Gln Asn Ser His Glu Leu Ser
85 90 95

Thr Gly Phe Leu Asn Leu Ala Val Phe Thr Arg Glu Val Ala Ala Leu
100 105 110

Phe Lys Asn Leu Ile Gln Asn Leu Asn Asn Ile Val Ser Phe Pro Leu
115 120 125

Asp Ser Leu Met Lys Gly Gln Leu Arg Asp Gly Arg Gln Ala Ser Leu
130 135 140

Ser Leu Gly Ser Arg Ala Lys Leu Glu Lys Glu Arg Asp Arg Ala Arg
145 150 155 160

Val Thr Gly Gly Ile Pro Gly Glu Val Ala Gln Asp Met Gln Arg Glu
165 170 175

Arg Arg Ile Phe Gln Leu His Met Cys Glu Tyr Leu Leu Lys Ala Gly
180 185 190

Glu Ser Gln Met Lys Gln Gly Pro Asp Phe Leu Gln Ser Leu Ile Lys
195 200 205

Phe Phe His Ala Gln His Asn Phe Phe Gln Asp Gly Trp Lys Ala Ala
210 215 220

```
Gln Ser Leu Phe Pro Phe Ile Glu Lys Leu Ala Ala Ser Val His Ala
225                 230                 235                 240

Leu His Gln Ala Gln Glu Asp Glu Leu Gln Lys Leu Thr Gln Leu Arg
                245                 250                 255

Asp Ser Leu Arg Gly Thr Leu Gln Leu Glu Ser Arg Glu Glu His Leu
            260                 265                 270

Ser Arg Lys Asn Ser Gly Cys Gly Tyr Ser Ile His Gln His Gln Gly
        275                 280                 285

Asn Lys Gln Phe Gly Thr Glu Lys Val Gly Phe Leu Tyr Lys Lys Ser
    290                 295                 300

Asp Gly Ile Arg Arg Val Trp Gln Lys Arg Lys Cys Gly Val Lys Tyr
305                 310                 315                 320

Gly Cys Leu Thr Ile Ser His Ser Thr Ile Asn Arg Pro Pro Val Lys
                325                 330                 335

Leu Thr Leu Leu Thr Cys Gln Val Arg Pro Asn Pro Glu Glu Lys Lys
            340                 345                 350

Cys Phe Asp Leu Val Thr His Asn Arg Thr Tyr His Phe Gln Ala Glu
        355                 360                 365

Asp Glu His Glu Cys Glu Ala Trp Val Ser Val Leu Gln Asn Ser Lys
    370                 375                 380

Asp Glu Ala Leu Ser Ser Ala Phe Leu Gly Glu Pro Ser Ala Gly Pro
385                 390                 395                 400

Gly Ser Trp Gly Ser Ala Gly His Asp Gly Glu Pro His Asp Leu Thr
                405                 410                 415

Lys Leu Leu Ile Ala Glu Val Lys Ser Arg Pro Gly Asn Ser Gln Cys
            420                 425                 430

Cys Asp Cys Gly Ala Ala Asp Pro Thr Trp Leu Ser Thr Asn Leu Gly
        435                 440                 445

Val Leu Thr Cys Ile Gln Cys Ser Gly Val His Arg Glu Leu Gly Val
```

```
    450                 455                 460

Arg Phe Ser Arg Met Gln Ser Leu Thr Leu Asp Leu Leu Gly Pro Ser
465                 470                 475                 480

Glu Leu Leu Leu Ala Leu Asn Met Gly Asn Thr Ser Phe Asn Glu Val
                485                 490                 495

Met Glu Ala Gln Leu Pro Ser His Gly Gly Pro Lys Pro Ser Ala Glu
            500                 505                 510

Ser Asp Met Gly Thr Arg Arg Asp Tyr Ile Met Ala Lys Tyr Val Glu
        515                 520                 525

His Arg Phe Ala Arg Arg Cys Thr Pro Glu Pro Gln Arg Leu Trp Thr
    530                 535                 540

Ala Ile Cys Asn Arg Asp Leu Leu Ser Val Leu Glu Ala Phe Ala Asn
545                 550                 555                 560

Gly Gln Asp Phe Gly Gln Pro Leu Pro Gly Pro Asp Ala Gln Ala Pro
                565                 570                 575

Glu Glu Leu Val Leu His Leu Ala Val Lys Val Ala Asn Gln Ala Ser
            580                 585                 590

Leu Pro Leu Val Asp Phe Ile Ile Gln Asn Gly Gly His Leu Asp Ala
        595                 600                 605

Lys Ala Ala Asp Gly Asn Thr Ala Leu His Tyr Ala Ala Leu Tyr Asn
    610                 615                 620

Gln Pro Asp Cys Leu Lys Leu Leu Leu Lys Gly Arg Ala Leu Val Gly
625                 630                 635                 640

Thr Val Asn Glu Ala Gly Glu Thr Ala Leu Asp Ile Ala Arg Lys Lys
                645                 650                 655

His His Lys Glu Cys Glu Glu Leu Leu Glu Gln Ala Gln Ala Gly Thr
            660                 665                 670

Phe Ala Phe Pro Leu His Val Asp Tyr Ser Trp Val Ile Ser Thr Glu
        675                 680                 685
```

```
Pro Gly Ser Asp Ser Glu Glu Asp Glu Glu Glu Lys Arg Cys Leu Leu
    690                 695                 700

Lys Leu Pro Ala Gln Ala His Trp Ala Ser Gly Arg Leu Asp Ile Ser
705                 710                 715                 720

Asn Lys Thr Tyr Glu Thr Val Ala Ser Leu Gly Ala Ala Thr Pro Gln
                725                 730                 735

Gly Glu Ser Glu Asp Cys Pro Pro Pro Leu Pro Val Lys Asn Ser Ser
            740                 745                 750

Arg Thr Leu Val Gln Gly Cys Ala Arg His Ala Ser Gly Asp Arg Ser
        755                 760                 765

Glu Val Ser Ser Leu Ser Ser Glu Ala Pro Glu Thr Pro Glu Ser Leu
    770                 775                 780

Gly Ser Pro Ala Ser Ser Ser Ser Leu Met Ser Pro Leu Glu Pro Gly
785                 790                 795                 800

Asp Pro Ser Gln Ala Pro Pro Asn Ser Glu Glu Gly Leu Arg Glu Pro
                805                 810                 815

Pro Gly Thr Ser Arg Pro Ser Leu Thr Ser Gly Thr Thr Pro Ser Glu
            820                 825                 830

Met Tyr Leu Pro Val Arg Phe Ser Ser Glu Ser Thr Arg Ser Tyr Arg
        835                 840                 845

Arg Gly Ala Arg Ser Pro Glu Asp Gly Pro Ser Ala Arg Gln Pro Leu
    850                 855                 860

Pro Arg Arg Asn Val Pro Val Gly Ile Thr Glu Gly Asp Gly Ser Arg
865                 870                 875                 880

Thr Gly Ser Leu Pro Ala Ser Ser Val Gln Leu Leu Gln Asp
                885                 890
```

<210> 6167
<211> 120
<212> PRT

<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1337; "

<220>
<221> source
<223> /note="Gene Symbol: ASAP3; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with SH3 domain, ankyrin repeat and PH domain
3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000489094"

<400> 6167
Tyr Leu Leu Lys Ala Gly Glu Ser Gln Met Lys Gln Gly Pro Asp Phe
1 5 10 15

Leu Gln Ser Leu Ile Lys Phe Phe His Ala Gln His Asn Phe Phe Gln
20 25 30

Asp Gly Trp Lys Ala Ala Gln Ser Leu Phe Pro Phe Ile Glu Lys Leu
35 40 45

Ala Ala Ser Val His Ala Leu His Gln Ala Gln Glu Asp Glu Leu Gln
50 55 60

Lys Leu Thr Gln Leu Arg Asp Ser Leu Arg Gly Thr Leu Gln Leu Glu
65 70 75 80

Ser Arg Glu Glu His Leu Ser Arg Lys Asn Ser Gly Cys Gly Tyr Ser
85 90 95

Ile His Gln His Gln Gly Asn Lys Gln Phe Gly Thr Glu Lys Val Gly
100 105 110

Phe Leu Tyr Lys Lys Ser Asp Gly
115 120

<210> 6168
<211> 157
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1337; "

<220>
<221> source
<223> /note="Gene Symbol: ASAP3; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with SH3 domain, ankyrin repeat and PH domain
3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000489187"

<400> 6168

```
Met Pro Glu Gln Phe Ser Val Ala Glu Phe Leu Ala Val Thr Ala Glu
1               5                  10                  15

Asp Leu Ser Ser Pro Ala Gly Ala Ala Ala Phe Ala Ala Lys Met Pro
            20                  25                  30

Arg Tyr Arg Gly Ala Ala Leu Ala Arg Glu Glu Ile Leu Glu Gly Asp
        35                  40                  45

Gln Ala Ile Leu Gln Arg Ile Lys Lys Ala Val Arg Ala Ile His Ser
    50                  55                  60

Ser Gly Leu Gly His Val Glu Asn Glu Glu Gln Tyr Arg Glu Ala Val
65                  70                  75                  80

Glu Ser Leu Gly Asn Ser His Leu Ser Gln Asn Ser His Glu Leu Ser
                85                  90                  95

Thr Gly Phe Leu Asn Leu Ala Val Phe Thr Arg Glu Val Ala Ala Leu
            100                 105                 110

Phe Lys Asn Leu Ile Gln Asn Leu Asn Asn Ile Val Ser Phe Pro Leu
        115                 120                 125

Asp Ser Leu Met Lys Gly Gln Leu Arg Asp Gly Arg Gln Asp Ser Lys
    130                 135                 140

Lys Gln Leu Glu Lys Ala Trp Lys Asp Tyr Glu Ala Lys
```

145 150 155

<210> 6169
<211> 124
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1337; "

<220>
<221> source
<223> /note="Gene Symbol: ASAP3; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with SH3 domain, ankyrin repeat and PH domain
3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000489344"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6169
Xaa Arg Phe Ser Arg Met Gln Ser Leu Thr Leu Asp Leu Leu Gly Pro
1 5 10 15

Ser Glu Leu Leu Leu Ala Leu Asn Met Gly Asn Thr Ser Phe Asn Glu
20 25 30

Val Met Glu Ala Gln Leu Pro Ser His Gly Gly Pro Lys Pro Ser Ala
35 40 45

Glu Ser Asp Met Gly Thr Arg Arg Asp Tyr Ile Met Ala Lys Tyr Val
50 55 60

Glu His Arg Phe Ala Arg Arg Cys Thr Pro Glu Pro Gln Arg Leu Trp
65 70 75 80

Thr Ala Ile Cys Asn Arg Asp Leu Leu Ser Val Leu Glu Ala Phe Ala
85 90 95

```
Asn Gly Gln Asp Phe Gly Gln Pro Leu Pro Gly Pro Asp Ala Gln Val
            100                 105                 110

Arg Thr Pro Pro Arg Ala Thr Tyr Asn Pro Pro Val
        115                 120
```

<210> 6170
<211> 202
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1337; "

<220>
<221> source
<223> /note="Gene Symbol: ASAP3; "

<220>
<221> source
<223> /note="Gene Name:
ArfGAP with SH3 domain, ankyrin repeat and PH domain
3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000489432"

<400> 6170

```
Met Pro Glu Gln Phe Ser Val Ala Glu Phe Leu Ala Val Thr Ala Glu
1               5                   10                  15

Asp Leu Ser Ser Pro Ala Gly Ala Ala Ala Phe Ala Ala Lys Met Pro
            20                  25                  30

Arg Tyr Arg Gly Ala Ala Leu Ala Arg Glu Glu Ile Leu Glu Gly Asp
        35                  40                  45

Gln Ala Ile Leu Gln Arg Ile Lys Lys Ala Val Arg Ala Ile His Ser
    50                  55                  60

Ser Gly Leu Gly His Val Glu Asn Glu Glu Gln Tyr Arg Glu Ala Val
65                  70                  75                  80

Glu Ser Leu Gly Asn Ser His Leu Ser Gln Asn Ser His Glu Leu Ser
                85                  90                  95

Thr Gly Phe Leu Asn Leu Ala Val Phe Thr Arg Glu Val Ala Ala Leu
```

```
            100                 105                 110

Phe Lys Asn Leu Ile Gln Asn Leu Asn Asn Ile Val Ser Phe Pro Leu
        115                 120                 125

Asp Ser Leu Met Lys Gly Gln Leu Arg Asp Gly Arg Gln Asp Ser Lys
    130                 135                 140

Lys Gln Leu Glu Lys Ala Trp Lys Asp Tyr Glu Ala Lys Met Ala Lys
145                 150                 155                 160

Leu Glu Lys Glu Arg Asp Arg Ala Arg Val Thr Gly Gly Ile Pro Gly
                165                 170                 175

Asn Leu Gly Ile Pro Ala Lys Pro His Pro Thr Leu Lys Arg Ala Ser
            180                 185                 190

Glu Ser Pro Gln Ala Pro Pro Asp Pro Ala
        195                 200


<210> 6171
<211> 203
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1337; "

<220>
<221> source
<223> /note="Gene Symbol: ASAP3; "

<220>
<221> source
<223> /note="Gene Name:
      ArfGAP with SH3 domain, ankyrin repeat and PH domain
      3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000489483"

<400> 6171
Leu Glu Gln Ala Gln Ala Gly Thr Phe Ala Phe Pro Leu His Val Asp
1               5                   10                  15

Tyr Ser Trp Val Ile Ser Thr Glu Pro Gly Ser Asp Ser Glu Glu Asp
            20                  25                  30
```

```
Glu Glu Glu Lys Arg Cys Leu Leu Lys Leu Pro Ala Gln Ala His Trp
        35                  40                  45

Ala Ser Gly Arg Leu Asp Ile Ser Asn Lys Thr Tyr Glu Thr Val Ala
    50                  55                  60

Ser Leu Gly Ala Ala Thr Pro Gln Gly Glu Asn Arg Ser Glu Val Ser
65                  70                  75                  80

Ser Leu Ser Ser Glu Ala Pro Glu Thr Pro Glu Ser Leu Gly Ser Pro
                85                  90                  95

Ala Ser Ser Ser Ser Leu Met Ser Pro Leu Glu Pro Gly Asp Pro Ser
            100                 105                 110

Gln Ala Pro Pro Asn Ser Glu Glu Gly Leu Arg Glu Pro Pro Gly Thr
        115                 120                 125

Ser Arg Pro Ser Leu Thr Ser Gly Thr Thr Pro Ser Glu Met Tyr Leu
    130                 135                 140

Pro Val Arg Phe Ser Ser Glu Ser Thr Arg Ser Tyr Arg Arg Gly Ala
145                 150                 155                 160

Arg Ser Pro Glu Asp Gly Pro Ser Ala Arg Gln Pro Leu Pro Arg Arg
                165                 170                 175

Asn Val Pro Val Gly Ile Thr Glu Gly Asp Gly Ser Arg Thr Gly Ser
            180                 185                 190

Leu Pro Ala Ser Ser Val Gln Leu Leu Gln Asp
        195                 200


<210> 6172
<211> 44
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1337; "

<220>
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<223> /note="Gene Symbol: ASAP3; "

<220>
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<223> /note="Gene Name:
ArfGAP with SH3 domain, ankyrin repeat and PH domain
3; "

<220>
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<223> /note="ENSP ID: ENSP00000489485"

<400> 6172
Met Pro Glu Gln Phe Ser Val Ala Glu Phe Leu Ala Val Thr Ala Glu
1 5 10 15

Asp Leu Ser Ser Pro Ala Gly Ala Ala Ala Phe Ala Ala Lys Met Pro
20 25 30

Arg Ser Trp Lys Glu Thr Lys Pro Ser Cys Arg Glu
35 40

<210> 6173
<211> 2177
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1338; "

<220>
<221> source
<223> /note="Gene Symbol: ARFGEF3; "

<220>
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<223> /note="Gene Name:
ARFGEF family
member 3; "

<220>
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<223> /note="Uniprot ID: Q5TH69; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000251691"

<400> 6173
Met Glu Glu Ile Leu Arg Lys Leu Gln Lys Glu Ala Ser Gly Ser Lys
1 5 10 15

```
Tyr Lys Ala Ile Lys Glu Ser Cys Thr Trp Ala Leu Glu Thr Leu Gly
            20                  25                  30

Gly Leu Asp Thr Ile Val Lys Ile Pro Pro His Val Leu Arg Glu Lys
        35                  40                  45

Cys Leu Leu Pro Leu Gln Leu Ala Leu Glu Ser Lys Asn Val Lys Leu
    50                  55                  60

Ala Gln His Ala Leu Ala Gly Met Gln Lys Leu Leu Ser Glu Glu Arg
65                  70                  75                  80

Phe Val Ser Met Glu Thr Asp Ser Asp Glu Lys Gln Leu Leu Asn Gln
                85                  90                  95

Ile Leu Asn Ala Val Lys Val Thr Pro Ser Leu Asn Glu Asp Leu Gln
            100                 105                 110

Val Glu Val Met Lys Val Leu Leu Cys Ile Thr Tyr Thr Pro Thr Phe
        115                 120                 125

Asp Leu Asn Gly Ser Ala Val Leu Lys Ile Ala Glu Val Cys Ile Glu
    130                 135                 140

Thr Tyr Ile Ser Ser Cys His Gln Arg Ser Ile Asn Thr Ala Val Arg
145                 150                 155                 160

Ala Thr Leu Ser Gln Met Leu Ser Asp Leu Thr Leu Gln Leu Arg Gln
                165                 170                 175

Arg Gln Glu Asn Thr Ile Ile Glu Asn Pro Asp Val Pro Gln Asp Phe
            180                 185                 190

Gly Asn Gln Gly Ser Thr Val Glu Ser Leu Cys Asp Asp Val Val Ser
        195                 200                 205

Val Leu Thr Val Leu Cys Glu Lys Leu Gln Ala Ala Ile Asn Asp Ser
    210                 215                 220

Gln Gln Leu Gln Leu Leu Tyr Leu Glu Cys Ile Leu Ser Val Leu Ser
225                 230                 235                 240

Ser Ser Ser Ser Ser Met His Leu His Arg Arg Phe Thr Asp Leu Ile
```

245 250 255

Trp Lys Asn Leu Cys Pro Ala Leu Ile Val Ile Leu Gly Asn Pro Ile
260 265 270

His Asp Lys Thr Ile Thr Ser Ala His Thr Ser Ser Thr Ser Thr Ser
275 280 285

Leu Glu Ser Asp Ser Ala Ser Pro Gly Val Ser Asp His Gly Arg Gly
290 295 300

Ser Gly Cys Ser Cys Thr Ala Pro Ala Leu Ser Gly Pro Val Ala Arg
305 310 315 320

Thr Ile Tyr Tyr Ile Ala Ala Glu Leu Val Arg Leu Val Gly Ser Val
325 330 335

Asp Ser Met Lys Pro Val Leu Gln Ser Leu Tyr His Arg Val Leu Leu
340 345 350

Tyr Pro Pro Pro Gln His Arg Val Glu Ala Ile Lys Ile Met Lys Glu
355 360 365

Ile Leu Gly Ser Pro Gln Arg Leu Cys Asp Leu Ala Gly Pro Ser Ser
370 375 380

Thr Glu Ser Glu Ser Arg Lys Arg Ser Ile Ser Lys Arg Lys Ser His
385 390 395 400

Leu Asp Leu Leu Lys Leu Ile Met Asp Gly Met Thr Glu Ala Cys Ile
405 410 415

Lys Gly Gly Ile Glu Ala Cys Tyr Ala Ala Val Ser Cys Val Cys Thr
420 425 430

Leu Leu Gly Ala Leu Asp Glu Leu Ser Gln Gly Lys Gly Leu Ser Glu
435 440 445

Gly Gln Val Gln Leu Leu Leu Leu Arg Leu Glu Glu Leu Lys Asp Gly
450 455 460

Ala Glu Trp Ser Arg Asp Ser Met Glu Ile Asn Glu Ala Asp Phe Arg
465 470 475 480

```
Trp Gln Arg Arg Val Leu Ser Ser Glu His Thr Pro Trp Glu Ser Gly
                485                 490                 495

Asn Glu Arg Ser Leu Asp Ile Ser Ile Ser Val Thr Thr Asp Thr Gly
            500                 505                 510

Gln Thr Thr Leu Glu Gly Glu Leu Gly Gln Thr Thr Pro Glu Asp His
        515                 520                 525

Ser Gly Asn His Lys Asn Ser Leu Lys Ser Pro Ala Ile Pro Glu Gly
    530                 535                 540

Lys Glu Thr Leu Ser Lys Val Leu Glu Thr Glu Ala Val Asp Gln Pro
545                 550                 555                 560

Asp Val Val Gln Arg Ser His Thr Val Pro Tyr Pro Asp Ile Thr Asn
                565                 570                 575

Phe Leu Ser Val Asp Cys Arg Thr Arg Ser Tyr Gly Ser Arg Tyr Ser
            580                 585                 590

Glu Ser Asn Phe Ser Val Asp Asp Gln Asp Leu Ser Arg Thr Glu Phe
        595                 600                 605

Asp Ser Cys Asp Gln Tyr Ser Met Ala Ala Glu Lys Asp Ser Gly Arg
    610                 615                 620

Ser Asp Val Ser Asp Ile Gly Ser Asp Asn Cys Ser Leu Ala Asp Glu
625                 630                 635                 640

Glu Gln Thr Pro Arg Asp Cys Leu Gly His Arg Ser Leu Arg Thr Ala
                645                 650                 655

Ala Leu Ser Leu Lys Leu Leu Lys Asn Gln Glu Ala Asp Gln His Ser
            660                 665                 670

Ala Arg Leu Phe Ile Gln Ser Leu Glu Gly Leu Leu Pro Arg Leu Leu
        675                 680                 685

Ser Leu Ser Asn Val Glu Glu Val Asp Thr Ala Leu Gln Asn Phe Ala
    690                 695                 700
```

Ser Thr Phe Cys Ser Gly Met Met His Ser Pro Gly Phe Asp Gly Asn
705 710 715 720

Ser Ser Leu Ser Phe Gln Met Leu Met Asn Ala Asp Ser Leu Tyr Thr
725 730 735

Ala Ala His Cys Ala Leu Leu Leu Asn Leu Lys Leu Ser His Gly Asp
740 745 750

Tyr Tyr Arg Lys Arg Pro Thr Leu Ala Pro Gly Val Met Lys Asp Phe
755 760 765

Met Lys Gln Val Gln Thr Ser Gly Val Leu Met Val Phe Ser Gln Ala
770 775 780

Trp Ile Glu Glu Leu Tyr His Gln Val Leu Asp Arg Asn Met Leu Gly
785 790 795 800

Glu Ala Gly Tyr Trp Gly Ser Pro Glu Asp Asn Ser Leu Pro Leu Ile
805 810 815

Thr Met Leu Thr Asp Ile Asp Gly Leu Glu Ser Ser Ala Ile Gly Gly
820 825 830

Gln Leu Met Ala Ser Ala Ala Thr Glu Ser Pro Phe Ala Gln Ser Arg
835 840 845

Arg Ile Asp Asp Ser Thr Val Ala Gly Val Ala Phe Ala Arg Tyr Ile
850 855 860

Leu Val Gly Cys Trp Lys Asn Leu Ile Asp Thr Leu Ser Thr Pro Leu
865 870 875 880

Thr Gly Arg Met Ala Gly Ser Ser Lys Gly Leu Ala Phe Ile Leu Gly
885 890 895

Ala Glu Gly Ile Lys Glu Gln Asn Gln Lys Glu Arg Asp Ala Ile Cys
900 905 910

Met Ser Leu Asp Gly Leu Arg Lys Ala Ala Arg Leu Ser Cys Ala Leu
915 920 925

```
Gly Val Ala Ala Asn Cys Ala Ser Ala Leu Ala Gln Met Ala Ala Ala
    930                 935                 940

Ser Cys Val Gln Glu Glu Lys Glu Glu Arg Glu Ala Gln Glu Pro Ser
945                 950                 955                 960

Asp Ala Ile Thr Gln Val Lys Leu Lys Val Glu Gln Lys Leu Glu Gln
                965                 970                 975

Ile Gly Lys Val Gln Gly Val Trp Leu His Thr Ala His Val Leu Cys
            980                 985                 990

Met Glu Ala Ile Leu Ser Val Gly  Leu Glu Met Gly Ser  His Asn
Pro
        995                 1000                1005

Asp Cys  Trp Pro His Val Phe  Arg Val Cys Glu Tyr  Val Gly Thr
    1010                1015                1020

Leu Glu  His Asn His Phe Ser  Asp Gly Ala Ser Gln  Pro Pro Leu
    1025                1030                1035

Thr Ile  Ser Gln Pro Gln Lys  Ala Thr Gly Ser Ala  Gly Leu Leu
    1040                1045                1050

Gly Asp  Pro Glu Cys Glu Gly  Ser Pro Pro Glu His  Ser Pro Glu
    1055                1060                1065

Gln Gly  Arg Ser Leu Ser Thr  Ala Pro Val Val Gln  Pro Leu Ser
    1070                1075                1080

Ile Gln  Asp Leu Val Arg Glu  Gly Ser Arg Gly Arg  Ala Ser Asp
    1085                1090                1095

Phe Arg  Gly Gly Ser Leu Met  Ser Gly Ser Ser Ala  Ala Lys Val
    1100                1105                1110

Val Leu  Thr Leu Ser Thr Gln  Ala Asp Arg Leu Phe  Glu Asp Ala
    1115                1120                1125

Thr Asp  Lys Leu Asn Leu Met  Ala Leu Gly Gly Phe  Leu Tyr Gln
    1130                1135                1140
```

Leu Lys Lys Ala Ser Gln Ser Gln Leu Phe His Ser Val Thr Asp
1145 1150 1155

Thr Val Asp Tyr Ser Leu Ala Met Pro Gly Glu Val Lys Ser Thr
1160 1165 1170

Gln Asp Arg Lys Ser Ala Leu His Leu Phe Arg Leu Gly Asn Ala
1175 1180 1185

Met Leu Arg Ile Val Arg Ser Lys Ala Arg Pro Leu Leu His Val
1190 1195 1200

Met Arg Cys Trp Ser Leu Val Ala Pro His Leu Val Glu Ala Ala
1205 1210 1215

Cys His Lys Glu Arg His Val Ser Gln Lys Ala Val Ser Phe Ile
1220 1225 1230

His Asp Ile Leu Thr Glu Val Leu Thr Asp Trp Asn Glu Pro Pro
1235 1240 1245

His Phe His Phe Asn Glu Ala Leu Phe Arg Pro Phe Glu Arg Ile
1250 1255 1260

Met Gln Leu Glu Leu Cys Asp Glu Asp Val Gln Asp Gln Val Val
1265 1270 1275

Thr Ser Ile Gly Glu Leu Val Glu Val Cys Ser Thr Gln Ile Gln
1280 1285 1290

Ser Gly Trp Arg Pro Leu Phe Ser Ala Leu Glu Thr Val His Gly
1295 1300 1305

Gly Asn Lys Ser Glu Met Lys Glu Tyr Leu Val Gly Asp Tyr Ser
1310 1315 1320

Met Gly Lys Gly Gln Ala Pro Val Phe Asp Val Phe Glu Ala Phe
1325 1330 1335

Leu Asn Thr Asp Asn Ile Gln Val Phe Ala Asn Ala Ala Thr Ser
1340 1345 1350

Tyr Ile Met Cys Leu Met Lys Phe Val Lys Gly Leu Gly Glu Val

1355 1360 1365

Asp Cys Lys Glu Ile Gly Asp Cys Ala Pro Ala Pro Gly Ala Pro
1370 1375 1380

Ser Thr Asp Leu Cys Leu Pro Ala Leu Asp Tyr Leu Arg Arg Cys
1385 1390 1395

Ser Gln Leu Leu Ala Lys Ile Tyr Lys Met Pro Leu Lys Pro Ile
1400 1405 1410

Phe Leu Ser Gly Arg Leu Ala Gly Leu Pro Arg Arg Leu Gln Glu
1415 1420 1425

Gln Ser Ala Ser Ser Glu Asp Gly Ile Glu Ser Val Leu Ser Asp
1430 1435 1440

Phe Asp Asp Asp Thr Gly Leu Ile Glu Val Trp Ile Ile Leu Leu
1445 1450 1455

Glu Gln Leu Thr Ala Ala Val Ser Asn Cys Pro Arg Gln His Gln
1460 1465 1470

Pro Pro Thr Leu Asp Leu Leu Phe Glu Leu Leu Arg Asp Val Thr
1475 1480 1485

Lys Thr Pro Gly Pro Gly Phe Gly Ile Tyr Ala Val Val His Leu
1490 1495 1500

Leu Leu Pro Val Met Ser Val Trp Leu Arg Arg Ser His Lys Asp
1505 1510 1515

His Ser Tyr Trp Asp Met Ala Ser Ala Asn Phe Lys His Ala Ile
1520 1525 1530

Gly Leu Ser Cys Glu Leu Val Val Glu His Ile Gln Ser Phe Leu
1535 1540 1545

His Ser Asp Ile Arg Tyr Glu Ser Met Ile Asn Thr Met Leu Lys
1550 1555 1560

Asp Leu Phe Glu Leu Leu Val Ala Cys Val Ala Lys Pro Thr Glu
1565 1570 1575

```
Thr Ile  Ser Arg Val Gly Cys  Ser Cys Ile Arg Tyr  Val Leu Val
    1580                1585                1590

Thr Ala  Gly Pro Val Phe Thr  Glu Glu Met Trp Arg  Leu Ala Cys
    1595                1600                1605

Cys Ala  Leu Gln Asp Ala Phe  Ser Ala Thr Leu Lys  Pro Val Lys
    1610                1615                1620

Asp Leu  Leu Gly Cys Phe His  Ser Gly Thr Glu Ser  Phe Ser Gly
    1625                1630                1635

Glu Gly  Cys Gln Val Arg Val  Ala Ala Pro Ser Ser  Ser Pro Ser
    1640                1645                1650

Ala Glu  Ala Glu Tyr Trp Arg  Ile Arg Ala Met Ala  Gln Gln Val
    1655                1660                1665

Phe Met  Leu Asp Thr Gln Cys  Ser Pro Lys Thr Pro  Asn Asn Phe
    1670                1675                1680

Asp His  Ala Gln Ser Cys Gln  Leu Ile Ile Glu Leu  Pro Pro Asp
    1685                1690                1695

Glu Lys  Pro Asn Gly His Thr  Lys Lys Ser Val Ser  Phe Arg Glu
    1700                1705                1710

Ile Val  Val Ser Leu Leu Ser  His Gln Val Leu Leu  Gln Asn Leu
    1715                1720                1725

Tyr Asp  Ile Leu Leu Glu Glu  Phe Val Lys Gly Pro  Ser Pro Gly
    1730                1735                1740

Glu Glu  Lys Thr Ile Gln Val  Pro Glu Ala Lys Leu  Ala Gly Phe
    1745                1750                1755

Leu Arg  Tyr Ile Ser Met Gln  Asn Leu Ala Val Ile  Phe Asp Leu
    1760                1765                1770

Leu Leu  Asp Ser Tyr Arg Thr  Ala Arg Glu Phe Asp  Thr Ser Pro
    1775                1780                1785
```

```
Gly Leu  Lys Cys Leu Leu Lys  Lys Val Ser Gly Ile  Gly Gly Ala
    1790                 1795                 1800

Ala Asn  Leu Tyr Arg Gln Ser  Ala Met Ser Phe Asn  Ile Tyr Phe
    1805                 1810                 1815

His Ala  Leu Val Cys Ala Val  Leu Thr Asn Gln Glu  Thr Ile Thr
    1820                 1825                 1830

Ala Glu  Gln Val Lys Lys Val  Leu Phe Glu Asp Asp  Glu Arg Ser
    1835                 1840                 1845

Thr Asp  Ser Ser Gln Gln Cys  Ser Ser Glu Asp Glu  Asp Ile Phe
    1850                 1855                 1860

Glu Glu  Thr Ala Gln Val Ser  Pro Pro Arg Gly Lys  Glu Lys Arg
    1865                 1870                 1875

Gln Trp  Arg Ala Arg Met Pro  Leu Leu Ser Val Gln  Pro Val Ser
    1880                 1885                 1890

Asn Ala  Asp Trp Val Trp Leu  Val Lys Arg Leu His  Lys Leu Cys
    1895                 1900                 1905

Met Glu  Leu Cys Asn Asn Tyr  Ile Gln Met His Leu  Asp Leu Glu
    1910                 1915                 1920

Asn Cys  Met Glu Glu Pro Pro  Ile Phe Lys Gly Asp  Pro Phe Phe
    1925                 1930                 1935

Ile Leu  Pro Ser Phe Gln Ser  Glu Ser Ser Thr Pro  Ser Thr Gly
    1940                 1945                 1950

Gly Phe  Ser Gly Lys Glu Thr  Pro Ser Glu Asp Asp  Arg Ser Gln
    1955                 1960                 1965

Ser Arg  Glu His Met Gly Glu  Ser Leu Ser Leu Lys  Ala Gly Gly
    1970                 1975                 1980

Gly Asp  Leu Leu Leu Pro Pro  Ser Pro Lys Val Glu  Lys Lys Asp
    1985                 1990                 1995
```

```
Pro Ser  Arg Lys Lys Glu Trp  Trp Glu Asn Ala Gly  Asn Lys Ile
    2000                2005                2010

Tyr Thr  Met Ala Ala Asp Lys  Thr Ile Ser Lys Leu  Met Thr Glu
    2015                2020                2025

Tyr Lys  Lys Arg Lys Gln Gln  His Asn Leu Ser Ala  Phe Pro Lys
    2030                2035                2040

Glu Val  Lys Val Glu Lys Lys  Gly Glu Pro Leu Gly  Pro Arg Gly
    2045                2050                2055

Gln Asp  Ser Pro Leu Leu Gln  Arg Pro Gln His Leu  Met Asp Gln
    2060                2065                2070

Gly Gln  Met Arg His Ser Phe  Ser Ala Gly Pro Glu  Leu Leu Arg
    2075                2080                2085

Gln Asp  Lys Arg Pro Arg Ser  Gly Ser Thr Gly Ser  Ser Leu Ser
    2090                2095                2100

Val Ser  Val Arg Asp Ala Glu  Ala Gln Ile Gln Ala  Trp Thr Asn
    2105                2110                2115

Met Val  Leu Thr Val Leu Asn  Gln Ile Gln Ile Leu  Pro Asp Gln
    2120                2125                2130

Thr Phe  Thr Ala Leu Gln Pro  Ala Val Phe Pro Cys  Ile Ser Gln
    2135                2140                2145

Leu Thr  Cys His Val Thr Asp  Ile Arg Val Arg Gln  Ala Val Arg
    2150                2155                2160

Glu Trp  Leu Gly Arg Val Gly  Arg Val Tyr Asp Ile  Ile Val
    2165                2170                2175


<210> 6174
<211> 330
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1339; "
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<220>
<221> source
<223> /note="Gene Symbol: ARG1; "

<220>
<221> source
<223> /note="Gene Name:
arginase 1; "

<220>
<221> source
<223> /note="Uniprot ID: P05089; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000349446"

<400> 6174

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Met Ser Ala Lys Ser Arg Thr Ile Gly Ile Ile Gly Ala Pro Phe Ser
1               5                  10                  15

Lys Gly Gln Pro Arg Gly Gly Val Glu Glu Gly Pro Thr Val Leu Arg
            20                  25                  30

Lys Ala Gly Leu Leu Glu Lys Leu Lys Glu Gln Val Thr Gln Asn Phe
        35                  40                  45

Leu Ile Leu Glu Cys Asp Val Lys Asp Tyr Gly Asp Leu Pro Phe Ala
    50                  55                  60

Asp Ile Pro Asn Asp Ser Pro Phe Gln Ile Val Lys Asn Pro Arg Ser
65                  70                  75                  80

Val Gly Lys Ala Ser Glu Gln Leu Ala Gly Lys Val Ala Glu Val Lys
                85                  90                  95

Lys Asn Gly Arg Ile Ser Leu Val Leu Gly Gly Asp His Ser Leu Ala
            100                 105                 110

Ile Gly Ser Ile Ser Gly His Ala Arg Val His Pro Asp Leu Gly Val
        115                 120                 125

Ile Trp Val Asp Ala His Thr Asp Ile Asn Thr Pro Leu Thr Thr Thr
    130                 135                 140

Ser Gly Asn Leu His Gly Gln Pro Val Ser Phe Leu Leu Lys Glu Leu
145                 150                 155                 160
```

```
Lys Gly Lys Ile Pro Asp Val Pro Gly Phe Ser Trp Val Thr Pro Cys
                165                 170                 175

Ile Ser Ala Lys Asp Ile Val Tyr Ile Gly Leu Arg Asp Val Asp Pro
            180                 185                 190

Gly Glu His Tyr Ile Leu Lys Thr Leu Gly Ile Lys Tyr Phe Ser Met
        195                 200                 205

Thr Glu Val Asp Arg Leu Gly Ile Gly Lys Val Met Glu Glu Thr Leu
    210                 215                 220

Ser Tyr Leu Leu Gly Arg Lys Lys Arg Pro Ile His Leu Ser Phe Asp
225                 230                 235                 240

Val Asp Gly Leu Asp Pro Ser Phe Thr Pro Ala Thr Gly Thr Pro Val
                245                 250                 255

Val Gly Gly Leu Thr Tyr Arg Glu Gly Leu Tyr Ile Thr Glu Glu Ile
            260                 265                 270

Tyr Lys Thr Gly Leu Leu Ser Gly Leu Asp Ile Met Glu Val Asn Pro
        275                 280                 285

Ser Leu Gly Lys Thr Pro Glu Glu Val Thr Arg Thr Val Asn Thr Ala
    290                 295                 300

Val Ala Ile Thr Leu Ala Cys Phe Gly Leu Ala Arg Glu Gly Asn His
305                 310                 315                 320

Lys Pro Ile Asp Tyr Leu Asn Pro Pro Lys
                325                 330


<210> 6175
<211> 322
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1339; "

<220>
<221> source
<223> /note="Gene Symbol: ARG1; "
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<220>
<221> source
<223> /note="Gene Name:
arginase 1; "

<220>
<221> source
<223> /note="Uniprot ID: P05089; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000357066"

<400> 6175

```
Met Ser Ala Lys Ser Arg Thr Ile Gly Ile Ile Gly Ala Pro Phe Ser
1               5                  10                  15

Lys Gly Gln Pro Arg Gly Gly Val Glu Glu Gly Pro Thr Val Leu Arg
            20                  25                  30

Lys Ala Gly Leu Leu Glu Lys Leu Lys Glu Gln Glu Cys Asp Val Lys
        35                  40                  45

Asp Tyr Gly Asp Leu Pro Phe Ala Asp Ile Pro Asn Asp Ser Pro Phe
    50                  55                  60

Gln Ile Val Lys Asn Pro Arg Ser Val Gly Lys Ala Ser Glu Gln Leu
65                  70                  75                  80

Ala Gly Lys Val Ala Glu Val Lys Lys Asn Gly Arg Ile Ser Leu Val
                85                  90                  95

Leu Gly Gly Asp His Ser Leu Ala Ile Gly Ser Ile Ser Gly His Ala
            100                 105                 110

Arg Val His Pro Asp Leu Gly Val Ile Trp Val Asp Ala His Thr Asp
        115                 120                 125

Ile Asn Thr Pro Leu Thr Thr Thr Ser Gly Asn Leu His Gly Gln Pro
    130                 135                 140

Val Ser Phe Leu Leu Lys Glu Leu Lys Gly Lys Ile Pro Asp Val Pro
145                 150                 155                 160

Gly Phe Ser Trp Val Thr Pro Cys Ile Ser Ala Lys Asp Ile Val Tyr
                165                 170                 175
```

```
Ile Gly Leu Arg Asp Val Asp Pro Gly Glu His Tyr Ile Leu Lys Thr
            180                 185                 190

Leu Gly Ile Lys Tyr Phe Ser Met Thr Glu Val Asp Arg Leu Gly Ile
        195                 200                 205

Gly Lys Val Met Glu Glu Thr Leu Ser Tyr Leu Leu Gly Arg Lys Lys
    210                 215                 220

Arg Pro Ile His Leu Ser Phe Asp Val Asp Gly Leu Asp Pro Ser Phe
225                 230                 235                 240

Thr Pro Ala Thr Gly Thr Pro Val Val Gly Gly Leu Thr Tyr Arg Glu
                245                 250                 255

Gly Leu Tyr Ile Thr Glu Glu Ile Tyr Lys Thr Gly Leu Leu Ser Gly
            260                 265                 270

Leu Asp Ile Met Glu Val Asn Pro Ser Leu Gly Lys Thr Pro Glu Glu
        275                 280                 285

Val Thr Arg Thr Val Asn Thr Ala Val Ala Ile Thr Leu Ala Cys Phe
    290                 295                 300

Gly Leu Ala Arg Glu Gly Asn His Lys Pro Ile Asp Tyr Leu Asn Pro
305                 310                 315                 320

Pro Lys
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<210> 6176
<211> 354
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1340; "

<220>
<221> source
<223> /note="Gene Symbol: ARG2; "

<220>
<221> source

<223> /note="Gene Name:
arginase 2; "

<220>
<221> source
<223> /note="Uniprot ID: P78540; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000261783"

<400> 6176

```
Met Ser Leu Arg Gly Ser Leu Ser Arg Leu Leu Gln Thr Arg Val His
1               5                  10                  15

Ser Ile Leu Lys Lys Ser Val His Ser Val Ala Val Ile Gly Ala Pro
            20                  25                  30

Phe Ser Gln Gly Gln Lys Arg Lys Gly Val Glu His Gly Pro Ala Ala
        35                  40                  45

Ile Arg Glu Ala Gly Leu Met Lys Arg Leu Ser Ser Leu Gly Cys His
    50                  55                  60

Leu Lys Asp Phe Gly Asp Leu Ser Phe Thr Pro Val Pro Lys Asp Asp
65                  70                  75                  80

Leu Tyr Asn Asn Leu Ile Val Asn Pro Arg Ser Val Gly Leu Ala Asn
                85                  90                  95

Gln Glu Leu Ala Glu Val Val Ser Arg Ala Val Ser Asp Gly Tyr Ser
            100                 105                 110

Cys Val Thr Leu Gly Gly Asp His Ser Leu Ala Ile Gly Thr Ile Ser
        115                 120                 125

Gly His Ala Arg His Cys Pro Asp Leu Cys Val Val Trp Val Asp Ala
    130                 135                 140

His Ala Asp Ile Asn Thr Pro Leu Thr Thr Ser Ser Gly Asn Leu His
145                 150                 155                 160

Gly Gln Pro Val Ser Phe Leu Leu Arg Glu Leu Gln Asp Lys Val Pro
                165                 170                 175

Gln Leu Pro Gly Phe Ser Trp Ile Lys Pro Cys Ile Ser Ser Ala Ser
```

```
            180                 185                 190

Ile Val Tyr Ile Gly Leu Arg Asp Val Asp Pro Pro Glu His Phe Ile
        195                 200                 205

Leu Lys Asn Tyr Asp Ile Gln Tyr Phe Ser Met Arg Asp Ile Asp Arg
    210                 215                 220

Leu Gly Ile Gln Lys Val Met Glu Arg Thr Phe Asp Leu Leu Ile Gly
225                 230                 235                 240

Lys Arg Gln Arg Pro Ile His Leu Ser Phe Asp Ile Asp Ala Phe Asp
                245                 250                 255

Pro Thr Leu Ala Pro Ala Thr Gly Thr Pro Val Val Gly Gly Leu Thr
            260                 265                 270

Tyr Arg Glu Gly Met Tyr Ile Ala Glu Glu Ile His Asn Thr Gly Leu
        275                 280                 285

Leu Ser Ala Leu Asp Leu Val Glu Val Asn Pro Gln Leu Ala Thr Ser
    290                 295                 300

Glu Glu Glu Ala Lys Thr Thr Ala Asn Leu Ala Val Asp Val Ile Ala
305                 310                 315                 320

Ser Ser Phe Gly Gln Thr Arg Glu Gly Gly His Ile Val Tyr Asp Gln
                325                 330                 335

Leu Pro Thr Pro Ser Ser Pro Asp Glu Ser Glu Asn Gln Ala Arg Val
            340                 345                 350

Arg Ile
```

<210> 6177
<211> 68
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1341; "

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<221> source
<223> /note="Gene Symbol: ARGLU1; "

<220>
<221> source
<223> /note="Gene Name:
arginine and glutamate rich 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000353844"

<400> 6177
Met Lys Leu Asn Glu Lys Phe Ser Glu Gly Trp Arg Lys Pro Asn Ala
1 5 10 15

Ser Trp Lys Ser Ser Cys Ser Lys Asn Ser Ser Asp Arg Asp Lys Leu
20 25 30

Ser Leu Pro His Lys Lys Leu Glu Arg Gly Ser Trp Arg Val Trp Gln
35 40 45

Pro Arg Ser Thr Leu Cys Arg Thr Leu Asp Lys Thr Glu Glu Glu Arg
50 55 60

Ala Lys Arg Glu
65

<210> 6178
<211> 142
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1341; "

<220>
<221> source
<223> /note="Gene Symbol: ARGLU1; "

<220>
<221> source
<223> /note="Gene Name:
arginine and glutamate rich 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000365092"

<400> 6178
Met Lys Leu Asn Glu Lys Phe Ser Glu Gly Trp Arg Lys Pro Asn Ala

```
1               5                   10                  15

Ser Trp Lys Ser Ser Cys Ser Lys Asn Ser Ser Asp Arg Asp Lys Leu
            20                  25                  30

Ser Leu Pro His Lys Lys Leu Glu Arg Gly Ser Trp Arg Val Trp Gln
        35                  40                  45

Pro Arg Ser Thr Leu Cys Arg Thr Leu Asp Lys Thr Glu Glu Glu Arg
    50                  55                  60

Ala Lys Arg Glu Glu Leu Glu Arg Ile Leu Glu Glu Asn Asn Arg Lys
65                  70                  75                  80

Ile Ala Glu Ala Gln Ala Lys Leu Ala Glu Glu Gln Leu Arg Ile Val
                85                  90                  95

Glu Glu Gln Arg Lys Ile His Glu Glu Arg Met Lys Leu Glu Gln Glu
            100                 105                 110

Arg Gln Arg Gln Gln Lys Glu Glu Gln Lys Ile Ile Leu Gly Lys Gly
        115                 120                 125

Lys Ser Arg Pro Lys Leu Ser Phe Ser Leu Lys Thr Gln Asp
    130                 135                 140


<210> 6179
<211> 273
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1341; "

<220>
<221> source
<223> /note="Gene Symbol: ARGLU1; "

<220>
<221> source
<223> /note="Gene Name:
      arginine and glutamate rich 1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9NWB6; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000383059"

<400> 6179
Met Gly Arg Ser Arg Ser Arg Ser Ser Ser Arg Ser Lys His Thr Lys
1   5   10   15

Ser Ser Lys His Asn Lys Lys Arg Ser Arg Ser Arg Ser Arg Ser Arg
            20   25   30

Asp Lys Glu Arg Val Arg Lys Arg Ser Lys Ser Arg Glu Ser Lys Arg
        35   40   45

Asn Arg Arg Arg Glu Ser Arg Ser Arg Ser Arg Ser Thr Asn Thr Ala
    50   55   60

Val Ser Arg Arg Glu Arg Asp Arg Glu Arg Ala Ser Ser Pro Pro Asp
65   70   75   80

Arg Ile Asp Ile Phe Gly Arg Thr Val Ser Lys Arg Ser Ser Leu Asp
                85   90   95

Glu Lys Gln Lys Arg Glu Glu Glu Glu Lys Lys Ala Glu Phe Glu Arg
            100   105   110

Gln Arg Lys Ile Arg Gln Gln Glu Ile Glu Glu Lys Leu Ile Glu Glu
        115   120   125

Glu Thr Ala Arg Arg Val Glu Glu Leu Val Ala Lys Arg Val Glu Glu
    130   135   140

Glu Leu Glu Lys Arg Lys Asp Glu Ile Glu Arg Glu Val Leu Arg Arg
145   150   155   160

Val Glu Glu Ala Lys Arg Ile Met Glu Lys Gln Leu Leu Glu Glu Leu
                165   170   175

Glu Arg Gln Arg Gln Ala Glu Leu Ala Ala Gln Lys Ala Arg Glu Glu
            180   185   190

Glu Glu Arg Ala Lys Arg Glu Glu Leu Glu Arg Ile Leu Glu Glu Asn
        195   200   205

```
Asn Arg Lys Ile Ala Glu Ala Gln Ala Lys Leu Ala Glu Glu Gln Leu
    210                 215                 220

Arg Ile Val Glu Glu Gln Arg Lys Ile His Glu Glu Arg Met Lys Leu
225                 230                 235                 240

Glu Gln Glu Arg Gln Arg Gln Gln Lys Glu Glu Gln Lys Ile Ile Leu
                245                 250                 255

Gly Lys Gly Lys Ser Arg Pro Lys Leu Ser Phe Ser Leu Lys Thr Gln
            260                 265                 270

Asp
```

<210> 6180
<211> 164
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1342; "

<220>
<221> source
<223> /note="Gene Symbol: AVP; "

<220>
<221> source
<223> /note="Gene Name:
arginine vasopressin; "

<220>
<221> source
<223> /note="Uniprot ID: P01185; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000369647"

<400> 6180

```
Met Pro Asp Thr Met Leu Pro Ala Cys Phe Leu Gly Leu Leu Ala Phe
1               5                   10                  15

Ser Ser Ala Cys Tyr Phe Gln Asn Cys Pro Arg Gly Gly Lys Arg Ala
            20                  25                  30

Met Ser Asp Leu Glu Leu Arg Gln Cys Leu Pro Cys Gly Pro Gly Gly
        35                  40                  45
```

```
Lys Gly Arg Cys Phe Gly Pro Ser Ile Cys Cys Ala Asp Glu Leu Gly
    50                  55                  60

Cys Phe Val Gly Thr Ala Glu Ala Leu Arg Cys Gln Glu Glu Asn Tyr
65                  70                  75                  80

Leu Pro Ser Pro Cys Gln Ser Gly Gln Lys Ala Cys Gly Ser Gly Gly
                85                  90                  95

Arg Cys Ala Ala Phe Gly Val Cys Cys Asn Asp Glu Ser Cys Val Thr
            100                 105                 110

Glu Pro Glu Cys Arg Glu Gly Phe His Arg Arg Ala Arg Ala Ser Asp
        115                 120                 125

Arg Ser Asn Ala Thr Gln Leu Asp Gly Pro Ala Gly Ala Leu Leu Leu
    130                 135                 140

Arg Leu Val Gln Leu Ala Gly Ala Pro Glu Pro Phe Glu Pro Ala Gln
145                 150                 155                 160

Pro Asp Ala Tyr
```

<210> 6181
<211> 418
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1343; "

<220>
<221> source
<223> /note="Gene Symbol: AVPR1A; "

<220>
<221> source
<223> /note="Gene Name:
arginine vasopressin receptor 1A; "

<220>
<221> source
<223> /note="Uniprot ID: P37288; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000299178"

<400> 6181
Met Arg Leu Ser Ala Gly Pro Asp Ala Gly Pro Ser Gly Asn Ser Ser
1 5 10 15

Pro Trp Trp Pro Leu Ala Thr Gly Ala Gly Asn Thr Ser Arg Glu Ala
20 25 30

Glu Ala Leu Gly Glu Gly Asn Gly Pro Pro Arg Asp Val Arg Asn Glu
35 40 45

Glu Leu Ala Lys Leu Glu Ile Ala Val Leu Ala Val Thr Phe Ala Val
50 55 60

Ala Val Leu Gly Asn Ser Ser Val Leu Leu Ala Leu His Arg Thr Pro
65 70 75 80

Arg Lys Thr Ser Arg Met His Leu Phe Ile Arg His Leu Ser Leu Ala
85 90 95

Asp Leu Ala Val Ala Phe Phe Gln Val Leu Pro Gln Met Cys Trp Asp
100 105 110

Ile Thr Tyr Arg Phe Arg Gly Pro Asp Trp Leu Cys Arg Val Val Lys
115 120 125

His Leu Gln Val Phe Gly Met Phe Ala Ser Ala Tyr Met Leu Val Val
130 135 140

Met Thr Ala Asp Arg Tyr Ile Ala Val Cys His Pro Leu Lys Thr Leu
145 150 155 160

Gln Gln Pro Ala Arg Arg Ser Arg Leu Met Ile Ala Ala Ala Trp Val
165 170 175

Leu Ser Phe Val Leu Ser Thr Pro Gln Tyr Phe Val Phe Ser Met Ile
180 185 190

Glu Val Asn Asn Val Thr Lys Ala Arg Asp Cys Trp Ala Thr Phe Ile
195 200 205

Gln Pro Trp Gly Ser Arg Ala Tyr Val Thr Trp Met Thr Gly Gly Ile

210 215 220

Phe Val Ala Pro Val Val Ile Leu Gly Thr Cys Tyr Gly Phe Ile Cys
225 230 235 240

Tyr Asn Ile Trp Cys Asn Val Arg Gly Lys Thr Ala Ser Arg Gln Ser
245 250 255

Lys Gly Ala Glu Gln Ala Gly Val Ala Phe Gln Lys Gly Phe Leu Leu
260 265 270

Ala Pro Cys Val Ser Ser Val Lys Ser Ile Ser Arg Ala Lys Ile Arg
275 280 285

Thr Val Lys Met Thr Phe Val Ile Val Thr Ala Tyr Ile Val Cys Trp
290 295 300

Ala Pro Phe Phe Ile Ile Gln Met Trp Ser Val Trp Asp Pro Met Ser
305 310 315 320

Val Trp Thr Glu Ser Glu Asn Pro Thr Ile Thr Ile Thr Ala Leu Leu
325 330 335

Gly Ser Leu Asn Ser Cys Cys Asn Pro Trp Ile Tyr Met Phe Phe Ser
340 345 350

Gly His Leu Leu Gln Asp Cys Val Gln Ser Phe Pro Cys Cys Gln Asn
355 360 365

Met Lys Glu Lys Phe Asn Lys Glu Asp Thr Asp Ser Met Ser Arg Arg
370 375 380

Gln Thr Phe Tyr Ser Asn Asn Arg Ser Pro Thr Asn Ser Thr Gly Met
385 390 395 400

Trp Lys Asp Ser Pro Lys Ser Ser Lys Ser Ile Lys Phe Ile Pro Val
405 410 415

Ser Thr

<210> 6182
<211> 186

<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1343; "

<220>
<221> source
<223> /note="Gene Symbol: AVPR1A; "

<220>
<221> source
<223> /note="Gene Name:
arginine vasopressin receptor 1A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000449822"

<400> 6182
Met Thr Gly Gly Ile Phe Val Ala Pro Val Val Ile Leu Gly Thr Cys
1 5 10 15

Tyr Gly Phe Ile Cys Tyr Asn Ile Trp Cys Asn Val Arg Gly Lys Thr
20 25 30

Ala Ser Arg Gln Ser Lys Gly Ala Glu Gln Ala Gly Val Ala Phe Gln
35 40 45

Lys Gly Phe Leu Leu Ala Pro Cys Val Ser Ser Val Lys Ser Ile Ser
50 55 60

Arg Ala Lys Ile Arg Thr Val Lys Met Thr Phe Val Ile Val Thr Ala
65 70 75 80

Tyr Ile Val Cys Trp Ala Pro Phe Phe Ile Ile Gln Met Trp Ser Val
85 90 95

Trp Asp Pro Met Ser Val Trp Thr Glu Ser Glu Asn Pro Thr Ile Thr
100 105 110

Ile Thr Ala Leu Leu Gly Ser Leu Asn Ser Cys Cys Asn Pro Trp Ile
115 120 125

Tyr Met Phe Phe Ser Gly His Leu Leu Gln Asp Cys Val Gln Ser Phe
130 135 140

```
Pro Cys Cys Gln Asn Met Lys Glu Lys Phe Asn Lys Glu Asp Thr Asp
145                 150                 155                 160

Ser Met Ser Arg Arg Gln Thr Phe Tyr Ser Asn Asn Arg Ser Pro Thr
                165                 170                 175

Asn Ser Thr Asp Lys Lys Met Arg Thr Gly
            180                 185


<210> 6183
<211> 424
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1344; "

<220>
<221> source
<223> /note="Gene Symbol: AVPR1B; "

<220>
<221> source
<223> /note="Gene Name:
      arginine vasopressin receptor 1B; "

<220>
<221> source
<223> /note="Uniprot ID:  P47901; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000356094"

<400> 6183
Met Asp Ser Gly Pro Leu Trp Asp Ala Asn Pro Thr Pro Arg Gly Thr
1               5                   10                  15

Leu Ser Ala Pro Asn Ala Thr Thr Pro Trp Leu Gly Arg Asp Glu Glu
            20                  25                  30

Leu Ala Lys Val Glu Ile Gly Val Leu Ala Thr Val Leu Val Leu Ala
        35                  40                  45

Thr Gly Gly Asn Leu Ala Val Leu Leu Thr Leu Gly Gln Leu Gly Arg
    50                  55                  60

Lys Arg Ser Arg Met His Leu Phe Val Leu His Leu Ala Leu Thr Asp
65                  70                  75                  80
```

```
Leu Ala Val Ala Leu Phe Gln Val Leu Pro Gln Leu Leu Trp Asp Ile
                85                  90                  95

Thr Tyr Arg Phe Gln Gly Pro Asp Leu Leu Cys Arg Ala Val Lys Tyr
            100                 105                 110

Leu Gln Val Leu Ser Met Phe Ala Ser Thr Tyr Met Leu Leu Ala Met
        115                 120                 125

Thr Leu Asp Arg Tyr Leu Ala Val Cys His Pro Leu Arg Ser Leu Gln
    130                 135                 140

Gln Pro Gly Gln Ser Thr Tyr Leu Leu Ile Ala Ala Pro Trp Leu Leu
145                 150                 155                 160

Ala Ala Ile Phe Ser Leu Pro Gln Val Phe Ile Phe Ser Leu Arg Glu
                165                 170                 175

Val Ile Gln Gly Ser Gly Val Leu Asp Cys Trp Ala Asp Phe Gly Phe
            180                 185                 190

Pro Trp Gly Pro Arg Ala Tyr Leu Thr Trp Thr Thr Leu Ala Ile Phe
        195                 200                 205

Val Leu Pro Val Thr Met Leu Thr Ala Cys Tyr Ser Leu Ile Cys His
    210                 215                 220

Glu Ile Cys Lys Asn Leu Lys Val Lys Thr Gln Ala Trp Arg Val Gly
225                 230                 235                 240

Gly Gly Gly Trp Arg Thr Trp Asp Arg Pro Ser Pro Ser Thr Leu Ala
                245                 250                 255

Ala Thr Thr Arg Gly Leu Pro Ser Arg Val Ser Ser Ile Asn Thr Ile
            260                 265                 270

Ser Arg Ala Lys Ile Arg Thr Val Lys Met Thr Phe Val Ile Val Leu
        275                 280                 285

Ala Tyr Ile Ala Cys Trp Ala Pro Phe Phe Ser Val Gln Met Trp Ser
    290                 295                 300
```

```
Val Trp Asp Lys Asn Ala Pro Asp Glu Asp Ser Thr Asn Val Ala Phe
305                 310                 315                 320

Thr Ile Ser Met Leu Leu Gly Asn Leu Asn Ser Cys Cys Asn Pro Trp
                325                 330                 335

Ile Tyr Met Gly Phe Asn Ser His Leu Leu Pro Arg Pro Leu Arg His
            340                 345                 350

Leu Ala Cys Cys Gly Gly Pro Gln Pro Arg Met Arg Arg Arg Leu Ser
        355                 360                 365

Asp Gly Ser Leu Ser Ser Arg His Thr Thr Leu Leu Thr Arg Ser Ser
    370                 375                 380

Cys Pro Ala Thr Leu Ser Leu Ser Leu Ser Leu Thr Leu Ser Gly Arg
385                 390                 395                 400

Pro Arg Pro Glu Glu Ser Pro Arg Asp Leu Glu Leu Ala Asp Gly Glu
                405                 410                 415

Gly Thr Ala Glu Thr Ile Ile Phe
            420


<210> 6184
<211> 371
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1345; "

<220>
<221> source
<223> /note="Gene Symbol: AVPR2; "

<220>
<221> source
<223> /note="Gene Name:
      arginine vasopressin receptor 2; "

<220>
<221> source
<223> /note="Uniprot ID:  P30518; "

<220>
<221> source
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<223> /note="ENSP ID: ENSP00000338072"

<400> 6184

```
Met Leu Met Ala Ser Thr Thr Ser Ala Val Pro Gly His Pro Ser Leu
1               5                  10                  15

Pro Ser Leu Pro Ser Asn Ser Ser Gln Glu Arg Pro Leu Asp Thr Arg
            20                  25                  30

Asp Pro Leu Leu Ala Arg Ala Glu Leu Ala Leu Leu Ser Ile Val Phe
        35                  40                  45

Val Ala Val Ala Leu Ser Asn Gly Leu Val Leu Ala Ala Leu Ala Arg
    50                  55                  60

Arg Gly Arg Arg Gly His Trp Ala Pro Ile His Val Phe Ile Gly His
65                  70                  75                  80

Leu Cys Leu Ala Asp Leu Ala Val Ala Leu Phe Gln Val Leu Pro Gln
                85                  90                  95

Leu Ala Trp Lys Ala Thr Asp Arg Phe Arg Gly Pro Asp Ala Leu Cys
            100                 105                 110

Arg Ala Val Lys Tyr Leu Gln Met Val Gly Met Tyr Ala Ser Ser Tyr
        115                 120                 125

Met Ile Leu Ala Met Thr Leu Asp Arg His Arg Ala Ile Cys Arg Pro
    130                 135                 140

Met Leu Ala Tyr Arg His Gly Ser Gly Ala His Trp Asn Arg Pro Val
145                 150                 155                 160

Leu Val Ala Trp Ala Phe Ser Leu Leu Leu Ser Leu Pro Gln Leu Phe
                165                 170                 175

Ile Phe Ala Gln Arg Asn Val Glu Gly Gly Ser Gly Val Thr Asp Cys
            180                 185                 190

Trp Ala Cys Phe Ala Glu Pro Trp Gly Arg Arg Thr Tyr Val Thr Trp
        195                 200                 205

Ile Ala Leu Met Val Phe Val Ala Pro Thr Leu Gly Ile Ala Ala Cys
    210                 215                 220
```

```
Gln Val Leu Ile Phe Arg Glu Ile His Ala Ser Leu Val Pro Gly Pro
225                 230                 235                 240

Ser Glu Arg Pro Gly Gly Arg Arg Arg Gly Arg Arg Thr Gly Ser Pro
                245                 250                 255

Gly Glu Gly Ala His Val Ser Ala Ala Val Ala Lys Thr Val Arg Met
            260                 265                 270

Thr Leu Val Ile Val Val Val Tyr Val Leu Cys Trp Ala Pro Phe Phe
        275                 280                 285

Leu Val Gln Leu Trp Ala Ala Trp Asp Pro Glu Ala Pro Leu Glu Gly
    290                 295                 300

Ala Pro Phe Val Leu Leu Met Leu Leu Ala Ser Leu Asn Ser Cys Thr
305                 310                 315                 320

Asn Pro Trp Ile Tyr Ala Ser Phe Ser Ser Ser Val Ser Ser Glu Leu
                325                 330                 335

Arg Ser Leu Leu Cys Cys Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly
            340                 345                 350

Pro Gln Asp Glu Ser Cys Thr Thr Ala Ser Ser Ser Leu Ala Lys Asp
        355                 360                 365

Thr Ser Ser
    370


<210> 6185
<211> 371
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1345; "

<220>
<221> source
<223> /note="Gene Symbol: AVPR2; "

<220>
<221> source
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<223> /note="Gene Name:
arginine vasopressin receptor 2; "

<220>
<221> source
<223> /note="Uniprot ID: P30518; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000351805"

<400> 6185

```
Met Leu Met Ala Ser Thr Thr Ser Ala Val Pro Gly His Pro Ser Leu
1               5                  10                  15

Pro Ser Leu Pro Ser Asn Ser Ser Gln Glu Arg Pro Leu Asp Thr Arg
            20                  25                  30

Asp Pro Leu Leu Ala Arg Ala Glu Leu Ala Leu Leu Ser Ile Val Phe
        35                  40                  45

Val Ala Val Ala Leu Ser Asn Gly Leu Val Leu Ala Ala Leu Ala Arg
    50                  55                  60

Arg Gly Arg Arg Gly His Trp Ala Pro Ile His Val Phe Ile Gly His
65                  70                  75                  80

Leu Cys Leu Ala Asp Leu Ala Val Ala Leu Phe Gln Val Leu Pro Gln
                85                  90                  95

Leu Ala Trp Lys Ala Thr Asp Arg Phe Arg Gly Pro Asp Ala Leu Cys
            100                 105                 110

Arg Ala Val Lys Tyr Leu Gln Met Val Gly Met Tyr Ala Ser Ser Tyr
        115                 120                 125

Met Ile Leu Ala Met Thr Leu Asp Arg His Arg Ala Ile Cys Arg Pro
    130                 135                 140

Met Leu Ala Tyr Arg His Gly Ser Gly Ala His Trp Asn Arg Pro Val
145                 150                 155                 160

Leu Val Ala Trp Ala Phe Ser Leu Leu Leu Ser Leu Pro Gln Leu Phe
                165                 170                 175

Ile Phe Ala Gln Arg Asn Val Glu Gly Gly Ser Gly Val Thr Asp Cys
```

```
            180                 185                 190

Trp Ala Cys Phe Ala Glu Pro Trp Gly Arg Arg Thr Tyr Val Thr Trp
        195                 200                 205

Ile Ala Leu Met Val Phe Val Ala Pro Thr Leu Gly Ile Ala Ala Cys
    210                 215                 220

Gln Val Leu Ile Phe Arg Glu Ile His Ala Ser Leu Val Pro Gly Pro
225                 230                 235                 240

Ser Glu Arg Pro Gly Gly Arg Arg Arg Gly Arg Arg Thr Gly Ser Pro
                245                 250                 255

Gly Glu Gly Ala His Val Ser Ala Ala Val Ala Lys Thr Val Arg Met
            260                 265                 270

Thr Leu Val Ile Val Val Val Tyr Val Leu Cys Trp Ala Pro Phe Phe
        275                 280                 285

Leu Val Gln Leu Trp Ala Ala Trp Asp Pro Glu Ala Pro Leu Glu Gly
    290                 295                 300

Ala Pro Phe Val Leu Leu Met Leu Leu Ala Ser Leu Asn Ser Cys Thr
305                 310                 315                 320

Asn Pro Trp Ile Tyr Ala Ser Phe Ser Ser Ser Val Ser Ser Glu Leu
                325                 330                 335

Arg Ser Leu Leu Cys Cys Ala Arg Gly Arg Thr Pro Pro Ser Leu Gly
            340                 345                 350

Pro Gln Asp Glu Ser Cys Thr Thr Ala Ser Ser Ser Leu Ala Lys Asp
        355                 360                 365

Thr Ser Ser
    370
```

<210> 6186
<211> 309
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1345; "

<220>
<221> source
<223> /note="Gene Symbol: AVPR2; "

<220>
<221> source
<223> /note="Gene Name:
arginine vasopressin receptor 2; "

<220>
<221> source
<223> /note="Uniprot ID: P30518; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000359066"

<400> 6186

```
Met Leu Met Ala Ser Thr Thr Ser Ala Val Pro Gly His Pro Ser Leu
1               5                  10                  15

Pro Ser Leu Pro Ser Asn Ser Ser Gln Glu Arg Pro Leu Asp Thr Arg
            20                  25                  30

Asp Pro Leu Leu Ala Arg Ala Glu Leu Ala Leu Leu Ser Ile Val Phe
        35                  40                  45

Val Ala Val Ala Leu Ser Asn Gly Leu Val Leu Ala Ala Leu Ala Arg
    50                  55                  60

Arg Gly Arg Arg Gly His Trp Ala Pro Ile His Val Phe Ile Gly His
65                  70                  75                  80

Leu Cys Leu Ala Asp Leu Ala Val Ala Leu Phe Gln Val Leu Pro Gln
                85                  90                  95

Leu Ala Trp Lys Ala Thr Asp Arg Phe Arg Gly Pro Asp Ala Leu Cys
            100                 105                 110

Arg Ala Val Lys Tyr Leu Gln Met Val Gly Met Tyr Ala Ser Ser Tyr
        115                 120                 125

Met Ile Leu Ala Met Thr Leu Asp Arg His Arg Ala Ile Cys Arg Pro
    130                 135                 140
```

```
Met Leu Ala Tyr Arg His Gly Ser Gly Ala His Trp Asn Arg Pro Val
145                 150                 155                 160

Leu Val Ala Trp Ala Phe Ser Leu Leu Leu Ser Leu Pro Gln Leu Phe
                165                 170                 175

Ile Phe Ala Gln Arg Asn Val Glu Gly Gly Ser Gly Val Thr Asp Cys
            180                 185                 190

Trp Ala Cys Phe Ala Glu Pro Trp Gly Arg Arg Thr Tyr Val Thr Trp
        195                 200                 205

Ile Ala Leu Met Val Phe Val Ala Pro Thr Leu Gly Ile Ala Ala Cys
    210                 215                 220

Gln Val Leu Ile Phe Arg Glu Ile His Ala Ser Leu Val Pro Gly Pro
225                 230                 235                 240

Ser Glu Arg Pro Gly Gly Arg Arg Arg Gly Arg Arg Thr Gly Ser Pro
                245                 250                 255

Gly Glu Gly Ala His Val Ser Ala Ala Val Ala Lys Thr Val Arg Met
            260                 265                 270

Thr Leu Val Ile Val Val Val Tyr Val Leu Cys Trp Ala Pro Phe Phe
        275                 280                 285

Leu Val Gln Leu Trp Ala Ala Trp Asp Pro Glu Ala Pro Leu Glu Gly
    290                 295                 300

Gly Cys Ser Arg Gly
305
```

<210> 6187
<211> 48
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1345; "

<220>
<221> source
<223> /note="Gene Symbol: AVPR2; "

<220>
<221> source
<223> /note="Gene Name:
arginine vasopressin receptor 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000393397"

<400> 6187
Met Leu Met Ala Ser Thr Thr Ser Ala Cys Pro Ser Ser Ser Ser Ser
1 5 10 15

Pro Ser Ala Thr Trp Lys Val Ala Ala Gly Ser Leu Thr Ala Gly Pro
20 25 30

Ala Leu Arg Ser Pro Gly Ala Val Ala Pro Met Ser Pro Gly Leu Pro
35 40 45

<210> 6188
<211> 372
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1345; "

<220>
<221> source
<223> /note="Gene Symbol: AVPR2; "

<220>
<221> source
<223> /note="Gene Name:
arginine vasopressin receptor 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000393513"

<400> 6188
Met Leu Met Ala Ser Thr Thr Ser Ala Val Pro Gly His Pro Ser Leu
1 5 10 15

Pro Ser Leu Pro Ser Asn Ser Ser Gln Glu Arg Pro Leu Asp Thr Arg
20 25 30

Asp Pro Leu Leu Ala Arg Ala Glu Leu Ala Leu Leu Ser Ile Val Phe
35 40 45

```
Val Ala Val Ala Leu Ser Asn Gly Leu Val Leu Ala Ala Leu Ala Arg
    50                  55                  60

Arg Gly Arg Arg Gly His Trp Ala Pro Ile His Val Phe Ile Gly His
65                  70                  75                  80

Leu Cys Leu Ala Asp Leu Ala Val Ala Leu Phe Gln Val Leu Pro Gln
                85                  90                  95

Leu Ala Trp Lys Ala Thr Asp Arg Phe Arg Gly Pro Asp Ala Leu Cys
            100                 105                 110

Arg Ala Val Lys Tyr Leu Gln Met Val Gly Met Tyr Ala Ser Ser Tyr
        115                 120                 125

Met Ile Leu Ala Met Thr Leu Asp Arg His Arg Ala Ile Cys Arg Pro
    130                 135                 140

Met Leu Ala Tyr Arg His Gly Ser Gly Ala His Trp Asn Arg Pro Val
145                 150                 155                 160

Leu Val Ala Trp Ala Phe Ser Leu Leu Leu Ser Leu Pro Gln Leu Phe
                165                 170                 175

Ile Phe Ala Gln Arg Asn Val Glu Gly Gly Ser Gly Val Thr Asp Cys
            180                 185                 190

Trp Ala Cys Phe Ala Glu Pro Trp Gly Arg Arg Thr Tyr Val Thr Trp
        195                 200                 205

Ile Ala Leu Met Val Phe Val Ala Pro Thr Leu Gly Ile Ala Ala Cys
    210                 215                 220

Gln Val Leu Ile Phe Arg Glu Ile His Ala Ser Leu Val Pro Gly Pro
225                 230                 235                 240

Ser Glu Arg Pro Gly Gly Arg Arg Arg Gly Arg Arg Thr Gly Ser Pro
                245                 250                 255

Gly Glu Gly Ala His Val Ser Ala Ala Val Ala Lys Thr Val Arg Met
            260                 265                 270

Thr Leu Gly Arg Pro Leu Cys Tyr Ser Cys Cys Trp Pro Ala Ser Thr
```

```
        275                 280                 285

Ala Ala Pro Thr Pro Gly Ser Met His Leu Ser Ala Ala Ala Cys Pro
    290                 295                 300

Gln Ser Cys Glu Ala Cys Ser Ala Val Pro Gly Asp Ala Pro His Pro
305                 310                 315                 320

Ala Trp Val Pro Lys Met Ser Pro Ala Pro Pro Pro Ala Pro Pro Trp
                325                 330                 335

Pro Arg Thr Leu His Arg Glu Glu Leu Leu Gly Val Leu Pro Leu Glu
            340                 345                 350

Ala Leu Arg Ser Ser Ala Ala Phe Leu Gly Leu Val Leu Gly Ala Thr
        355                 360                 365

Gly Arg Gly Thr
    370


<210> 6189
<211> 147
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1346; "

<220>
<221> source
<223> /note="Gene Symbol: AVPI1; "

<220>
<221> source
<223> /note="Gene Name:
      arginine vasopressin-induced 1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q5T686; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000359660"

<400> 6189
Met Gly Thr Pro Ala Ser Val Val Ser Glu Pro Pro Pro Trp Gln Ala
1               5                   10                  15
```

```
Pro Ile Glu Ala Arg Gly Arg Lys Gln Ala Ser Ala Asn Ile Phe Gln
            20                  25                  30

Asp Ala Glu Leu Leu Gln Ile Gln Ala Leu Phe Gln Arg Ser Gly Asp
        35                  40                  45

Gln Leu Ala Glu Glu Arg Ala Gln Ile Ile Trp Glu Cys Ala Gly Asp
    50                  55                  60

His Arg Val Ala Glu Ala Leu Lys Arg Leu Arg Arg Lys Arg Pro Pro
65                  70                  75                  80

Arg Gln Lys Pro Leu Gly His Ser Leu His His Cys Ser Arg Leu Arg
                85                  90                  95

Ile Leu Glu Pro His Ser Ala Leu Ala Asn Pro Gln Ser Ala Thr Glu
            100                 105                 110

Thr Ala Ser Ser Glu Gln Tyr Leu His Ser Arg Lys Lys Ser Ala Arg
        115                 120                 125

Ile Arg Arg Asn Trp Arg Lys Ser Gly Pro Thr Ser Tyr Leu His Gln
    130                 135                 140

Ile Arg His
145
```

<210> 6190
<211> 334
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1347; "

<220>
<221> source
<223> /note="Gene Symbol: RSRC1; "

<220>
<221> source
<223> /note="Gene Name:
arginine/serine-rich coiled-coil 1; "

<220>
<221> source

<223> /note="Uniprot ID: Q96IZ7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000295930"

<400> 6190

```
Met Gly Arg Arg Ser Ser Asp Thr Glu Glu Glu Ser Arg Ser Lys Arg
1               5                  10                  15

Lys Lys Lys His Arg Arg Arg Ser Ser Ser Ser Ser Ser Ser Asp Ser
            20                  25                  30

Arg Thr Tyr Ser Arg Lys Lys Gly Gly Arg Lys Ser Arg Ser Lys Ser
        35                  40                  45

Arg Ser Trp Ser Arg Asp Leu Gln Pro Arg Ser His Ser Tyr Asp Arg
    50                  55                  60

Arg Arg Arg His Arg Ser Ser Ser Ser Ser Ser Tyr Gly Ser Arg Arg
65                  70                  75                  80

Lys Arg Ser Arg Ser Arg Ser Arg Gly Arg Gly Lys Ser Tyr Arg Val
                85                  90                  95

Gln Arg Ser Arg Ser Lys Ser Arg Thr Arg Arg Ser Arg Ser Arg Pro
            100                 105                 110

Arg Leu Arg Ser His Ser Arg Ser Ser Glu Arg Ser Ser His Arg Arg
        115                 120                 125

Thr Arg Ser Arg Ser Arg Asp Arg Glu Arg Arg Lys Gly Arg Asp Lys
    130                 135                 140

Glu Lys Arg Glu Lys Glu Lys Asp Lys Gly Lys Asp Lys Glu Leu His
145                 150                 155                 160

Asn Ile Lys Arg Gly Glu Ser Gly Asn Ile Lys Ala Gly Leu Glu His
                165                 170                 175

Leu Pro Pro Ala Glu Gln Ala Lys Ala Arg Leu Gln Leu Val Leu Glu
            180                 185                 190

Ala Ala Ala Lys Ala Asp Glu Ala Leu Lys Ala Lys Glu Arg Asn Glu
        195                 200                 205
```

```
Glu Glu Ala Lys Arg Arg Lys Glu Glu Asp Gln Ala Thr Leu Val Glu
    210                 215                 220

Gln Val Lys Arg Val Lys Glu Ile Glu Ala Ile Glu Ser Asp Ser Phe
225                 230                 235                 240

Val Gln Gln Thr Phe Arg Ser Ser Lys Glu Val Lys Lys Ser Val Glu
                245                 250                 255

Pro Ser Glu Val Lys Gln Ala Thr Ser Thr Ser Gly Pro Ala Ser Ala
            260                 265                 270

Val Ala Asp Pro Pro Ser Thr Glu Lys Glu Ile Asp Pro Thr Ser Ile
        275                 280                 285

Pro Thr Ala Ile Lys Tyr Gln Asp Asp Asn Ser Leu Ala His Pro Asn
    290                 295                 300

Leu Phe Ile Glu Lys Ala Asp Ala Glu Glu Lys Trp Phe Lys Arg Leu
305                 310                 315                 320

Ile Ala Leu Arg Gln Glu Arg Leu Met Gly Ser Pro Val Ala
                325                 330
```

<210> 6191
<211> 276
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1347; "

<220>
<221> source
<223> /note="Gene Symbol: RSRC1; "

<220>
<221> source
<223> /note="Gene Name:
arginine/serine-rich coiled-coil 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q96IZ7; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000308671"

<400> 6191
Met Gly Arg Arg Ser Ser Asp Thr Glu Glu Glu Ser Arg Ser Lys Arg
1 5 10 15

Lys Lys Lys His Arg Arg Arg Ser Ser Ser Ser Ser Ser Ser Asp Ser
20 25 30

Arg Thr Tyr Ser Arg Lys Lys Gly Gly Arg Lys Ser Arg Ser Lys Ser
35 40 45

Arg Ser Trp Ser Arg Asp Leu Gln Pro Arg Ser His Ser Tyr Asp Arg
50 55 60

Arg Arg Arg His Arg Ser Ser Ser Ser Ser Ser Tyr Gly Ser Arg Arg
65 70 75 80

Lys Arg Ser Arg Ser Arg Ser Arg Gly Arg Gly Lys Ser Tyr Arg Val
85 90 95

Gln Arg Ser Arg Ser Lys Ser Arg Thr Arg Arg Glu Ser Gly Asn Ile
100 105 110

Lys Ala Gly Leu Glu His Leu Pro Pro Ala Glu Gln Ala Lys Ala Arg
115 120 125

Leu Gln Leu Val Leu Glu Ala Ala Ala Lys Ala Asp Glu Ala Leu Lys
130 135 140

Ala Lys Glu Arg Asn Glu Glu Glu Ala Lys Arg Arg Lys Glu Glu Asp
145 150 155 160

Gln Ala Thr Leu Val Glu Gln Val Lys Arg Val Lys Glu Ile Glu Ala
165 170 175

Ile Glu Ser Asp Ser Phe Val Gln Gln Thr Phe Arg Ser Ser Lys Glu
180 185 190

Val Lys Lys Ser Val Glu Pro Ser Glu Val Lys Gln Ala Thr Ser Thr
195 200 205

Ser Gly Pro Ala Ser Ala Val Ala Asp Pro Pro Ser Thr Glu Lys Glu

```
    210                 215                 220

Ile Asp Pro Thr Ser Ile Pro Thr Ala Ile Lys Tyr Gln Asp Asp Asn
225                 230                 235                 240

Ser Leu Ala His Pro Asn Leu Phe Ile Glu Lys Ala Asp Ala Glu Glu
                245                 250                 255

Lys Trp Phe Lys Arg Leu Ile Ala Leu Arg Gln Glu Arg Leu Met Gly
            260                 265                 270

Ser Pro Val Ala
        275


<210> 6192
<211> 203
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1347; "

<220>
<221> source
<223> /note="Gene Symbol: RSRC1; "

<220>
<221> source
<223> /note="Gene Name:
      arginine/serine-rich coiled-coil 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000417302"

<400> 6192
Met Gly Arg Arg Ser Ser Asp Thr Glu Glu Glu Ser Arg Ser Lys Arg
1               5                   10                  15

Lys Lys Lys His Arg Arg Arg Ser Ser Ser Ser Ser Ser Ser Asp Ser
            20                  25                  30

Arg Thr Tyr Ser Arg Lys Lys Gly Gly Arg Lys Ser Arg Ser Lys Ser
        35                  40                  45

Arg Ser Trp Ser Arg Asp Leu Gln Pro Arg Ser His Ser Tyr Asp Arg
    50                  55                  60
```

```
Arg Arg Arg His Arg Ser Ser Ser Ser Ser Ser Tyr Gly Ser Arg Arg
65                  70                  75                  80

Lys Arg Ser Arg Ser Arg Ser Arg Gly Arg Gly Lys Ser Tyr Arg Val
                85                  90                  95

Gln Arg Ser Arg Ser Lys Ser Arg Thr Arg Arg Ser Arg Ser Arg Pro
            100                 105                 110

Arg Leu Arg Ser His Ser Arg Ser Ser Glu Arg Ser Ser His Arg Arg
        115                 120                 125

Thr Arg Ser Arg Ser Arg Asp Arg Glu Arg Arg Lys Gly Arg Asp Lys
    130                 135                 140

Glu Lys Arg Glu Lys Glu Lys Asp Lys Gly Lys Asp Lys Glu Leu His
145                 150                 155                 160

Asn Ile Lys Arg Gly Glu Ser Gly Asn Ile Lys Ala Gly Leu Glu His
                165                 170                 175

Leu Pro Pro Ala Glu Gln Ala Lys Ala Arg Leu Gln Leu Val Leu Glu
            180                 185                 190

Ala Ala Ala Lys Ala Asp Glu Ala Leu Lys Ala
        195                 200


<210> 6193
<211> 164
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1347; "

<220>
<221> source
<223> /note="Gene Symbol: RSRC1; "

<220>
<221> source
<223> /note="Gene Name:
      arginine/serine-rich coiled-coil 1; "

<220>
<221> source
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<223> /note="ENSP ID: ENSP00000417690"

<400> 6193
Met Gly Arg Arg Ser Ser Asp Thr Glu Glu Glu Ser Arg Ser Lys Arg
1 5 10 15

Lys Lys Lys His Arg Arg Arg Ser Ser Ser Ser Ser Ser Ser Asp Ser
20 25 30

Arg Thr Tyr Ser Arg Lys Lys Gly Gly Arg Lys Ser Arg Ser Lys Ser
35 40 45

Arg Ser Trp Ser Arg Asp Leu Gln Pro Arg Ser His Ser Tyr Asp Arg
50 55 60

Arg Arg Arg His Arg Ser Ser Ser Ser Ser Ser Tyr Gly Ser Arg Arg
65 70 75 80

Lys Arg Ser Arg Ser Arg Ser Arg Gly Arg Gly Lys Ser Tyr Arg Val
85 90 95

Gln Arg Ser Arg Ser Lys Ser Arg Thr Arg Arg Ser Arg Ser Arg Pro
100 105 110

Arg Leu Arg Ser His Ser Arg Ser Ser Glu Arg Ser Ser His Arg Arg
115 120 125

Thr Arg Ser Arg Ser Arg Asp Arg Glu Arg Arg Lys Gly Arg Asp Lys
130 135 140

Glu Lys Arg Glu Lys Glu Lys Asp Lys Gly Lys Asp Lys Glu Leu His
145 150 155 160

Asn Ile Lys Arg

<210> 6194
<211> 283
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1347; "

<220>

<221> source
<223> /note="Gene Symbol: RSRC1; "

<220>
<221> source
<223> /note="Gene Name:
arginine/serine-rich coiled-coil 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000417816"

<400> 6194

```
Met Gly Arg Arg Ser Ser Asp Thr Glu Glu Glu Ser Arg Ser Lys Arg
1               5                  10                  15

Lys Lys Lys His Arg Arg Arg Ser Ser Ser Ser Ser Ser Ser Asp Ser
            20                  25                  30

Arg Thr Tyr Ser Arg Lys Lys Gly Gly Arg Lys Ser Arg Ser Lys Ser
        35                  40                  45

Arg Ser Trp Ser Arg Asp Leu Gln Pro Arg Ser His Ser Tyr Asp Arg
    50                  55                  60

Arg Arg Arg His Arg Ser Ser Ser Ser Ser Ser Tyr Gly Ser Arg Arg
65                  70                  75                  80

Lys Arg Ser Arg Ser Arg Ser Arg Gly Arg Gly Lys Ser Tyr Arg Val
                85                  90                  95

Gln Arg Ser Arg Ser Lys Ser Arg Thr Arg Arg Ser Arg Ser Arg Pro
            100                 105                 110

Arg Leu Arg Ser His Ser Arg Ser Ser Glu Arg Ser Ser His Arg Arg
        115                 120                 125

Thr Arg Ser Arg Ser Arg Asp Arg Glu Arg Arg Lys Gly Arg Asp Lys
    130                 135                 140

Glu Lys Arg Glu Lys Glu Lys Asp Lys Gly Lys Asp Lys Glu Leu His
145                 150                 155                 160

Asn Ile Lys Arg Gly Glu Ser Gly Asn Ile Lys Ala Gly Leu Glu His
                165                 170                 175
```

```
Leu Pro Pro Ala Glu Gln Ala Lys Ala Arg Leu Gln Leu Val Leu Glu
            180                 185                 190

Ala Ala Ala Lys Ala Asp Glu Ala Leu Lys Ala Lys Glu Arg Asn Glu
        195                 200                 205

Glu Glu Ala Lys Arg Arg Lys Glu Glu Asp Gln Ala Thr Leu Val Glu
    210                 215                 220

Gln Val Lys Arg Val Lys Glu Ile Glu Ala Ile Glu Ser Asp Ser Phe
225                 230                 235                 240

Val Gln Gln Thr Phe Arg Ser Ser Lys Glu Val Lys Lys Leu Phe Ile
                245                 250                 255

Glu Lys Ala Asp Ala Glu Glu Lys Trp Phe Lys Arg Leu Ile Ala Leu
            260                 265                 270

Arg Gln Glu Arg Leu Met Gly Ser Pro Val Ala
        275                 280


<210> 6195
<211> 112
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1347; "

<220>
<221> source
<223> /note="Gene Symbol: RSRC1; "

<220>
<221> source
<223> /note="Gene Name:
      arginine/serine-rich coiled-coil 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419054"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6195
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Xaa Lys Lys His Arg Arg Arg Ser Ser Ser Ser Ser Ser Ser Asp Ser
1   5   10   15

Arg Thr Tyr Ser Arg Lys Lys Gly Gly Arg Lys Ser Arg Ser Lys Ser
            20   25   30

Arg Ser Trp Ser Arg Asp Leu Gln Pro Arg Ser His Ser Tyr Asp Arg
        35   40   45

Arg Arg Arg His Arg Ser Ser Ser Ser Ser Ser Tyr Gly Ser Arg Arg
    50   55   60

Lys Arg Ser Arg Ser Arg Ser Arg Gly Arg Gly Lys Ser Tyr Arg Val
65   70   75   80

Gln Arg Ser Arg Ser Lys Ser Arg Thr Arg Arg Tyr Pro Pro Thr Ser
                85   90   95

Thr Ser Trp Val Ala Gly Thr Thr Gly Thr His Arg His Thr Gln Leu
            100   105   110

<210> 6196
<211> 194
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1347; "

<220>
<221> source
<223> /note="Gene Symbol: RSRC1; "

<220>
<221> source
<223> /note="Gene Name:
      arginine/serine-rich coiled-coil 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419394"

<400> 6196
Met Gly Arg Arg Ser Ser Asp Thr Glu Glu Glu Ser Arg Ser Lys Arg
1   5   10   15

Lys Lys Lys His Arg Arg Arg Ser Ser Ser Ser Ser Ser Ser Asp Ser
            20   25   30

```
Arg Thr Tyr Ser Arg Lys Lys Gly Gly Arg Lys Ser Arg Ser Lys Ser
        35                  40                  45

Arg Ser Trp Ser Arg Asp Leu Gln Pro Arg Ser His Ser Tyr Asp Arg
    50                  55                  60

Arg Arg Arg His Arg Ser Ser Ser Ser Ser Ser Tyr Gly Ser Arg Arg
65                  70                  75                  80

Lys Arg Ser Arg Ser Arg Ser Arg Gly Arg Gly Lys Ser Tyr Arg Val
                85                  90                  95

Gln Arg Ser Arg Ser Lys Ser Arg Thr Arg Arg Ser Arg Ser Arg Pro
            100                 105                 110

Arg Leu Arg Ser His Ser Arg Ser Ser Glu Arg Ser Ser His Arg Arg
        115                 120                 125

Thr Arg Ser Arg Ser Arg Asp Arg Glu Arg Arg Lys Gly Arg Asp Lys
    130                 135                 140

Glu Lys Arg Glu Lys Glu Lys Asp Lys Gly Lys Asp Lys Glu Leu His
145                 150                 155                 160

Asn Ile Lys Arg Gly Glu Ser Gly Asn Ile Lys Ala Gly Leu Glu His
                165                 170                 175

Leu Pro Pro Ala Glu Gln Ala Lys Ala Arg Leu Gln Leu Val Leu Glu
            180                 185                 190

Ala Ala
```

<210> 6197
<211> 276
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1347; "

<220>
<221> source

<223> /note="Gene Symbol: RSRC1; "

<220>
<221> source
<223> /note="Gene Name:
arginine/serine-rich coiled-coil 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q96IZ7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419794"

<400> 6197

```
Met Gly Arg Arg Ser Ser Asp Thr Glu Glu Glu Ser Arg Ser Lys Arg
1               5                  10                  15

Lys Lys Lys His Arg Arg Arg Ser Ser Ser Ser Ser Ser Ser Asp Ser
            20                  25                  30

Arg Thr Tyr Ser Arg Lys Lys Gly Gly Arg Lys Ser Arg Ser Lys Ser
        35                  40                  45

Arg Ser Trp Ser Arg Asp Leu Gln Pro Arg Ser His Ser Tyr Asp Arg
    50                  55                  60

Arg Arg Arg His Arg Ser Ser Ser Ser Ser Ser Tyr Gly Ser Arg Arg
65                  70                  75                  80

Lys Arg Ser Arg Ser Arg Ser Arg Gly Arg Gly Lys Ser Tyr Arg Val
                85                  90                  95

Gln Arg Ser Arg Ser Lys Ser Arg Thr Arg Arg Glu Ser Gly Asn Ile
            100                 105                 110

Lys Ala Gly Leu Glu His Leu Pro Pro Ala Glu Gln Ala Lys Ala Arg
        115                 120                 125

Leu Gln Leu Val Leu Glu Ala Ala Ala Lys Ala Asp Glu Ala Leu Lys
    130                 135                 140

Ala Lys Glu Arg Asn Glu Glu Glu Ala Lys Arg Arg Lys Glu Glu Asp
145                 150                 155                 160

Gln Ala Thr Leu Val Glu Gln Val Lys Arg Val Lys Glu Ile Glu Ala
```

```
                165                 170                 175

Ile Glu Ser Asp Ser Phe Val Gln Gln Thr Phe Arg Ser Ser Lys Glu
            180                 185                 190

Val Lys Lys Ser Val Glu Pro Ser Glu Val Lys Gln Ala Thr Ser Thr
        195                 200                 205

Ser Gly Pro Ala Ser Ala Val Ala Asp Pro Pro Ser Thr Glu Lys Glu
    210                 215                 220

Ile Asp Pro Thr Ser Ile Pro Thr Ala Ile Lys Tyr Gln Asp Asp Asn
225                 230                 235                 240

Ser Leu Ala His Pro Asn Leu Phe Ile Glu Lys Ala Asp Ala Glu Glu
                245                 250                 255

Lys Trp Phe Lys Arg Leu Ile Ala Leu Arg Gln Glu Arg Leu Met Gly
            260                 265                 270

Ser Pro Val Ala
        275


<210> 6198
<211> 199
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1347; "

<220>
<221> source
<223> /note="Gene Symbol: RSRC1; "

<220>
<221> source
<223> /note="Gene Name:
      arginine/serine-rich coiled-coil 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420018"

<400> 6198
Met Gly Arg Arg Ser Ser Asp Thr Glu Glu Glu Ser Arg Ser Lys Arg
1               5                   10                  15
```

```
Lys Lys Lys His Arg Arg Arg Ser Ser Ser Ser Ser Ser Ser Asp Ser
            20                  25                  30

Arg Thr Tyr Ser Arg Lys Lys Gly Gly Arg Lys Ser Arg Ser Lys Ser
        35                  40                  45

Arg Ser Trp Ser Arg Asp Leu Gln Pro Arg Ser His Ser Tyr Asp Arg
    50                  55                  60

Arg Arg Arg His Arg Ser Ser Ser Ser Ser Ser Tyr Gly Ser Arg Arg
65                  70                  75                  80

Lys Arg Ser Arg Ser Arg Ser Arg Gly Arg Gly Lys Ser Tyr Arg Val
                85                  90                  95

Gln Arg Ser Arg Ser Lys Ser Arg Thr Arg Arg Ser Arg Ser Arg Pro
            100                 105                 110

Arg Leu Arg Ser His Ser Arg Ser Ser Glu Arg Ser Ser His Arg Arg
        115                 120                 125

Thr Arg Ser Arg Ser Arg Asp Arg Glu Arg Arg Lys Gly Arg Asp Lys
    130                 135                 140

Glu Lys Arg Glu Lys Glu Lys Asp Lys Gly Lys Asp Lys Glu Leu His
145                 150                 155                 160

Asn Ile Lys Arg Gly Phe His Gln Lys Asn Cys Glu Arg Lys Lys Lys
                165                 170                 175

Leu Thr Ser Asn Arg Lys Arg Lys Val Leu Gly Arg Pro Asn Trp Asn
            180                 185                 190

Leu Glu Thr Ser Lys Leu Asp
        195


<210> 6199
<211> 334
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1347; "
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<220>
<221> source
<223> /note="Gene Symbol: RSRC1; "

<220>
<221> source
<223> /note="Gene Name:
arginine/serine-rich coiled-coil 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q96IZ7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420150"

<400> 6199
Met Gly Arg Arg Ser Ser Asp Thr Glu Glu Glu Ser Arg Ser Lys Arg
1   5   10   15

Lys Lys Lys His Arg Arg Arg Ser Ser Ser Ser Ser Ser Ser Asp Ser
            20   25   30

Arg Thr Tyr Ser Arg Lys Lys Gly Gly Arg Lys Ser Arg Ser Lys Ser
        35   40   45

Arg Ser Trp Ser Arg Asp Leu Gln Pro Arg Ser His Ser Tyr Asp Arg
    50   55   60

Arg Arg Arg His Arg Ser Ser Ser Ser Ser Ser Tyr Gly Ser Arg Arg
65   70   75   80

Lys Arg Ser Arg Ser Arg Ser Arg Gly Arg Gly Lys Ser Tyr Arg Val
                85   90   95

Gln Arg Ser Arg Ser Lys Ser Arg Thr Arg Arg Ser Arg Ser Arg Pro
            100   105   110

Arg Leu Arg Ser His Ser Arg Ser Ser Glu Arg Ser Ser His Arg Arg
        115   120   125

Thr Arg Ser Arg Ser Arg Asp Arg Glu Arg Arg Lys Gly Arg Asp Lys
    130   135   140

Glu Lys Arg Glu Lys Glu Lys Asp Lys Gly Lys Asp Lys Glu Leu His
145   150   155   160

```
Asn Ile Lys Arg Gly Glu Ser Gly Asn Ile Lys Ala Gly Leu Glu His
                165                 170                 175

Leu Pro Pro Ala Glu Gln Ala Lys Ala Arg Leu Gln Leu Val Leu Glu
            180                 185                 190

Ala Ala Ala Lys Ala Asp Glu Ala Leu Lys Ala Lys Glu Arg Asn Glu
        195                 200                 205

Glu Glu Ala Lys Arg Arg Lys Glu Glu Asp Gln Ala Thr Leu Val Glu
    210                 215                 220

Gln Val Lys Arg Val Lys Glu Ile Glu Ala Ile Glu Ser Asp Ser Phe
225                 230                 235                 240

Val Gln Gln Thr Phe Arg Ser Ser Lys Glu Val Lys Lys Ser Val Glu
                245                 250                 255

Pro Ser Glu Val Lys Gln Ala Thr Ser Thr Ser Gly Pro Ala Ser Ala
            260                 265                 270

Val Ala Asp Pro Pro Ser Thr Glu Lys Glu Ile Asp Pro Thr Ser Ile
        275                 280                 285

Pro Thr Ala Ile Lys Tyr Gln Asp Asp Asn Ser Leu Ala His Pro Asn
    290                 295                 300

Leu Phe Ile Glu Lys Ala Asp Ala Glu Glu Lys Trp Phe Lys Arg Leu
305                 310                 315                 320

Ile Ala Leu Arg Gln Glu Arg Leu Met Gly Ser Pro Val Ala
                325                 330


<210> 6200
<211> 208
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1347; "

<220>
<221> source
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<223> /note="Gene Symbol: RSRC1; "

<220>
<221> source
<223> /note="Gene Name:
arginine/serine-rich coiled-coil 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420464"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6200
Xaa Ser Arg Ser Arg Pro Arg Leu Arg Ser His Ser Arg Ser Ser Glu
1 5 10 15

Arg Ser Ser His Arg Arg Thr Arg Ser Arg Ser Arg Asp Arg Glu Arg
20 25 30

Arg Lys Gly Arg Asp Lys Glu Lys Arg Glu Lys Glu Lys Asp Lys Gly
35 40 45

Lys Asp Lys Glu Leu His Asn Ile Lys Arg Gly Glu Ser Gly Asn Ile
50 55 60

Lys Ala Gly Leu Glu His Leu Pro Pro Ala Glu Gln Ala Lys Ala Arg
65 70 75 80

Leu Gln Leu Val Leu Glu Ala Ala Ala Lys Ala Asp Glu Ala Leu Lys
85 90 95

Ala Lys Glu Arg Asn Glu Glu Glu Ala Lys Arg Arg Lys Glu Glu Asp
100 105 110

Gln Ala Thr Leu Val Glu Gln Val Lys Arg Val Lys Glu Ile Glu Ala
115 120 125

Ile Glu Ser Asp Ser Phe Val Gln Gln Thr Phe Arg Ser Ser Lys Glu
130 135 140

Val Lys Lys Ser Val Glu Pro Ser Glu Val Lys Gln Ala Thr Ser Thr
145 150 155 160

```
Ser Gly Pro Ala Ser Ala Val Ala Asp Pro Pro Ser Thr Glu Lys Glu
                165                 170                 175

Ile Asp Pro Thr Ser Ile Pro Thr Ala Ile Lys Tyr Gln Asp Asp Asn
            180                 185                 190

Ser Leu Ala His Pro Asn Val Ile Ser Leu Asn Phe Thr Asn Val Ser
        195                 200                 205


<210> 6201
<211> 334
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1347; "

<220>
<221> source
<223> /note="Gene Symbol: RSRC1; "

<220>
<221> source
<223> /note="Gene Name:
      arginine/serine-rich coiled-coil 1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q96IZ7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000481697"

<400> 6201
Met Gly Arg Arg Ser Ser Asp Thr Glu Glu Glu Ser Arg Ser Lys Arg
1               5                   10                  15

Lys Lys Lys His Arg Arg Arg Ser Ser Ser Ser Ser Ser Ser Asp Ser
            20                  25                  30

Arg Thr Tyr Ser Arg Lys Lys Gly Gly Arg Lys Ser Arg Ser Lys Ser
        35                  40                  45

Arg Ser Trp Ser Arg Asp Leu Gln Pro Arg Ser His Ser Tyr Asp Arg
    50                  55                  60

Arg Arg Arg His Arg Ser Ser Ser Ser Ser Ser Tyr Gly Ser Arg Arg
```

65 70 75 80

Lys Arg Ser Arg Ser Arg Ser Arg Gly Arg Gly Lys Ser Tyr Arg Val
85 90 95

Gln Arg Ser Arg Ser Lys Ser Arg Thr Arg Arg Ser Arg Ser Arg Pro
100 105 110

Arg Leu Arg Ser His Ser Arg Ser Ser Glu Arg Ser Ser His Arg Arg
115 120 125

Thr Arg Ser Arg Ser Arg Asp Arg Glu Arg Arg Lys Gly Arg Asp Lys
130 135 140

Glu Lys Arg Glu Lys Glu Lys Asp Lys Gly Lys Asp Lys Glu Leu His
145 150 155 160

Asn Ile Lys Arg Gly Glu Ser Gly Asn Ile Lys Ala Gly Leu Glu His
165 170 175

Leu Pro Pro Ala Glu Gln Ala Lys Ala Arg Leu Gln Leu Val Leu Glu
180 185 190

Ala Ala Ala Lys Ala Asp Glu Ala Leu Lys Ala Lys Glu Arg Asn Glu
195 200 205

Glu Glu Ala Lys Arg Arg Lys Glu Glu Asp Gln Ala Thr Leu Val Glu
210 215 220

Gln Val Lys Arg Val Lys Glu Ile Glu Ala Ile Glu Ser Asp Ser Phe
225 230 235 240

Val Gln Gln Thr Phe Arg Ser Ser Lys Glu Val Lys Lys Ser Val Glu
245 250 255

Pro Ser Glu Val Lys Gln Ala Thr Ser Thr Ser Gly Pro Ala Ser Ala
260 265 270

Val Ala Asp Pro Pro Ser Thr Glu Lys Glu Ile Asp Pro Thr Ser Ile
275 280 285

Pro Thr Ala Ile Lys Tyr Gln Asp Asp Asn Ser Leu Ala His Pro Asn
290 295 300

```
Leu Phe Ile Glu Lys Ala Asp Ala Glu Glu Lys Trp Phe Lys Arg Leu
305                 310                 315                 320


Ile Ala Leu Arg Gln Glu Arg Leu Met Gly Ser Pro Val Ala
                325                 330


<210> 6202
<211> 434
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1348; "

<220>
<221> source
<223> /note="Gene Symbol: RSRC2; "

<220>
<221> source
<223> /note="Gene Name:
      arginine/serine-rich coiled-coil 2; "

<220>
<221> source
<223> /note="Uniprot ID:  Q7L4I2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000330188"

<400> 6202
Met Ala Ala Ser Asp Thr Glu Arg Asp Gly Leu Ala Pro Glu Lys Thr
1               5                   10                  15


Ser Pro Asp Arg Asp Lys Lys Lys Glu Gln Ser Glu Val Ser Val Ser
            20                  25                  30


Pro Arg Ala Ser Lys His His Tyr Ser Arg Ser Arg Ser Arg Ser Arg
        35                  40                  45


Glu Arg Lys Arg Lys Ser Asp Asn Glu Gly Arg Lys His Arg Ser Arg
    50                  55                  60


Ser Arg Ser Lys Glu Gly Arg Arg His Glu Ser Lys Asp Lys Ser Ser
65                  70                  75                  80
```

```
Lys Lys His Lys Ser Glu Glu His Asn Asp Lys Glu His Ser Ser Asp
                85                  90                  95

Lys Gly Arg Glu Arg Leu Asn Ser Ser Glu Asn Gly Glu Asp Arg His
            100                 105                 110

Lys Arg Lys Glu Arg Lys Ser Ser Arg Gly Arg Ser His Ser Arg Ser
        115                 120                 125

Arg Ser Arg Glu Arg Arg His Arg Ser Arg Ser Arg Glu Arg Lys Lys
    130                 135                 140

Ser Arg Ser Arg Ser Arg Glu Arg Lys Lys Ser Arg Ser Arg Ser Arg
145                 150                 155                 160

Glu Arg Lys Lys Ser Arg Ser Arg Ser Arg Glu Arg Lys Arg Arg Ile
                165                 170                 175

Arg Ser Arg Ser Arg Ser Arg Ser Arg His Arg His Arg Thr Arg Ser
            180                 185                 190

Arg Ser Arg Thr Arg Ser Arg Ser Arg Asp Arg Lys Lys Arg Ile Glu
        195                 200                 205

Lys Pro Arg Arg Phe Ser Arg Ser Leu Ser Arg Thr Pro Ser Pro Pro
    210                 215                 220

Pro Phe Arg Gly Arg Asn Thr Ala Met Asp Ala Gln Glu Ala Leu Ala
225                 230                 235                 240

Arg Arg Leu Glu Arg Ala Lys Lys Leu Gln Glu Gln Arg Glu Lys Glu
                245                 250                 255

Met Val Glu Lys Gln Lys Gln Gln Glu Ile Ala Ala Ala Ala Ala Thr
            260                 265                 270

Gly Gly Ser Val Leu Asn Val Ala Ala Leu Leu Ala Ser Gly Thr Gln
        275                 280                 285

Val Thr Pro Gln Ile Ala Met Ala Ala Gln Met Ala Ala Leu Gln Ala
    290                 295                 300

Lys Ala Leu Ala Glu Thr Gly Ile Ala Val Pro Ser Tyr Tyr Asn Pro
```

```
305                 310                 315                 320

Ala Ala Val Asn Pro Met Lys Phe Ala Glu Gln Glu Lys Lys Arg Lys
                325                 330                 335

Met Leu Trp Gln Gly Lys Lys Glu Gly Asp Lys Ser Gln Ser Ala Glu
            340                 345                 350

Ile Trp Glu Lys Leu Asn Phe Gly Asn Lys Asp Gln Asn Val Lys Phe
        355                 360                 365

Arg Lys Leu Met Gly Ile Lys Ser Glu Asp Glu Ala Gly Cys Ser Ser
    370                 375                 380

Val Asp Glu Glu Ser Tyr Lys Thr Leu Lys Gln Gln Glu Glu Val Phe
385                 390                 395                 400

Arg Asn Leu Asp Ala Gln Tyr Glu Met Ala Arg Ser Gln Thr His Thr
                405                 410                 415

Gln Arg Gly Met Gly Leu Gly Phe Thr Ser Ser Met Arg Gly Met Asp
            420                 425                 430

Ala Val
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<210> 6203
<211> 236
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1348; "

<220>
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<223> /note="Gene Symbol: RSRC2; "

<220>
<221> source
<223> /note="Gene Name:
arginine/serine-rich coiled-coil 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000343315"

<400> 6203
Met Ile Arg Thr Asn Phe Phe Leu Lys Gln Gly Arg Arg His Glu Ser
1 5 10 15

Lys Asp Lys Ser Ser Lys Lys His Lys Ser Glu Glu His Asn Asp Lys
20 25 30

Glu His Ser Ser Asp Lys Gly Arg Glu Arg Leu Asn Ser Ser Glu Asn
35 40 45

Gly Glu Asp Arg His Lys Arg Lys Glu Arg Lys Ser Ser Arg Gly Arg
50 55 60

Ser His Ser Arg Ser Arg Ser Arg Glu Arg Arg His Arg Ser Arg Ser
65 70 75 80

Arg Glu Arg Lys Lys Ser Arg Ser Arg Ser Arg Glu Arg Lys Lys Ser
85 90 95

Arg Ser Arg Ser Arg Glu Arg Lys Lys Ser Arg Ser Arg Ser Arg Glu
100 105 110

Arg Lys Arg Arg Ile Arg Ser Arg Ser Arg Ser Arg Ser Arg His Arg
115 120 125

His Arg Thr Arg Ser Arg Ser Arg Thr Arg Ser Arg Ser Arg Asp Arg
130 135 140

Lys Lys Arg Ile Glu Lys Pro Arg Arg Phe Ser Arg Ser Leu Ser Arg
145 150 155 160

Thr Pro Ser Pro Pro Pro Phe Arg Gly Arg Asn Thr Ala Met Asp Ala
165 170 175

Gln Glu Ala Leu Ala Arg Arg Leu Glu Arg Ala Lys Lys Leu Gln Glu
180 185 190

Gln Arg Glu Lys Glu Met Val Glu Lys Gln Lys Gln Gln Glu Ile Ala
195 200 205

Ala Ala Ala Ala Thr Gly Gly Ser Val Leu Asn Val Ala Ala Leu Leu
210 215 220

Ala Ser Gly Thr Gln Val Thr Pro Gln Ile Ala Met
225 230 235

<210> 6204
<211> 76
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
arginine/serine-rich coiled-coil 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000412148"

<400> 6204
Met Ala Ala Ser Asp Thr Glu Arg Asp Gly Leu Ala Pro Glu Lys Thr
1 5 10 15

Ser Pro Asp Arg Asp Lys Lys Lys Glu Gln Ser Glu Val Ser Val Ser
20 25 30

Pro Arg Ala Ser Lys His His Tyr Ser Arg Ser Arg Ser Arg Ser Arg
35 40 45

Glu Arg Lys Arg Lys Ser Asp Asn Glu Gly Arg Lys His Arg Ser Arg
50 55 60

Ser Arg Ser Lys Glu Arg Ala Tyr Ala Arg Arg Asp
65 70 75

<210> 6205
<211> 76
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1348; "

<220>

<221> source
<223> /note="Gene Symbol: RSRC2; "

<220>
<221> source
<223> /note="Gene Name:
arginine/serine-rich coiled-coil 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000432725"

<400> 6205
Met Ala Ala Ser Asp Thr Glu Arg Asp Gly Leu Ala Pro Glu Lys Thr
1 5 10 15

Ser Pro Asp Arg Asp Lys Lys Lys Glu Gln Ser Glu Val Ser Val Ser
20 25 30

Pro Arg Ala Ser Lys His His Tyr Ser Arg Ser Arg Ser Arg Ser Arg
35 40 45

Glu Arg Lys Arg Lys Ser Asp Asn Glu Gly Arg Lys His Arg Ser Arg
50 55 60

Ser Arg Ser Lys Glu Arg Ala Tyr Ala Arg Arg Asp
65 70 75

<210> 6206
<211> 76
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1348; "

<220>
<221> source
<223> /note="Gene Symbol: RSRC2; "

<220>
<221> source
<223> /note="Gene Name:
arginine/serine-rich coiled-coil 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436515"

<400> 6206
Met Ala Ala Ser Asp Thr Glu Arg Asp Gly Leu Ala Pro Glu Lys Thr

1 5 10 15

Ser Pro Asp Arg Asp Lys Lys Lys Glu Gln Ser Glu Val Ser Val Ser
20 25 30

Pro Arg Ala Ser Lys His His Tyr Ser Arg Ser Arg Ser Arg Ser Arg
35 40 45

Glu Arg Lys Arg Lys Ser Asp Asn Glu Gly Arg Lys His Arg Ser Arg
50 55 60

Ser Arg Ser Lys Glu Arg Ala Tyr Ala Arg Arg Asp
65 70 75

<210> 6207
<211> 176
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1348; "

<220>
<221> source
<223> /note="Gene Symbol: RSRC2; "

<220>
<221> source
<223> /note="Gene Name:
arginine/serine-rich coiled-coil 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000444159"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6207
Xaa Arg Arg His Glu Ser Lys Asp Lys Ser Ser Lys Lys His Lys Ser
1 5 10 15

Glu Glu His Asn Asp Lys Glu His Ser Ser Asp Lys Gly Arg Glu Arg
20 25 30

Leu Asn Ser Ser Glu Asn Gly Glu Asp Arg His Lys Arg Lys Glu Arg

```
        35                  40                  45

Lys Ser Ser Arg Gly Arg Ser His Ser Arg Ser Arg Ser Arg Glu Arg
    50                  55                  60

Arg His Arg Ser Arg Ser Arg Glu Arg Lys Lys Ser Arg Ser Arg Ser
65                  70                  75                  80

Arg Glu Arg Lys Lys Ser Arg Ser Arg Ser Arg Glu Arg Lys Lys Ser
                85                  90                  95

Arg Ser Arg Ser Arg Glu Arg Lys Arg Arg Ile Arg Ser Arg Ser Arg
            100                 105                 110

Ser Arg Ser Arg His Arg His Arg Thr Arg Ser Arg Ser Arg Thr Arg
        115                 120                 125

Ser Arg Ser Arg Asp Arg Lys Lys Arg Ile Glu Lys Pro Arg Arg Phe
    130                 135                 140

Ser Arg Ser Leu Ser Arg Thr Pro Ser Pro Pro Pro Phe Arg Gly Arg
145                 150                 155                 160

Asn Thr Ala Met Asp Ala Gln Glu Ala Leu Ala Arg Arg Gln Asn Thr
                165                 170                 175


<210> 6208
<211> 25
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1348; "

<220>
<221> source
<223> /note="Gene Symbol: RSRC2; "

<220>
<221> source
<223> /note="Gene Name:
      arginine/serine-rich coiled-coil 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000445664"
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<400> 6208
Met Lys Glu Glu Asn Thr Gly Ala Gly Ala Glu Ala Lys Ser Val Leu
1 5 10 15

Met Arg Glu Glu Thr Glu Leu Lys Thr
20 25

<210> 6209
<211> 91
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1348; "

<220>
<221> source
<223> /note="Gene Symbol: RSRC2; "

<220>
<221> source
<223> /note="Gene Name:
arginine/serine-rich coiled-coil 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000446470"

<400> 6209
Met Val Arg Thr Gly Thr Asn Ala Lys Lys Glu Ser His Gln Glu Ala
1 5 10 15

Glu Val Thr Gln Asp Leu Gly Leu Val Lys Asp Ala Ile Val Val Glu
20 25 30

Ala Gly Ser Gly Arg Ser Leu Asp Pro Gly Val Gly Ser Gly Arg Asn
35 40 45

Arg Asp Pro Glu Ala Glu Arg Gly Arg Asn Arg Asp Pro Glu Ala Gly
50 55 60

Lys Glu Asn Gly Gly Ser Gly Leu Val Pro Ala Gln Asp Gln Asp Thr
65 70 75 80

Gly Ile Gly Leu Glu Ala Gly Val Gly Gln Gly
85 90

<210> 6210

<211> 290
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1349; "

<220>
<221> source
<223> /note="Gene Symbol: RSRP1; "

<220>
<221> source
<223> /note="Gene Name:
arginine/serine-rich prt 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q9BUV0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000243189"

<400> 6210

Met	Ser	Asn	Tyr	Val	Asn	Asp	Met	Trp	Pro	Gly	Ser	Pro	Gln	Glu	Lys
1				5				10						15	

Asp	Ser	Pro	Ser	Thr	Ser	Arg	Ser	Gly	Gly	Ser	Ser	Arg	Leu	Ser	Ser
			20					25					30		

Arg	Ser	Arg	Ser	Arg	Ser	Phe	Ser	Arg	Ser	Ser	Arg	Ser	His	Ser	Arg
		35					40					45			

Val	Ser	Ser	Arg	Phe	Ser	Ser	Arg	Ser	Arg	Arg	Ser	Lys	Ser	Arg	Ser
	50					55					60				

Arg	Ser	Arg	Arg	Arg	His	Gln	Arg	Lys	Tyr	Arg	Arg	Tyr	Ser	Arg	Ser
65					70					75					80

Tyr	Ser	Arg	Ser	Arg	Ser	Arg	Ser	Arg	Ser	Arg	Arg	Tyr	Arg	Glu	Arg
				85					90					95	

Arg	Tyr	Gly	Phe	Thr	Arg	Arg	Tyr	Tyr	Arg	Ser	Pro	Ser	Arg	Tyr	Arg
			100					105					110		

Ser	Arg	Ser	Arg	Ser	Arg	Ser	Arg	Ser	Arg	Gly	Arg	Ser	Tyr	Cys	Gly
		115					120					125			

```
Arg Ala Tyr Ala Ile Ala Arg Gly Gln Arg Tyr Tyr Gly Phe Gly Arg
    130                 135                 140

Thr Val Tyr Pro Glu Glu His Ser Arg Trp Arg Asp Arg Ser Arg Thr
145                 150                 155                 160

Arg Ser Arg Ser Arg Thr Pro Phe Arg Leu Ser Glu Lys Asp Arg Met
                165                 170                 175

Glu Leu Leu Glu Ile Ala Lys Thr Asn Ala Ala Lys Ala Leu Gly Thr
            180                 185                 190

Thr Asn Ile Asp Leu Pro Ala Ser Leu Arg Thr Val Pro Ser Ala Lys
        195                 200                 205

Glu Thr Ser Arg Gly Ile Gly Val Ser Ser Asn Gly Ala Lys Pro Glu
    210                 215                 220

Leu Ser Glu Lys Val Thr Glu Asp Gly Thr Arg Asn Pro Asn Glu Lys
225                 230                 235                 240

Pro Thr Gln Gln Arg Ser Ile Ala Phe Ser Ser Asn Asn Ser Val Ala
                245                 250                 255

Lys Pro Ile Gln Lys Ser Ala Lys Ala Ala Thr Glu Glu Ala Ser Ser
            260                 265                 270

Arg Ser Pro Lys Ile Asp Gln Lys Lys Ser Pro Tyr Gly Leu Trp Ile
        275                 280                 285

Pro Ile
    290
```

<210> 6211
<211> 242
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1349; "

<220>
<221> source
<223> /note="Gene Symbol: RSRP1; "

<220>
<221> source
<223> /note="Gene Name:
arginine/serine-rich prt 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q9BUV0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000391510"

<400> 6211

```
Met Ser Asn Tyr Val Asn Asp Met Trp Pro Gly Ser Pro Gln Glu Lys
1               5                   10                  15


Asp Ser Pro Ser Thr Ser Arg Ser Gly Gly Ser Ser Arg Leu Ser Ser
            20                  25                  30


Arg Ser Arg Ser Arg Ser Phe Ser Arg Ser Ser Arg Ser His Ser Arg
        35                  40                  45


Val Ser Ser Arg Phe Ser Ser Arg Ser Arg Arg Ser Lys Ser Arg Ser
    50                  55                  60


Arg Ser Arg Arg Arg His Gln Arg Lys Tyr Arg Arg Tyr Ser Arg Ser
65                  70                  75                  80


Tyr Ser Arg Ser Arg Ser Arg Ser Arg Ser Arg Arg Tyr Arg Glu Arg
                85                  90                  95


Arg Tyr Gly Phe Thr Arg Arg Tyr Tyr Arg Ser Pro Ser Arg Tyr Arg
            100                 105                 110


Ser Arg Ser Arg Ser Arg Ser Arg Ser Arg Gly Arg Ser Tyr Cys Gly
        115                 120                 125


Arg Ala Tyr Ala Ile Ala Arg Gly Gln Arg Tyr Tyr Gly Phe Gly Arg
    130                 135                 140


Thr Val Tyr Pro Glu Glu His Ser Arg Trp Arg Asp Arg Ser Arg Thr
145                 150                 155                 160


Arg Ser Arg Ser Arg Thr Pro Phe Arg Leu Ser Glu Lys Asp Arg Met
                165                 170                 175
```

```
Glu Leu Leu Glu Ile Ala Lys Thr Asn Ala Ala Lys Ala Leu Gly Thr
            180                 185                 190

Thr Asn Ile Asp Leu Pro Ala Ser Leu Arg Thr Val Pro Ser Ala Lys
        195                 200                 205

Glu Thr Ser Arg Gly Ile Gly Val Ser Ser Asn Gly Ala Lys Pro Glu
    210                 215                 220

Val Ser Ile Leu Gly Leu Ser Glu Gln Asn Phe Gln Lys Ala Asn Cys
225                 230                 235                 240

Gln Ile
```

<210> 6212
<211> 84
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1349; "

<220>
<221> source
<223> /note="Gene Symbol: RSRP1; "

<220>
<221> source
<223> /note="Gene Name:
arginine/serine-rich prt 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000454463"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6212

```
Xaa Arg Thr Val Tyr Pro Glu Glu His Ser Arg Trp Arg Asp Arg Ser
1               5                   10                  15

Arg Thr Arg Ser Arg Ser Arg Thr Pro Phe Arg Leu Ser Glu Lys Asp
            20                  25                  30
```

```
Arg Met Glu Leu Leu Glu Ile Ala Lys Thr Asn Ala Ala Lys Ala Leu
        35                  40                  45

Gly Thr Thr Asn Ile Asp Leu Pro Ala Ser Leu Arg Thr Val Pro Ser
    50                  55                  60

Ala Lys Glu Thr Ser Arg Gly Ile Gly Val Ser Ser Asn Gly Ala Lys
65                  70                  75                  80

Pro Glu Lys Ser
```

<210> 6213
<211> 129
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1349; "

<220>
<221> source
<223> /note="Gene Symbol: RSRP1; "

<220>
<221> source
<223> /note="Gene Name:
arginine/serine-rich prt 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000454590"

<400> 6213

```
Met Ser Asn Tyr Val Asn Asp Met Trp Pro Gly Ser Pro Gln Glu Lys
1               5                   10                  15

Asp Ser Pro Ser Thr Ser Arg Ser Gly Gly Ser Ser Arg Leu Ser Ser
            20                  25                  30

Arg Ser Arg Ser Arg Ser Phe Ser Arg Ser Ser Arg Ser His Ser Arg
        35                  40                  45

Val Ser Ser Arg Phe Ser Ser Arg Ser Arg Arg Ser Lys Ser Arg Ser
    50                  55                  60
```

```
Arg Ser Arg Arg Arg His Gln Arg Lys Tyr Arg Arg Tyr Ser Arg Ser
65                  70                  75                  80


Tyr Ser Arg Ser Arg Ser Arg Ser Arg Ser Arg Arg Tyr Arg Glu Arg
                85                  90                  95


Arg Tyr Gly Phe Thr Arg Arg Tyr Tyr Arg Ser Pro Ser Arg Tyr Arg
            100                 105                 110


Ser Arg Ser Arg Ser Arg Ser Arg Ser Arg Gly Arg Ser Tyr Cys Gly
        115                 120                 125


Arg
```

<210> 6214
<211> 183
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1349; "

<220>
<221> source
<223> /note="Gene Symbol: RSRP1; "

<220>
<221> source
<223> /note="Gene Name:
arginine/serine-rich prt 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000455127"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6214

```
Xaa Ser Arg Tyr Arg Ser Arg Ser Arg Ser Arg Ser Arg Ser Arg Gly
1               5                   10                  15


Arg Ser Tyr Cys Gly Arg Ala Tyr Ala Ile Ala Arg Gly Gln Arg Tyr
            20                  25                  30
```

```
Tyr Gly Phe Gly Arg Thr Val Tyr Pro Glu Glu His Ser Arg Trp Arg
        35                  40                  45

Asp Arg Ser Arg Thr Arg Ser Arg Ser Arg Thr Pro Phe Arg Leu Ser
    50                  55                  60

Glu Lys Asp Arg Met Glu Leu Leu Glu Ile Ala Lys Thr Asn Ala Ala
65                  70                  75                  80

Lys Ala Leu Gly Thr Thr Asn Ile Asp Leu Pro Ala Ser Leu Arg Thr
                85                  90                  95

Val Pro Ser Ala Lys Glu Thr Ser Arg Gly Ile Gly Val Ser Ser Asn
            100                 105                 110

Gly Ala Lys Pro Glu Leu Ser Glu Lys Val Thr Glu Asp Gly Thr Arg
        115                 120                 125

Asn Pro Asn Glu Lys Pro Thr Gln Gln Arg Ser Ile Ala Phe Ser Ser
    130                 135                 140

Asn Asn Ser Val Ala Lys Pro Ile Gln Lys Ser Ala Lys Ala Ala Thr
145                 150                 155                 160

Glu Glu Ala Ser Ser Arg Ser Pro Lys Ile Asp Gln Lys Lys Ser Pro
                165                 170                 175

Tyr Gly Leu Trp Ile Pro Ile
            180


<210> 6215
<211> 96
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1349; "

<220>
<221> source
<223> /note="Gene Symbol: RSRP1; "

<220>
<221> source
<223> /note="Gene Name:
      arginine/serine-rich prt 1; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000456995"

<400> 6215
Met Ser Asn Tyr Val Asn Asp Met Trp Pro Gly Ser Pro Gln Glu Lys
1   5   10   15

Asp Ser Pro Ser Thr Ser Arg Ser Gly Gly Ser Ser Arg Leu Ser Ser
            20   25   30

Arg Ser Arg Ser Arg Ser Phe Ser Arg Ser Ser Arg Ser His Ser Arg
        35   40   45

Val Ser Ser Arg Phe Ser Ser Arg Ser Arg Arg Ser Lys Ser Arg Ser
    50   55   60

Arg Ser Arg Arg Arg His Gln Arg Lys Tyr Arg Arg Tyr Ser Arg Ser
65   70   75   80

Tyr Ser Arg Ser Arg Ser Arg Ser Arg Ser Arg Arg Tyr Arg Glu Arg
                85   90   95

<210> 6216
<211> 226
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1349; "

<220>
<221> source
<223> /note="Gene Symbol: RSRP1; "

<220>
<221> source
<223> /note="Gene Name:
      arginine/serine-rich prt 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000457195"

<400> 6216
Met Ser Asn Tyr Val Asn Asp Met Trp Pro Gly Ser Pro Gln Glu Lys
1   5   10   15

Asp Ser Pro Ser Thr Ser Arg Ser Gly Gly Ser Ser Arg Leu Ser Ser
20 25 30

Arg Ser Arg Ser Arg Ser Phe Ser Arg Ser Ser Arg Ser His Ser Arg
35 40 45

Val Ser Ser Arg Phe Ser Ser Arg Ser Arg Arg Ser Lys Ser Arg Ser
50 55 60

Arg Ser Arg Arg Arg His Gln Arg Lys Tyr Arg Arg Tyr Ser Arg Ser
65 70 75 80

Tyr Ser Arg Ser Arg Ser Arg Ser Arg Ser Arg Arg Tyr Arg Glu Arg
85 90 95

Arg Tyr Gly Phe Thr Arg Arg Tyr Tyr Arg Ser Pro Ser Arg Tyr Arg
100 105 110

Ser Arg Ser Arg Ser Arg Ser Arg Ser Arg Gly Arg Ser Tyr Cys Gly
115 120 125

Arg Ala Tyr Ala Ile Ala Arg Gly Gln Arg Tyr Tyr Gly Phe Gly Arg
130 135 140

Thr Val Tyr Pro Glu Glu His Ser Arg Trp Arg Asp Arg Ser Arg Thr
145 150 155 160

Arg Ser Arg Ser Arg Thr Pro Phe Arg Leu Ser Glu Lys Asp Arg Met
165 170 175

Glu Leu Leu Glu Ile Ala Lys Thr Asn Ala Ala Lys Ala Leu Gly Thr
180 185 190

Thr Asn Ile Asp Leu Pro Ala Ser Leu Arg Thr Val Pro Ser Ala Lys
195 200 205

Glu Thr Ser Arg Gly Ile Gly Val Ser Ser Asn Gly Ala Lys Pro Glu
210 215 220

Met Phe
225

<210> 6217

<211> 226
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1349; "

<220>
<221> source
<223> /note="Gene Symbol: RSRP1; "

<220>
<221> source
<223> /note="Gene Name:
arginine/serine-rich prt 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q9BUV0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000457582"

<400> 6217

Met	Ser	Asn	Tyr	Val	Asn	Asp	Met	Trp	Pro	Gly	Ser	Pro	Gln	Glu	Lys
1				5				10					15		
Asp	Ser	Pro	Ser	Thr	Ser	Arg	Ser	Gly	Gly	Ser	Ser	Arg	Leu	Ser	Ser
			20					25				30			
Arg	Ser	Arg	Ser	Arg	Ser	Phe	Ser	Arg	Ser	Ser	Arg	Ser	His	Ser	Arg
		35					40					45			
Val	Ser	Ser	Arg	Phe	Ser	Ser	Arg	Ser	Arg	Arg	Ser	Lys	Ser	Arg	Ser
	50					55					60				
Arg	Ser	Arg	Arg	Arg	His	Gln	Arg	Lys	Tyr	Arg	Arg	Tyr	Ser	Arg	Ser
65					70					75					80
Tyr	Ser	Arg	Ser	Arg	Ser	Arg	Ser	Arg	Ser	Arg	Arg	Tyr	Arg	Glu	Arg
				85					90					95	
Arg	Tyr	Gly	Phe	Thr	Arg	Arg	Tyr	Tyr	Arg	Ser	Pro	Ser	Arg	Tyr	Arg
			100					105					110		
Ser	Arg	Ser	Arg	Ser	Arg	Ser	Arg	Ser	Arg	Gly	Arg	Ser	Tyr	Cys	Gly
		115					120					125			

```
Arg Ala Tyr Ala Ile Ala Arg Gly Gln Arg Tyr Tyr Gly Phe Gly Arg
    130                 135                 140

Thr Val Tyr Pro Glu Glu His Ser Arg Trp Arg Asp Arg Ser Arg Thr
145                 150                 155                 160

Arg Ser Arg Ser Arg Thr Pro Phe Arg Leu Ser Glu Lys Asp Arg Met
                165                 170                 175

Glu Leu Leu Glu Ile Ala Lys Thr Asn Ala Ala Lys Ala Leu Gly Thr
            180                 185                 190

Thr Asn Ile Asp Leu Pro Ala Ser Leu Arg Thr Val Pro Ser Ala Lys
        195                 200                 205

Glu Thr Ser Arg Gly Ile Gly Val Ser Ser Asn Gly Ala Lys Pro Glu
    210                 215                 220

Lys Ser
225


<210> 6218
<211> 89
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1349; "

<220>
<221> source
<223> /note="Gene Symbol: RSRP1; "

<220>
<221> source
<223> /note="Gene Name:
      arginine/serine-rich prt 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000458042"

<400> 6218
Met Ser Asn Tyr Val Asn Asp Met Trp Pro Gly Ser Pro Gln Glu Lys
1               5                   10                  15

Asp Ser Pro Ser Thr Ser Arg Ser Gly Gly Ser Ser Arg Leu Ser Ser
```

```
            20                  25                  30

Arg Ser Arg Ser Arg Ser Phe Ser Arg Ser Ser Arg Ser His Ser Arg
        35                  40                  45

Val Ser Ser Arg Phe Ser Ser Arg Ser Arg Arg Ser Lys Ser Arg Ser
    50                  55                  60

Arg Ser Arg Arg Arg His Gln Arg Lys Tyr Arg Arg Tyr Ser Arg Ser
65                  70                  75                  80

Tyr Ser Arg Ser Arg Ser Arg Ser Arg
                85


<210> 6219
<211> 315
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1350; "

<220>
<221> source
<223> /note="Gene Symbol: ARGFX; "

<220>
<221> source
<223> /note="Gene Name:
      arginine-fifty homeobox; "

<220>
<221> source
<223> /note="Uniprot ID:  A6NJG6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000335578"

<400> 6219
Met Arg Asn Arg Met Ala Pro Glu Asn Pro Gln Pro Asp Pro Phe Ile
1               5                   10                  15

Asn Arg Asn Tyr Ser Asn Met Lys Val Ile Pro Pro Gln Asp Pro Ala
            20                  25                  30

Ser Pro Ser Phe Thr Leu Leu Ser Lys Leu Glu Cys Ser Gly Thr Val
        35                  40                  45
```

```
Ser Ala Tyr Cys Ser Leu Asn Leu Pro Gly Ser Thr Asp Pro Pro Thr
    50                  55                  60

Ser Ala Ser Arg Val Ala Ala Thr Thr Ala Ile Arg Arg Arg His Lys
65                  70                  75                  80

Glu Arg Thr Ser Phe Thr His Gln Gln Tyr Glu Glu Leu Glu Ala Leu
                85                  90                  95

Phe Ser Gln Thr Met Phe Pro Asp Arg Asn Leu Gln Glu Lys Leu Ala
            100                 105                 110

Leu Arg Leu Asp Leu Pro Glu Ser Thr Val Lys Val Trp Phe Arg Asn
        115                 120                 125

Arg Arg Phe Lys Leu Lys Lys Gln Gln Gln Gln Gln Ser Ala Lys Gln
    130                 135                 140

Arg Asn Gln Ile Leu Pro Ser Lys Lys Asn Val Pro Thr Ser Pro Arg
145                 150                 155                 160

Thr Ser Pro Ser Pro Tyr Ala Phe Ser Pro Val Ile Ser Asp Phe Tyr
                165                 170                 175

Ser Ser Leu Pro Ser Gln Pro Leu Asp Pro Ser Asn Trp Ala Trp Asn
            180                 185                 190

Ser Thr Phe Thr Glu Ser Ser Thr Ser Asp Phe Gln Met Gln Asp Thr
        195                 200                 205

Gln Trp Glu Arg Leu Val Ala Ser Val Pro Ala Leu Tyr Ser Asp Ala
    210                 215                 220

Tyr Asp Ile Phe Gln Ile Ile Glu Leu Tyr Asn Leu Pro Asp Glu Asn
225                 230                 235                 240

Glu Ile Ser Ser Ser Ser Phe His Cys Leu Tyr Gln Tyr Leu Ser Pro
                245                 250                 255

Thr Lys Tyr Gln Val Gly Gly Gln Gly Ser Ser Leu Ser Ile Phe Ala
            260                 265                 270
```

```
Gly Pro Ala Val Gly Leu Ser Pro Ala Gln Thr Trp Pro Asn Met Thr
        275                 280                 285

Ser Gln Ala Phe Glu Ala Tyr Ser Leu Thr Asp Ser Leu Glu Phe Gln
    290                 295                 300

Lys Thr Ser Asn Met Val Asp Leu Gly Phe Leu
305                 310                 315


<210> 6220
<211> 1566
<212> PRT
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<223> /note="Gene Symbol: RERE; "

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      arginine-glutamic acid dipeptide (RE) repeats; "

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Met Thr Ala Asp Lys Asp Lys Asp Lys Asp Lys Glu Lys Asp Arg Asp
1               5                   10                  15

Arg Asp Arg Asp Arg Glu Arg Glu Lys Arg Asp Lys Ala Arg Glu Ser
            20                  25                  30

Glu Asn Ser Arg Pro Arg Arg Ser Cys Thr Leu Glu Gly Gly Ala Lys
        35                  40                  45

Asn Tyr Ala Glu Ser Asp His Ser Glu Asp Glu Asp Asn Asp Asn Asn
    50                  55                  60

Ser Ala Thr Ala Glu Glu Ser Thr Lys Lys Asn Lys Lys Lys Pro Pro
65                  70                  75                  80
```

```
Lys Lys Lys Ser Arg Tyr Glu Arg Thr Asp Thr Gly Glu Ile Thr Ser
                85                  90                  95

Tyr Ile Thr Glu Asp Asp Val Val Tyr Arg Pro Gly Asp Cys Val Tyr
            100                 105                 110

Ile Glu Ser Arg Arg Pro Asn Thr Pro Tyr Phe Ile Cys Ser Ile Gln
        115                 120                 125

Asp Phe Lys Leu Val His Asn Ser Gln Ala Cys Cys Arg Ser Pro Thr
    130                 135                 140

Pro Ala Leu Cys Asp Pro Pro Ala Cys Ser Leu Pro Val Ala Ser Gln
145                 150                 155                 160

Pro Pro Gln His Leu Ser Glu Ala Gly Arg Gly Pro Val Gly Ser Lys
                165                 170                 175

Arg Asp His Leu Leu Met Asn Val Lys Trp Tyr Tyr Arg Gln Ser Glu
            180                 185                 190

Val Pro Asp Ser Val Tyr Gln His Leu Val Gln Asp Arg His Asn Glu
        195                 200                 205

Asn Asp Ser Gly Arg Glu Leu Val Ile Thr Asp Pro Val Ile Lys Asn
    210                 215                 220

Arg Glu Leu Phe Ile Ser Asp Tyr Val Asp Thr Tyr His Ala Ala Ala
225                 230                 235                 240

Leu Arg Gly Lys Cys Asn Ile Ser His Phe Ser Asp Ile Phe Ala Ala
                245                 250                 255

Arg Glu Phe Lys Ala Arg Val Asp Ser Phe Phe Tyr Ile Leu Gly Tyr
            260                 265                 270

Asn Pro Glu Thr Arg Arg Leu Asn Ser Thr Gln Gly Glu Ile Arg Val
        275                 280                 285

Gly Pro Ser His Gln Ala Lys Leu Pro Asp Leu Gln Pro Phe Pro Ser
    290                 295                 300
```

```
Pro Asp Gly Asp Thr Val Thr Gln His Glu Glu Leu Val Trp Met Pro
305                 310                 315                 320

Gly Val Asn Asp Cys Asp Leu Leu Met Tyr Leu Arg Ala Ala Arg Ser
                325                 330                 335

Met Ala Ala Phe Ala Gly Met Cys Asp Gly Gly Ser Thr Glu Asp Gly
            340                 345                 350

Cys Val Ala Ala Ser Arg Asp Asp Thr Thr Leu Asn Ala Leu Asn Thr
        355                 360                 365

Leu His Glu Ser Gly Tyr Asp Ala Gly Lys Ala Leu Gln Arg Leu Val
    370                 375                 380

Lys Lys Pro Val Pro Lys Leu Ile Glu Lys Cys Trp Thr Glu Asp Glu
385                 390                 395                 400

Val Lys Arg Phe Val Lys Gly Leu Arg Gln Tyr Gly Lys Asn Phe Phe
                405                 410                 415

Arg Ile Arg Lys Glu Leu Leu Pro Asn Lys Glu Thr Gly Glu Leu Ile
            420                 425                 430

Thr Phe Tyr Tyr Tyr Trp Lys Lys Thr Pro Glu Ala Ala Ser Ser Arg
        435                 440                 445

Ala His Arg Arg His Arg Arg Gln Ala Val Phe Arg Arg Ile Lys Thr
    450                 455                 460

Arg Thr Ala Ser Thr Pro Val Asn Thr Pro Ser Arg Pro Pro Ser Ser
465                 470                 475                 480

Glu Phe Leu Asp Leu Ser Ser Ala Ser Glu Asp Asp Phe Asp Ser Glu
                485                 490                 495

Asp Ser Glu Gln Glu Leu Lys Gly Tyr Ala Cys Arg His Cys Phe Thr
            500                 505                 510

Thr Thr Ser Lys Asp Trp His His Gly Gly Arg Glu Asn Ile Leu Leu
        515                 520                 525
```

```
Cys Thr Asp Cys Arg Ile His Phe Lys Lys Tyr Gly Glu Leu Pro Pro
    530                 535                 540

Ile Glu Lys Pro Val Asp Pro Pro Pro Phe Met Phe Lys Pro Val Lys
545                 550                 555                 560

Glu Glu Asp Asp Gly Leu Ser Gly Lys His Ser Met Arg Thr Arg Arg
                565                 570                 575

Ser Arg Gly Ser Met Ser Thr Leu Arg Ser Gly Arg Lys Lys Gln Pro
            580                 585                 590

Ala Ser Pro Asp Gly Arg Thr Ser Pro Ile Asn Glu Asp Ile Arg Ser
        595                 600                 605

Ser Gly Arg Asn Ser Pro Ser Ala Ala Ser Thr Ser Ser Asn Asp Ser
    610                 615                 620

Lys Ala Glu Thr Val Lys Lys Ser Ala Lys Lys Val Lys Glu Glu Ala
625                 630                 635                 640

Ser Ser Pro Leu Lys Ser Asn Lys Arg Gln Arg Glu Lys Val Ala Ser
                645                 650                 655

Asp Thr Glu Glu Ala Asp Arg Thr Ser Ser Lys Lys Thr Lys Thr Gln
            660                 665                 670

Glu Ile Ser Arg Pro Asn Ser Pro Ser Glu Gly Glu Gly Glu Ser Ser
        675                 680                 685

Asp Ser Arg Ser Val Asn Asp Glu Gly Ser Ser Asp Pro Lys Asp Ile
    690                 695                 700

Asp Gln Asp Asn Arg Ser Thr Ser Pro Ser Ile Pro Ser Pro Gln Asp
705                 710                 715                 720

Asn Glu Ser Asp Ser Asp Ser Ser Ala Gln Gln Gln Met Leu Gln Ala
                725                 730                 735

Gln Pro Pro Ala Leu Gln Ala Pro Thr Gly Val Thr Pro Ala Pro Ser
            740                 745                 750

Ser Ala Pro Pro Gly Thr Pro Gln Leu Pro Thr Pro Gly Pro Thr Pro
```

```
        755                 760                 765

Ser Ala Thr Ala Val Pro Pro Gln Gly Ser Pro Thr Ala Ser Gln Ala
    770                 775                 780

Pro Asn Gln Pro Gln Ala Pro Thr Ala Pro Val Pro His Thr His Ile
785                 790                 795                 800

Gln Gln Ala Pro Ala Leu His Pro Gln Arg Pro Pro Ser Pro His Pro
                805                 810                 815

Pro Pro His Pro Ser Pro His Pro Pro Leu Gln Pro Leu Thr Gly Ser
            820                 825                 830

Ala Gly Gln Pro Ser Ala Pro Ser His Ala Gln Pro Pro Leu His Gly
        835                 840                 845

Gln Gly Pro Pro Gly Pro His Ser Leu Gln Ala Gly Pro Leu Leu Gln
    850                 855                 860

His Pro Gly Pro Pro Gln Pro Phe Gly Leu Pro Pro Gln Ala Ser Gln
865                 870                 875                 880

Gly Gln Ala Pro Leu Gly Thr Ser Pro Ala Ala Ala Tyr Pro His Thr
                885                 890                 895

Ser Leu Gln Leu Pro Ala Ser Gln Ser Ala Leu Gln Ser Gln Gln Pro
            900                 905                 910

Pro Arg Glu Gln Pro Leu Pro Pro Ala Pro Leu Ala Met Pro His Ile
        915                 920                 925

Lys Pro Pro Pro Thr Thr Pro Ile Pro Gln Leu Pro Ala Pro Gln Ala
    930                 935                 940

His Lys His Pro Pro His Leu Ser Gly Pro Ser Pro Phe Ser Met Asn
945                 950                 955                 960

Ala Asn Leu Pro Pro Pro Pro Ala Leu Lys Pro Leu Ser Ser Leu Ser
                965                 970                 975

Thr His His Pro Pro Ser Ala His Pro Pro Pro Leu Gln Leu Met Pro
            980                 985                 990
```

Gln Ser Gln Pro Leu Pro Ser Ser Pro Ala Gln Pro Pro Gly Leu Thr
995 1000 1005

Gln Ser Gln Asn Leu Pro Pro Pro Pro Ala Ser His Pro Pro Thr
1010 1015 1020

Gly Leu His Gln Val Ala Pro Gln Pro Pro Phe Ala Gln His Pro
1025 1030 1035

Phe Val Pro Gly Gly Pro Pro Pro Ile Thr Pro Pro Thr Cys Pro
1040 1045 1050

Ser Thr Ser Thr Pro Pro Ala Gly Pro Gly Thr Ser Ala Gln Pro
1055 1060 1065

Pro Cys Ser Gly Ala Ala Ala Ser Gly Gly Ser Ile Ala Gly Gly
1070 1075 1080

Ser Ser Cys Pro Leu Pro Thr Val Gln Ile Lys Glu Glu Ala Leu
1085 1090 1095

Asp Asp Ala Glu Glu Pro Glu Ser Pro Pro Pro Pro Pro Arg Ser
1100 1105 1110

Pro Ser Pro Glu Pro Thr Val Val Asp Thr Pro Ser His Ala Ser
1115 1120 1125

Gln Ser Ala Arg Phe Tyr Lys His Leu Asp Arg Gly Tyr Asn Ser
1130 1135 1140

Cys Ala Arg Thr Asp Leu Tyr Phe Met Pro Leu Ala Gly Ser Lys
1145 1150 1155

Leu Ala Lys Lys Arg Glu Glu Ala Ile Glu Lys Ala Lys Arg Glu
1160 1165 1170

Ala Glu Gln Lys Ala Arg Glu Glu Arg Glu Arg Glu Lys Glu Lys
1175 1180 1185

Glu Lys Glu Arg Glu Arg Glu Arg Glu Arg Glu Arg Glu Ala Glu
1190 1195 1200

```
Arg Ala  Ala Lys Ala Ser Ser  Ser Ala His Glu Gly  Arg Leu Ser
    1205                 1210                 1215

Asp Pro  Gln Leu Ser Gly Pro  Gly His Met Arg Pro  Ser Phe Glu
    1220                 1225                 1230

Pro Pro  Pro Thr Thr Ile Ala  Ala Val Pro Pro Tyr  Ile Gly Pro
    1235                 1240                 1245

Asp Thr  Pro Ala Leu Arg Thr  Leu Ser Glu Tyr Ala  Arg Pro His
    1250                 1255                 1260

Val Met  Ser Pro Thr Asn Arg  Asn His Pro Phe Tyr  Met Pro Leu
    1265                 1270                 1275

Asn Pro  Thr Asp Pro Leu Leu  Ala Tyr His Met Pro  Gly Leu Tyr
    1280                 1285                 1290

Asn Val  Asp Pro Thr Ile Arg  Glu Arg Glu Leu Arg  Glu Arg Glu
    1295                 1300                 1305

Ile Arg  Glu Arg Glu Ile Arg  Glu Arg Glu Leu Arg  Glu Arg Met
    1310                 1315                 1320

Lys Pro  Gly Phe Glu Val Lys  Pro Pro Glu Leu Asp  Pro Leu His
    1325                 1330                 1335

Pro Ala  Ala Asn Pro Met Glu  His Phe Ala Arg His  Ser Ala Leu
    1340                 1345                 1350

Thr Ile  Pro Pro Thr Ala Gly  Pro His Pro Phe Ala  Ser Phe His
    1355                 1360                 1365

Pro Gly  Leu Asn Pro Leu Glu  Arg Glu Arg Leu Ala  Leu Ala Gly
    1370                 1375                 1380

Pro Gln  Leu Arg Pro Glu Met  Ser Tyr Pro Asp Arg  Leu Ala Ala
    1385                 1390                 1395

Glu Arg  Ile His Ala Glu Arg  Met Ala Ser Leu Thr  Ser Asp Pro
    1400                 1405                 1410
```

```
Leu Ala  Arg Leu Gln Met Phe  Asn Val Thr Pro His  His His Gln
    1415                1420                1425

His Ser  His Ile His Ser His  Leu His Leu His Gln  Gln Asp Pro
    1430                1435                1440

Leu His  Gln Gly Ser Ala Gly  Pro Val His Pro Leu  Val Asp Pro
    1445                1450                1455

Leu Thr  Ala Gly Pro His Leu  Ala Arg Phe Pro Tyr  Pro Pro Gly
    1460                1465                1470

Thr Leu  Pro Asn Pro Leu Leu  Gly Gln Pro Pro His  Glu His Glu
    1475                1480                1485

Met Leu  Arg His Pro Val Phe  Gly Thr Pro Tyr Pro  Arg Asp Leu
    1490                1495                1500

Pro Gly  Ala Ile Pro Pro Pro  Met Ser Ala Ala His  Gln Leu Gln
    1505                1510                1515

Ala Met  His Ala Gln Ser Ala  Glu Leu Gln Arg Leu  Ala Met Glu
    1520                1525                1530

Gln Gln  Trp Leu His Gly His  Pro His Met His Gly  Gly His Leu
    1535                1540                1545

Pro Ser  Gln Glu Asp Tyr Tyr  Ser Arg Leu Lys Lys  Glu Gly Asp
    1550                1555                1560

Lys Gln  Leu
    1565


<210> 6221
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arginine-glutamic acid dipeptide (RE) repeats; "

<220>
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Met Asp Asp Pro Phe Ser Pro Cys Arg Arg Leu Asn Ser Thr Gln Gly
1 5 10 15

Glu Ile Arg Val Gly Pro Ser His Gln Ala Lys Leu Pro Asp Leu Gln
20 25 30

Pro Phe Pro Ser Pro Asp Gly Asp Thr Val Thr Gln His Glu Glu Leu
35 40 45

Val Trp Met Pro Gly Val Asn Asp Cys Asp Leu Leu Met Tyr Leu Arg
50 55 60

Ala Ala Arg Ser Met Ala Ala Phe Ala Gly Met Cys Asp Gly Gly Ser
65 70 75 80

Thr Glu Asp Gly Cys Val Ala Ala Ser Arg Asp Asp Thr Thr Leu Asn
85 90 95

Ala Leu Asn Thr Leu His Glu Ser Gly Tyr Asp Ala Gly Lys Ala Leu
100 105 110

Gln Arg Leu Val Lys Lys Pro Val Pro Lys Leu Ile Glu Lys Cys Trp
115 120 125

Thr Glu Asp Glu Val Lys Arg Phe Val Lys Gly Leu Arg Gln Tyr Gly
130 135 140

Lys Asn Phe Phe Arg Ile Arg Lys Glu Leu Leu Pro Asn Lys Glu Thr
145 150 155 160

Gly Glu Leu Ile Thr Phe Tyr Tyr Tyr Trp Lys Lys Thr Pro Glu Ala
165 170 175

Ala Ser Ser Arg Ala His Arg Arg His Arg Arg Gln Ala Val Phe Arg
180 185 190

```
Arg Ile Lys Thr Arg Thr Ala Ser Thr Pro Val Asn Thr Pro Ser Arg
        195                 200                 205

Pro Pro Ser Ser Glu Phe Leu Asp Leu Ser Ser Ala Ser Glu Asp Asp
    210                 215                 220

Phe Asp Ser Glu Asp Ser Glu Gln Glu Leu Lys Gly Tyr Ala Cys Arg
225                 230                 235                 240

His Cys Phe Thr Thr Thr Ser Lys Asp Trp His His Gly Gly Arg Glu
                245                 250                 255

Asn Ile Leu Leu Cys Thr Asp Cys Arg Ile His Phe Lys Lys Tyr Gly
            260                 265                 270

Glu Leu Pro Pro Ile Glu Lys Pro Val Asp Pro Pro Pro Phe Met Phe
        275                 280                 285

Lys Pro Val Lys Glu Glu Asp Asp Gly Leu Ser Gly Lys His Ser Met
    290                 295                 300

Arg Thr Arg Arg Ser Arg Gly Ser Met Ser Thr Leu Arg Ser Gly Arg
305                 310                 315                 320

Lys Lys Gln Pro Ala Ser Pro Asp Gly Arg Thr Ser Pro Ile Asn Glu
                325                 330                 335

Asp Ile Arg Ser Ser Gly Arg Asn Ser Pro Ser Ala Ala Ser Thr Ser
            340                 345                 350

Ser Asn Asp Ser Lys Ala Glu Thr Val Lys Lys Ser Ala Lys Lys Val
        355                 360                 365

Lys Glu Glu Ala Ser Ser Pro Leu Lys Ser Asn Lys Arg Gln Arg Glu
    370                 375                 380

Lys Val Ala Ser Asp Thr Glu Glu Ala Asp Arg Thr Ser Ser Lys Lys
385                 390                 395                 400

Thr Lys Thr Gln Glu Ile Ser Arg Pro Asn Ser Pro Ser Glu Gly Glu
                405                 410                 415
```

```
Gly Glu Ser Ser Asp Ser Arg Ser Val Asn Asp Glu Gly Ser Ser Asp
            420                 425                 430

Pro Lys Asp Ile Asp Gln Asp Asn Arg Ser Thr Ser Pro Ser Ile Pro
        435                 440                 445

Ser Pro Gln Asp Asn Glu Ser Asp Ser Asp Ser Ser Ala Gln Gln Gln
    450                 455                 460

Met Leu Gln Ala Gln Pro Pro Ala Leu Gln Ala Pro Thr Gly Val Thr
465                 470                 475                 480

Pro Ala Pro Ser Ser Ala Pro Pro Gly Thr Pro Gln Leu Pro Thr Pro
                485                 490                 495

Gly Pro Thr Pro Ser Ala Thr Ala Val Pro Pro Gln Gly Ser Pro Thr
            500                 505                 510

Ala Ser Gln Ala Pro Asn Gln Pro Gln Ala Pro Thr Ala Pro Val Pro
        515                 520                 525

His Thr His Ile Gln Gln Ala Pro Ala Leu His Pro Gln Arg Pro Pro
    530                 535                 540

Ser Pro His Pro Pro Pro His Pro Ser Pro His Pro Pro Leu Gln Pro
545                 550                 555                 560

Leu Thr Gly Ser Ala Gly Gln Pro Ser Ala Pro Ser His Ala Gln Pro
                565                 570                 575

Pro Leu His Gly Gln Gly Pro Pro Gly Pro His Ser Leu Gln Ala Gly
            580                 585                 590

Pro Leu Leu Gln His Pro Gly Pro Pro Gln Pro Phe Gly Leu Pro Pro
        595                 600                 605

Gln Ala Ser Gln Gly Gln Ala Pro Leu Gly Thr Ser Pro Ala Ala Ala
    610                 615                 620

Tyr Pro His Thr Ser Leu Gln Leu Pro Ala Ser Gln Ser Ala Leu Gln
625                 630                 635                 640
```

Ser Gln Gln Pro Pro Arg Glu Gln Pro Leu Pro Pro Ala Pro Leu Ala
645 650 655

Met Pro His Ile Lys Pro Pro Pro Thr Thr Pro Ile Pro Gln Leu Pro
660 665 670

Ala Pro Gln Ala His Lys His Pro Pro His Leu Ser Gly Pro Ser Pro
675 680 685

Phe Ser Met Asn Ala Asn Leu Pro Pro Pro Pro Ala Leu Lys Pro Leu
690 695 700

Ser Ser Leu Ser Thr His His Pro Pro Ser Ala His Pro Pro Pro Leu
705 710 715 720

Gln Leu Met Pro Gln Ser Gln Pro Leu Pro Ser Ser Pro Ala Gln Pro
725 730 735

Pro Gly Leu Thr Gln Ser Gln Asn Leu Pro Pro Pro Pro Ala Ser His
740 745 750

Pro Pro Thr Gly Leu His Gln Val Ala Pro Gln Pro Pro Phe Ala Gln
755 760 765

His Pro Phe Val Pro Gly Gly Pro Pro Pro Ile Thr Pro Pro Thr Cys
770 775 780

Pro Ser Thr Ser Thr Pro Pro Ala Gly Pro Gly Thr Ser Ala Gln Pro
785 790 795 800

Pro Cys Ser Gly Ala Ala Ala Ser Gly Gly Ser Ile Ala Gly Gly Ser
805 810 815

Ser Cys Pro Leu Pro Thr Val Gln Ile Lys Glu Glu Ala Leu Asp Asp
820 825 830

Ala Glu Glu Pro Glu Ser Pro Pro Pro Pro Pro Arg Ser Pro Ser Pro
835 840 845

Glu Pro Thr Val Val Asp Thr Pro Ser His Ala Ser Gln Ser Ala Arg
850 855 860

Phe Tyr Lys His Leu Asp Arg Gly Tyr Asn Ser Cys Ala Arg Thr Asp

865 870 875 880

Leu Tyr Phe Met Pro Leu Ala Gly Ser Lys Leu Ala Lys Lys Arg Glu
885 890 895

Glu Ala Ile Glu Lys Ala Lys Arg Glu Ala Glu Gln Lys Ala Arg Glu
900 905 910

Glu Arg Glu Arg Glu Lys Glu Lys Glu Lys Glu Arg Glu Arg Glu Arg
915 920 925

Glu Arg Glu Arg Glu Ala Glu Arg Ala Ala Lys Ala Ser Ser Ser Ala
930 935 940

His Glu Gly Arg Leu Ser Asp Pro Gln Leu Ser Gly Pro Gly His Met
945 950 955 960

Arg Pro Ser Phe Glu Pro Pro Pro Thr Thr Ile Ala Ala Val Pro Pro
965 970 975

Tyr Ile Gly Pro Asp Thr Pro Ala Leu Arg Thr Leu Ser Glu Tyr Ala
980 985 990

Arg Pro His Val Met Ser Pro Thr Asn Arg Asn His Pro Phe Tyr
Met
995 1000 1005

Pro Leu Asn Pro Thr Asp Pro Leu Leu Ala Tyr His Met Pro Gly
1010 1015 1020

Leu Tyr Asn Val Asp Pro Thr Ile Arg Glu Arg Glu Leu Arg Glu
1025 1030 1035

Arg Glu Ile Arg Glu Arg Glu Ile Arg Glu Arg Glu Leu Arg Glu
1040 1045 1050

Arg Met Lys Pro Gly Phe Glu Val Lys Pro Pro Glu Leu Asp Pro
1055 1060 1065

Leu His Pro Ala Ala Asn Pro Met Glu His Phe Ala Arg His Ser
1070 1075 1080

Ala Leu Thr Ile Pro Pro Thr Ala Gly Pro His Pro Phe Ala Ser

1085 1090 1095

Phe His Pro Gly Leu Asn Pro Leu Glu Arg Glu Arg Leu Ala Leu
1100 1105 1110

Ala Gly Pro Gln Leu Arg Pro Glu Met Ser Tyr Pro Asp Arg Leu
1115 1120 1125

Ala Ala Glu Arg Ile His Ala Glu Arg Met Ala Ser Leu Thr Ser
1130 1135 1140

Asp Pro Leu Ala Arg Leu Gln Met Phe Asn Val Thr Pro His His
1145 1150 1155

His Gln His Ser His Ile His Ser His Leu His Leu His Gln Gln
1160 1165 1170

Asp Pro Leu His Gln Gly Ser Ala Gly Pro Val His Pro Leu Val
1175 1180 1185

Asp Pro Leu Thr Ala Gly Pro His Leu Ala Arg Phe Pro Tyr Pro
1190 1195 1200

Pro Gly Thr Leu Pro Asn Pro Leu Leu Gly Gln Pro Pro His Glu
1205 1210 1215

His Glu Met Leu Arg His Pro Val Phe Gly Thr Pro Tyr Pro Arg
1220 1225 1230

Asp Leu Pro Gly Ala Ile Pro Pro Pro Met Ser Ala Ala His Gln
1235 1240 1245

Leu Gln Ala Met His Ala Gln Ser Ala Glu Leu Gln Arg Leu Ala
1250 1255 1260

Met Glu Gln Gln Trp Leu His Gly His Pro His Met His Gly Gly
1265 1270 1275

His Leu Pro Ser Gln Glu Asp Tyr Tyr Ser Arg Leu Lys Lys Glu
1280 1285 1290

Gly Asp Lys Gln Leu
1295

<210> 6222
<211> 584
<212> PRT
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<220>
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arginine-glutamic acid dipeptide (RE) repeats; "

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Met Thr Ala Asp Lys Asp Lys Asp Lys Asp Lys Glu Lys Asp Arg Asp
1 5 10 15

Arg Asp Arg Asp Arg Glu Arg Glu Lys Arg Asp Lys Ala Arg Glu Ser
20 25 30

Glu Asn Ser Arg Pro Arg Arg Ser Cys Thr Leu Glu Gly Gly Ala Lys
35 40 45

Asn Tyr Ala Glu Ser Asp His Ser Glu Asp Glu Asp Asn Asp Asn Asn
50 55 60

Ser Ala Thr Ala Glu Glu Ser Thr Lys Lys Asn Lys Lys Lys Pro Pro
65 70 75 80

Lys Lys Lys Ser Arg Tyr Glu Arg Thr Asp Thr Gly Glu Ile Thr Ser
85 90 95

Tyr Ile Thr Glu Asp Asp Val Val Tyr Arg Pro Gly Asp Cys Val Tyr
100 105 110

Ile Glu Ser Arg Arg Pro Asn Thr Pro Tyr Phe Ile Cys Ser Ile Gln
115 120 125

```
Asp Phe Lys Leu Val His Asn Ser Gln Ala Cys Cys Arg Ser Pro Thr
    130                 135                 140

Pro Ala Leu Cys Asp Pro Pro Ala Cys Ser Leu Pro Val Ala Ser Gln
145                 150                 155                 160

Pro Pro Gln His Leu Ser Glu Ala Gly Arg Gly Pro Val Gly Ser Lys
                165                 170                 175

Arg Asp His Leu Leu Met Asn Val Lys Trp Tyr Tyr Arg Gln Ser Glu
            180                 185                 190

Val Pro Asp Ser Val Tyr Gln His Leu Val Gln Asp Arg His Asn Glu
        195                 200                 205

Asn Asp Ser Gly Arg Glu Leu Val Ile Thr Asp Pro Val Ile Lys Asn
    210                 215                 220

Arg Glu Leu Phe Ile Ser Asp Tyr Val Asp Thr Tyr His Ala Ala Ala
225                 230                 235                 240

Leu Arg Gly Lys Cys Asn Ile Ser His Phe Ser Asp Ile Phe Ala Ala
                245                 250                 255

Arg Glu Phe Lys Ala Arg Val Asp Ser Phe Phe Tyr Ile Leu Gly Tyr
            260                 265                 270

Asn Pro Glu Thr Arg Arg Leu Asn Ser Thr Gln Gly Glu Ile Arg Val
        275                 280                 285

Gly Pro Ser His Gln Ala Lys Leu Pro Asp Leu Gln Pro Phe Pro Ser
    290                 295                 300

Pro Asp Gly Asp Thr Val Thr Gln His Glu Glu Leu Val Trp Met Pro
305                 310                 315                 320

Gly Val Asn Asp Cys Asp Leu Leu Met Tyr Leu Arg Ala Ala Arg Ser
                325                 330                 335

Met Ala Ala Phe Ala Gly Met Cys Asp Gly Gly Ser Thr Glu Asp Gly
            340                 345                 350

Cys Val Ala Ala Ser Arg Asp Asp Thr Thr Leu Asn Ala Leu Asn Thr
```

```
        355                 360                 365

Leu His Glu Ser Gly Tyr Asp Ala Gly Lys Ala Leu Gln Arg Leu Val
    370                 375                 380

Lys Lys Pro Val Pro Lys Leu Ile Glu Lys Cys Trp Thr Glu Asp Glu
385                 390                 395                 400

Val Lys Arg Phe Val Lys Gly Leu Arg Gln Tyr Gly Lys Asn Phe Phe
                405                 410                 415

Arg Ile Arg Lys Glu Leu Leu Pro Asn Lys Glu Thr Gly Glu Leu Ile
            420                 425                 430

Thr Phe Tyr Tyr Tyr Trp Lys Lys Thr Pro Glu Ala Ala Ser Ser Arg
        435                 440                 445

Ala His Arg Arg His Arg Arg Gln Ala Val Phe Arg Arg Ile Lys Thr
    450                 455                 460

Arg Thr Ala Ser Thr Pro Val Asn Thr Pro Ser Arg Pro Pro Ser Ser
465                 470                 475                 480

Glu Phe Leu Asp Leu Ser Ser Ala Ser Glu Asp Asp Phe Asp Ser Glu
                485                 490                 495

Asp Ser Glu Gln Glu Leu Lys Gly Tyr Ala Cys Arg His Cys Phe Thr
            500                 505                 510

Thr Ser Thr Pro Tyr Pro Arg Asp Leu Pro Gly Ala Ile Pro Pro Pro
        515                 520                 525

Met Ser Ala Ala His Gln Leu Gln Ala Met His Ala Gln Ser Ala Glu
    530                 535                 540

Leu Gln Arg Leu Ala Met Glu Gln Gln Trp Leu His Gly His Pro His
545                 550                 555                 560

Met His Gly Gly His Leu Pro Ser Gln Glu Asp Tyr Tyr Ser Arg Leu
                565                 570                 575

Lys Lys Glu Gly Asp Lys Gln Leu
            580
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<210> 6223
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<213> Homo sapiens

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<220>
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Met Thr Ala Asp Lys Asp Lys Asp Lys Asp Lys Glu Lys Asp Arg Asp
1   5   10   15

Arg Asp Arg Asp Arg Glu Arg Glu Lys Arg Asp Lys Ala Arg Glu Ser
            20   25   30

Glu Asn Ser Arg Pro Arg Arg Ser Cys Thr Leu Glu Gly Gly Ala Lys
        35   40   45

Asn Tyr Ala Glu Ser Asp His Ser Glu Asp Glu Asp Asn Asp Asn Asn
    50   55   60

Ser Ala Thr Ala Glu Glu Ser Thr Lys Lys Asn Lys Lys Lys Pro Pro
65   70   75   80

Lys Lys Lys Ser Arg Tyr Glu Arg Thr Asp Thr Gly Glu Ile Thr Ser
                85   90   95

Tyr Ile Thr Glu Asp Asp Val Val Tyr Arg Pro Gly Asp Cys Val Tyr
            100   105   110

```
Ile Glu Ser Arg Arg Pro Asn Thr Pro Tyr Phe Ile Cys Ser Ile Gln
        115                 120                 125

Asp Phe Lys Leu Val His Asn Ser Gln Ala Cys Cys Arg Ser Pro Thr
    130                 135                 140

Pro Ala Leu Cys Asp Pro Pro Ala Cys Ser Leu Pro Val Ala Ser Gln
145                 150                 155                 160

Pro Pro Gln His Leu Ser Glu Ala Gly Arg Gly Pro Val Gly Ser Lys
                165                 170                 175

Arg Asp His Leu Leu Met Asn Val Lys Trp Tyr Tyr Arg Gln Ser Glu
            180                 185                 190

Val Pro Asp Ser Val Tyr Gln His Leu Val Gln Asp Arg His Asn Glu
        195                 200                 205

Asn Asp Ser Gly Arg Glu Leu Val Ile Thr Asp Pro Val Ile Lys Asn
    210                 215                 220

Arg Glu Leu Phe Ile Ser Asp Tyr Val Asp Thr Tyr His Ala Ala Ala
225                 230                 235                 240

Leu Arg Gly Lys Cys Asn Ile Ser His Phe Ser Asp Ile Phe Ala Ala
                245                 250                 255

Arg Glu Phe Lys Ala Arg Val Asp Ser Phe Phe Tyr Ile Leu Gly Tyr
            260                 265                 270

Asn Pro Glu Thr Arg Arg Leu Asn Ser Thr Gln Gly Glu Ile Arg Val
        275                 280                 285

Gly Pro Ser His Gln Ala Lys Leu Pro Asp Leu Gln Pro Phe Pro Ser
    290                 295                 300

Pro Asp Gly Asp Thr Val Thr Gln His Glu Glu Leu Val Trp Met Pro
305                 310                 315                 320

Gly Val Asn Asp Cys Asp Leu Leu Met Tyr Leu Arg Ala Ala Arg Ser
                325                 330                 335

Met Ala Ala Phe Ala Gly Met Cys Asp Gly Gly Ser Thr Glu Asp Gly
```

```
            340                 345                 350

Cys Val Ala Ala Ser Arg Asp Asp Thr Thr Leu Asn Ala Leu Asn Thr
        355                 360                 365

Leu His Glu Ser Gly Tyr Asp Ala Gly Lys Ala Leu Gln Arg Leu Val
    370                 375                 380

Lys Lys Pro Val Pro Lys Leu Ile Glu Lys Cys Trp Thr Glu Asp Glu
385                 390                 395                 400

Val Lys Arg Phe Val Lys Gly Leu Arg Gln Tyr Gly Lys Asn Phe Phe
                405                 410                 415

Arg Ile Arg Lys Glu Leu Leu Pro Asn Lys Glu Thr Gly Glu Leu Ile
            420                 425                 430

Thr Phe Tyr Tyr Tyr Trp Lys Lys Thr Pro Glu Ala Ala Ser Ser Arg
        435                 440                 445

Ala His Arg Arg His Arg Arg Gln Ala Val Phe Arg Arg Ile Lys Thr
    450                 455                 460

Arg Thr Ala Ser Thr Pro Val Asn Thr Pro Ser Arg Pro Pro Ser Ser
465                 470                 475                 480

Glu Phe Leu Asp Leu Ser Ser Ala Ser Glu Asp Asp Phe Asp Ser Glu
                485                 490                 495

Asp Ser Glu Gln Glu Leu Lys Gly Tyr Ala Cys Arg His Cys Phe Thr
            500                 505                 510

Thr Thr Ser Lys Asp Trp His His Gly Gly Arg Glu Asn Ile Leu Leu
        515                 520                 525

Cys Thr Asp Cys Arg Ile His Phe Lys Lys Tyr Gly Glu Leu Pro Pro
    530                 535                 540

Ile Glu Lys Pro Val Asp Pro Pro Pro Phe Met Phe Lys Pro Val Lys
545                 550                 555                 560

Glu Glu Asp Asp Gly Leu Ser Gly Lys His Ser Met Arg Thr Arg Arg
                565                 570                 575
```

```
Ser Arg Gly Ser Met Ser Thr Leu Arg Ser Gly Arg Lys Lys Gln Pro
            580                 585                 590

Ala Ser Pro Asp Gly Arg Thr Ser Pro Ile Asn Glu Asp Ile Arg Ser
        595                 600                 605

Ser Gly Arg Asn Ser Pro Ser Ala Ala Ser Thr Ser Ser Asn Asp Ser
    610                 615                 620

Lys Ala Glu Thr Val Lys Lys Ser Ala Lys Lys Val Lys Glu Glu Ala
625                 630                 635                 640

Ser Ser Pro Leu Lys Ser Asn Lys Arg Gln Arg Glu Lys Val Ala Ser
                645                 650                 655

Asp Thr Glu Glu Ala Asp Arg Thr Ser Ser Lys Lys Thr Lys Thr Gln
            660                 665                 670

Glu Ile Ser Arg Pro Asn Ser Pro Ser Glu Gly Glu Gly Glu Ser Ser
        675                 680                 685

Asp Ser Arg Ser Val Asn Asp Glu Gly Ser Ser Asp Pro Lys Asp Ile
    690                 695                 700

Asp Gln Asp Asn Arg Ser Thr Ser Pro Ser Ile Pro Ser Pro Gln Asp
705                 710                 715                 720

Asn Glu Ser Asp Ser Asp Ser Ser Ala Gln Gln Gln Met Leu Gln Ala
                725                 730                 735

Gln Pro Pro Ala Leu Gln Ala Pro Thr Gly Val Thr Pro Ala Pro Ser
            740                 745                 750

Ser Ala Pro Pro Gly Thr Pro Gln Leu Pro Thr Pro Gly Pro Thr Pro
        755                 760                 765

Ser Ala Thr Ala Val Pro Pro Gln Gly Ser Pro Thr Ala Ser Gln Ala
    770                 775                 780

Pro Asn Gln Pro Gln Ala Pro Thr Ala Pro Val Pro His Thr His Ile
785                 790                 795                 800
```

```
Gln Gln Ala Pro Ala Leu His Pro Gln Arg Pro Pro Ser Pro His Pro
                805                 810                 815

Pro Pro His Pro Ser Pro His Pro Pro Leu Gln Pro Leu Thr Gly Ser
            820                 825                 830

Ala Gly Gln Pro Ser Ala Pro Ser His Ala Gln Pro Pro Leu His Gly
        835                 840                 845

Gln Gly Pro Pro Gly Pro His Ser Leu Gln Ala Gly Pro Leu Leu Gln
    850                 855                 860

His Pro Gly Pro Pro Gln Pro Phe Gly Leu Pro Pro Gln Ala Ser Gln
865                 870                 875                 880

Gly Gln Ala Pro Leu Gly Thr Ser Pro Ala Ala Ala Tyr Pro His Thr
                885                 890                 895

Ser Leu Gln Leu Pro Ala Ser Gln Ser Ala Leu Gln Ser Gln Gln Pro
            900                 905                 910

Pro Arg Glu Gln Pro Leu Pro Pro Ala Pro Leu Ala Met Pro His Ile
        915                 920                 925

Lys Pro Pro Pro Thr Thr Pro Ile Pro Gln Leu Pro Ala Pro Gln Ala
    930                 935                 940

His Lys His Pro Pro His Leu Ser Gly Pro Ser Pro Phe Ser Met Asn
945                 950                 955                 960

Ala Asn Leu Pro Pro Pro Pro Ala Leu Lys Pro Leu Ser Ser Leu Ser
                965                 970                 975

Thr His His Pro Pro Ser Ala His Pro Pro Pro Leu Gln Leu Met Pro
            980                 985                 990

Gln Ser Gln Pro Leu Pro Ser Ser  Pro Ala Gln Pro Pro  Gly Leu
Thr
        995                 1000                1005

Gln Ser  Gln Asn Leu Pro Pro  Pro Pro Ala Ser His  Pro Pro Thr
    1010                1015                1020
```

Gly Leu His Gln Val Ala Pro Gln Pro Pro Phe Ala Gln His Pro
1025 1030 1035

Phe Val Pro Gly Gly Pro Pro Pro Ile Thr Pro Pro Thr Cys Pro
1040 1045 1050

Ser Thr Ser Thr Pro Pro Ala Gly Pro Gly Thr Ser Ala Gln Pro
1055 1060 1065

Pro Cys Ser Gly Ala Ala Ala Ser Gly Gly Ser Ile Ala Gly Gly
1070 1075 1080

Ser Ser Cys Pro Leu Pro Thr Val Gln Ile Lys Glu Glu Ala Leu
1085 1090 1095

Asp Asp Ala Glu Glu Pro Glu Ser Pro Pro Pro Pro Pro Arg Ser
1100 1105 1110

Pro Ser Pro Glu Pro Thr Val Val Asp Thr Pro Ser His Ala Ser
1115 1120 1125

Gln Ser Ala Arg Phe Tyr Lys His Leu Asp Arg Gly Tyr Asn Ser
1130 1135 1140

Cys Ala Arg Thr Asp Leu Tyr Phe Met Pro Leu Ala Gly Ser Lys
1145 1150 1155

Leu Ala Lys Lys Arg Glu Glu Ala Ile Glu Lys Ala Lys Arg Glu
1160 1165 1170

Ala Glu Gln Lys Ala Arg Glu Glu Arg Glu Arg Glu Lys Glu Lys
1175 1180 1185

Glu Lys Glu Arg Glu Arg Glu Arg Glu Arg Glu Arg Glu Ala Glu
1190 1195 1200

Arg Ala Ala Lys Ala Ser Ser Ser Ala His Glu Gly Arg Leu Ser
1205 1210 1215

Asp Pro Gln Leu Ser Gly Pro Gly His Met Arg Pro Ser Phe Glu
1220 1225 1230

```
Pro Pro  Pro Thr Thr Ile Ala  Ala Val Pro Pro Tyr  Ile Gly Pro
    1235                1240                1245

Asp Thr  Pro Ala Leu Arg Thr  Leu Ser Glu Tyr Ala  Arg Pro His
    1250                1255                1260

Val Met  Ser Pro Thr Asn Arg  Asn His Pro Phe Tyr  Met Pro Leu
    1265                1270                1275

Asn Pro  Thr Asp Pro Leu Leu  Ala Tyr His Met Pro  Gly Leu Tyr
    1280                1285                1290

Asn Val  Asp Pro Thr Ile Arg  Glu Arg Glu Leu Arg  Glu Arg Glu
    1295                1300                1305

Ile Arg  Glu Arg Glu Ile Arg  Glu Arg Glu Leu Arg  Glu Arg Met
    1310                1315                1320

Lys Pro  Gly Phe Glu Val Lys  Pro Pro Glu Leu Asp  Pro Leu His
    1325                1330                1335

Pro Ala  Ala Asn Pro Met Glu  His Phe Ala Arg His  Ser Ala Leu
    1340                1345                1350

Thr Ile  Pro Pro Thr Ala Gly  Pro His Pro Phe Ala  Ser Phe His
    1355                1360                1365

Pro Gly  Leu Asn Pro Leu Glu  Arg Glu Arg Leu Ala  Leu Ala Gly
    1370                1375                1380

Pro Gln  Leu Arg Pro Glu Met  Ser Tyr Pro Asp Arg  Leu Ala Ala
    1385                1390                1395

Glu Arg  Ile His Ala Glu Arg  Met Ala Ser Leu Thr  Ser Asp Pro
    1400                1405                1410

Leu Ala  Arg Leu Gln Met Phe  Asn Val Thr Pro His  His His Gln
    1415                1420                1425

His Ser  His Ile His Ser His  Leu His Leu His Gln  Gln Asp Pro
    1430                1435                1440

Leu His  Gln Gly Ser Ala Gly  Pro Val His Pro Leu  Val Asp Pro
```

```
    1445                1450                1455

Leu Thr  Ala Gly Pro His Leu  Ala Arg Phe Pro Tyr  Pro Pro Gly
    1460                1465                1470

Thr Leu  Pro Asn Pro Leu Leu  Gly Gln Pro Pro His  Glu His Glu
    1475                1480                1485

Met Leu  Arg His Pro Val Phe  Gly Thr Pro Tyr Pro  Arg Asp Leu
    1490                1495                1500

Pro Gly  Ala Ile Pro Pro Pro  Met Ser Ala Ala His  Gln Leu Gln
    1505                1510                1515

Ala Met  His Ala Gln Ser Ala  Glu Leu Gln Arg Leu  Ala Met Glu
    1520                1525                1530

Gln Gln  Trp Leu His Gly His  Pro His Met His Gly  Gly His Leu
    1535                1540                1545

Pro Ser  Gln Glu Asp Tyr Tyr  Ser Arg Leu Lys Lys  Glu Gly Asp
    1550                1555                1560

Lys Gln  Leu
    1565


<210> 6224
<211> 1012
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1351; "

<220>
<221> source
<223> /note="Gene Symbol: RERE; "

<220>
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<223> /note="Gene Name:
      arginine-glutamic acid dipeptide (RE) repeats; "

<220>
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<223> /note="Uniprot ID:  Q9P2R6; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000422246"

<400> 6224
Met Phe Lys Pro Val Lys Glu Glu Asp Asp Gly Leu Ser Gly Lys His
1   5   10   15

Ser Met Arg Thr Arg Arg Ser Arg Gly Ser Met Ser Thr Leu Arg Ser
            20   25   30

Gly Arg Lys Lys Gln Pro Ala Ser Pro Asp Gly Arg Thr Ser Pro Ile
        35   40   45

Asn Glu Asp Ile Arg Ser Ser Gly Arg Asn Ser Pro Ser Ala Ala Ser
    50   55   60

Thr Ser Ser Asn Asp Ser Lys Ala Glu Thr Val Lys Lys Ser Ala Lys
65   70   75   80

Lys Val Lys Glu Glu Ala Ser Ser Pro Leu Lys Ser Asn Lys Arg Gln
                85   90   95

Arg Glu Lys Val Ala Ser Asp Thr Glu Glu Ala Asp Arg Thr Ser Ser
            100   105   110

Lys Lys Thr Lys Thr Gln Glu Ile Ser Arg Pro Asn Ser Pro Ser Glu
        115   120   125

Gly Glu Gly Glu Ser Ser Asp Ser Arg Ser Val Asn Asp Glu Gly Ser
    130   135   140

Ser Asp Pro Lys Asp Ile Asp Gln Asp Asn Arg Ser Thr Ser Pro Ser
145   150   155   160

Ile Pro Ser Pro Gln Asp Asn Glu Ser Asp Ser Asp Ser Ser Ala Gln
                165   170   175

Gln Gln Met Leu Gln Ala Gln Pro Pro Ala Leu Gln Ala Pro Thr Gly
            180   185   190

Val Thr Pro Ala Pro Ser Ser Ala Pro Pro Gly Thr Pro Gln Leu Pro
        195   200   205

```
Thr Pro Gly Pro Thr Pro Ser Ala Thr Ala Val Pro Pro Gln Gly Ser
    210                 215                 220

Pro Thr Ala Ser Gln Ala Pro Asn Gln Pro Gln Ala Pro Thr Ala Pro
225                 230                 235                 240

Val Pro His Thr His Ile Gln Gln Ala Pro Ala Leu His Pro Gln Arg
                245                 250                 255

Pro Pro Ser Pro His Pro Pro Pro His Pro Ser Pro His Pro Pro Leu
            260                 265                 270

Gln Pro Leu Thr Gly Ser Ala Gly Gln Pro Ser Ala Pro Ser His Ala
        275                 280                 285

Gln Pro Pro Leu His Gly Gln Gly Pro Pro Gly Pro His Ser Leu Gln
    290                 295                 300

Ala Gly Pro Leu Leu Gln His Pro Gly Pro Pro Gln Pro Phe Gly Leu
305                 310                 315                 320

Pro Pro Gln Ala Ser Gln Gly Gln Ala Pro Leu Gly Thr Ser Pro Ala
                325                 330                 335

Ala Ala Tyr Pro His Thr Ser Leu Gln Leu Pro Ala Ser Gln Ser Ala
            340                 345                 350

Leu Gln Ser Gln Gln Pro Pro Arg Glu Gln Pro Leu Pro Pro Ala Pro
        355                 360                 365

Leu Ala Met Pro His Ile Lys Pro Pro Pro Thr Thr Pro Ile Pro Gln
    370                 375                 380

Leu Pro Ala Pro Gln Ala His Lys His Pro Pro His Leu Ser Gly Pro
385                 390                 395                 400

Ser Pro Phe Ser Met Asn Ala Asn Leu Pro Pro Pro Pro Ala Leu Lys
                405                 410                 415

Pro Leu Ser Ser Leu Ser Thr His His Pro Pro Ser Ala His Pro Pro
            420                 425                 430

Pro Leu Gln Leu Met Pro Gln Ser Gln Pro Leu Pro Ser Ser Pro Ala
```

```
        435                 440                 445

Gln Pro Pro Gly Leu Thr Gln Ser Gln Asn Leu Pro Pro Pro Pro Ala
    450                 455                 460

Ser His Pro Pro Thr Gly Leu His Gln Val Ala Pro Gln Pro Pro Phe
465                 470                 475                 480

Ala Gln His Pro Phe Val Pro Gly Gly Pro Pro Pro Ile Thr Pro Pro
                485                 490                 495

Thr Cys Pro Ser Thr Ser Thr Pro Pro Ala Gly Pro Gly Thr Ser Ala
            500                 505                 510

Gln Pro Pro Cys Ser Gly Ala Ala Ala Ser Gly Gly Ser Ile Ala Gly
        515                 520                 525

Gly Ser Ser Cys Pro Leu Pro Thr Val Gln Ile Lys Glu Glu Ala Leu
    530                 535                 540

Asp Asp Ala Glu Glu Pro Glu Ser Pro Pro Pro Pro Pro Arg Ser Pro
545                 550                 555                 560

Ser Pro Glu Pro Thr Val Val Asp Thr Pro Ser His Ala Ser Gln Ser
                565                 570                 575

Ala Arg Phe Tyr Lys His Leu Asp Arg Gly Tyr Asn Ser Cys Ala Arg
            580                 585                 590

Thr Asp Leu Tyr Phe Met Pro Leu Ala Gly Ser Lys Leu Ala Lys Lys
        595                 600                 605

Arg Glu Glu Ala Ile Glu Lys Ala Lys Arg Glu Ala Glu Gln Lys Ala
    610                 615                 620

Arg Glu Glu Arg Glu Arg Glu Lys Glu Lys Glu Lys Glu Arg Glu Arg
625                 630                 635                 640

Glu Arg Glu Arg Glu Arg Glu Ala Glu Arg Ala Ala Lys Ala Ser Ser
                645                 650                 655

Ser Ala His Glu Gly Arg Leu Ser Asp Pro Gln Leu Ser Gly Pro Gly
            660                 665                 670
```

```
His Met Arg Pro Ser Phe Glu Pro Pro Pro Thr Thr Ile Ala Ala Val
        675                 680                 685

Pro Pro Tyr Ile Gly Pro Asp Thr Pro Ala Leu Arg Thr Leu Ser Glu
    690                 695                 700

Tyr Ala Arg Pro His Val Met Ser Pro Thr Asn Arg Asn His Pro Phe
705                 710                 715                 720

Tyr Met Pro Leu Asn Pro Thr Asp Pro Leu Leu Ala Tyr His Met Pro
                725                 730                 735

Gly Leu Tyr Asn Val Asp Pro Thr Ile Arg Glu Arg Glu Leu Arg Glu
            740                 745                 750

Arg Glu Ile Arg Glu Arg Glu Ile Arg Glu Arg Glu Leu Arg Glu Arg
        755                 760                 765

Met Lys Pro Gly Phe Glu Val Lys Pro Pro Glu Leu Asp Pro Leu His
    770                 775                 780

Pro Ala Ala Asn Pro Met Glu His Phe Ala Arg His Ser Ala Leu Thr
785                 790                 795                 800

Ile Pro Pro Thr Ala Gly Pro His Pro Phe Ala Ser Phe His Pro Gly
                805                 810                 815

Leu Asn Pro Leu Glu Arg Glu Arg Leu Ala Leu Ala Gly Pro Gln Leu
            820                 825                 830

Arg Pro Glu Met Ser Tyr Pro Asp Arg Leu Ala Ala Glu Arg Ile His
        835                 840                 845

Ala Glu Arg Met Ala Ser Leu Thr Ser Asp Pro Leu Ala Arg Leu Gln
    850                 855                 860

Met Phe Asn Val Thr Pro His His His Gln His Ser His Ile His Ser
865                 870                 875                 880

His Leu His Leu His Gln Gln Asp Pro Leu His Gln Gly Ser Ala Gly
                885                 890                 895
```

```
Pro Val His Pro Leu Val Asp Pro Leu Thr Ala Gly Pro His Leu Ala
            900                 905                 910

Arg Phe Pro Tyr Pro Pro Gly Thr Leu Pro Asn Pro Leu Leu Gly Gln
        915                 920                 925

Pro Pro His Glu His Glu Met Leu Arg His Pro Val Phe Gly Thr Pro
    930                 935                 940

Tyr Pro Arg Asp Leu Pro Gly Ala Ile Pro Pro Pro Met Ser Ala Ala
945                 950                 955                 960

His Gln Leu Gln Ala Met His Ala Gln Ser Ala Glu Leu Gln Arg Leu
                965                 970                 975

Ala Met Glu Gln Gln Trp Leu His Gly His Pro His Met His Gly Gly
            980                 985                 990

His Leu Pro Ser Gln Glu Asp Tyr  Tyr Ser Arg Leu Lys  Lys Glu
Gly
        995                 1000                1005

Asp Lys  Gln Leu
    1010


<210> 6225
<211> 91
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1351; "

<220>
<221> source
<223> /note="Gene Symbol: RERE; "

<220>
<221> source
<223> /note="Gene Name:
      arginine-glutamic acid dipeptide (RE) repeats; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000423259"
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<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6225
Xaa Cys Val Tyr Ile Glu Ser Arg Arg Pro Asn Thr Pro Tyr Phe Ile
1   5   10   15

Cys Ser Ile Gln Asp Phe Lys Leu Ser Lys Arg Asp His Leu Leu Met
            20   25   30

Asn Val Lys Trp Tyr Tyr Arg Gln Ser Glu Val Pro Asp Ser Val Tyr
        35   40   45

Gln His Leu Val Gln Asp Arg His Asn Glu Asn Asp Ser Gly Arg Glu
    50   55   60

Leu Val Ile Thr Asp Pro Val Ile Lys Asn Arg Glu Leu Phe Ile Ser
65   70   75   80

Asp Tyr Val Asp Thr Tyr His Ala Ala Ala Leu
                85   90

<210> 6226
<211> 177
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1351; "

<220>
<221> source
<223> /note="Gene Symbol: RERE; "

<220>
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<223> /note="Gene Name:
      arginine-glutamic acid dipeptide (RE) repeats; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000423451"

<400> 6226
Met Ser Thr Leu Arg Ser Gly Arg Lys Lys Gln Pro Ala Ser Pro Asp
1   5   10   15

```
Gly Arg Thr Ser Pro Ile Asn Glu Asp Ile Arg Ser Ser Gly Arg Asn
            20                  25                  30

Ser Pro Ser Ala Ala Ser Thr Ser Ser Asn Asp Ser Lys Ala Glu Thr
        35                  40                  45

Val Lys Lys Ser Ala Lys Lys Val Lys Glu Glu Ala Ser Ser Pro Leu
    50                  55                  60

Lys Ser Asn Lys Arg Gln Arg Glu Lys Val Ala Ser Asp Thr Glu Glu
65                  70                  75                  80

Ala Asp Arg Thr Ser Ser Lys Lys Thr Lys Thr Gln Glu Ile Ser Arg
                85                  90                  95

Pro Asn Ser Pro Ser Glu Gly Ser Ala Gly Pro Val His Pro Leu Val
            100                 105                 110

Asp Pro Leu Thr Ala Gly Pro His Leu Ala Arg Phe Pro Tyr Pro Pro
        115                 120                 125

Gly Thr Leu Pro Asn Pro Leu Leu Gly Gln Pro Pro His Glu His Glu
    130                 135                 140

Met Leu Arg His Pro Val Phe Gly Thr Pro Tyr Pro Arg Asp Leu Pro
145                 150                 155                 160

Gly Ala Ile Pro Pro Pro Met Ser Ala Ala His Gln Leu Gln Ala Met
                165                 170                 175

His
```

<210> 6227
<211> 89
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1351; "

<220>
<221> source
<223> /note="Gene Symbol: RERE; "

<220>
<221> source
<223> /note="Gene Name:
arginine-glutamic acid dipeptide (RE) repeats; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000464712"

<400> 6227
Met Pro Gly Val Asn Asp Cys Asp Leu Leu Met Tyr Leu Arg Ala Ala
1 5 10 15

Arg Ser Met Ala Ala Phe Ala Gly Met Cys Asp Gly Gly Ser Thr Glu
20 25 30

Asp Gly Cys Val Ala Ala Ser Arg Asp Asp Thr Thr Leu Asn Ala Leu
35 40 45

Asn Thr Leu His Glu Ser Gly Tyr Asp Ala Gly Lys Ala Leu Gln Arg
50 55 60

Leu Val Lys Lys Pro Val Pro Lys Leu Ile Glu Lys Cys Trp Thr Glu
65 70 75 80

Asp Glu Val Lys Arg Phe Val Lys Gly
85

<210> 6228
<211> 26
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1351; "

<220>
<221> source
<223> /note="Gene Symbol: RERE; "

<220>
<221> source
<223> /note="Gene Name:
arginine-glutamic acid dipeptide (RE) repeats; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000464847"

<400> 6228

```
Met Phe Lys Pro Val Lys Glu Glu Asp Asp Gly Leu Ser Gly Lys His
1               5                   10                  15


Ser Met Arg Thr Arg Arg Ser Arg Gly Ser
            20                  25


<210> 6229
<211> 213
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1351; "

<220>
<221> source
<223> /note="Gene Symbol: RERE; "

<220>
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<223> /note="Gene Name:
      arginine-glutamic acid dipeptide (RE) repeats; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000465133"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6229
Xaa Asp Leu Ser Ser Ala Ser Glu Asp Asp Phe Asp Ser Glu Asp Ser
1               5                   10                  15


Glu Gln Glu Leu Lys Gly Tyr Ala Cys Arg His Cys Phe Thr Thr Thr
            20                  25                  30


Ser Lys Asp Trp His His Gly Gly Arg Glu Asn Ile Leu Leu Cys Thr
        35                  40                  45


Asp Cys Arg Ile His Phe Lys Lys Tyr Gly Glu Leu Pro Pro Ile Glu
    50                  55                  60


Lys Pro Val Asp Pro Pro Pro Phe Met Phe Lys Pro Val Lys Glu Glu
65                  70                  75                  80
```

```
Asp Asp Gly Leu Ser Gly Lys His Ser Met Arg Thr Arg Arg Ser Arg
                85                  90                  95

Gly Ser Val Ser Pro Leu Gly Pro Trp Gly Ser Trp Gln Leu Leu Gln
            100                 105                 110

Phe Pro Gly Met Cys Gly Gly Leu Ser Leu Pro Gly Gly Gly Ser Glu
        115                 120                 125

Ser Leu Val Tyr Gln Thr Lys Ser Trp Arg Gly Ala Ala Leu Pro Glu
    130                 135                 140

Ala Val Ala Cys Leu Trp Ala Gly Lys Ser Ser Leu Phe Ser Pro Ser
145                 150                 155                 160

Arg Gly Pro Arg Val Ala Ser Cys Ser Gly Phe Cys Ser Lys Leu Leu
                165                 170                 175

Ala Ser Gly Ser Val Gln Ala Leu Gln Gly Pro Ser Cys Ser Pro Arg
            180                 185                 190

Leu Leu Leu Val Val Ser Leu Pro Leu Tyr Gln Ile Ser Ala Ile Leu
        195                 200                 205

Asn Leu Gln Ala Leu
    210


<210> 6230
<211> 35
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1351; "

<220>
<221> source
<223> /note="Gene Symbol: RERE; "

<220>
<221> source
<223> /note="Gene Name:
      arginine-glutamic acid dipeptide (RE) repeats; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000465271"
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<400> 6230
Met Thr Ala Asp Lys Asp Lys Asp Lys Asp Lys Glu Lys Asp Arg Asp
1   5   10   15

Arg Asp Arg Asp Arg Glu Arg Glu Lys Arg Asp Lys Ala Arg Glu Ser
            20   25   30

Glu Asn Ser
        35

<210> 6231
<211> 464
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1352; "

<220>
<221> source
<223> /note="Gene Symbol: ASL; "

<220>
<221> source
<223> /note="Gene Name:
      argininosuccinate lyase; "

<220>
<221> source
<223> /note="Uniprot ID: P04424; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000307188"

<400> 6231
Met Ala Ser Glu Ser Gly Lys Leu Trp Gly Gly Arg Phe Val Gly Ala
1   5   10   15

Val Asp Pro Ile Met Glu Lys Phe Asn Ala Ser Ile Ala Tyr Asp Arg
            20   25   30

His Leu Trp Glu Val Asp Val Gln Gly Ser Lys Ala Tyr Ser Arg Gly
        35   40   45

Leu Glu Lys Ala Gly Leu Leu Thr Lys Ala Glu Met Asp Gln Ile Leu
    50   55   60

```
His Gly Leu Asp Lys Val Ala Glu Glu Trp Ala Gln Gly Thr Phe Lys
65                  70                  75                  80

Leu Asn Ser Asn Asp Glu Asp Ile His Thr Ala Asn Glu Arg Arg Leu
                85                  90                  95

Lys Glu Leu Ile Gly Ala Thr Ala Gly Lys Leu His Thr Gly Arg Ser
            100                 105                 110

Arg Asn Asp Gln Val Val Thr Asp Leu Arg Leu Trp Met Arg Gln Thr
        115                 120                 125

Cys Ser Thr Leu Ser Gly Leu Leu Trp Glu Leu Ile Arg Thr Met Val
    130                 135                 140

Asp Arg Ala Glu Ala Glu Arg Asp Val Leu Phe Pro Gly Tyr Thr His
145                 150                 155                 160

Leu Gln Arg Ala Gln Pro Ile Arg Trp Ser His Trp Ile Leu Ser His
                165                 170                 175

Ala Val Ala Leu Thr Arg Asp Ser Glu Arg Leu Leu Glu Val Arg Lys
            180                 185                 190

Arg Ile Asn Val Leu Pro Leu Gly Ser Gly Ala Ile Ala Gly Asn Pro
        195                 200                 205

Leu Gly Val Asp Arg Glu Leu Leu Arg Ala Glu Leu Asn Phe Gly Ala
    210                 215                 220

Ile Thr Leu Asn Ser Met Asp Ala Thr Ser Glu Arg Asp Phe Val Ala
225                 230                 235                 240

Glu Phe Leu Phe Trp Ala Ser Leu Cys Met Thr His Leu Ser Arg Met
                245                 250                 255

Ala Glu Asp Leu Ile Leu Tyr Cys Thr Lys Glu Phe Ser Phe Val Gln
            260                 265                 270

Leu Ser Asp Ala Tyr Ser Thr Gly Ser Ser Leu Met Pro Gln Lys Lys
        275                 280                 285

Asn Pro Asp Ser Leu Glu Leu Ile Arg Ser Lys Ala Gly Arg Val Phe
```

```
    290                 295                 300

Gly Arg Cys Ala Gly Leu Leu Met Thr Leu Lys Gly Leu Pro Ser Thr
305                 310                 315                 320

Tyr Asn Lys Asp Leu Gln Glu Asp Lys Glu Ala Val Phe Glu Val Ser
                325                 330                 335

Asp Thr Met Ser Ala Val Leu Gln Val Ala Thr Gly Val Ile Ser Thr
            340                 345                 350

Leu Gln Ile His Gln Glu Asn Met Gly Gln Ala Leu Ser Pro Asp Met
        355                 360                 365

Leu Ala Thr Asp Leu Ala Tyr Tyr Leu Val Arg Lys Gly Met Pro Phe
    370                 375                 380

Arg Gln Ala His Glu Ala Ser Gly Lys Ala Val Phe Met Ala Glu Thr
385                 390                 395                 400

Lys Gly Val Ala Leu Asn Gln Leu Ser Leu Gln Glu Leu Gln Thr Ile
                405                 410                 415

Ser Pro Leu Phe Ser Gly Asp Val Ile Cys Val Trp Asp Tyr Gly His
            420                 425                 430

Ser Val Glu Gln Tyr Gly Ala Leu Gly Gly Thr Ala Arg Ser Ser Val
        435                 440                 445

Asp Trp Gln Ile Arg Gln Val Arg Ala Leu Leu Gln Ala Gln Gln Ala
    450                 455                 460


<210> 6232
<211> 242
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1352; "

<220>
<221> source
<223> /note="Gene Symbol: ASL; "

<220>
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<221> source
<223> /note="Gene Name:
argininosuccinate lyase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000354710"

<400> 6232

```
Met Ala Ser Glu Val Ala Glu Glu Trp Ala Gln Gly Thr Phe Lys Leu
1               5                  10                  15

Asn Ser Asn Asp Glu Asp Ile His Thr Ala Asn Glu Arg Arg Leu Lys
            20                  25                  30

Glu Leu Ile Gly Ala Thr Ala Gly Lys Leu His Thr Gly Arg Ser Arg
        35                  40                  45

Asn Asp Gln Val Val Thr Asp Leu Arg Leu Trp Met Arg Gln Thr Cys
    50                  55                  60

Ser Thr Leu Ser Gly Leu Leu Trp Glu Leu Ile Arg Thr Met Val Asp
65                  70                  75                  80

Arg Ala Glu Ala Glu Arg Asp Val Leu Phe Pro Gly Tyr Thr His Leu
                85                  90                  95

Gln Arg Ala Gln Pro Ile Arg Trp Ser His Trp Ile Leu Ser His Ala
            100                 105                 110

Val Ala Leu Thr Arg Asp Ser Glu Arg Leu Leu Glu Val Arg Lys Arg
        115                 120                 125

Ile Asn Val Leu Pro Leu Gly Ser Gly Ala Ile Ala Gly Asn Pro Leu
    130                 135                 140

Gly Val Asp Arg Glu Leu Leu Arg Ala Glu Leu Asn Phe Gly Ala Ile
145                 150                 155                 160

Thr Leu Asn Ser Met Asp Ala Thr Ser Glu Arg Asp Phe Val Ala Glu
                165                 170                 175

Phe Leu Phe Trp Ala Ser Leu Cys Met Thr His Leu Ser Arg Met Ala
            180                 185                 190
```

Glu Asp Leu Ile Leu Tyr Cys Thr Lys Glu Phe Ser Phe Val Gln Leu
        195   200   205

Ser Asp Ala Tyr Ser Thr Gly Ser Ser Leu Met Pro Gln Lys Lys Asn
    210   215   220

Pro Asp Ser Leu Glu Leu Ile Arg Ser Lys Ala Gly Arg Val Phe Gly
225   230   235   240

Arg Val

<210> 6233
<211> 438
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1352; "

<220>
<221> source
<223> /note="Gene Symbol: ASL; "

<220>
<221> source
<223> /note="Gene Name:
      argininosuccinate lyase; "

<220>
<221> source
<223> /note="Uniprot ID: P04424; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000370219"

<400> 6233
Met Ala Ser Glu Ser Gly Lys Leu Trp Gly Gly Arg Phe Val Gly Ala
1   5   10   15

Val Asp Pro Ile Met Glu Lys Phe Asn Ala Ser Ile Ala Tyr Asp Arg
            20   25   30

His Leu Trp Glu Val Asp Val Gln Gly Ser Lys Ala Tyr Ser Arg Gly
        35   40   45

Leu Glu Lys Ala Gly Leu Leu Thr Lys Ala Glu Met Asp Gln Ile Leu
    50   55   60

```
His Gly Leu Asp Lys Val Ala Glu Glu Trp Ala Gln Gly Thr Phe Lys
65                  70                  75                  80

Leu Asn Ser Asn Asp Glu Asp Ile His Thr Ala Asn Glu Arg Arg Leu
                85                  90                  95

Lys Glu Leu Ile Gly Ala Thr Ala Gly Lys Leu His Thr Gly Arg Ser
            100                 105                 110

Arg Asn Asp Gln Val Val Thr Asp Leu Arg Leu Trp Met Arg Gln Thr
        115                 120                 125

Cys Ser Thr Leu Ser Gly Leu Leu Trp Glu Leu Ile Arg Thr Met Val
    130                 135                 140

Asp Arg Ala Glu Ala Glu Arg Asp Val Leu Phe Pro Gly Tyr Thr His
145                 150                 155                 160

Leu Gln Arg Ala Gln Pro Ile Arg Trp Ser His Trp Ile Leu Ser Gly
                165                 170                 175

Ala Ile Ala Gly Asn Pro Leu Gly Val Asp Arg Glu Leu Leu Arg Ala
            180                 185                 190

Glu Leu Asn Phe Gly Ala Ile Thr Leu Asn Ser Met Asp Ala Thr Ser
        195                 200                 205

Glu Arg Asp Phe Val Ala Glu Phe Leu Phe Trp Ala Ser Leu Cys Met
    210                 215                 220

Thr His Leu Ser Arg Met Ala Glu Asp Leu Ile Leu Tyr Cys Thr Lys
225                 230                 235                 240

Glu Phe Ser Phe Val Gln Leu Ser Asp Ala Tyr Ser Thr Gly Ser Ser
                245                 250                 255

Leu Met Pro Gln Lys Lys Asn Pro Asp Ser Leu Glu Leu Ile Arg Ser
            260                 265                 270

Lys Ala Gly Arg Val Phe Gly Arg Cys Ala Gly Leu Leu Met Thr Leu
        275                 280                 285
```

```
Lys Gly Leu Pro Ser Thr Tyr Asn Lys Asp Leu Gln Glu Asp Lys Glu
    290                 295                 300

Ala Val Phe Glu Val Ser Asp Thr Met Ser Ala Val Leu Gln Val Ala
305                 310                 315                 320

Thr Gly Val Ile Ser Thr Leu Gln Ile His Gln Glu Asn Met Gly Gln
                325                 330                 335

Ala Leu Ser Pro Asp Met Leu Ala Thr Asp Leu Ala Tyr Tyr Leu Val
            340                 345                 350

Arg Lys Gly Met Pro Phe Arg Gln Ala His Glu Ala Ser Gly Lys Ala
        355                 360                 365

Val Phe Met Ala Glu Thr Lys Gly Val Ala Leu Asn Gln Leu Ser Leu
    370                 375                 380

Gln Glu Leu Gln Thr Ile Ser Pro Leu Phe Ser Gly Asp Val Ile Cys
385                 390                 395                 400

Val Trp Asp Tyr Gly His Ser Val Glu Gln Tyr Gly Ala Leu Gly Gly
                405                 410                 415

Thr Ala Arg Ser Ser Val Asp Trp Gln Ile Arg Gln Val Arg Ala Leu
            420                 425                 430

Leu Gln Ala Gln Gln Ala
        435


<210> 6234
<211> 444
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1352; "

<220>
<221> source
<223> /note="Gene Symbol: ASL; "

<220>
<221> source
<223> /note="Gene Name:
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argininosuccinate lyase; "

<220>
<221> source
<223> /note="Uniprot ID: P04424; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000378740"

<400> 6234
Met Ala Ser Glu Ser Gly Lys Leu Trp Gly Gly Arg Phe Val Gly Ala
1   5   10   15

Val Asp Pro Ile Met Glu Lys Phe Asn Ala Ser Ile Ala Tyr Asp Arg
            20   25   30

His Leu Trp Glu Val Asp Val Gln Gly Ser Lys Ala Tyr Ser Arg Gly
        35   40   45

Leu Glu Lys Ala Gly Leu Leu Thr Lys Ala Glu Met Asp Gln Ile Leu
    50   55   60

His Gly Leu Asp Lys Val Ala Glu Glu Trp Ala Gln Gly Thr Phe Lys
65   70   75   80

Leu Asn Ser Asn Asp Glu Asp Ile His Thr Ala Asn Glu Arg Arg Leu
                85   90   95

Lys Glu Leu Ile Gly Ala Thr Ala Gly Lys Leu His Thr Gly Arg Ser
            100   105   110

Arg Asn Asp Gln Val Val Thr Asp Leu Arg Leu Trp Met Arg Gln Thr
        115   120   125

Cys Ser Thr Leu Ser Gly Leu Leu Trp Glu Leu Ile Arg Thr Met Val
    130   135   140

Asp Arg Ala Glu Ala Glu Arg Asp Val Leu Phe Pro Gly Tyr Thr His
145   150   155   160

Leu Gln Arg Ala Gln Pro Ile Arg Trp Ser His Trp Ile Leu Ser His
                165   170   175

Ala Val Ala Leu Thr Arg Asp Ser Glu Arg Leu Leu Glu Val Arg Lys
            180   185   190

```
Arg Ile Asn Val Leu Pro Leu Gly Ser Gly Ala Ile Ala Gly Asn Pro
        195                 200                 205

Leu Gly Val Asp Arg Glu Leu Leu Arg Ala Glu Leu Asn Phe Gly Ala
    210                 215                 220

Ile Thr Leu Asn Ser Met Asp Ala Thr Ser Glu Arg Asp Phe Val Ala
225                 230                 235                 240

Glu Phe Leu Phe Trp Ala Ser Leu Cys Met Thr His Leu Ser Arg Met
                245                 250                 255

Ala Glu Asp Leu Ile Leu Tyr Cys Thr Lys Glu Phe Ser Phe Val Gln
            260                 265                 270

Leu Ser Asp Ala Tyr Ser Thr Gly Ser Ser Leu Met Pro Gln Lys Lys
        275                 280                 285

Asn Pro Asp Ser Leu Glu Leu Ile Arg Ser Lys Ala Gly Arg Val Phe
    290                 295                 300

Gly Arg Glu Asp Lys Glu Ala Val Phe Glu Val Ser Asp Thr Met Ser
305                 310                 315                 320

Ala Val Leu Gln Val Ala Thr Gly Val Ile Ser Thr Leu Gln Ile His
                325                 330                 335

Gln Glu Asn Met Gly Gln Ala Leu Ser Pro Asp Met Leu Ala Thr Asp
            340                 345                 350

Leu Ala Tyr Tyr Leu Val Arg Lys Gly Met Pro Phe Arg Gln Ala His
        355                 360                 365

Glu Ala Ser Gly Lys Ala Val Phe Met Ala Glu Thr Lys Gly Val Ala
    370                 375                 380

Leu Asn Gln Leu Ser Leu Gln Glu Leu Gln Thr Ile Ser Pro Leu Phe
385                 390                 395                 400

Ser Gly Asp Val Ile Cys Val Trp Asp Tyr Gly His Ser Val Glu Gln
                405                 410                 415
```

Tyr Gly Ala Leu Gly Gly Thr Ala Arg Ser Ser Val Asp Trp Gln Ile
420 425 430

Arg Gln Val Arg Ala Leu Leu Gln Ala Gln Gln Ala
435 440

<210> 6235
<211> 464
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1352; "

<220>
<221> source
<223> /note="Gene Symbol: ASL; "

<220>
<221> source
<223> /note="Gene Name:
argininosuccinate lyase; "

<220>
<221> source
<223> /note="Uniprot ID: P04424; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000378741"

<400> 6235
Met Ala Ser Glu Ser Gly Lys Leu Trp Gly Gly Arg Phe Val Gly Ala
1 5 10 15

Val Asp Pro Ile Met Glu Lys Phe Asn Ala Ser Ile Ala Tyr Asp Arg
20 25 30

His Leu Trp Glu Val Asp Val Gln Gly Ser Lys Ala Tyr Ser Arg Gly
35 40 45

Leu Glu Lys Ala Gly Leu Leu Thr Lys Ala Glu Met Asp Gln Ile Leu
50 55 60

His Gly Leu Asp Lys Val Ala Glu Glu Trp Ala Gln Gly Thr Phe Lys
65 70 75 80

Leu Asn Ser Asn Asp Glu Asp Ile His Thr Ala Asn Glu Arg Arg Leu

```
                85                  90                  95

Lys Glu Leu Ile Gly Ala Thr Ala Gly Lys Leu His Thr Gly Arg Ser
            100                 105                 110

Arg Asn Asp Gln Val Val Thr Asp Leu Arg Leu Trp Met Arg Gln Thr
        115                 120                 125

Cys Ser Thr Leu Ser Gly Leu Leu Trp Glu Leu Ile Arg Thr Met Val
    130                 135                 140

Asp Arg Ala Glu Ala Glu Arg Asp Val Leu Phe Pro Gly Tyr Thr His
145                 150                 155                 160

Leu Gln Arg Ala Gln Pro Ile Arg Trp Ser His Trp Ile Leu Ser His
                165                 170                 175

Ala Val Ala Leu Thr Arg Asp Ser Glu Arg Leu Leu Glu Val Arg Lys
            180                 185                 190

Arg Ile Asn Val Leu Pro Leu Gly Ser Gly Ala Ile Ala Gly Asn Pro
        195                 200                 205

Leu Gly Val Asp Arg Glu Leu Leu Arg Ala Glu Leu Asn Phe Gly Ala
    210                 215                 220

Ile Thr Leu Asn Ser Met Asp Ala Thr Ser Glu Arg Asp Phe Val Ala
225                 230                 235                 240

Glu Phe Leu Phe Trp Ala Ser Leu Cys Met Thr His Leu Ser Arg Met
                245                 250                 255

Ala Glu Asp Leu Ile Leu Tyr Cys Thr Lys Glu Phe Ser Phe Val Gln
            260                 265                 270

Leu Ser Asp Ala Tyr Ser Thr Gly Ser Ser Leu Met Pro Gln Lys Lys
        275                 280                 285

Asn Pro Asp Ser Leu Glu Leu Ile Arg Ser Lys Ala Gly Arg Val Phe
    290                 295                 300

Gly Arg Cys Ala Gly Leu Leu Met Thr Leu Lys Gly Leu Pro Ser Thr
305                 310                 315                 320
```

```
Tyr Asn Lys Asp Leu Gln Glu Asp Lys Glu Ala Val Phe Glu Val Ser
                325                 330                 335

Asp Thr Met Ser Ala Val Leu Gln Val Ala Thr Gly Val Ile Ser Thr
            340                 345                 350

Leu Gln Ile His Gln Glu Asn Met Gly Gln Ala Leu Ser Pro Asp Met
        355                 360                 365

Leu Ala Thr Asp Leu Ala Tyr Tyr Leu Val Arg Lys Gly Met Pro Phe
    370                 375                 380

Arg Gln Ala His Glu Ala Ser Gly Lys Ala Val Phe Met Ala Glu Thr
385                 390                 395                 400

Lys Gly Val Ala Leu Asn Gln Leu Ser Leu Gln Glu Leu Gln Thr Ile
                405                 410                 415

Ser Pro Leu Phe Ser Gly Asp Val Ile Cys Val Trp Asp Tyr Gly His
            420                 425                 430

Ser Val Glu Gln Tyr Gly Ala Leu Gly Gly Thr Ala Arg Ser Ser Val
        435                 440                 445

Asp Trp Gln Ile Arg Gln Val Arg Ala Leu Leu Gln Ala Gln Gln Ala
    450                 455                 460


<210> 6236
<211> 412
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1353; "

<220>
<221> source
<223> /note="Gene Symbol: ASS1; "

<220>
<221> source
<223> /note="Gene Name:
      argininosuccinate synthase 1; "

<220>
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<221> source
<223> /note="Uniprot ID: P00966; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000253004"

<400> 6236
Met Ser Ser Lys Gly Ser Val Val Leu Ala Tyr Ser Gly Gly Leu Asp
1   5   10   15

Thr Ser Cys Ile Leu Val Trp Leu Lys Glu Gln Gly Tyr Asp Val Ile
            20   25   30

Ala Tyr Leu Ala Asn Ile Gly Gln Lys Glu Asp Phe Glu Glu Ala Arg
        35   40   45

Lys Lys Ala Leu Lys Leu Gly Ala Lys Lys Val Phe Ile Glu Asp Val
    50   55   60

Ser Arg Glu Phe Val Glu Glu Phe Ile Trp Pro Ala Ile Gln Ser Ser
65   70   75   80

Ala Leu Tyr Glu Asp Arg Tyr Leu Leu Gly Thr Ser Leu Ala Arg Pro
                85   90   95

Cys Ile Ala Arg Lys Gln Val Glu Ile Ala Gln Arg Glu Gly Ala Lys
            100   105   110

Tyr Val Ser His Gly Ala Thr Gly Lys Gly Asn Asp Gln Val Arg Phe
        115   120   125

Glu Leu Ser Cys Tyr Ser Leu Ala Pro Gln Ile Lys Val Ile Ala Pro
    130   135   140

Trp Arg Met Pro Glu Phe Tyr Asn Arg Phe Lys Gly Arg Asn Asp Leu
145   150   155   160

Met Glu Tyr Ala Lys Gln His Gly Ile Pro Ile Pro Val Thr Pro Lys
                165   170   175

Asn Pro Trp Ser Met Asp Glu Asn Leu Met His Ile Ser Tyr Glu Ala
            180   185   190

Gly Ile Leu Glu Asn Pro Lys Asn Gln Ala Pro Pro Gly Leu Tyr Thr

195 200 205

Lys Thr Gln Asp Pro Ala Lys Ala Pro Asn Thr Pro Asp Ile Leu Glu
210 215 220

Ile Glu Phe Lys Lys Gly Val Pro Val Lys Val Thr Asn Val Lys Asp
225 230 235 240

Gly Thr Thr His Gln Thr Ser Leu Glu Leu Phe Met Tyr Leu Asn Glu
245 250 255

Val Ala Gly Lys His Gly Val Gly Arg Ile Asp Ile Val Glu Asn Arg
260 265 270

Phe Ile Gly Met Lys Ser Arg Gly Ile Tyr Glu Thr Pro Ala Gly Thr
275 280 285

Ile Leu Tyr His Ala His Leu Asp Ile Glu Ala Phe Thr Met Asp Arg
290 295 300

Glu Val Arg Lys Ile Lys Gln Gly Leu Gly Leu Lys Phe Ala Glu Leu
305 310 315 320

Val Tyr Thr Gly Phe Trp His Ser Pro Glu Cys Glu Phe Val Arg His
325 330 335

Cys Ile Ala Lys Ser Gln Glu Arg Val Glu Gly Lys Val Gln Val Ser
340 345 350

Val Leu Lys Gly Gln Val Tyr Ile Leu Gly Arg Glu Ser Pro Leu Ser
355 360 365

Leu Tyr Asn Glu Glu Leu Val Ser Met Asn Val Gln Gly Asp Tyr Glu
370 375 380

Pro Thr Asp Ala Thr Gly Phe Ile Asn Ile Asn Ser Leu Arg Leu Lys
385 390 395 400

Glu Tyr His Arg Leu Gln Ser Lys Val Thr Ala Lys
405 410

<210> 6237
<211> 412

<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1353; "

<220>
<221> source
<223> /note="Gene Symbol: ASS1; "

<220>
<221> source
<223> /note="Gene Name:
argininosuccinate synthase 1; "

<220>
<221> source
<223> /note="Uniprot ID: P00966; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000361469"

<400> 6237

```
Met Ser Ser Lys Gly Ser Val Val Leu Ala Tyr Ser Gly Gly Leu Asp
1               5                  10                  15


Thr Ser Cys Ile Leu Val Trp Leu Lys Glu Gln Gly Tyr Asp Val Ile
            20                  25                  30


Ala Tyr Leu Ala Asn Ile Gly Gln Lys Glu Asp Phe Glu Glu Ala Arg
        35                  40                  45


Lys Lys Ala Leu Lys Leu Gly Ala Lys Lys Val Phe Ile Glu Asp Val
    50                  55                  60


Ser Arg Glu Phe Val Glu Glu Phe Ile Trp Pro Ala Ile Gln Ser Ser
65                  70                  75                  80


Ala Leu Tyr Glu Asp Arg Tyr Leu Leu Gly Thr Ser Leu Ala Arg Pro
                85                  90                  95


Cys Ile Ala Arg Lys Gln Val Glu Ile Ala Gln Arg Glu Gly Ala Lys
            100                 105                 110


Tyr Val Ser His Gly Ala Thr Gly Lys Gly Asn Asp Gln Val Arg Phe
        115                 120                 125
```

```
Glu Leu Ser Cys Tyr Ser Leu Ala Pro Gln Ile Lys Val Ile Ala Pro
    130                 135                 140

Trp Arg Met Pro Glu Phe Tyr Asn Arg Phe Lys Gly Arg Asn Asp Leu
145                 150                 155                 160

Met Glu Tyr Ala Lys Gln His Gly Ile Pro Ile Pro Val Thr Pro Lys
                165                 170                 175

Asn Pro Trp Ser Met Asp Glu Asn Leu Met His Ile Ser Tyr Glu Ala
            180                 185                 190

Gly Ile Leu Glu Asn Pro Lys Asn Gln Ala Pro Pro Gly Leu Tyr Thr
        195                 200                 205

Lys Thr Gln Asp Pro Ala Lys Ala Pro Asn Thr Pro Asp Ile Leu Glu
    210                 215                 220

Ile Glu Phe Lys Lys Gly Val Pro Val Lys Val Thr Asn Val Lys Asp
225                 230                 235                 240

Gly Thr Thr His Gln Thr Ser Leu Glu Leu Phe Met Tyr Leu Asn Glu
                245                 250                 255

Val Ala Gly Lys His Gly Val Gly Arg Ile Asp Ile Val Glu Asn Arg
            260                 265                 270

Phe Ile Gly Met Lys Ser Arg Gly Ile Tyr Glu Thr Pro Ala Gly Thr
        275                 280                 285

Ile Leu Tyr His Ala His Leu Asp Ile Glu Ala Phe Thr Met Asp Arg
    290                 295                 300

Glu Val Arg Lys Ile Lys Gln Gly Leu Gly Leu Lys Phe Ala Glu Leu
305                 310                 315                 320

Val Tyr Thr Gly Phe Trp His Ser Pro Glu Cys Glu Phe Val Arg His
                325                 330                 335

Cys Ile Ala Lys Ser Gln Glu Arg Val Glu Gly Lys Val Gln Val Ser
            340                 345                 350

Val Leu Lys Gly Gln Val Tyr Ile Leu Gly Arg Glu Ser Pro Leu Ser
```

355 360 365

Leu Tyr Asn Glu Glu Leu Val Ser Met Asn Val Gln Gly Asp Tyr Glu
370 375 380

Pro Thr Asp Ala Thr Gly Phe Ile Asn Ile Asn Ser Leu Arg Leu Lys
385 390 395 400

Glu Tyr His Arg Leu Gln Ser Lys Val Thr Ala Lys
405 410

<210> 6238
<211> 412
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1353; "

<220>
<221> source
<223> /note="Gene Symbol: ASS1; "

<220>
<221> source
<223> /note="Gene Name:
argininosuccinate synthase 1; "

<220>
<221> source
<223> /note="Uniprot ID: P00966; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000361471"

<400> 6238
Met Ser Ser Lys Gly Ser Val Val Leu Ala Tyr Ser Gly Gly Leu Asp
1 5 10 15

Thr Ser Cys Ile Leu Val Trp Leu Lys Glu Gln Gly Tyr Asp Val Ile
20 25 30

Ala Tyr Leu Ala Asn Ile Gly Gln Lys Glu Asp Phe Glu Glu Ala Arg
35 40 45

Lys Lys Ala Leu Lys Leu Gly Ala Lys Lys Val Phe Ile Glu Asp Val
50 55 60

```
Ser Arg Glu Phe Val Glu Glu Phe Ile Trp Pro Ala Ile Gln Ser Ser
65                  70                  75                  80

Ala Leu Tyr Glu Asp Arg Tyr Leu Leu Gly Thr Ser Leu Ala Arg Pro
                85                  90                  95

Cys Ile Ala Arg Lys Gln Val Glu Ile Ala Gln Arg Glu Gly Ala Lys
            100                 105                 110

Tyr Val Ser His Gly Ala Thr Gly Lys Gly Asn Asp Gln Val Arg Phe
        115                 120                 125

Glu Leu Ser Cys Tyr Ser Leu Ala Pro Gln Ile Lys Val Ile Ala Pro
    130                 135                 140

Trp Arg Met Pro Glu Phe Tyr Asn Arg Phe Lys Gly Arg Asn Asp Leu
145                 150                 155                 160

Met Glu Tyr Ala Lys Gln His Gly Ile Pro Ile Pro Val Thr Pro Lys
                165                 170                 175

Asn Pro Trp Ser Met Asp Glu Asn Leu Met His Ile Ser Tyr Glu Ala
            180                 185                 190

Gly Ile Leu Glu Asn Pro Lys Asn Gln Ala Pro Pro Gly Leu Tyr Thr
        195                 200                 205

Lys Thr Gln Asp Pro Ala Lys Ala Pro Asn Thr Pro Asp Ile Leu Glu
    210                 215                 220

Ile Glu Phe Lys Lys Gly Val Pro Val Lys Val Thr Asn Val Lys Asp
225                 230                 235                 240

Gly Thr Thr His Gln Thr Ser Leu Glu Leu Phe Met Tyr Leu Asn Glu
                245                 250                 255

Val Ala Gly Lys His Gly Val Gly Arg Ile Asp Ile Val Glu Asn Arg
            260                 265                 270

Phe Ile Gly Met Lys Ser Arg Gly Ile Tyr Glu Thr Pro Ala Gly Thr
        275                 280                 285
```

```
Ile Leu Tyr His Ala His Leu Asp Ile Glu Ala Phe Thr Met Asp Arg
    290                 295                 300

Glu Val Arg Lys Ile Lys Gln Gly Leu Gly Leu Lys Phe Ala Glu Leu
305                 310                 315                 320

Val Tyr Thr Gly Phe Trp His Ser Pro Glu Cys Glu Phe Val Arg His
                325                 330                 335

Cys Ile Ala Lys Ser Gln Glu Arg Val Glu Gly Lys Val Gln Val Ser
            340                 345                 350

Val Leu Lys Gly Gln Val Tyr Ile Leu Gly Arg Glu Ser Pro Leu Ser
        355                 360                 365

Leu Tyr Asn Glu Glu Leu Val Ser Met Asn Val Gln Gly Asp Tyr Glu
    370                 375                 380

Pro Thr Asp Ala Thr Gly Phe Ile Asn Ile Asn Ser Leu Arg Leu Lys
385                 390                 395                 400

Glu Tyr His Arg Leu Gln Ser Lys Val Thr Ala Lys
                405                 410
```

<210> 6239
<211> 198
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1353; "

<220>
<221> source
<223> /note="Gene Symbol: ASS1; "

<220>
<221> source
<223> /note="Gene Name:
argininosuccinate synthase 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000394212"

<400> 6239

```
Met Ser Ser Lys Gly Ser Val Val Leu Ala Tyr Ser Gly Gly Leu Asp
1               5                   10                  15
```

Thr Ser Cys Ile Leu Val Trp Leu Lys Glu Gln Gly Tyr Asp Val Ile
20 25 30

Ala Tyr Leu Ala Asn Ile Gly Gln Lys Glu Asp Phe Glu Glu Ala Arg
35 40 45

Lys Lys Ala Leu Lys Leu Gly Ala Lys Lys Val Phe Ile Glu Asp Val
50 55 60

Ser Arg Glu Phe Val Glu Glu Phe Ile Trp Pro Ala Ile Gln Ser Ser
65 70 75 80

Ala Leu Tyr Glu Asp Arg Tyr Leu Leu Gly Thr Ser Leu Ala Arg Pro
85 90 95

Cys Ile Ala Arg Lys Gln Val Glu Ile Ala Gln Arg Glu Gly Ala Lys
100 105 110

Tyr Val Ser His Gly Ala Thr Gly Lys Gly Asn Asp Gln Val Arg Phe
115 120 125

Glu Leu Ser Cys Tyr Ser Leu Ala Pro Gln Ile Lys Val Ile Ala Pro
130 135 140

Trp Arg Met Pro Glu Phe Tyr Asn Arg Phe Lys Gly Arg Asn Asp Leu
145 150 155 160

Met Glu Tyr Ala Lys Gln His Gly Ile Pro Ile Pro Val Thr Pro Lys
165 170 175

Asn Pro Trp Ser Met Asp Glu Asn Leu Met His Ile Ser Tyr Glu Ala
180 185 190

Gly Ile Leu Glu Asn Pro
195

<210> 6240
<211> 179
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1353; "

<220>
<221> source
<223> /note="Gene Symbol: ASS1; "

<220>
<221> source
<223> /note="Gene Name:
argininosuccinate synthase 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000397785"

<400> 6240

```
Met Ser Ser Lys Gly Ser Val Val Leu Ala Tyr Ser Gly Gly Leu Asp
1               5                   10                  15

Thr Ser Cys Ile Leu Val Trp Leu Lys Glu Gln Gly Tyr Asp Val Ile
            20                  25                  30

Ala Tyr Leu Ala Asn Ile Gly Gln Lys Glu Asp Phe Glu Glu Ala Arg
        35                  40                  45

Lys Lys Ala Leu Lys Leu Gly Ala Lys Lys Val Phe Ile Glu Asp Val
    50                  55                  60

Ser Arg Glu Phe Val Glu Glu Phe Ile Trp Pro Ala Ile Gln Ser Ser
65                  70                  75                  80

Ala Leu Tyr Glu Asp Arg Tyr Leu Leu Gly Thr Ser Leu Ala Arg Pro
                85                  90                  95

Cys Ile Ala Arg Lys Gln Val Glu Ile Ala Gln Arg Glu Gly Ala Lys
            100                 105                 110

Tyr Val Ser His Gly Ala Thr Gly Lys Val Ile Ala Pro Trp Arg Met
        115                 120                 125

Pro Glu Phe Tyr Asn Arg Phe Lys Gly Arg Asn Asp Leu Met Glu Tyr
    130                 135                 140

Ala Lys Gln His Gly Ile Pro Ile Pro Val Thr Pro Lys Asn Pro Trp
145                 150                 155                 160

Ser Met Asp Glu Asn Leu Met His Ile Ser Tyr Glu Ala Gly Ile Leu
```

165 170 175

Glu Asn Pro

<210> 6241
<211> 650
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1354; "

<220>
<221> source
<223> /note="Gene Symbol: RNPEP; "

<220>
<221> source
<223> /note="Gene Name:
arginyl aminopeptidase (aminopeptidase B); "

<220>
<221> source
<223> /note="Uniprot ID: Q9H4A4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000295640"

<400> 6241
Met Ala Ser Gly Glu His Ser Pro Gly Ser Gly Ala Ala Arg Arg Pro
1 5 10 15

Leu His Ser Ala Gln Ala Val Asp Val Ala Ser Ala Ser Asn Phe Arg
20 25 30

Ala Phe Glu Leu Leu His Leu His Leu Asp Leu Arg Ala Glu Phe Gly
35 40 45

Pro Pro Gly Pro Gly Ala Gly Ser Arg Gly Leu Ser Gly Thr Ala Val
50 55 60

Leu Asp Leu Arg Cys Leu Glu Pro Glu Gly Ala Ala Glu Leu Arg Leu
65 70 75 80

Asp Ser His Pro Cys Leu Glu Val Thr Ala Ala Ala Leu Arg Arg Glu
85 90 95

```
Arg Pro Gly Ser Glu Glu Pro Pro Ala Glu Pro Val Ser Phe Tyr Thr
            100                 105                 110

Gln Pro Phe Ser His Tyr Gly Gln Ala Leu Cys Val Ser Phe Pro Gln
        115                 120                 125

Pro Cys Arg Ala Ala Glu Arg Leu Gln Val Leu Leu Thr Tyr Arg Val
    130                 135                 140

Gly Glu Gly Pro Gly Val Cys Trp Leu Ala Pro Glu Gln Thr Ala Gly
145                 150                 155                 160

Lys Lys Lys Pro Phe Val Tyr Thr Gln Gly Gln Ala Val Leu Asn Arg
                165                 170                 175

Ala Phe Phe Pro Cys Phe Asp Thr Pro Ala Val Lys Tyr Lys Tyr Ser
            180                 185                 190

Ala Leu Ile Glu Val Pro Asp Gly Phe Thr Ala Val Met Ser Ala Ser
        195                 200                 205

Thr Trp Glu Lys Arg Gly Pro Asn Lys Phe Phe Phe Gln Met Cys Gln
    210                 215                 220

Pro Ile Pro Ser Tyr Leu Ile Ala Leu Ala Ile Gly Asp Leu Val Ser
225                 230                 235                 240

Ala Glu Val Gly Pro Arg Ser Arg Val Trp Ala Glu Pro Cys Leu Ile
                245                 250                 255

Asp Ala Ala Lys Glu Glu Tyr Asn Gly Val Ile Glu Glu Phe Leu Ala
            260                 265                 270

Thr Gly Glu Lys Leu Phe Gly Pro Tyr Val Trp Gly Arg Tyr Asp Leu
        275                 280                 285

Leu Phe Met Pro Pro Ser Phe Pro Phe Gly Gly Met Glu Asn Pro Cys
    290                 295                 300

Leu Thr Phe Val Thr Pro Cys Leu Leu Ala Gly Asp Arg Ser Leu Ala
305                 310                 315                 320
```

```
Asp Val Ile Ile His Glu Ile Ser His Ser Trp Phe Gly Asn Leu Val
                325                 330                 335

Thr Asn Ala Asn Trp Gly Glu Phe Trp Leu Asn Glu Gly Phe Thr Met
            340                 345                 350

Tyr Ala Gln Arg Arg Ile Ser Thr Ile Leu Phe Gly Ala Ala Tyr Thr
        355                 360                 365

Cys Leu Glu Ala Ala Thr Gly Arg Ala Leu Leu Arg Gln His Met Asp
    370                 375                 380

Ile Thr Gly Glu Glu Asn Pro Leu Asn Lys Leu Arg Val Lys Ile Glu
385                 390                 395                 400

Pro Gly Val Asp Pro Asp Asp Thr Tyr Asn Glu Thr Pro Tyr Glu Lys
                405                 410                 415

Gly Phe Cys Phe Val Ser Tyr Leu Ala His Leu Val Gly Asp Gln Asp
            420                 425                 430

Gln Phe Asp Ser Phe Leu Lys Ala Tyr Val His Glu Phe Lys Phe Arg
        435                 440                 445

Ser Ile Leu Ala Asp Asp Phe Leu Asp Phe Tyr Leu Glu Tyr Phe Pro
    450                 455                 460

Glu Leu Lys Lys Lys Arg Val Asp Ile Ile Pro Gly Phe Glu Phe Asp
465                 470                 475                 480

Arg Trp Leu Asn Thr Pro Gly Trp Pro Pro Tyr Leu Pro Asp Leu Ser
                485                 490                 495

Pro Gly Asp Ser Leu Met Lys Pro Ala Glu Glu Leu Ala Gln Leu Trp
            500                 505                 510

Ala Ala Glu Glu Leu Asp Met Lys Ala Ile Glu Ala Val Ala Ile Ser
        515                 520                 525

Pro Trp Lys Thr Tyr Gln Leu Val Tyr Phe Leu Asp Lys Ile Leu Gln
    530                 535                 540

Lys Ser Pro Leu Pro Pro Gly Asn Val Lys Lys Leu Gly Asp Thr Tyr
```

```
545                 550                 555                 560

Pro Ser Ile Ser Asn Ala Arg Asn Ala Glu Leu Arg Leu Arg Trp Gly
                565                 570                 575

Gln Ile Val Leu Lys Asn Asp His Gln Glu Asp Phe Trp Lys Val Lys
            580                 585                 590

Glu Phe Leu His Asn Gln Gly Lys Gln Lys Tyr Thr Leu Pro Leu Tyr
        595                 600                 605

His Ala Met Met Gly Gly Ser Glu Val Ala Gln Thr Leu Ala Lys Glu
    610                 615                 620

Thr Phe Ala Ser Thr Ala Ser Gln Leu His Ser Asn Val Val Asn Tyr
625                 630                 635                 640

Val Gln Gln Ile Val Ala Pro Lys Gly Ser
                645                 650


<210> 6242
<211> 611
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1354; "

<220>
<221> source
<223> /note="Gene Symbol: RNPEP; "

<220>
<221> source
<223> /note="Gene Name:
      arginyl aminopeptidase (aminopeptidase B); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000356255"

<400> 6242
Met Ala Ser Gly Glu His Ser Pro Gly Ser Gly Ala Ala Arg Arg Pro
1               5                   10                  15

Leu His Ser Ala Gln Ala Val Asp Val Ala Ser Ala Ser Asn Phe Arg
            20                  25                  30
```

```
Ala Phe Glu Leu Leu His Leu His Leu Asp Leu Arg Ala Glu Phe Gly
        35                  40                  45

Pro Pro Gly Pro Gly Ala Gly Ser Arg Gly Leu Ser Gly Thr Ala Val
    50                  55                  60

Leu Asp Leu Arg Cys Leu Glu Pro Glu Gly Ala Ala Glu Leu Arg Leu
65                  70                  75                  80

Asp Ser His Pro Cys Leu Glu Val Thr Ala Ala Ala Leu Arg Arg Glu
                85                  90                  95

Arg Pro Gly Ser Glu Glu Pro Pro Ala Glu Pro Val Ser Phe Tyr Thr
            100                 105                 110

Gln Pro Phe Ser His Tyr Gly Gln Ala Leu Cys Val Ser Phe Pro Gln
        115                 120                 125

Pro Cys Arg Ala Ala Glu Arg Leu Gln Val Leu Leu Thr Tyr Arg Val
    130                 135                 140

Gly Glu Gly Pro Gly Val Cys Trp Leu Ala Pro Glu Gln Thr Ala Gly
145                 150                 155                 160

Lys Lys Lys Pro Phe Val Tyr Thr Gln Gly Gln Ala Val Leu Asn Arg
                165                 170                 175

Ala Phe Phe Pro Cys Phe Asp Thr Pro Ala Val Lys Tyr Lys Tyr Ser
            180                 185                 190

Ala Leu Ile Glu Val Pro Asp Gly Phe Thr Ala Val Met Ser Ala Ser
        195                 200                 205

Thr Trp Glu Lys Arg Gly Pro Asn Lys Phe Phe Phe Gln Met Cys Gln
    210                 215                 220

Pro Ile Pro Ser Tyr Leu Ile Ala Leu Ala Ile Gly Asp Leu Val Ser
225                 230                 235                 240

Ala Glu Val Gly Pro Arg Tyr Asp Leu Leu Phe Met Pro Pro Ser Phe
                245                 250                 255
```

```
Pro Phe Gly Gly Met Glu Asn Pro Cys Leu Thr Phe Val Thr Pro Cys
            260                 265                 270

Leu Leu Ala Gly Asp Arg Ser Leu Ala Asp Val Ile Ile His Glu Ile
        275                 280                 285

Ser His Ser Trp Phe Gly Asn Leu Val Thr Asn Ala Asn Trp Gly Glu
    290                 295                 300

Phe Trp Leu Asn Glu Gly Phe Thr Met Tyr Ala Gln Arg Arg Ile Ser
305                 310                 315                 320

Thr Ile Leu Phe Gly Ala Ala Tyr Thr Cys Leu Glu Ala Ala Thr Gly
                325                 330                 335

Arg Ala Leu Leu Arg Gln His Met Asp Ile Thr Gly Glu Glu Asn Pro
            340                 345                 350

Leu Asn Lys Leu Arg Val Lys Ile Glu Pro Gly Val Asp Pro Asp Asp
        355                 360                 365

Thr Tyr Asn Glu Thr Pro Tyr Glu Lys Gly Phe Cys Phe Val Ser Tyr
    370                 375                 380

Leu Ala His Leu Val Gly Asp Gln Asp Gln Phe Asp Ser Phe Leu Lys
385                 390                 395                 400

Ala Tyr Val His Glu Phe Lys Phe Arg Ser Ile Leu Ala Asp Asp Phe
                405                 410                 415

Leu Asp Phe Tyr Leu Glu Tyr Phe Pro Glu Leu Lys Lys Lys Arg Val
            420                 425                 430

Asp Ile Ile Pro Gly Phe Glu Phe Asp Arg Trp Leu Asn Thr Pro Gly
        435                 440                 445

Trp Pro Pro Tyr Leu Pro Asp Leu Ser Pro Gly Asp Ser Leu Met Lys
    450                 455                 460

Pro Ala Glu Glu Leu Ala Gln Leu Trp Ala Ala Glu Glu Leu Asp Met
465                 470                 475                 480

Lys Ala Ile Glu Ala Val Ala Ile Ser Pro Trp Lys Thr Tyr Gln Leu
```

485 490 495

Val Tyr Phe Leu Asp Lys Ile Leu Gln Lys Ser Pro Leu Pro Pro Gly
500 505 510

Asn Val Lys Lys Leu Gly Asp Thr Tyr Pro Ser Ile Ser Asn Ala Arg
515 520 525

Asn Ala Glu Leu Arg Leu Arg Trp Gly Gln Ile Val Leu Lys Asn Asp
530 535 540

His Gln Glu Asp Phe Trp Lys Val Lys Glu Phe Leu His Asn Gln Gly
545 550 555 560

Lys Gln Lys Tyr Thr Leu Pro Leu Tyr His Ala Met Met Gly Gly Ser
565 570 575

Glu Val Ala Gln Thr Leu Ala Lys Glu Thr Phe Ala Ser Thr Ala Ser
580 585 590

Gln Leu His Ser Asn Val Val Asn Tyr Val Gln Gln Ile Val Ala Pro
595 600 605

Lys Gly Ser
610

<210> 6243
<211> 344
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1354; "

<220>
<221> source
<223> /note="Gene Symbol: RNPEP; "

<220>
<221> source
<223> /note="Gene Name:
arginyl aminopeptidase (aminopeptidase B); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000389602"

<400> 6243
Met Thr Cys Cys Ser Cys Thr Ser Leu Ser Ala Leu Leu Asp Phe Trp
1 5 10 15

Ala Glu Val Cys Trp Leu Ala Pro Glu Gln Thr Ala Gly Lys Lys Lys
20 25 30

Pro Phe Val Tyr Thr Gln Gly Gln Ala Val Leu Asn Arg Ala Phe Phe
35 40 45

Pro Cys Phe Asp Thr Pro Ala Val Lys Tyr Lys Tyr Ser Ala Leu Ile
50 55 60

Glu Val Pro Asp Gly Phe Thr Ala Val Met Ser Ala Ser Thr Trp Glu
65 70 75 80

Lys Arg Gly Pro Asn Lys Phe Phe Phe Gln Met Cys Gln Pro Ile Pro
85 90 95

Ser Tyr Leu Ile Ala Leu Ala Ile Gly Asp Leu Val Ser Ala Glu Val
100 105 110

Gly Pro Arg Ser Arg Val Trp Ala Glu Pro Cys Leu Ile Asp Ala Ala
115 120 125

Lys Glu Glu Tyr Asn Gly Val Ile Glu Glu Phe Leu Ala Thr Gly Glu
130 135 140

Lys Leu Phe Gly Pro Tyr Val Trp Gly Arg Tyr Asp Leu Leu Phe Met
145 150 155 160

Pro Pro Ser Phe Pro Phe Gly Gly Met Glu Asn Pro Cys Leu Thr Phe
165 170 175

Val Thr Pro Cys Leu Leu Ala Gly Asp Arg Ser Leu Ala Asp Val Ile
180 185 190

Ile His Glu Ile Ser His Ser Trp Phe Gly Asn Leu Val Thr Asn Ala
195 200 205

Asn Trp Gly Glu Phe Trp Leu Asn Glu Gly Phe Thr Met Tyr Ala Gln
210 215 220

```
Arg Arg Ile Ser Thr Ile Leu Phe Gly Ala Ala Tyr Thr Cys Leu Glu
225                 230                 235                 240

Ala Ala Thr Gly Arg Ala Leu Leu Arg Gln His Met Asp Ile Thr Gly
                245                 250                 255

Glu Glu Asn Pro Leu Asn Lys Leu Arg Val Lys Ile Glu Pro Gly Val
            260                 265                 270

Asp Pro Asp Asp Thr Tyr Asn Glu Thr Pro Tyr Glu Lys Gly Phe Cys
        275                 280                 285

Phe Val Ser Tyr Leu Ala His Leu Val Gly Asp Gln Asp Gln Phe Asp
    290                 295                 300

Ser Phe Leu Lys Ala Tyr Val His Glu Phe Lys Phe Arg Ser Ile Leu
305                 310                 315                 320

Ala Asp Asp Phe Leu Asp Phe Tyr Leu Glu Tyr Phe Pro Glu Leu Lys
                325                 330                 335

Lys Lys Arg Val Asp Ile Ile Pro
            340


<210> 6244
<211> 168
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1354; "

<220>
<221> source
<223> /note="Gene Symbol: RNPEP; "

<220>
<221> source
<223> /note="Gene Name:
      arginyl aminopeptidase (aminopeptidase B); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000407614"

<400> 6244
Leu Ile Asp Ala Ala Lys Glu Glu Tyr Asn Gly Val Ile Glu Glu Phe
1               5                   10                  15
```

```
Leu Ala Thr Gly Glu Lys Leu Phe Gly Pro Tyr Val Trp Gly Arg Tyr
            20                  25                  30

Asp Leu Leu Phe Met Pro Pro Ser Phe Pro Phe Gly Gly Met Glu Asn
        35                  40                  45

Pro Cys Leu Thr Phe Val Thr Pro Cys Leu Leu Ala Gly Asp Arg Ser
    50                  55                  60

Leu Ala Asp Val Ile Ile His Glu Ile Ser His Ser Trp Phe Gly Asn
65                  70                  75                  80

Leu Val Thr Asn Ala Asn Trp Gly Glu Phe Trp Leu Asn Glu Gly Phe
                85                  90                  95

Thr Met Tyr Ala Gln Arg Arg Ile Ser Thr Ile Leu Phe Gly Val Asp
            100                 105                 110

Pro Asp Asp Thr Tyr Asn Glu Thr Pro Tyr Glu Lys Gly Phe Cys Phe
        115                 120                 125

Val Ser Tyr Leu Ala His Leu Val Gly Asp Gln Asp Gln Phe Asp Ser
    130                 135                 140

Phe Leu Lys Ala Tyr Val His Glu Phe Lys Phe Arg Ser Ile Leu Ala
145                 150                 155                 160

Asp Asp Phe Leu Asp Phe Tyr Leu
                165


<210> 6245
<211> 171
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1354; "

<220>
<221> source
<223> /note="Gene Symbol: RNPEP; "

<220>
<221> source
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<223> /note="Gene Name:
arginyl aminopeptidase (aminopeptidase B); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000478325"

<400> 6245
Phe Arg Ala Phe Glu Leu Leu His Leu His Leu Asp Leu Arg Ala Glu
1 5 10 15

Phe Gly Pro Pro Gly Pro Gly Ala Gly Ser Arg Gly Leu Ser Gly Thr
20 25 30

Ala Val Leu Asp Leu Arg Cys Leu Glu Pro Glu Gly Ala Ala Glu Leu
35 40 45

Arg Leu Asp Ser His Pro Cys Leu Glu Val Thr Ala Ala Ala Leu Arg
50 55 60

Arg Glu Arg Pro Gly Ser Glu Glu Pro Pro Ala Glu Pro Val Ser Phe
65 70 75 80

Tyr Thr Gln Pro Phe Ser His Tyr Gly Gln Ala Leu Cys Val Ser Phe
85 90 95

Pro Gln Pro Cys Arg Ala Ala Glu Arg Leu Gln Val Leu Leu Thr Tyr
100 105 110

Arg Val Gly Glu Gly Pro Gly Val Cys Trp Leu Ala Pro Glu Gln Thr
115 120 125

Ala Gly Lys Lys Lys Pro Phe Val Tyr Thr Gln Gly Gln Ala Val Leu
130 135 140

Asn Arg Ala Phe Phe Pro Cys Phe Asp Thr Pro Ala Val Lys Tyr Lys
145 150 155 160

Tyr Ser Ala Leu Ile Glu Glu Pro Gly Val Gly
165 170

<210> 6246
<211> 151
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1354; "

<220>
<221> source
<223> /note="Gene Symbol: RNPEP; "

<220>
<221> source
<223> /note="Gene Name:
arginyl aminopeptidase (aminopeptidase B); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000478884"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6246
Xaa Pro Gly Ala Gly Ser Arg Gly Leu Ser Gly Thr Ala Val Leu Asp
1 5 10 15

Leu Arg Cys Leu Glu Pro Glu Gly Ala Ala Glu Leu Arg Leu Asp Ser
20 25 30

His Pro Cys Leu Glu Val Thr Ala Ala Ala Leu Arg Arg Glu Arg Pro
35 40 45

Gly Ser Glu Glu Pro Pro Ala Glu Pro Val Ser Phe Tyr Thr Gln Pro
50 55 60

Phe Ser His Tyr Gly Gln Ala Leu Cys Val Ser Phe Pro Gln Pro Cys
65 70 75 80

Arg Ala Ala Glu Arg Leu Gln Val Leu Leu Thr Tyr Arg Val Gly Glu
85 90 95

Gly Pro Gly Val Cys Trp Leu Ala Pro Glu Gln Thr Ala Gly Lys Lys
100 105 110

Lys Pro Phe Val Tyr Thr Gln Gly Gln Ala Val Leu Asn Arg Ala Phe
115 120 125

Phe Pro Cys Phe Asp Thr Pro Ala Val Lys Tyr Lys Tyr Ser Ala Leu

130 135 140

Ile Glu Glu Pro Gly Val Gly
145 150

<210> 6247
<211> 494
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1355; "

<220>
<221> source
<223> /note="Gene Symbol: RNPEPL1; "

<220>
<221> source
<223> /note="Gene Name:
arginyl aminopeptidase (aminopeptidase B)-like 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q9HAU8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000270357"

<400> 6247
Met Ser Ala Thr Arg Ser Ala Tyr Met Glu Glu Glu Gly Val Phe His
1 5 10 15

Phe His Met Glu His Pro Val Pro Ala Tyr Leu Val Ala Leu Val Ala
20 25 30

Gly Asp Leu Lys Pro Ala Asp Ile Gly Pro Arg Ser Arg Val Trp Ala
35 40 45

Glu Pro Cys Leu Leu Pro Thr Ala Thr Ser Lys Leu Ser Gly Ala Val
50 55 60

Glu Gln Trp Leu Ser Ala Ala Glu Arg Leu Tyr Gly Pro Tyr Met Trp
65 70 75 80

Gly Arg Tyr Asp Ile Val Phe Leu Pro Pro Ser Phe Pro Ile Val Ala
85 90 95

```
Met Glu Asn Pro Cys Leu Thr Phe Ile Ile Ser Ser Ile Leu Glu Ser
            100                 105                 110

Asp Glu Phe Leu Val Ile Asp Val Ile His Glu Val Ala His Ser Trp
        115                 120                 125

Phe Gly Asn Ala Val Thr Asn Ala Thr Trp Glu Glu Met Trp Leu Ser
    130                 135                 140

Glu Gly Leu Ala Thr Tyr Ala Gln Arg Arg Ile Thr Thr Glu Thr Tyr
145                 150                 155                 160

Gly Ala Ala Phe Thr Cys Leu Glu Thr Ala Phe Arg Leu Asp Ala Leu
                165                 170                 175

His Arg Gln Met Lys Leu Leu Gly Glu Asp Ser Pro Val Ser Lys Leu
            180                 185                 190

Gln Val Lys Leu Glu Pro Gly Val Asn Pro Ser His Leu Met Asn Leu
        195                 200                 205

Phe Thr Tyr Glu Lys Gly Tyr Cys Phe Val Tyr Tyr Leu Ser Gln Leu
    210                 215                 220

Cys Gly Asp Pro Gln Arg Phe Asp Asp Phe Leu Arg Ala Tyr Val Glu
225                 230                 235                 240

Lys Tyr Lys Phe Thr Ser Val Val Ala Gln Asp Leu Leu Asp Ser Phe
                245                 250                 255

Leu Ser Phe Phe Pro Glu Leu Lys Glu Gln Ser Val Asp Cys Arg Ala
            260                 265                 270

Gly Leu Glu Phe Glu Arg Trp Leu Asn Ala Thr Gly Pro Pro Leu Ala
        275                 280                 285

Glu Pro Asp Leu Ser Gln Gly Ser Ser Leu Thr Arg Pro Val Glu Ala
    290                 295                 300

Leu Phe Gln Leu Trp Thr Ala Glu Pro Leu Asp Gln Ala Ala Ala Ser
305                 310                 315                 320
```

```
Ala Ser Ala Ile Asp Ile Ser Lys Trp Arg Thr Phe Gln Thr Ala Leu
                325                 330                 335

Phe Leu Asp Arg Leu Leu Asp Gly Ser Pro Leu Pro Gln Glu Val Val
            340                 345                 350

Met Ser Leu Ser Lys Cys Tyr Ser Ser Leu Leu Asp Ser Met Asn Ala
        355                 360                 365

Glu Ile Arg Ile Arg Trp Leu Gln Ile Val Val Arg Asn Asp Tyr Tyr
    370                 375                 380

Pro Asp Leu His Arg Val Arg Arg Phe Leu Glu Ser Gln Met Ser Arg
385                 390                 395                 400

Met Tyr Thr Ile Pro Leu Tyr Glu Asp Leu Cys Thr Gly Ala Leu Lys
                405                 410                 415

Ser Phe Ala Leu Glu Val Phe Tyr Gln Thr Gln Gly Arg Leu His Pro
            420                 425                 430

Asn Leu Arg Arg Ala Ile Gln Gln Ile Leu Ser Gln Gly Leu Gly Ser
        435                 440                 445

Ser Thr Glu Pro Ala Ser Glu Pro Ser Thr Glu Leu Gly Lys Ala Glu
    450                 455                 460

Ala Asp Thr Asp Ser Asp Ala Gln Ala Leu Leu Leu Gly Asp Glu Ala
465                 470                 475                 480

Pro Ser Ser Ala Ile Ser Leu Arg Asp Val Asn Val Ser Ala
                485                 490


<210> 6248
<211> 247
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1355; "

<220>
<221> source
<223> /note="Gene Symbol: RNPEPL1; "
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<220>
<221> source
<223> /note="Gene Name:
arginyl aminopeptidase (aminopeptidase B)-like 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000403319"

<400> 6248
Ala Tyr Val Glu Lys Tyr Lys Phe Thr Ser Val Val Ala Gln Asp Leu
1 5 10 15

Leu Asp Ser Phe Leu Ser Phe Phe Pro Glu Leu Lys Glu Gln Ser Val
20 25 30

Asp Cys Arg Ala Gly Pro Pro Leu Ala Glu Pro Asp Leu Ser Gln Gly
35 40 45

Ser Ser Leu Thr Arg Pro Val Glu Ala Leu Phe Gln Leu Trp Thr Ala
50 55 60

Glu Pro Leu Asp Gln Ala Ala Ala Ser Ala Ser Ala Ile Asp Ile Ser
65 70 75 80

Lys Trp Arg Thr Phe Gln Thr Ala Leu Phe Leu Asp Arg Leu Leu Asp
85 90 95

Gly Ser Pro Leu Pro Gln Glu Val Val Met Ser Leu Ser Lys Cys Tyr
100 105 110

Ser Ser Leu Leu Asp Ser Met Asn Ala Glu Ile Arg Ile Arg Trp Leu
115 120 125

Gln Ile Val Val Arg Asn Asp Tyr Tyr Pro Asp Leu His Arg Val Arg
130 135 140

Arg Phe Leu Glu Ser Gln Met Ser Arg Met Tyr Thr Ile Pro Leu Tyr
145 150 155 160

Glu Asp Leu Cys Thr Gly Ala Leu Lys Ser Phe Ala Leu Glu Val Phe
165 170 175

Tyr Gln Thr Gln Gly Arg Leu His Pro Asn Leu Arg Arg Ala Ile Gln
180 185 190

```
Gln Ile Leu Ser Gln Gly Leu Gly Ser Ser Thr Glu Pro Ala Ser Glu
        195                 200                 205

Pro Ser Thr Glu Leu Gly Lys Ala Glu Ala Asp Thr Asp Ser Asp Ala
    210                 215                 220

Gln Ala Leu Leu Leu Gly Asp Glu Ala Pro Ser Ser Ala Ile Ser Leu
225                 230                 235                 240

Arg Asp Val Asn Val Ser Ala
                245
```

<210> 6249
<211> 114
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1355; "

<220>
<221> source
<223> /note="Gene Symbol: RNPEPL1; "

<220>
<221> source
<223> /note="Gene Name:
arginyl aminopeptidase (aminopeptidase B)-like 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000414661"

<400> 6249

```
Met Lys Leu Leu Gly Glu Asp Ser Pro Val Ser Lys Leu Gln Ala Tyr
1               5                   10                  15

Val Glu Lys Tyr Lys Phe Thr Ser Val Val Ala Gln Asp Leu Leu Asp
            20                  25                  30

Ser Phe Leu Ser Phe Phe Pro Glu Leu Lys Glu Gln Ser Val Asp Cys
        35                  40                  45

Arg Ala Gly Leu Glu Phe Glu Arg Trp Leu Asn Ala Thr Gly Pro Pro
    50                  55                  60

Leu Ala Glu Pro Asp Leu Ser Gln Gly Ser Ser Leu Thr Arg Pro Val
```

65 70 75 80

Glu Ala Leu Phe Gln Leu Trp Thr Ala Glu Pro Leu Asp Gln Ala Ala
85 90 95

Ala Ser Ala Ser Ala Ile Asp Ile Ser Lys Trp Arg Thr Phe Gln Thr
100 105 110

Ala Leu

<210> 6250
<211> 518
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1356; "

<220>
<221> source
<223> /note="Gene Symbol: ATE1; "

<220>
<221> source
<223> /note="Gene Name:
arginyltransferase 1; "

<220>
<221> source
<223> /note="Uniprot ID: O95260; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000224652"

<400> 6250
Met Ala Phe Trp Ala Gly Gly Ser Pro Ser Val Val Asp Tyr Phe Pro
1 5 10 15

Ser Glu Asp Phe Tyr Arg Cys Gly Tyr Cys Lys Asn Glu Ser Gly Ser
20 25 30

Arg Ser Asn Gly Met Trp Ala His Ser Met Thr Val Gln Asp Tyr Gln
35 40 45

Asp Leu Ile Asp Arg Gly Trp Arg Arg Ser Gly Lys Tyr Val Tyr Lys
50 55 60

```
Pro Val Met Asn Gln Thr Cys Cys Pro Gln Tyr Thr Ile Arg Cys Arg
65                  70                  75                  80

Pro Leu Gln Phe Gln Pro Ser Lys Ser His Lys Lys Val Leu Lys Lys
                85                  90                  95

Met Leu Lys Phe Leu Ala Lys Gly Glu Val Pro Lys Gly Ser Cys Glu
            100                 105                 110

Asp Glu Pro Met Asp Ser Thr Met Asp Asp Ala Val Ala Gly Asp Phe
        115                 120                 125

Ala Leu Ile Asn Lys Leu Asp Ile Gln Cys Asp Leu Lys Thr Leu Ser
    130                 135                 140

Asp Asp Ile Lys Glu Ser Leu Glu Ser Glu Gly Lys Asn Ser Lys Lys
145                 150                 155                 160

Glu Glu Pro Gln Glu Leu Leu Gln Ser Gln Asp Phe Val Gly Glu Lys
                165                 170                 175

Leu Gly Ser Gly Glu Pro Ser His Ser Val Lys Val His Thr Val Pro
            180                 185                 190

Lys Pro Gly Lys Gly Ala Asp Leu Ser Lys Pro Pro Cys Arg Lys Ala
        195                 200                 205

Lys Glu Ile Arg Lys Glu Arg Lys Arg Leu Lys Leu Met Gln Gln Asn
    210                 215                 220

Pro Ala Gly Glu Leu Glu Gly Phe Gln Ala Gln Gly His Pro Pro Ser
225                 230                 235                 240

Leu Phe Pro Pro Lys Ala Lys Ser Asn Gln Pro Lys Ser Leu Glu Asp
                245                 250                 255

Leu Ile Phe Glu Ser Leu Pro Glu Asn Ala Ser His Lys Leu Glu Val
            260                 265                 270

Arg Val Val Arg Ser Ser Pro Pro Ser Ser Gln Phe Lys Ala Thr Leu
        275                 280                 285
```

```
Leu Glu Ser Tyr Gln Val Tyr Lys Arg Tyr Gln Met Val Ile His Lys
    290                 295                 300

Asn Pro Pro Asp Thr Pro Thr Glu Ser Gln Phe Thr Arg Phe Leu Cys
305                 310                 315                 320

Ser Ser Pro Leu Glu Ala Glu Thr Pro Pro Asn Gly Pro Asp Cys Gly
                325                 330                 335

Tyr Gly Ser Phe His Gln Gln Tyr Trp Leu Asp Gly Lys Ile Ile Ala
            340                 345                 350

Val Gly Val Ile Asp Ile Leu Pro Asn Cys Val Ser Ser Val Tyr Leu
        355                 360                 365

Tyr Tyr Asp Pro Asp Tyr Ser Phe Leu Ser Leu Gly Val Tyr Ser Ala
    370                 375                 380

Leu Arg Glu Ile Ala Phe Thr Arg Gln Leu His Glu Lys Thr Ser Gln
385                 390                 395                 400

Leu Ser Tyr Tyr Tyr Met Gly Phe Tyr Ile His Ser Cys Pro Lys Met
                405                 410                 415

Lys Tyr Lys Gly Gln Tyr Arg Pro Ser Asp Leu Leu Cys Pro Glu Thr
            420                 425                 430

Tyr Val Trp Val Pro Ile Glu Gln Cys Leu Pro Ser Leu Glu Asn Ser
        435                 440                 445

Lys Tyr Cys Arg Phe Asn Gln Asp Pro Glu Ala Val Asp Glu Asp Arg
    450                 455                 460

Ser Thr Glu Pro Asp Arg Leu Gln Val Phe His Lys Arg Ala Ile Met
465                 470                 475                 480

Pro Tyr Gly Val Tyr Lys Lys Gln Gln Lys Asp Pro Ser Glu Glu Ala
                485                 490                 495

Ala Val Leu Gln Tyr Ala Ser Leu Val Gly Gln Lys Cys Ser Glu Arg
            500                 505                 510

Met Leu Leu Phe Arg Asn
```

515

<210> 6251
<211> 422
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1356; "

<220>
<221> source
<223> /note="Gene Symbol: ATE1; "

<220>
<221> source
<223> /note="Gene Name:
arginyltransferase 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000358036"

<400> 6251
Met Leu Lys Phe Leu Ala Lys Gly Glu Val Pro Lys Gly Ser Cys Glu
1 5 10 15

Asp Glu Pro Met Asp Ser Thr Met Asp Asp Ala Val Ala Gly Asp Phe
20 25 30

Ala Leu Ile Asn Lys Leu Asp Ile Gln Cys Asp Leu Lys Thr Leu Ser
35 40 45

Asp Asp Ile Lys Glu Ser Leu Glu Ser Glu Gly Lys Asn Ser Lys Lys
50 55 60

Glu Glu Pro Gln Glu Leu Leu Gln Ser Gln Asp Phe Val Gly Glu Lys
65 70 75 80

Leu Gly Ser Gly Glu Pro Ser His Ser Val Lys Val His Thr Val Pro
85 90 95

Lys Pro Gly Lys Gly Ala Asp Leu Ser Lys Pro Pro Cys Arg Lys Ala
100 105 110

Lys Glu Ile Arg Lys Glu Arg Lys Arg Leu Lys Leu Met Gln Gln Asn
115 120 125

```
Pro Ala Gly Glu Leu Glu Gly Phe Gln Ala Gln Gly His Pro Pro Ser
    130                 135                 140

Leu Phe Pro Pro Lys Ala Lys Ser Asn Gln Pro Lys Ser Leu Glu Asp
145                 150                 155                 160

Leu Ile Phe Glu Ser Leu Pro Glu Asn Ala Ser His Lys Leu Glu Val
                165                 170                 175

Arg Leu Val Pro Val Ser Phe Glu Asp Pro Glu Phe Lys Ser Ser Phe
            180                 185                 190

Ser Gln Ser Phe Ser Leu Tyr Val Lys Tyr Gln Val Ala Ile His Gln
        195                 200                 205

Asp Pro Pro Asp Glu Cys Gly Lys Thr Glu Phe Thr Arg Phe Leu Cys
    210                 215                 220

Ser Ser Pro Leu Glu Ala Glu Thr Pro Pro Asn Gly Pro Asp Cys Gly
225                 230                 235                 240

Tyr Gly Ser Phe His Gln Gln Tyr Trp Leu Asp Gly Lys Ile Ile Ala
                245                 250                 255

Val Gly Val Ile Asp Ile Leu Pro Asn Cys Val Ser Ser Val Tyr Leu
            260                 265                 270

Tyr Tyr Asp Pro Asp Tyr Ser Phe Leu Ser Leu Gly Val Tyr Ser Ala
        275                 280                 285

Leu Arg Glu Ile Ala Phe Thr Arg Gln Leu His Glu Lys Thr Ser Gln
    290                 295                 300

Leu Ser Tyr Tyr Tyr Met Gly Phe Tyr Ile His Ser Cys Pro Lys Met
305                 310                 315                 320

Lys Tyr Lys Gly Gln Tyr Arg Pro Ser Asp Leu Leu Cys Pro Glu Thr
                325                 330                 335

Tyr Val Trp Val Pro Ile Glu Gln Cys Leu Pro Ser Leu Glu Asn Ser
            340                 345                 350
```

```
Lys Tyr Cys Arg Phe Asn Gln Asp Pro Glu Ala Val Asp Glu Asp Arg
        355                 360                 365

Ser Thr Glu Pro Asp Arg Leu Gln Val Phe His Lys Arg Ala Ile Met
    370                 375                 380

Pro Tyr Gly Val Tyr Lys Lys Gln Gln Lys Asp Pro Ser Glu Glu Ala
385                 390                 395                 400

Ala Val Leu Gln Tyr Ala Ser Leu Val Gly Gln Lys Cys Ser Glu Arg
                405                 410                 415

Met Leu Leu Phe Arg Asn
            420


<210> 6252
<211> 518
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1356; "

<220>
<221> source
<223> /note="Gene Symbol: ATE1; "

<220>
<221> source
<223> /note="Gene Name:
      arginyltransferase 1; "

<220>
<221> source
<223> /note="Uniprot ID:  O95260; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000358039"

<400> 6252
Met Ala Phe Trp Ala Gly Gly Ser Pro Ser Val Val Asp Tyr Phe Pro
1               5                   10                  15

Ser Glu Asp Phe Tyr Arg Cys Gly Tyr Cys Lys Asn Glu Ser Gly Ser
            20                  25                  30

Arg Ser Asn Gly Met Trp Ala His Ser Met Thr Val Gln Asp Tyr Gln
        35                  40                  45
```

```
Asp Leu Ile Asp Arg Gly Trp Arg Arg Ser Gly Lys Tyr Val Tyr Lys
    50                  55                  60

Pro Val Met Asn Gln Thr Cys Cys Pro Gln Tyr Thr Ile Arg Cys Arg
65                  70                  75                  80

Pro Leu Gln Phe Gln Pro Ser Lys Ser His Lys Lys Val Leu Lys Lys
                85                  90                  95

Met Leu Lys Phe Leu Ala Lys Gly Glu Val Pro Lys Gly Ser Cys Glu
            100                 105                 110

Asp Glu Pro Met Asp Ser Thr Met Asp Asp Ala Val Ala Gly Asp Phe
        115                 120                 125

Ala Leu Ile Asn Lys Leu Asp Ile Gln Cys Asp Leu Lys Thr Leu Ser
    130                 135                 140

Asp Asp Ile Lys Glu Ser Leu Glu Ser Glu Gly Lys Asn Ser Lys Lys
145                 150                 155                 160

Glu Glu Pro Gln Glu Leu Leu Gln Ser Gln Asp Phe Val Gly Glu Lys
                165                 170                 175

Leu Gly Ser Gly Glu Pro Ser His Ser Val Lys Val His Thr Val Pro
            180                 185                 190

Lys Pro Gly Lys Gly Ala Asp Leu Ser Lys Pro Pro Cys Arg Lys Ala
        195                 200                 205

Lys Glu Ile Arg Lys Glu Arg Lys Arg Leu Lys Leu Met Gln Gln Asn
    210                 215                 220

Pro Ala Gly Glu Leu Glu Gly Phe Gln Ala Gln Gly His Pro Pro Ser
225                 230                 235                 240

Leu Phe Pro Pro Lys Ala Lys Ser Asn Gln Pro Lys Ser Leu Glu Asp
                245                 250                 255

Leu Ile Phe Glu Ser Leu Pro Glu Asn Ala Ser His Lys Leu Glu Val
            260                 265                 270
```

```
Arg Leu Val Pro Val Ser Phe Glu Asp Pro Glu Phe Lys Ser Ser Phe
        275                 280                 285

Ser Gln Ser Phe Ser Leu Tyr Val Lys Tyr Gln Val Ala Ile His Gln
    290                 295                 300

Asp Pro Pro Asp Glu Cys Gly Lys Thr Glu Phe Thr Arg Phe Leu Cys
305                 310                 315                 320

Ser Ser Pro Leu Glu Ala Glu Thr Pro Pro Asn Gly Pro Asp Cys Gly
                325                 330                 335

Tyr Gly Ser Phe His Gln Gln Tyr Trp Leu Asp Gly Lys Ile Ile Ala
            340                 345                 350

Val Gly Val Ile Asp Ile Leu Pro Asn Cys Val Ser Ser Val Tyr Leu
        355                 360                 365

Tyr Tyr Asp Pro Asp Tyr Ser Phe Leu Ser Leu Gly Val Tyr Ser Ala
    370                 375                 380

Leu Arg Glu Ile Ala Phe Thr Arg Gln Leu His Glu Lys Thr Ser Gln
385                 390                 395                 400

Leu Ser Tyr Tyr Tyr Met Gly Phe Tyr Ile His Ser Cys Pro Lys Met
                405                 410                 415

Lys Tyr Lys Gly Gln Tyr Arg Pro Ser Asp Leu Leu Cys Pro Glu Thr
            420                 425                 430

Tyr Val Trp Val Pro Ile Glu Gln Cys Leu Pro Ser Leu Glu Asn Ser
        435                 440                 445

Lys Tyr Cys Arg Phe Asn Gln Asp Pro Glu Ala Val Asp Glu Asp Arg
    450                 455                 460

Ser Thr Glu Pro Asp Arg Leu Gln Val Phe His Lys Arg Ala Ile Met
465                 470                 475                 480

Pro Tyr Gly Val Tyr Lys Lys Gln Gln Lys Asp Pro Ser Glu Glu Ala
                485                 490                 495
```

```
Ala Val Leu Gln Tyr Ala Ser Leu Val Gly Gln Lys Cys Ser Glu Arg
            500                 505                 510

Met Leu Leu Phe Arg Asn
        515
```

<210> 6253
<211> 515
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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arginyltransferase 1; "

<220>
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<223> /note="ENSP ID: ENSP00000397787"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6253

```
Xaa Ala Gly Gly Ser Pro Ser Val Val Asp Tyr Phe Pro Ser Glu Asp
1               5                   10                  15

Phe Tyr Arg Cys Gly Tyr Cys Lys Asn Glu Ser Gly Ser Arg Ser Asn
            20                  25                  30

Gly Met Trp Ala His Ser Met Thr Val Gln Asp Tyr Gln Asp Leu Ile
        35                  40                  45

Asp Arg Gly Trp Arg Arg Ser Gly Lys Tyr Val Tyr Lys Pro Val Met
    50                  55                  60

Asn Gln Thr Cys Cys Pro Gln Tyr Thr Ile Arg Cys Arg Pro Leu Gln
65                  70                  75                  80
```

```
Phe Gln Pro Ser Lys Ser His Lys Lys Val Leu Lys Lys Met Leu Lys
                85                  90                  95

Phe Leu Ala Lys Gly Glu Val Pro Lys Gly Ser Cys Glu Asp Glu Pro
            100                 105                 110

Met Asp Ser Thr Met Asp Asp Ala Val Ala Gly Asp Phe Ala Leu Ile
        115                 120                 125

Asn Lys Leu Asp Ile Gln Cys Asp Leu Lys Thr Leu Ser Asp Asp Ile
    130                 135                 140

Lys Glu Ser Leu Glu Ser Glu Gly Lys Asn Ser Lys Lys Glu Glu Pro
145                 150                 155                 160

Gln Glu Leu Leu Gln Ser Gln Asp Phe Val Gly Glu Lys Leu Gly Ser
                165                 170                 175

Gly Glu Pro Ser His Ser Val Lys Val His Thr Val Pro Lys Pro Gly
            180                 185                 190

Lys Gly Ala Asp Leu Ser Lys Pro Pro Cys Arg Lys Ala Lys Glu Ile
        195                 200                 205

Arg Lys Glu Arg Lys Arg Leu Lys Leu Met Gln Gln Asn Pro Ala Gly
    210                 215                 220

Glu Leu Glu Gly Phe Gln Ala Gln Gly His Pro Pro Ser Leu Phe Pro
225                 230                 235                 240

Pro Lys Ala Lys Ser Asn Gln Pro Lys Ser Leu Glu Asp Leu Ile Phe
                245                 250                 255

Glu Ser Leu Pro Glu Asn Ala Ser His Lys Leu Glu Val Arg Val Val
            260                 265                 270

Arg Ser Ser Pro Pro Ser Ser Gln Phe Lys Ala Thr Leu Leu Glu Ser
        275                 280                 285

Tyr Gln Val Tyr Lys Arg Tyr Gln Met Val Ile His Lys Asn Pro Pro
    290                 295                 300

Asp Thr Pro Thr Glu Ser Gln Phe Thr Arg Phe Leu Cys Ser Ser Pro
```

305 310 315 320

Leu Glu Ala Glu Thr Pro Pro Asn Gly Pro Asp Cys Gly Tyr Gly Ser
325 330 335

Phe His Gln Gln Tyr Trp Leu Asp Gly Lys Ile Ile Ala Val Gly Val
340 345 350

Ile Asp Ile Leu Pro Asn Cys Val Ser Ser Val Tyr Leu Tyr Tyr Asp
355 360 365

Pro Asp Tyr Ser Phe Leu Ser Leu Gly Val Tyr Ser Ala Leu Arg Glu
370 375 380

Ile Ala Phe Thr Arg Gln Leu His Glu Lys Thr Ser Gln Leu Ser Tyr
385 390 395 400

Tyr Tyr Met Gly Phe Tyr Ile His Ser Cys Pro Lys Met Lys Tyr Lys
405 410 415

Gly Gln Tyr Arg Pro Ser Asp Leu Leu Cys Pro Glu Thr Tyr Val Trp
420 425 430

Val Pro Ile Glu Gln Cys Leu Pro Ser Leu Glu Asn Ser Lys Tyr Cys
435 440 445

Arg Phe Asn Gln Asp Pro Glu Ala Val Asp Glu Asp Arg Ser Thr Glu
450 455 460

Pro Asp Arg Leu Gln Val Phe His Lys Arg Ala Ile Met Pro Tyr Gly
465 470 475 480

Val Tyr Lys Lys Gln Gln Lys Asp Pro Ser Glu Glu Ala Ala Val Leu
485 490 495

Gln Tyr Ala Ser Leu Val Gly Gln Lys Cys Ser Glu Arg Met Leu Leu
500 505 510

Phe Arg Asn
515

<210> 6254
<211> 222

<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1356; "

<220>
<221> source
<223> /note="Gene Symbol: ATE1; "

<220>
<221> source
<223> /note="Gene Name:
arginyltransferase 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000405099"

<400> 6254
Met Ala Ser Val Val Glu Tyr Lys Gly Leu Arg Ala Gly Tyr His Cys
1 5 10 15

Gly Tyr Cys Asp Ser Lys Glu Gly Lys Ala Ser Cys Gly Met Trp Ala
20 25 30

His Ser Met Thr Val Gln Asp Tyr Gln Asp Leu Ile Asp Arg Gly Trp
35 40 45

Arg Arg Ser Gly Lys Tyr Val Tyr Lys Pro Val Met Asn Gln Thr Cys
50 55 60

Cys Pro Gln Tyr Thr Ile Arg Cys Arg Pro Leu Gln Phe Gln Pro Ser
65 70 75 80

Lys Ser His Lys Lys Val Leu Lys Lys Met Leu Lys Phe Leu Ala Lys
85 90 95

Gly Glu Val Pro Lys Gly Ser Cys Glu Asp Glu Pro Met Asp Ser Thr
100 105 110

Met Asp Asp Ala Val Ala Gly Asp Phe Ala Leu Ile Asn Lys Leu Asp
115 120 125

Ile Gln Cys Asp Leu Lys Thr Leu Ser Asp Asp Ile Lys Glu Ser Leu
130 135 140

```
Glu Ser Glu Gly Lys Asn Ser Lys Lys Glu Glu Pro Gln Glu Leu Leu
145                 150                 155                 160

Gln Ser Gln Asp Phe Val Gly Glu Lys Leu Gly Ser Gly Glu Pro Ser
                165                 170                 175

His Ser Val Lys Val His Thr Val Pro Lys Pro Gly Lys Gly Ala Asp
            180                 185                 190

Leu Ser Lys Pro Pro Cys Arg Lys Ala Lys Glu Ile Arg Lys Glu Arg
        195                 200                 205

Lys Arg Leu Lys Leu Met Gln Gln Asn Pro Ala Gly Glu Leu
    210                 215                 220


<210> 6255
<211> 511
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ATE1; "

<220>
<221> source
<223> /note="Gene Name:
      arginyltransferase 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000440881"

<400> 6255
Met Ala Ser Val Val Glu Tyr Lys Gly Leu Arg Ala Gly Tyr His Cys
1               5                   10                  15

Gly Tyr Cys Asp Ser Lys Glu Gly Lys Ala Ser Cys Gly Met Trp Ala
            20                  25                  30

His Ser Met Thr Val Gln Asp Tyr Gln Asp Leu Ile Asp Arg Gly Trp
        35                  40                  45

Arg Arg Ser Gly Lys Tyr Val Tyr Lys Pro Val Met Asn Gln Thr Cys
    50                  55                  60
```

```
Cys Pro Gln Tyr Thr Ile Arg Cys Arg Pro Leu Gln Phe Gln Pro Ser
65                  70                  75                  80

Lys Ser His Lys Lys Val Leu Lys Lys Met Leu Lys Phe Leu Ala Lys
                85                  90                  95

Gly Glu Val Pro Lys Gly Ser Cys Glu Asp Glu Pro Met Asp Ser Thr
            100                 105                 110

Met Asp Asp Ala Val Ala Gly Asp Phe Ala Leu Ile Asn Lys Leu Asp
        115                 120                 125

Ile Gln Cys Asp Leu Lys Thr Leu Ser Asp Asp Ile Lys Glu Ser Leu
    130                 135                 140

Glu Ser Glu Gly Lys Asn Ser Lys Lys Glu Glu Pro Gln Glu Leu Leu
145                 150                 155                 160

Gln Ser Gln Asp Phe Val Gly Glu Lys Leu Gly Ser Gly Glu Pro Ser
                165                 170                 175

His Ser Val Lys Val His Thr Val Pro Lys Pro Gly Lys Gly Ala Asp
            180                 185                 190

Leu Ser Lys Pro Pro Cys Arg Lys Ala Lys Glu Ile Arg Lys Glu Arg
        195                 200                 205

Lys Arg Leu Lys Leu Met Gln Gln Asn Pro Ala Gly Glu Leu Glu Gly
    210                 215                 220

Phe Gln Ala Gln Gly His Pro Pro Ser Leu Phe Pro Pro Lys Ala Lys
225                 230                 235                 240

Ser Asn Gln Pro Lys Ser Leu Glu Asp Leu Ile Phe Glu Ser Leu Pro
                245                 250                 255

Glu Asn Ala Ser His Lys Leu Glu Val Arg Leu Val Pro Val Ser Phe
            260                 265                 270

Glu Asp Pro Glu Phe Lys Ser Ser Phe Ser Gln Ser Phe Ser Leu Tyr
        275                 280                 285
```

```
Val Lys Tyr Gln Val Ala Ile His Gln Asp Pro Pro Asp Glu Cys Gly
    290                 295                 300

Lys Thr Glu Phe Thr Arg Phe Leu Cys Ser Ser Pro Leu Glu Ala Glu
305                 310                 315                 320

Thr Pro Pro Asn Gly Pro Asp Cys Gly Tyr Gly Ser Phe His Gln Gln
                325                 330                 335

Tyr Trp Leu Asp Gly Lys Ile Ile Ala Val Gly Val Ile Asp Ile Leu
            340                 345                 350

Pro Asn Cys Val Ser Ser Val Tyr Leu Tyr Tyr Asp Pro Asp Tyr Ser
        355                 360                 365

Phe Leu Ser Leu Gly Val Tyr Ser Ala Leu Arg Glu Ile Ala Phe Thr
    370                 375                 380

Arg Gln Leu His Glu Lys Thr Ser Gln Leu Ser Tyr Tyr Tyr Met Gly
385                 390                 395                 400

Phe Tyr Ile His Ser Cys Pro Lys Met Lys Tyr Lys Gly Gln Tyr Arg
                405                 410                 415

Pro Ser Asp Leu Leu Cys Pro Glu Thr Tyr Val Trp Val Pro Ile Glu
            420                 425                 430

Gln Cys Leu Pro Ser Leu Glu Asn Ser Lys Tyr Cys Arg Phe Asn Gln
        435                 440                 445

Asp Pro Glu Ala Val Asp Glu Asp Arg Ser Thr Glu Pro Asp Arg Leu
    450                 455                 460

Gln Val Phe His Lys Arg Ala Ile Met Pro Tyr Gly Val Tyr Lys Lys
465                 470                 475                 480

Gln Gln Lys Asp Pro Ser Glu Glu Ala Ala Val Leu Gln Tyr Ala Ser
                485                 490                 495

Leu Val Gly Gln Lys Cys Ser Glu Arg Met Leu Leu Phe Arg Asn
            500                 505                 510
```

<210> 6256
<211> 403
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1356; "

<220>
<221> source
<223> /note="Gene Symbol: ATE1; "

<220>
<221> source
<223> /note="Gene Name:
arginyltransferase 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000444852"

<400> 6256
Met Asp Ser Thr Met Asp Asp Ala Val Ala Gly Asp Phe Ala Leu Ile
1 5 10 15

Asn Lys Leu Asp Ile Gln Cys Asp Leu Lys Thr Leu Ser Asp Asp Ile
20 25 30

Lys Glu Ser Leu Glu Ser Glu Gly Lys Asn Ser Lys Lys Glu Glu Pro
35 40 45

Gln Glu Leu Leu Gln Ser Gln Asp Phe Val Gly Glu Lys Leu Gly Ser
50 55 60

Gly Glu Pro Ser His Ser Val Lys Val His Thr Val Pro Lys Pro Gly
65 70 75 80

Lys Gly Ala Asp Leu Ser Lys Pro Pro Cys Arg Lys Ala Lys Glu Ile
85 90 95

Arg Lys Glu Arg Lys Arg Leu Lys Leu Met Gln Gln Asn Pro Ala Gly
100 105 110

Glu Leu Glu Gly Phe Gln Ala Gln Gly His Pro Pro Ser Leu Phe Pro
115 120 125

Pro Lys Ala Lys Ser Asn Gln Pro Lys Ser Leu Glu Asp Leu Ile Phe
130 135 140

```
Glu Ser Leu Pro Glu Asn Ala Ser His Lys Leu Glu Val Arg Val Val
145                 150                 155                 160

Arg Ser Ser Pro Pro Ser Ser Gln Phe Lys Ala Thr Leu Leu Glu Ser
                165                 170                 175

Tyr Gln Val Tyr Lys Arg Tyr Gln Met Val Ile His Lys Asn Pro Pro
            180                 185                 190

Asp Thr Pro Thr Glu Ser Gln Phe Thr Arg Phe Leu Cys Ser Ser Pro
        195                 200                 205

Leu Glu Ala Glu Thr Pro Pro Asn Gly Pro Asp Cys Gly Tyr Gly Ser
    210                 215                 220

Phe His Gln Gln Tyr Trp Leu Asp Gly Lys Ile Ile Ala Val Gly Val
225                 230                 235                 240

Ile Asp Ile Leu Pro Asn Cys Val Ser Ser Val Tyr Leu Tyr Tyr Asp
                245                 250                 255

Pro Asp Tyr Ser Phe Leu Ser Leu Gly Val Tyr Ser Ala Leu Arg Glu
            260                 265                 270

Ile Ala Phe Thr Arg Gln Leu His Glu Lys Thr Ser Gln Leu Ser Tyr
        275                 280                 285

Tyr Tyr Met Gly Phe Tyr Ile His Ser Cys Pro Lys Met Lys Tyr Lys
    290                 295                 300

Gly Gln Tyr Arg Pro Ser Asp Leu Leu Cys Pro Glu Thr Tyr Val Trp
305                 310                 315                 320

Val Pro Ile Glu Gln Cys Leu Pro Ser Leu Glu Asn Ser Lys Tyr Cys
                325                 330                 335

Arg Phe Asn Gln Asp Pro Glu Ala Val Asp Glu Asp Arg Ser Thr Glu
            340                 345                 350

Pro Asp Arg Leu Gln Val Phe His Lys Arg Ala Ile Met Pro Tyr Gly
        355                 360                 365
```

```
Val Tyr Lys Lys Gln Gln Lys Asp Pro Ser Glu Glu Ala Ala Val Leu
    370                 375                 380

Gln Tyr Ala Ser Leu Val Gly Gln Lys Cys Ser Glu Arg Met Leu Leu
385                 390                 395                 400

Phe Arg Asn
```

<210> 6257
<211> 660
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1357; "

<220>
<221> source
<223> /note="Gene Symbol: RARS; "

<220>
<221> source
<223> /note="Gene Name:
arginyl-tRNA
synthetase; "

<220>
<221> source
<223> /note="Uniprot ID: P54136; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000231572"

<400> 6257

```
Met Asp Val Leu Val Ser Glu Cys Ser Ala Arg Leu Leu Gln Gln Glu
1               5                   10                  15

Glu Glu Ile Lys Ser Leu Thr Ala Glu Ile Asp Arg Leu Lys Asn Cys
            20                  25                  30

Gly Cys Leu Gly Ala Ser Pro Asn Leu Glu Gln Leu Gln Glu Glu Asn
        35                  40                  45

Leu Lys Leu Lys Tyr Arg Leu Asn Ile Leu Arg Lys Ser Leu Gln Ala
    50                  55                  60
```

Glu Arg Asn Lys Pro Thr Lys Asn Met Ile Asn Ile Ile Ser Arg Leu
65 70 75 80

Gln Glu Val Phe Gly His Ala Ile Lys Ala Ala Tyr Pro Asp Leu Glu
85 90 95

Asn Pro Pro Leu Leu Val Thr Pro Ser Gln Gln Ala Lys Phe Gly Asp
100 105 110

Tyr Gln Cys Asn Ser Ala Met Gly Ile Ser Gln Met Leu Lys Thr Lys
115 120 125

Glu Gln Lys Val Asn Pro Arg Glu Ile Ala Glu Asn Ile Thr Lys His
130 135 140

Leu Pro Asp Asn Glu Cys Ile Glu Lys Val Glu Ile Ala Gly Pro Gly
145 150 155 160

Phe Ile Asn Val His Leu Arg Lys Asp Phe Val Ser Glu Gln Leu Thr
165 170 175

Ser Leu Leu Val Asn Gly Val Gln Leu Pro Ala Leu Gly Glu Asn Lys
180 185 190

Lys Val Ile Val Asp Phe Ser Ser Pro Asn Ile Ala Lys Glu Met His
195 200 205

Val Gly His Leu Arg Ser Thr Ile Ile Gly Glu Ser Ile Ser Arg Leu
210 215 220

Phe Glu Phe Ala Gly Tyr Asp Val Leu Arg Leu Asn His Val Gly Asp
225 230 235 240

Trp Gly Thr Gln Phe Gly Met Leu Ile Ala His Leu Gln Asp Lys Phe
245 250 255

Pro Asp Tyr Leu Thr Val Ser Pro Pro Ile Gly Asp Leu Gln Val Phe
260 265 270

Tyr Lys Glu Ser Lys Lys Arg Phe Asp Thr Glu Glu Glu Phe Lys Lys
275 280 285

Arg Ala Tyr Gln Cys Val Val Leu Leu Gln Gly Lys Asn Pro Asp Ile

```
    290                 295                 300

Thr Lys Ala Trp Lys Leu Ile Cys Asp Val Ser Arg Gln Glu Leu Asn
305                 310                 315                 320

Lys Ile Tyr Asp Ala Leu Asp Val Ser Leu Ile Glu Arg Gly Glu Ser
                325                 330                 335

Phe Tyr Gln Asp Arg Met Asn Asp Ile Val Lys Glu Phe Glu Asp Arg
            340                 345                 350

Gly Phe Val Gln Val Asp Asp Gly Arg Lys Ile Val Phe Val Pro Gly
        355                 360                 365

Cys Ser Ile Pro Leu Thr Ile Val Lys Ser Asp Gly Gly Tyr Thr Tyr
    370                 375                 380

Asp Thr Ser Asp Leu Ala Ala Ile Lys Gln Arg Leu Phe Glu Glu Lys
385                 390                 395                 400

Ala Asp Met Ile Ile Tyr Val Val Asp Asn Gly Gln Ser Val His Phe
                405                 410                 415

Gln Thr Ile Phe Ala Ala Ala Gln Met Ile Gly Trp Tyr Asp Pro Lys
            420                 425                 430

Val Thr Arg Val Phe His Ala Gly Phe Gly Val Val Leu Gly Glu Asp
        435                 440                 445

Lys Lys Lys Phe Lys Thr Arg Ser Gly Glu Thr Val Arg Leu Met Asp
    450                 455                 460

Leu Leu Gly Glu Gly Leu Lys Arg Ser Met Asp Lys Leu Lys Glu Lys
465                 470                 475                 480

Glu Arg Asp Lys Val Leu Thr Ala Glu Glu Leu Asn Ala Ala Gln Thr
                485                 490                 495

Ser Val Ala Tyr Gly Cys Ile Lys Tyr Ala Asp Leu Ser His Asn Arg
            500                 505                 510

Leu Asn Asp Tyr Ile Phe Ser Phe Asp Lys Met Leu Asp Asp Arg Gly
        515                 520                 525
```

```
Asn Thr Ala Ala Tyr Leu Leu Tyr Ala Phe Thr Arg Ile Arg Ser Ile
    530                 535                 540

Ala Arg Leu Ala Asn Ile Asp Glu Glu Met Leu Gln Lys Ala Ala Arg
545                 550                 555                 560

Glu Thr Lys Ile Leu Leu Asp His Glu Lys Glu Trp Lys Leu Gly Arg
                565                 570                 575

Cys Ile Leu Arg Phe Pro Glu Ile Leu Gln Lys Ile Leu Asp Asp Leu
            580                 585                 590

Phe Leu His Thr Leu Cys Asp Tyr Ile Tyr Glu Leu Ala Thr Ala Phe
        595                 600                 605

Thr Glu Phe Tyr Asp Ser Cys Tyr Cys Val Glu Lys Asp Arg Gln Thr
    610                 615                 620

Gly Lys Ile Leu Lys Val Asn Met Trp Arg Met Leu Leu Cys Glu Ala
625                 630                 635                 640

Val Ala Ala Val Met Ala Lys Gly Phe Asp Ile Leu Gly Ile Lys Pro
                645                 650                 655

Val Gln Arg Met
            660
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<210> 6258
<211> 58
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1357; "

<220>
<221> source
<223> /note="Gene Symbol: RARS; "

<220>
<221> source
<223> /note="Gene Name:
arginyl-tRNA
synthetase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000428494"

<400> 6258
Met Asp Val Leu Val Ser Glu Cys Ser Ala Arg Leu Leu Gln Gln Ser
1   5   10   15

Leu Ala Leu Ser Ser Arg Leu Glu Cys Ser Gly Thr Ile Ser Thr His
            20   25   30

Arg Asn Leu Ser Leu Trp Asp Ser Gly Asn Ser Pro Ala Ser Ala Ser
        35   40   45

Gln Val Ala Arg Ile Thr Gly Arg Arg Asp
    50   55

<210> 6259
<211> 129
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1357; "

<220>
<221> source
<223> /note="Gene Symbol: RARS; "

<220>
<221> source
<223> /note="Gene Name:
      arginyl-tRNA
      synthetase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429030"

<400> 6259
Met Asp Val Leu Val Ser Glu Cys Ser Ala Arg Leu Leu Gln Gln Glu
1   5   10   15

Glu Glu Ile Lys Ser Leu Thr Ala Glu Ile Asp Arg Leu Lys Asn Cys
            20   25   30

Gly Cys Leu Gly Ala Ser Pro Asn Leu Glu Gln Leu Gln Glu Glu Asn
        35   40   45

```
Leu Lys Leu Lys Tyr Arg Leu Asn Ile Leu Arg Lys Ser Leu Gln Ala
    50                  55                  60

Glu Arg Asn Lys Pro Thr Lys Asn Met Ile Asn Ile Ile Ser Arg Leu
65                  70                  75                  80

Gln Glu Val Phe Gly His Ala Ile Lys Ala Ala Tyr Pro Asp Leu Glu
                85                  90                  95

Asn Pro Pro Leu Leu Val Thr Pro Ser Gln Gln Ala Lys Phe Gly Asp
            100                 105                 110

Tyr Gln Cys Asn Ser Ala Met Gly Ile Ser Gln Val Leu Leu Met Ser
        115                 120                 125

Thr
```

<210> 6260
<211> 113
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1357; "

<220>
<221> source
<223> /note="Gene Symbol: RARS; "

<220>
<221> source
<223> /note="Gene Name:
arginyl-tRNA
synthetase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430035"

<400> 6260

```
Met Asp Val Leu Val Ser Glu Cys Ser Ala Arg Leu Leu Gln Gln Glu
1               5                   10                  15

Glu Glu Ile Lys Ser Leu Thr Ala Glu Ile Asp Arg Leu Lys Asn Cys
            20                  25                  30

Gly Cys Leu Gly Ala Ser Pro Asn Leu Glu Gln Leu Gln Glu Glu Asn
```

```
        35                  40                  45

Leu Lys Leu Lys Tyr Arg Leu Asn Ile Leu Arg Lys Ser Leu Gln Ala
    50                  55                  60

Glu Arg Asn Lys Pro Thr Lys Asn Met Ile Asn Ile Ile Ser Arg Leu
65                  70                  75                  80

Gln Glu Val Phe Gly His Ala Ile Lys Ala Ala Tyr Pro Asp Leu Glu
                85                  90                  95

Asn Pro Pro Leu Leu Val Thr Pro Asn Ala Gln Asn Gln Gly Thr Glu
            100                 105                 110

Ser
```

<210> 6261
<211> 58
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1357; "

<220>
<221> source
<223> /note="Gene Symbol: RARS; "

<220>
<221> source
<223> /note="Gene Name:
arginyl-tRNA
synthetase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000486284"

<400> 6261

```
Met Asp Val Leu Val Ser Glu Cys Ser Ala Arg Leu Leu Gln Gln Ser
1               5                   10                  15

Leu Ala Leu Ser Ser Arg Leu Glu Cys Ser Gly Thr Ile Ser Thr His
            20                  25                  30

Arg Asn Leu Ser Leu Trp Asp Ser Gly Asn Ser Pro Ala Ser Ala Ser
        35                  40                  45
```

```
Gln Val Ala Arg Ile Thr Gly Arg Arg Asp
    50                  55


<210> 6262
<211> 578
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1358; "

<220>
<221> source
<223> /note="Gene Symbol: RARS2; "

<220>
<221> source
<223> /note="Gene Name:
      arginyl-tRNA synthetase 2,
      mitochondrial; "

<220>
<221> source
<223> /note="Uniprot ID:  Q5T160; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000358549"

<400> 6262
Met Ala Cys Gly Phe Arg Arg Ala Ile Ala Cys Gln Leu Ser Arg Val
1               5                  10                  15


Leu Asn Leu Pro Pro Glu Asn Leu Ile Thr Ser Ile Ser Ala Val Pro
            20                  25                  30


Ile Ser Gln Lys Glu Glu Val Ala Asp Phe Gln Leu Ser Val Asp Ser
        35                  40                  45


Leu Leu Glu Lys Asp Asn Asp His Ser Arg Pro Asp Ile Gln Val Gln
    50                  55                  60


Ala Lys Arg Leu Ala Glu Lys Leu Arg Cys Asp Thr Val Val Ser Glu
65                  70                  75                  80


Ile Ser Thr Gly Gln Arg Thr Val Asn Phe Lys Ile Asn Arg Glu Leu
                85                  90                  95
```

```
Leu Thr Lys Thr Val Leu Gln Gln Val Ile Glu Asp Gly Ser Lys Tyr
            100                 105                 110

Gly Leu Lys Ser Glu Leu Phe Ser Gly Leu Pro Gln Lys Lys Ile Val
        115                 120                 125

Val Glu Phe Ser Ser Pro Asn Val Ala Lys Lys Phe His Val Gly His
    130                 135                 140

Leu Arg Ser Thr Ile Ile Gly Asn Phe Ile Ala Asn Leu Lys Glu Ala
145                 150                 155                 160

Leu Gly His Gln Val Ile Arg Ile Asn Tyr Leu Gly Asp Trp Gly Met
                165                 170                 175

Gln Phe Gly Leu Leu Gly Thr Gly Phe Gln Leu Phe Gly Tyr Glu Glu
            180                 185                 190

Lys Leu Gln Ser Asn Pro Leu Gln His Leu Phe Glu Val Tyr Val Gln
        195                 200                 205

Val Asn Lys Glu Ala Ala Asp Asp Lys Ser Val Ala Lys Ala Ala Gln
    210                 215                 220

Glu Phe Phe Gln Arg Leu Glu Leu Gly Asp Val Gln Ala Leu Ser Leu
225                 230                 235                 240

Trp Gln Lys Phe Arg Asp Leu Ser Ile Glu Glu Tyr Ile Arg Val Tyr
                245                 250                 255

Lys Arg Leu Gly Val Tyr Phe Asp Glu Tyr Ser Gly Glu Ser Phe Tyr
            260                 265                 270

Arg Glu Lys Ser Gln Glu Val Leu Lys Leu Leu Glu Ser Lys Gly Leu
        275                 280                 285

Leu Leu Lys Thr Ile Lys Gly Thr Ala Val Val Asp Leu Ser Gly Asn
    290                 295                 300

Gly Asp Pro Ser Ser Ile Cys Thr Val Met Arg Ser Asp Gly Thr Ser
305                 310                 315                 320
```

```
Leu Tyr Ala Thr Arg Asp Leu Ala Ala Ala Ile Asp Arg Met Asp Lys
                325                 330                 335

Tyr Asn Phe Asp Thr Met Ile Tyr Val Thr Asp Lys Gly Gln Lys Lys
            340                 345                 350

His Phe Gln Gln Val Phe Gln Met Leu Lys Ile Met Gly Tyr Asp Trp
        355                 360                 365

Ala Glu Arg Cys Gln His Val Pro Phe Gly Val Val Gln Gly Met Lys
    370                 375                 380

Thr Arg Arg Gly Asp Val Thr Phe Leu Glu Asp Val Leu Asn Glu Ile
385                 390                 395                 400

Gln Leu Arg Met Leu Gln Asn Met Ala Ser Ile Lys Thr Thr Lys Glu
                405                 410                 415

Leu Lys Asn Pro Gln Glu Thr Ala Glu Arg Val Gly Leu Ala Ala Leu
            420                 425                 430

Ile Ile Gln Asp Phe Lys Gly Leu Leu Leu Ser Asp Tyr Lys Phe Ser
        435                 440                 445

Trp Asp Arg Val Phe Gln Ser Arg Gly Asp Thr Gly Val Phe Leu Gln
    450                 455                 460

Tyr Thr His Ala Arg Leu His Ser Leu Glu Glu Thr Phe Gly Cys Gly
465                 470                 475                 480

Tyr Leu Asn Asp Phe Asn Thr Ala Cys Leu Gln Glu Pro Gln Ser Val
                485                 490                 495

Ser Ile Leu Gln His Leu Leu Arg Phe Asp Glu Val Leu Tyr Lys Ser
            500                 505                 510

Ser Gln Asp Phe Gln Pro Arg His Ile Val Ser Tyr Leu Leu Thr Leu
        515                 520                 525

Ser His Leu Ala Ala Val Ala His Lys Thr Leu Gln Ile Lys Asp Ser
    530                 535                 540

Pro Pro Glu Val Ala Gly Ala Arg Leu His Leu Phe Lys Ala Val Arg
```

545 550 555 560

Ser Val Leu Ala Asn Gly Met Lys Leu Leu Gly Ile Thr Pro Val Cys
565 570 575

Arg Met

<210> 6263
<211> 206
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1358; "

<220>
<221> source
<223> /note="Gene Symbol: RARS2; "

<220>
<221> source
<223> /note="Gene Name:
arginyl-tRNA synthetase 2,
mitochondrial; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000389656"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6263
Xaa Phe Gln Ser Val Glu Ser Ser Thr Arg Lys Leu Asp His Ile Asn
1 5 10 15

Ile Cys Ser Ser Asn Phe Pro Lys Arg Ser Phe Ala Leu Val Thr Gln
20 25 30

Ala Gly Val Gln Trp His Asn Leu Asp Ser Leu Gln Ser Pro Pro Pro
35 40 45

Gly Phe Lys Arg Phe Pro Cys Leu Ser Leu Pro Ser Ser Trp Asp Cys
50 55 60

```
Arg Glu Val Ala Asp Phe Gln Leu Ser Val Asp Ser Leu Leu Glu Lys
65                  70                  75                  80

Asp Asn Asp His Ser Arg Pro Asp Ile Gln Val Gln Ala Lys Arg Leu
                85                  90                  95

Ala Glu Lys Leu Arg Cys Asp Thr Val Val Ser Glu Ile Ser Thr Gly
            100                 105                 110

Gln Arg Thr Val Asn Phe Lys Ile Asn Arg Glu Leu Leu Thr Lys Thr
        115                 120                 125

Val Leu Gln Gln Val Ile Glu Asp Gly Ser Lys Tyr Gly Leu Lys Ser
    130                 135                 140

Glu Leu Phe Ser Gly Leu Pro Gln Lys Lys Ile Val Val Glu Phe Ser
145                 150                 155                 160

Ser Pro Asn Val Ala Lys Lys Phe His Val Gly His Leu Arg Ser Thr
                165                 170                 175

Ile Ile Gly Asn Phe Ile Ala Asn Leu Lys Glu Ala Leu Gly His Gln
            180                 185                 190

Val Ile Arg Ile Asn Tyr Leu Gly Asp Trp Gly Met Gln Phe
        195                 200                 205


<210> 6264
<211> 857
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1359; "

<220>
<221> source
<223> /note="Gene Symbol: AGO1; "

<220>
<221> source
<223> /note="Gene Name:
      argonaute RISC catalytic component 1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9UL18; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000362300"

<400> 6264
Met Glu Ala Gly Pro Ser Gly Ala Ala Ala Gly Ala Tyr Leu Pro Pro
1   5   10   15

Leu Gln Gln Val Phe Gln Ala Pro Arg Arg Pro Gly Ile Gly Thr Val
            20   25   30

Gly Lys Pro Ile Lys Leu Leu Ala Asn Tyr Phe Glu Val Asp Ile Pro
        35   40   45

Lys Ile Asp Val Tyr His Tyr Glu Val Asp Ile Lys Pro Asp Lys Cys
    50   55   60

Pro Arg Arg Val Asn Arg Glu Val Val Glu Tyr Met Val Gln His Phe
65   70   75   80

Lys Pro Gln Ile Phe Gly Asp Arg Lys Pro Val Tyr Asp Gly Lys Lys
                85   90   95

Asn Ile Tyr Thr Val Thr Ala Leu Pro Ile Gly Asn Glu Arg Val Asp
            100   105   110

Phe Glu Val Thr Ile Pro Gly Glu Gly Lys Asp Arg Ile Phe Lys Val
        115   120   125

Ser Ile Lys Trp Leu Ala Ile Val Ser Trp Arg Met Leu His Glu Ala
    130   135   140

Leu Val Ser Gly Gln Ile Pro Val Pro Leu Glu Ser Val Gln Ala Leu
145   150   155   160

Asp Val Ala Met Arg His Leu Ala Ser Met Arg Tyr Thr Pro Val Gly
                165   170   175

Arg Ser Phe Phe Ser Pro Pro Glu Gly Tyr Tyr His Pro Leu Gly Gly
            180   185   190

Gly Arg Glu Val Trp Phe Gly Phe His Gln Ser Val Arg Pro Ala Met
        195   200   205

```
Trp Lys Met Met Leu Asn Ile Asp Val Ser Ala Thr Ala Phe Tyr Lys
    210                 215                 220

Ala Gln Pro Val Ile Glu Phe Met Cys Glu Val Leu Asp Ile Arg Asn
225                 230                 235                 240

Ile Asp Glu Gln Pro Lys Pro Leu Thr Asp Ser Gln Arg Val Arg Phe
                245                 250                 255

Thr Lys Glu Ile Lys Gly Leu Lys Val Glu Val Thr His Cys Gly Gln
            260                 265                 270

Met Lys Arg Lys Tyr Arg Val Cys Asn Val Thr Arg Arg Pro Ala Ser
        275                 280                 285

His Gln Thr Phe Pro Leu Gln Leu Glu Ser Gly Gln Thr Val Glu Cys
    290                 295                 300

Thr Val Ala Gln Tyr Phe Lys Gln Lys Tyr Asn Leu Gln Leu Lys Tyr
305                 310                 315                 320

Pro His Leu Pro Cys Leu Gln Val Gly Gln Glu Gln Lys His Thr Tyr
                325                 330                 335

Leu Pro Leu Glu Val Cys Asn Ile Val Ala Gly Gln Arg Cys Ile Lys
            340                 345                 350

Lys Leu Thr Asp Asn Gln Thr Ser Thr Met Ile Lys Ala Thr Ala Arg
        355                 360                 365

Ser Ala Pro Asp Arg Gln Glu Glu Ile Ser Arg Leu Met Lys Asn Ala
    370                 375                 380

Ser Tyr Asn Leu Asp Pro Tyr Ile Gln Glu Phe Gly Ile Lys Val Lys
385                 390                 395                 400

Asp Asp Met Thr Glu Val Thr Gly Arg Val Leu Pro Ala Pro Ile Leu
                405                 410                 415

Gln Tyr Gly Gly Arg Asn Arg Ala Ile Ala Thr Pro Asn Gln Gly Val
            420                 425                 430
```

```
Trp Asp Met Arg Gly Lys Gln Phe Tyr Asn Gly Ile Glu Ile Lys Val
        435                 440                 445

Trp Ala Ile Ala Cys Phe Ala Pro Gln Lys Gln Cys Arg Glu Glu Val
    450                 455                 460

Leu Lys Asn Phe Thr Asp Gln Leu Arg Lys Ile Ser Lys Asp Ala Gly
465                 470                 475                 480

Met Pro Ile Gln Gly Gln Pro Cys Phe Cys Lys Tyr Ala Gln Gly Ala
                485                 490                 495

Asp Ser Val Glu Pro Met Phe Arg His Leu Lys Asn Thr Tyr Ser Gly
            500                 505                 510

Leu Gln Leu Ile Ile Val Ile Leu Pro Gly Lys Thr Pro Val Tyr Ala
        515                 520                 525

Glu Val Lys Arg Val Gly Asp Thr Leu Leu Gly Met Ala Thr Gln Cys
    530                 535                 540

Val Gln Val Lys Asn Val Val Lys Thr Ser Pro Gln Thr Leu Ser Asn
545                 550                 555                 560

Leu Cys Leu Lys Ile Asn Val Lys Leu Gly Gly Ile Asn Asn Ile Leu
                565                 570                 575

Val Pro His Gln Arg Ser Ala Val Phe Gln Gln Pro Val Ile Phe Leu
            580                 585                 590

Gly Ala Asp Val Thr His Pro Pro Ala Gly Asp Gly Lys Lys Pro Ser
        595                 600                 605

Ile Thr Ala Val Val Gly Ser Met Asp Ala His Pro Ser Arg Tyr Cys
    610                 615                 620

Ala Thr Val Arg Val Gln Arg Pro Arg Gln Glu Ile Ile Glu Asp Leu
625                 630                 635                 640

Ser Tyr Met Val Arg Glu Leu Leu Ile Gln Phe Tyr Lys Ser Thr Arg
                645                 650                 655

Phe Lys Pro Thr Arg Ile Ile Phe Tyr Arg Asp Gly Val Pro Glu Gly
```

660 665 670

Gln Leu Pro Gln Ile Leu His Tyr Glu Leu Leu Ala Ile Arg Asp Ala
675 680 685

Cys Ile Lys Leu Glu Lys Asp Tyr Gln Pro Gly Ile Thr Tyr Ile Val
690 695 700

Val Gln Lys Arg His His Thr Arg Leu Phe Cys Ala Asp Lys Asn Glu
705 710 715 720

Arg Ile Gly Lys Ser Gly Asn Ile Pro Ala Gly Thr Thr Val Asp Thr
725 730 735

Asn Ile Thr His Pro Phe Glu Phe Asp Phe Tyr Leu Cys Ser His Ala
740 745 750

Gly Ile Gln Gly Thr Ser Arg Pro Ser His Tyr Tyr Val Leu Trp Asp
755 760 765

Asp Asn Arg Phe Thr Ala Asp Glu Leu Gln Ile Leu Thr Tyr Gln Leu
770 775 780

Cys His Thr Tyr Val Arg Cys Thr Arg Ser Val Ser Ile Pro Ala Pro
785 790 795 800

Ala Tyr Tyr Ala Arg Leu Val Ala Phe Arg Ala Arg Tyr His Leu Val
805 810 815

Asp Lys Glu His Asp Ser Gly Glu Gly Ser His Ile Ser Gly Gln Ser
820 825 830

Asn Gly Arg Asp Pro Gln Ala Leu Ala Lys Ala Val Gln Val His Gln
835 840 845

Asp Thr Leu Arg Thr Met Tyr Phe Ala
850 855

<210> 6265
<211> 782
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1359; "

<220>
<221> source
<223> /note="Gene Symbol: AGO1; "

<220>
<221> source
<223> /note="Gene Name:
argonaute RISC catalytic component 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000362302"

<400> 6265

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Met Val Gln His Phe Lys Pro Gln Ile Phe Gly Asp Arg Lys Pro Val
1               5                   10                  15

Tyr Asp Gly Lys Lys Asn Ile Tyr Thr Val Thr Ala Leu Pro Ile Gly
            20                  25                  30

Asn Glu Arg Val Asp Phe Glu Val Thr Ile Pro Gly Glu Gly Lys Asp
        35                  40                  45

Arg Ile Phe Lys Val Ser Ile Lys Trp Leu Ala Ile Val Ser Trp Arg
    50                  55                  60

Met Leu His Glu Ala Leu Val Ser Gly Gln Ile Pro Val Pro Leu Glu
65                  70                  75                  80

Ser Val Gln Ala Leu Asp Val Ala Met Arg His Leu Ala Ser Met Arg
                85                  90                  95

Tyr Thr Pro Val Gly Arg Ser Phe Phe Ser Pro Pro Glu Gly Tyr Tyr
            100                 105                 110

His Pro Leu Gly Gly Gly Arg Glu Val Trp Phe Gly Phe His Gln Ser
        115                 120                 125

Val Arg Pro Ala Met Trp Lys Met Met Leu Asn Ile Asp Val Ser Ala
    130                 135                 140

Thr Ala Phe Tyr Lys Ala Gln Pro Val Ile Glu Phe Met Cys Glu Val
145                 150                 155                 160
```

```
Leu Asp Ile Arg Asn Ile Asp Glu Gln Pro Lys Pro Leu Thr Asp Ser
                165                 170                 175

Gln Arg Val Arg Phe Thr Lys Glu Ile Lys Gly Leu Lys Val Glu Val
            180                 185                 190

Thr His Cys Gly Gln Met Lys Arg Lys Tyr Arg Val Cys Asn Val Thr
        195                 200                 205

Arg Arg Pro Ala Ser His Gln Thr Phe Pro Leu Gln Leu Glu Ser Gly
    210                 215                 220

Gln Thr Val Glu Cys Thr Val Ala Gln Tyr Phe Lys Gln Lys Tyr Asn
225                 230                 235                 240

Leu Gln Leu Lys Tyr Pro His Leu Pro Cys Leu Gln Val Gly Gln Glu
                245                 250                 255

Gln Lys His Thr Tyr Leu Pro Leu Glu Val Cys Asn Ile Val Ala Gly
            260                 265                 270

Gln Arg Cys Ile Lys Lys Leu Thr Asp Asn Gln Thr Ser Thr Met Ile
        275                 280                 285

Lys Ala Thr Ala Arg Ser Ala Pro Asp Arg Gln Glu Glu Ile Ser Arg
    290                 295                 300

Leu Met Lys Asn Ala Ser Tyr Asn Leu Asp Pro Tyr Ile Gln Glu Phe
305                 310                 315                 320

Gly Ile Lys Val Lys Asp Asp Met Thr Glu Val Thr Gly Arg Val Leu
                325                 330                 335

Pro Ala Pro Ile Leu Gln Tyr Gly Gly Arg Asn Arg Ala Ile Ala Thr
            340                 345                 350

Pro Asn Gln Gly Val Trp Asp Met Arg Gly Lys Gln Phe Tyr Asn Gly
        355                 360                 365

Ile Glu Ile Lys Val Trp Ala Ile Ala Cys Phe Ala Pro Gln Lys Gln
    370                 375                 380

Cys Arg Glu Glu Val Leu Lys Asn Phe Thr Asp Gln Leu Arg Lys Ile
```

385 390 395 400

Ser Lys Asp Ala Gly Met Pro Ile Gln Gly Gln Pro Cys Phe Cys Lys
405 410 415

Tyr Ala Gln Gly Ala Asp Ser Val Glu Pro Met Phe Arg His Leu Lys
420 425 430

Asn Thr Tyr Ser Gly Leu Gln Leu Ile Ile Val Ile Leu Pro Gly Lys
435 440 445

Thr Pro Val Tyr Ala Glu Val Lys Arg Val Gly Asp Thr Leu Leu Gly
450 455 460

Met Ala Thr Gln Cys Val Gln Val Lys Asn Val Val Lys Thr Ser Pro
465 470 475 480

Gln Thr Leu Ser Asn Leu Cys Leu Lys Ile Asn Val Lys Leu Gly Gly
485 490 495

Ile Asn Asn Ile Leu Val Pro His Gln Arg Ser Ala Val Phe Gln Gln
500 505 510

Pro Val Ile Phe Leu Gly Ala Asp Val Thr His Pro Pro Ala Gly Asp
515 520 525

Gly Lys Lys Pro Ser Ile Thr Ala Val Val Gly Ser Met Asp Ala His
530 535 540

Pro Ser Arg Tyr Cys Ala Thr Val Arg Val Gln Arg Pro Arg Gln Glu
545 550 555 560

Ile Ile Glu Asp Leu Ser Tyr Met Val Arg Glu Leu Leu Ile Gln Phe
565 570 575

Tyr Lys Ser Thr Arg Phe Lys Pro Thr Arg Ile Ile Phe Tyr Arg Asp
580 585 590

Gly Val Pro Glu Gly Gln Leu Pro Gln Ile Leu His Tyr Glu Leu Leu
595 600 605

Ala Ile Arg Asp Ala Cys Ile Lys Leu Glu Lys Asp Tyr Gln Pro Gly
610 615 620

```
Ile Thr Tyr Ile Val Val Gln Lys Arg His His Thr Arg Leu Phe Cys
625                 630                 635                 640

Ala Asp Lys Asn Glu Arg Ile Gly Lys Ser Gly Asn Ile Pro Ala Gly
                645                 650                 655

Thr Thr Val Asp Thr Asn Ile Thr His Pro Phe Glu Phe Asp Phe Tyr
            660                 665                 670

Leu Cys Ser His Ala Gly Ile Gln Gly Thr Ser Arg Pro Ser His Tyr
        675                 680                 685

Tyr Val Leu Trp Asp Asp Asn Arg Phe Thr Ala Asp Glu Leu Gln Ile
    690                 695                 700

Leu Thr Tyr Gln Leu Cys His Thr Tyr Val Arg Cys Thr Arg Ser Val
705                 710                 715                 720

Ser Ile Pro Ala Pro Ala Tyr Tyr Ala Arg Leu Val Ala Phe Arg Ala
                725                 730                 735

Arg Tyr His Leu Val Asp Lys Glu His Asp Ser Gly Glu Gly Ser His
            740                 745                 750

Ile Ser Gly Gln Ser Asn Gly Arg Asp Pro Gln Ala Leu Ala Lys Ala
        755                 760                 765

Val Gln Val His Gln Asp Thr Leu Arg Thr Met Tyr Phe Ala
    770                 775                 780


<210> 6266
<211> 133
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1359; "

<220>
<221> source
<223> /note="Gene Symbol: AGO1; "

<220>
<221> source
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<223> /note="Gene Name:
argonaute RISC catalytic component 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000489254"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6266
Xaa His Phe Lys Pro Gln Ile Phe Gly Asp Arg Lys Pro Val Tyr Asp
1 5 10 15

Gly Lys Lys Asn Ile Tyr Thr Val Thr Ala Leu Pro Ile Gly Asn Glu
20 25 30

Arg Val Asp Phe Glu Val Thr Ile Pro Gly Glu Gly Lys Asp Arg Ile
35 40 45

Phe Lys Val Ser Ile Lys Trp Leu Ala Ile Val Ser Trp Arg Met Leu
50 55 60

His Glu Ala Leu Val Ser Gly Gln Ile Pro Val Pro Leu Glu Ser Val
65 70 75 80

Gln Ala Leu Asp Val Ala Met Arg His Leu Ala Ser Met Arg Pro Gly
85 90 95

Leu Leu Arg Ala Gln Asp Ala Ser Gln Gly Gly Gly Leu Cys Pro Arg
100 105 110

Asp Gln Phe Ser Ala Cys Pro Cys Gln Val His Pro Cys Gly Pro Leu
115 120 125

Leu Leu Leu Thr Ala
130

<210> 6267
<211> 859
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1360; "

<220>
<221> source
<223> /note="Gene Symbol: AGO2; "

<220>
<221> source
<223> /note="Gene Name:
argonaute RISC catalytic component 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q9UKV8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000220592"

<400> 6267

```
Met Tyr Ser Gly Ala Gly Pro Ala Leu Ala Pro Pro Ala Pro Pro Pro
1               5                  10                  15

Pro Ile Gln Gly Tyr Ala Phe Lys Pro Pro Pro Arg Pro Asp Phe Gly
            20                  25                  30

Thr Ser Gly Arg Thr Ile Lys Leu Gln Ala Asn Phe Phe Glu Met Asp
        35                  40                  45

Ile Pro Lys Ile Asp Ile Tyr His Tyr Glu Leu Asp Ile Lys Pro Glu
    50                  55                  60

Lys Cys Pro Arg Arg Val Asn Arg Glu Ile Val Glu His Met Val Gln
65                  70                  75                  80

His Phe Lys Thr Gln Ile Phe Gly Asp Arg Lys Pro Val Phe Asp Gly
                85                  90                  95

Arg Lys Asn Leu Tyr Thr Ala Met Pro Leu Pro Ile Gly Arg Asp Lys
            100                 105                 110

Val Glu Leu Glu Val Thr Leu Pro Gly Glu Gly Lys Asp Arg Ile Phe
        115                 120                 125

Lys Val Ser Ile Lys Trp Val Ser Cys Val Ser Leu Gln Ala Leu His
    130                 135                 140

Asp Ala Leu Ser Gly Arg Leu Pro Ser Val Pro Phe Glu Thr Ile Gln
```

145 150 155 160

Ala Leu Asp Val Val Met Arg His Leu Pro Ser Met Arg Tyr Thr Pro
165 170 175

Val Gly Arg Ser Phe Phe Thr Ala Ser Glu Gly Cys Ser Asn Pro Leu
180 185 190

Gly Gly Gly Arg Glu Val Trp Phe Gly Phe His Gln Ser Val Arg Pro
195 200 205

Ser Leu Trp Lys Met Met Leu Asn Ile Asp Val Ser Ala Thr Ala Phe
210 215 220

Tyr Lys Ala Gln Pro Val Ile Glu Phe Val Cys Glu Val Leu Asp Phe
225 230 235 240

Lys Ser Ile Glu Glu Gln Gln Lys Pro Leu Thr Asp Ser Gln Arg Val
245 250 255

Lys Phe Thr Lys Glu Ile Lys Gly Leu Lys Val Glu Ile Thr His Cys
260 265 270

Gly Gln Met Lys Arg Lys Tyr Arg Val Cys Asn Val Thr Arg Arg Pro
275 280 285

Ala Ser His Gln Thr Phe Pro Leu Gln Gln Glu Ser Gly Gln Thr Val
290 295 300

Glu Cys Thr Val Ala Gln Tyr Phe Lys Asp Arg His Lys Leu Val Leu
305 310 315 320

Arg Tyr Pro His Leu Pro Cys Leu Gln Val Gly Gln Glu Gln Lys His
325 330 335

Thr Tyr Leu Pro Leu Glu Val Cys Asn Ile Val Ala Gly Gln Arg Cys
340 345 350

Ile Lys Lys Leu Thr Asp Asn Gln Thr Ser Thr Met Ile Arg Ala Thr
355 360 365

Ala Arg Ser Ala Pro Asp Arg Gln Glu Glu Ile Ser Lys Leu Met Arg
370 375 380

```
Ser Ala Ser Phe Asn Thr Asp Pro Tyr Val Arg Glu Phe Gly Ile Met
385                 390                 395                 400

Val Lys Asp Glu Met Thr Asp Val Thr Gly Arg Val Leu Gln Pro Pro
                405                 410                 415

Ser Ile Leu Tyr Gly Gly Arg Asn Lys Ala Ile Ala Thr Pro Val Gln
            420                 425                 430

Gly Val Trp Asp Met Arg Asn Lys Gln Phe His Thr Gly Ile Glu Ile
        435                 440                 445

Lys Val Trp Ala Ile Ala Cys Phe Ala Pro Gln Arg Gln Cys Thr Glu
    450                 455                 460

Val His Leu Lys Ser Phe Thr Glu Gln Leu Arg Lys Ile Ser Arg Asp
465                 470                 475                 480

Ala Gly Met Pro Ile Gln Gly Gln Pro Cys Phe Cys Lys Tyr Ala Gln
                485                 490                 495

Gly Ala Asp Ser Val Glu Pro Met Phe Arg His Leu Lys Asn Thr Tyr
            500                 505                 510

Ala Gly Leu Gln Leu Val Val Val Ile Leu Pro Gly Lys Thr Pro Val
        515                 520                 525

Tyr Ala Glu Val Lys Arg Val Gly Asp Thr Val Leu Gly Met Ala Thr
    530                 535                 540

Gln Cys Val Gln Met Lys Asn Val Gln Arg Thr Thr Pro Gln Thr Leu
545                 550                 555                 560

Ser Asn Leu Cys Leu Lys Ile Asn Val Lys Leu Gly Gly Val Asn Asn
                565                 570                 575

Ile Leu Leu Pro Gln Gly Arg Pro Pro Val Phe Gln Gln Pro Val Ile
            580                 585                 590

Phe Leu Gly Ala Asp Val Thr His Pro Pro Ala Gly Asp Gly Lys Lys
        595                 600                 605
```

```
Pro Ser Ile Ala Ala Val Val Gly Ser Met Asp Ala His Pro Asn Arg
    610                 615                 620

Tyr Cys Ala Thr Val Arg Val Gln Gln His Arg Gln Glu Ile Ile Gln
625                 630                 635                 640

Asp Leu Ala Ala Met Val Arg Glu Leu Leu Ile Gln Phe Tyr Lys Ser
                645                 650                 655

Thr Arg Phe Lys Pro Thr Arg Ile Ile Phe Tyr Arg Asp Gly Val Ser
            660                 665                 670

Glu Gly Gln Phe Gln Gln Val Leu His His Glu Leu Leu Ala Ile Arg
        675                 680                 685

Glu Ala Cys Ile Lys Leu Glu Lys Asp Tyr Gln Pro Gly Ile Thr Phe
    690                 695                 700

Ile Val Val Gln Lys Arg His His Thr Arg Leu Phe Cys Thr Asp Lys
705                 710                 715                 720

Asn Glu Arg Val Gly Lys Ser Gly Asn Ile Pro Ala Gly Thr Thr Val
                725                 730                 735

Asp Thr Lys Ile Thr His Pro Thr Glu Phe Asp Phe Tyr Leu Cys Ser
            740                 745                 750

His Ala Gly Ile Gln Gly Thr Ser Arg Pro Ser His Tyr His Val Leu
        755                 760                 765

Trp Asp Asp Asn Arg Phe Ser Ser Asp Glu Leu Gln Ile Leu Thr Tyr
    770                 775                 780

Gln Leu Cys His Thr Tyr Val Arg Cys Thr Arg Ser Val Ser Ile Pro
785                 790                 795                 800

Ala Pro Ala Tyr Tyr Ala His Leu Val Ala Phe Arg Ala Arg Tyr His
                805                 810                 815

Leu Val Asp Lys Glu His Asp Ser Ala Glu Gly Ser His Thr Ser Gly
            820                 825                 830
```

Gln Ser Asn Gly Arg Asp His Gln Ala Leu Ala Lys Ala Val Gln Val
835 840 845

His Gln Asp Thr Leu Arg Thr Met Tyr Phe Ala
850 855

<210> 6268
<211> 73
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1360; "

<220>
<221> source
<223> /note="Gene Symbol: AGO2; "

<220>
<221> source
<223> /note="Gene Name:
argonaute RISC catalytic component 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430164"

<400> 6268
Met Tyr Ser Gly Ala Gly Pro Gly Lys Ser Trp Asn Thr Trp Ser Ser
1 5 10 15

Thr Leu Lys His Arg Ser Leu Gly Ile Gly Ser Pro Cys Leu Thr Ala
20 25 30

Gly Arg Ile Tyr Thr Gln Pro Cys Pro Phe Arg Leu Gly Gly Thr Arg
35 40 45

Trp Ser Trp Arg Ser Arg Cys Gln Glu Lys Ala Arg Ile Ala Ser Ser
50 55 60

Arg Cys Pro Ser Ser Gly Cys Pro Ala
65 70

<210> 6269
<211> 825
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1360; "

<220>
<221> source
<223> /note="Gene Symbol: AGO2; "

<220>
<221> source
<223> /note="Gene Name:
argonaute RISC catalytic component 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q9UKV8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430176"

<400> 6269

```
Met Tyr Ser Gly Ala Gly Pro Ala Leu Ala Pro Pro Ala Pro Pro Pro
1               5                  10                  15

Pro Ile Gln Gly Tyr Ala Phe Lys Pro Pro Pro Arg Pro Asp Phe Gly
            20                  25                  30

Thr Ser Gly Arg Thr Ile Lys Leu Gln Ala Asn Phe Phe Glu Met Asp
        35                  40                  45

Ile Pro Lys Ile Asp Ile Tyr His Tyr Glu Leu Asp Ile Lys Pro Glu
    50                  55                  60

Lys Cys Pro Arg Arg Val Asn Arg Glu Ile Val Glu His Met Val Gln
65                  70                  75                  80

His Phe Lys Thr Gln Ile Phe Gly Asp Arg Lys Pro Val Phe Asp Gly
                85                  90                  95

Arg Lys Asn Leu Tyr Thr Ala Met Pro Leu Pro Ile Gly Arg Asp Lys
            100                 105                 110

Val Glu Leu Glu Val Thr Leu Pro Gly Glu Gly Lys Asp Arg Ile Phe
        115                 120                 125

Lys Val Ser Ile Lys Trp Val Ser Cys Val Ser Leu Gln Ala Leu His
    130                 135                 140
```

```
Asp Ala Leu Ser Gly Arg Leu Pro Ser Val Pro Phe Glu Thr Ile Gln
145                 150                 155                 160

Ala Leu Asp Val Val Met Arg His Leu Pro Ser Met Arg Tyr Thr Pro
                165                 170                 175

Val Gly Arg Ser Phe Phe Thr Ala Ser Glu Gly Cys Ser Asn Pro Leu
            180                 185                 190

Gly Gly Gly Arg Glu Val Trp Phe Gly Phe His Gln Ser Val Arg Pro
        195                 200                 205

Ser Leu Trp Lys Met Met Leu Asn Ile Asp Val Ser Ala Thr Ala Phe
    210                 215                 220

Tyr Lys Ala Gln Pro Val Ile Glu Phe Val Cys Glu Val Leu Asp Phe
225                 230                 235                 240

Lys Ser Ile Glu Glu Gln Gln Lys Pro Leu Thr Asp Ser Gln Arg Val
                245                 250                 255

Lys Phe Thr Lys Glu Ile Lys Gly Leu Lys Val Glu Ile Thr His Cys
            260                 265                 270

Gly Gln Met Lys Arg Lys Tyr Arg Val Cys Asn Val Thr Arg Arg Pro
        275                 280                 285

Ala Ser His Gln Thr Phe Pro Leu Gln Gln Glu Ser Gly Gln Thr Val
    290                 295                 300

Glu Cys Thr Val Ala Gln Tyr Phe Lys Asp Arg His Lys Leu Val Leu
305                 310                 315                 320

Arg Tyr Pro His Leu Pro Cys Leu Gln Val Gly Gln Glu Gln Lys His
                325                 330                 335

Thr Tyr Leu Pro Leu Glu Val Cys Asn Ile Val Ala Gly Gln Arg Cys
            340                 345                 350

Ile Lys Lys Leu Thr Asp Asn Gln Thr Ser Thr Met Ile Arg Ala Thr
        355                 360                 365

Ala Arg Ser Ala Pro Asp Arg Gln Glu Glu Ile Ser Lys Leu Met Arg
```

370 375 380

Ser Ala Ser Phe Asn Thr Asp Pro Tyr Val Arg Glu Phe Gly Ile Met
385 390 395 400

Val Lys Asp Glu Met Thr Asp Val Thr Gly Arg Val Leu Gln Pro Pro
405 410 415

Ser Ile Leu Tyr Gly Gly Arg Asn Lys Ala Ile Ala Thr Pro Val Gln
420 425 430

Gly Val Trp Asp Met Arg Asn Lys Gln Phe His Thr Gly Ile Glu Ile
435 440 445

Lys Val Trp Ala Ile Ala Cys Phe Ala Pro Gln Arg Gln Cys Thr Glu
450 455 460

Val His Leu Lys Ser Phe Thr Glu Gln Leu Arg Lys Ile Ser Arg Asp
465 470 475 480

Ala Gly Met Pro Ile Gln Gly Gln Pro Cys Phe Cys Lys Tyr Ala Gln
485 490 495

Gly Ala Asp Ser Val Glu Pro Met Phe Arg His Leu Lys Asn Thr Tyr
500 505 510

Ala Gly Leu Gln Leu Val Val Val Ile Leu Pro Gly Lys Thr Pro Val
515 520 525

Tyr Ala Glu Val Lys Arg Val Gly Asp Thr Val Leu Gly Met Ala Thr
530 535 540

Gln Cys Val Gln Met Lys Asn Val Gln Arg Thr Thr Pro Gln Thr Leu
545 550 555 560

Ser Asn Leu Cys Leu Lys Ile Asn Val Lys Leu Gly Gly Val Asn Asn
565 570 575

Ile Leu Leu Pro Gln Gly Arg Pro Pro Val Phe Gln Gln Pro Val Ile
580 585 590

Phe Leu Gly Ala Asp Val Thr His Pro Pro Ala Gly Asp Gly Lys Lys
595 600 605

```
Pro Ser Ile Ala Ala Val Val Gly Ser Met Asp Ala His Pro Asn Arg
    610                 615                 620

Tyr Cys Ala Thr Val Arg Val Gln Gln His Arg Gln Glu Ile Ile Gln
625                 630                 635                 640

Asp Leu Ala Ala Met Val Arg Glu Leu Leu Ile Gln Phe Tyr Lys Ser
                645                 650                 655

Thr Arg Phe Lys Pro Thr Arg Ile Ile Phe Tyr Arg Asp Gly Val Ser
            660                 665                 670

Glu Gly Gln Phe Gln Gln Val Leu His His Glu Leu Leu Ala Ile Arg
        675                 680                 685

Glu Ala Cys Ile Lys Leu Glu Lys Asp Tyr Gln Pro Gly Ile Thr Phe
    690                 695                 700

Ile Val Val Gln Lys Arg His His Thr Arg Leu Phe Cys Thr Asp Lys
705                 710                 715                 720

Asn Glu Arg Gly Thr Ser Arg Pro Ser His Tyr His Val Leu Trp Asp
                725                 730                 735

Asp Asn Arg Phe Ser Ser Asp Glu Leu Gln Ile Leu Thr Tyr Gln Leu
            740                 745                 750

Cys His Thr Tyr Val Arg Cys Thr Arg Ser Val Ser Ile Pro Ala Pro
        755                 760                 765

Ala Tyr Tyr Ala His Leu Val Ala Phe Arg Ala Arg Tyr His Leu Val
    770                 775                 780

Asp Lys Glu His Asp Ser Ala Glu Gly Ser His Thr Ser Gly Gln Ser
785                 790                 795                 800

Asn Gly Arg Asp His Gln Ala Leu Ala Lys Ala Val Gln Val His Gln
                805                 810                 815

Asp Thr Leu Arg Thr Met Tyr Phe Ala
            820                 825
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<210> 6270
<211> 36
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1360; "

<220>
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<223> /note="Gene Symbol: AGO2; "

<220>
<221> source
<223> /note="Gene Name:
argonaute RISC catalytic component 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431056"

<400> 6270
Met Asp Ile Pro Lys Ile Asp Ile Tyr His Tyr Glu Leu Asp Ile Lys
1 5 10 15

Pro Glu Lys Cys Pro Arg Arg Val Asn Arg Glu Ile Val Glu His Met
20 25 30

Val Gln His Phe
35

<210> 6271
<211> 626
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1361; "

<220>
<221> source
<223> /note="Gene Symbol: AGO3; "

<220>
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<223> /note="Gene Name:
argonaute RISC catalytic component 3; "

<220>
<221> source
<223> /note="Uniprot ID: Q9H9G7; "

<220>
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<223> /note="ENSP ID: ENSP00000246314"

<400> 6271
Met Cys Glu Val Leu Asp Ile His Asn Ile Asp Glu Gln Pro Arg Pro
1   5   10   15

Leu Thr Asp Ser His Arg Val Lys Phe Thr Lys Glu Ile Lys Gly Leu
            20   25   30

Lys Val Glu Val Thr His Cys Gly Thr Met Arg Arg Lys Tyr Arg Val
        35   40   45

Cys Asn Val Thr Arg Arg Pro Ala Ser His Gln Thr Phe Pro Leu Gln
    50   55   60

Leu Glu Asn Gly Gln Thr Val Glu Arg Thr Val Ala Gln Tyr Phe Arg
65   70   75   80

Glu Lys Tyr Thr Leu Gln Leu Lys Tyr Pro His Leu Pro Cys Leu Gln
                85   90   95

Val Gly Gln Glu Gln Lys His Thr Tyr Leu Pro Leu Glu Val Cys Asn
            100   105   110

Ile Val Ala Gly Gln Arg Cys Ile Lys Lys Leu Thr Asp Asn Gln Thr
        115   120   125

Ser Thr Met Ile Lys Ala Thr Ala Arg Ser Ala Pro Asp Arg Gln Glu
    130   135   140

Glu Ile Ser Arg Leu Val Arg Ser Ala Asn Tyr Glu Thr Asp Pro Phe
145   150   155   160

Val Gln Glu Phe Gln Phe Lys Val Arg Asp Glu Met Ala His Val Thr
                165   170   175

Gly Arg Val Leu Pro Ala Pro Met Leu Gln Tyr Gly Gly Arg Asn Arg
            180   185   190

Thr Val Ala Thr Pro Ser His Gly Val Trp Asp Met Arg Gly Lys Gln
        195   200   205

```
Phe His Thr Gly Val Glu Ile Lys Met Trp Ala Ile Ala Cys Phe Ala
    210                 215                 220

Thr Gln Arg Gln Cys Arg Glu Glu Ile Leu Lys Gly Phe Thr Asp Gln
225                 230                 235                 240

Leu Arg Lys Ile Ser Lys Asp Ala Gly Met Pro Ile Gln Gly Gln Pro
                245                 250                 255

Cys Phe Cys Lys Tyr Ala Gln Gly Ala Asp Ser Val Glu Pro Met Phe
            260                 265                 270

Arg His Leu Lys Asn Thr Tyr Ser Gly Leu Gln Leu Ile Ile Val Ile
        275                 280                 285

Leu Pro Gly Lys Thr Pro Val Tyr Ala Glu Val Lys Arg Val Gly Asp
    290                 295                 300

Thr Leu Leu Gly Met Ala Thr Gln Cys Val Gln Val Lys Asn Val Ile
305                 310                 315                 320

Lys Thr Ser Pro Gln Thr Leu Ser Asn Leu Cys Leu Lys Ile Asn Val
                325                 330                 335

Lys Leu Gly Gly Ile Asn Asn Ile Leu Val Pro His Gln Arg Pro Ser
            340                 345                 350

Val Phe Gln Gln Pro Val Ile Phe Leu Gly Ala Asp Val Thr His Pro
        355                 360                 365

Pro Ala Gly Asp Gly Lys Lys Pro Ser Ile Ala Ala Val Val Gly Ser
    370                 375                 380

Met Asp Ala His Pro Ser Arg Tyr Cys Ala Thr Val Arg Val Gln Arg
385                 390                 395                 400

Pro Arg Gln Glu Ile Ile Gln Asp Leu Ala Ser Met Val Arg Glu Leu
                405                 410                 415

Leu Ile Gln Phe Tyr Lys Ser Thr Arg Phe Lys Pro Thr Arg Ile Ile
            420                 425                 430
```

Phe Tyr Arg Asp Gly Val Ser Glu Gly Gln Phe Arg Gln Val Leu Tyr
435 440 445

Tyr Glu Leu Leu Ala Ile Arg Glu Ala Cys Ile Ser Leu Glu Lys Asp
450 455 460

Tyr Gln Pro Gly Ile Thr Tyr Ile Val Val Gln Lys Arg His His Thr
465 470 475 480

Arg Leu Phe Cys Ala Asp Arg Thr Glu Arg Val Gly Arg Ser Gly Asn
485 490 495

Ile Pro Ala Gly Thr Thr Val Asp Thr Asp Ile Thr His Pro Tyr Glu
500 505 510

Phe Asp Phe Tyr Leu Cys Ser His Ala Gly Ile Gln Gly Thr Ser Arg
515 520 525

Pro Ser His Tyr His Val Leu Trp Asp Asp Asn Cys Phe Thr Ala Asp
530 535 540

Glu Leu Gln Leu Leu Thr Tyr Gln Leu Cys His Thr Tyr Val Arg Cys
545 550 555 560

Thr Arg Ser Val Ser Ile Pro Ala Pro Ala Tyr Tyr Ala His Leu Val
565 570 575

Ala Phe Arg Ala Arg Tyr His Leu Val Asp Lys Glu His Asp Ser Ala
580 585 590

Glu Gly Ser His Val Ser Gly Gln Ser Asn Gly Arg Asp Pro Gln Ala
595 600 605

Leu Ala Lys Ala Val Gln Ile His Gln Asp Thr Leu Arg Thr Met Tyr
610 615 620

Phe Ala
625

<210> 6272
<211> 229
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1361; "

<220>
<221> source
<223> /note="Gene Symbol: AGO3; "

<220>
<221> source
<223> /note="Gene Name:
argonaute RISC catalytic component 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000317425"

<400> 6272
Met Glu Ile Gly Ser Ala Gly Pro Ala Gly Ala Gln Pro Leu Leu Met
1 5 10 15

Val Pro Arg Arg Pro Gly Tyr Gly Thr Met Gly Lys Pro Ile Lys Leu
20 25 30

Leu Ala Asn Cys Phe Gln Val Glu Ile Pro Lys Ile Asp Val Tyr Leu
35 40 45

Tyr Glu Val Asp Ile Lys Pro Asp Lys Cys Pro Arg Arg Val Asn Arg
50 55 60

Glu Val Val Asp Ser Met Val Gln His Phe Lys Val Thr Ile Phe Gly
65 70 75 80

Asp Arg Arg Pro Val Tyr Asp Gly Lys Arg Ser Leu Tyr Thr Ala Asn
85 90 95

Pro Leu Pro Val Ala Thr Thr Gly Val Asp Leu Asp Val Thr Leu Pro
100 105 110

Gly Glu Gly Gly Lys Asp Arg Pro Phe Lys Val Ser Ile Lys Phe Val
115 120 125

Ser Arg Val Ser Trp His Leu Leu His Glu Val Leu Thr Gly Arg Thr
130 135 140

Leu Pro Glu Pro Leu Glu Leu Asp Lys Pro Ile Ser Thr Asn Pro Val
145 150 155 160

```
His Ala Val Asp Val Val Leu Arg His Leu Pro Ser Met Lys Tyr Thr
                165                 170                 175

Pro Val Gly Arg Ser Phe Phe Ser Ala Pro Glu Gly Tyr Asp His Pro
            180                 185                 190

Leu Gly Gly Gly Arg Glu Val Trp Phe Gly Phe His Gln Ser Val Arg
        195                 200                 205

Pro Ala Met Trp Lys Met Met Leu Asn Ile Asp Glu Arg Asp Leu Trp
    210                 215                 220

Gln Gln Cys Gly Glu
225


<210> 6273
<211> 860
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1361; "

<220>
<221> source
<223> /note="Gene Symbol: AGO3; "

<220>
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<223> /note="Gene Name:
      argonaute RISC catalytic component 3; "

<220>
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<223> /note="Uniprot ID:  Q9H9G7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000362287"

<400> 6273
Met Glu Ile Gly Ser Ala Gly Pro Ala Gly Ala Gln Pro Leu Leu Met
1               5                   10                  15

Val Pro Arg Arg Pro Gly Tyr Gly Thr Met Gly Lys Pro Ile Lys Leu
            20                  25                  30

Leu Ala Asn Cys Phe Gln Val Glu Ile Pro Lys Ile Asp Val Tyr Leu
```

```
        35                  40                  45

Tyr Glu Val Asp Ile Lys Pro Asp Lys Cys Pro Arg Arg Val Asn Arg
    50                  55                  60

Glu Val Val Asp Ser Met Val Gln His Phe Lys Val Thr Ile Phe Gly
65                  70                  75                  80

Asp Arg Arg Pro Val Tyr Asp Gly Lys Arg Ser Leu Tyr Thr Ala Asn
                85                  90                  95

Pro Leu Pro Val Ala Thr Thr Gly Val Asp Leu Asp Val Thr Leu Pro
            100                 105                 110

Gly Glu Gly Gly Lys Asp Arg Pro Phe Lys Val Ser Ile Lys Phe Val
        115                 120                 125

Ser Arg Val Ser Trp His Leu Leu His Glu Val Leu Thr Gly Arg Thr
    130                 135                 140

Leu Pro Glu Pro Leu Glu Leu Asp Lys Pro Ile Ser Thr Asn Pro Val
145                 150                 155                 160

His Ala Val Asp Val Val Leu Arg His Leu Pro Ser Met Lys Tyr Thr
                165                 170                 175

Pro Val Gly Arg Ser Phe Phe Ser Ala Pro Glu Gly Tyr Asp His Pro
            180                 185                 190

Leu Gly Gly Gly Arg Glu Val Trp Phe Gly Phe His Gln Ser Val Arg
        195                 200                 205

Pro Ala Met Trp Lys Met Met Leu Asn Ile Asp Val Ser Ala Thr Ala
    210                 215                 220

Phe Tyr Lys Ala Gln Pro Val Ile Gln Phe Met Cys Glu Val Leu Asp
225                 230                 235                 240

Ile His Asn Ile Asp Glu Gln Pro Arg Pro Leu Thr Asp Ser His Arg
                245                 250                 255

Val Lys Phe Thr Lys Glu Ile Lys Gly Leu Lys Val Glu Val Thr His
            260                 265                 270
```

```
Cys Gly Thr Met Arg Arg Lys Tyr Arg Val Cys Asn Val Thr Arg Arg
        275                 280                 285

Pro Ala Ser His Gln Thr Phe Pro Leu Gln Leu Glu Asn Gly Gln Thr
    290                 295                 300

Val Glu Arg Thr Val Ala Gln Tyr Phe Arg Glu Lys Tyr Thr Leu Gln
305                 310                 315                 320

Leu Lys Tyr Pro His Leu Pro Cys Leu Gln Val Gly Gln Glu Gln Lys
                325                 330                 335

His Thr Tyr Leu Pro Leu Glu Val Cys Asn Ile Val Ala Gly Gln Arg
            340                 345                 350

Cys Ile Lys Lys Leu Thr Asp Asn Gln Thr Ser Thr Met Ile Lys Ala
        355                 360                 365

Thr Ala Arg Ser Ala Pro Asp Arg Gln Glu Glu Ile Ser Arg Leu Val
    370                 375                 380

Arg Ser Ala Asn Tyr Glu Thr Asp Pro Phe Val Gln Glu Phe Gln Phe
385                 390                 395                 400

Lys Val Arg Asp Glu Met Ala His Val Thr Gly Arg Val Leu Pro Ala
                405                 410                 415

Pro Met Leu Gln Tyr Gly Gly Arg Asn Arg Thr Val Ala Thr Pro Ser
            420                 425                 430

His Gly Val Trp Asp Met Arg Gly Lys Gln Phe His Thr Gly Val Glu
        435                 440                 445

Ile Lys Met Trp Ala Ile Ala Cys Phe Ala Thr Gln Arg Gln Cys Arg
    450                 455                 460

Glu Glu Ile Leu Lys Gly Phe Thr Asp Gln Leu Arg Lys Ile Ser Lys
465                 470                 475                 480

Asp Ala Gly Met Pro Ile Gln Gly Gln Pro Cys Phe Cys Lys Tyr Ala
                485                 490                 495
```

```
Gln Gly Ala Asp Ser Val Glu Pro Met Phe Arg His Leu Lys Asn Thr
            500                 505                 510

Tyr Ser Gly Leu Gln Leu Ile Ile Val Ile Leu Pro Gly Lys Thr Pro
        515                 520                 525

Val Tyr Ala Glu Val Lys Arg Val Gly Asp Thr Leu Leu Gly Met Ala
    530                 535                 540

Thr Gln Cys Val Gln Val Lys Asn Val Ile Lys Thr Ser Pro Gln Thr
545                 550                 555                 560

Leu Ser Asn Leu Cys Leu Lys Ile Asn Val Lys Leu Gly Gly Ile Asn
                565                 570                 575

Asn Ile Leu Val Pro His Gln Arg Pro Ser Val Phe Gln Gln Pro Val
            580                 585                 590

Ile Phe Leu Gly Ala Asp Val Thr His Pro Pro Ala Gly Asp Gly Lys
        595                 600                 605

Lys Pro Ser Ile Ala Ala Val Val Gly Ser Met Asp Ala His Pro Ser
    610                 615                 620

Arg Tyr Cys Ala Thr Val Arg Val Gln Arg Pro Arg Gln Glu Ile Ile
625                 630                 635                 640

Gln Asp Leu Ala Ser Met Val Arg Glu Leu Leu Ile Gln Phe Tyr Lys
                645                 650                 655

Ser Thr Arg Phe Lys Pro Thr Arg Ile Ile Phe Tyr Arg Asp Gly Val
            660                 665                 670

Ser Glu Gly Gln Phe Arg Gln Val Leu Tyr Tyr Glu Leu Leu Ala Ile
        675                 680                 685

Arg Glu Ala Cys Ile Ser Leu Glu Lys Asp Tyr Gln Pro Gly Ile Thr
    690                 695                 700

Tyr Ile Val Val Gln Lys Arg His His Thr Arg Leu Phe Cys Ala Asp
705                 710                 715                 720
```

```
Arg Thr Glu Arg Val Gly Arg Ser Gly Asn Ile Pro Ala Gly Thr Thr
                725                 730                 735

Val Asp Thr Asp Ile Thr His Pro Tyr Glu Phe Asp Phe Tyr Leu Cys
            740                 745                 750

Ser His Ala Gly Ile Gln Gly Thr Ser Arg Pro Ser His Tyr His Val
        755                 760                 765

Leu Trp Asp Asp Asn Cys Phe Thr Ala Asp Glu Leu Gln Leu Leu Thr
    770                 775                 780

Tyr Gln Leu Cys His Thr Tyr Val Arg Cys Thr Arg Ser Val Ser Ile
785                 790                 795                 800

Pro Ala Pro Ala Tyr Tyr Ala His Leu Val Ala Phe Arg Ala Arg Tyr
                805                 810                 815

His Leu Val Asp Lys Glu His Asp Ser Ala Glu Gly Ser His Val Ser
            820                 825                 830

Gly Gln Ser Asn Gly Arg Asp Pro Gln Ala Leu Ala Lys Ala Val Gln
        835                 840                 845

Ile His Gln Asp Thr Leu Arg Thr Met Tyr Phe Ala
    850                 855                 860


<210> 6274
<211> 229
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1361; "

<220>
<221> source
<223> /note="Gene Symbol: AGO3; "

<220>
<221> source
<223> /note="Gene Name:
      argonaute RISC catalytic component 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000380928"
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<400> 6274
Met Glu Ile Gly Ser Ala Gly Pro Ala Gly Ala Gln Pro Leu Leu Met
1 5 10 15

Val Pro Arg Arg Pro Gly Tyr Gly Thr Met Gly Lys Pro Ile Lys Leu
20 25 30

Leu Ala Asn Cys Phe Gln Val Glu Ile Pro Lys Ile Asp Val Tyr Leu
35 40 45

Tyr Glu Val Asp Ile Lys Pro Asp Lys Cys Pro Arg Arg Val Asn Arg
50 55 60

Glu Val Val Asp Ser Met Val Gln His Phe Lys Val Thr Ile Phe Gly
65 70 75 80

Asp Arg Arg Pro Val Tyr Asp Gly Lys Arg Ser Leu Tyr Thr Ala Asn
85 90 95

Pro Leu Pro Val Ala Thr Thr Gly Val Asp Leu Asp Val Thr Leu Pro
100 105 110

Gly Glu Gly Gly Lys Asp Arg Pro Phe Lys Val Ser Ile Lys Phe Val
115 120 125

Ser Arg Val Ser Trp His Leu Leu His Glu Val Leu Thr Gly Arg Thr
130 135 140

Leu Pro Glu Pro Leu Glu Leu Asp Lys Pro Ile Ser Thr Asn Pro Val
145 150 155 160

His Ala Val Asp Val Val Leu Arg His Leu Pro Ser Met Lys Tyr Thr
165 170 175

Pro Val Gly Arg Ser Phe Phe Ser Ala Pro Glu Gly Tyr Asp His Pro
180 185 190

Leu Gly Gly Gly Arg Glu Val Trp Phe Gly Phe His Gln Ser Val Arg
195 200 205

Pro Ala Met Trp Lys Met Met Leu Asn Ile Asp Glu Arg Asp Leu Trp
210 215 220

Gln Gln Cys Gly Glu
225

<210> 6275
<211> 64
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1361; "

<220>
<221> source
<223> /note="Gene Symbol: AGO3; "

<220>
<221> source
<223> /note="Gene Name:
argonaute RISC catalytic component 3; "

<220>
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<223> /note="ENSP ID: ENSP00000489286"

<400> 6275
Met Glu Ile Gly Ser Ala Gly Pro Ala Gly Ala Gln Pro Leu Leu Met
1 5 10 15

Val Pro Arg Arg Pro Gly Tyr Gly Thr Met Gly Lys Pro Ile Lys Leu
20 25 30

Leu Ala Asn Cys Phe Gln Val Glu Ile Pro Lys Ile Asp Val Tyr Leu
35 40 45

Tyr Glu Val Asp Ile Lys Pro Asp Lys Cys Pro Arg Arg Val Asn Arg
50 55 60

<210> 6276
<211> 861
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1362; "

<220>
<221> source
<223> /note="Gene Symbol: AGO4; "

<220>
<221> source
<223> /note="Gene Name:
argonaute RISC catalytic component 4; "

<220>
<221> source
<223> /note="Uniprot ID: Q9HCK5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000362306"

<400> 6276
Met Glu Ala Leu Gly Pro Gly Pro Pro Ala Ser Leu Phe Gln Pro Pro
1 5 10 15

Arg Arg Pro Gly Leu Gly Thr Val Gly Lys Pro Ile Arg Leu Leu Ala
20 25 30

Asn His Phe Gln Val Gln Ile Pro Lys Ile Asp Val Tyr His Tyr Asp
35 40 45

Val Asp Ile Lys Pro Glu Lys Arg Pro Arg Arg Val Asn Arg Glu Val
50 55 60

Val Asp Thr Met Val Arg His Phe Lys Met Gln Ile Phe Gly Asp Arg
65 70 75 80

Gln Pro Gly Tyr Asp Gly Lys Arg Asn Met Tyr Thr Ala His Pro Leu
85 90 95

Pro Ile Gly Arg Asp Arg Val Asp Met Glu Val Thr Leu Pro Gly Glu
100 105 110

Gly Lys Asp Gln Thr Phe Lys Val Ser Val Gln Trp Val Ser Val Val
115 120 125

Ser Leu Gln Leu Leu Leu Glu Ala Leu Ala Gly His Leu Asn Glu Val
130 135 140

Pro Asp Asp Ser Val Gln Ala Leu Asp Val Ile Thr Arg His Leu Pro
145 150 155 160

Ser Met Arg Tyr Thr Pro Val Gly Arg Ser Phe Phe Ser Pro Pro Glu
165 170 175

```
Gly Tyr Tyr His Pro Leu Gly Gly Gly Arg Glu Val Trp Phe Gly Phe
            180                 185                 190

His Gln Ser Val Arg Pro Ala Met Trp Asn Met Met Leu Asn Ile Asp
        195                 200                 205

Val Ser Ala Thr Ala Phe Tyr Arg Ala Gln Pro Ile Ile Glu Phe Met
    210                 215                 220

Cys Glu Val Leu Asp Ile Gln Asn Ile Asn Glu Gln Thr Lys Pro Leu
225                 230                 235                 240

Thr Asp Ser Gln Arg Val Lys Phe Thr Lys Glu Ile Arg Gly Leu Lys
                245                 250                 255

Val Glu Val Thr His Cys Gly Gln Met Lys Arg Lys Tyr Arg Val Cys
            260                 265                 270

Asn Val Thr Arg Arg Pro Ala Ser His Gln Thr Phe Pro Leu Gln Leu
        275                 280                 285

Glu Asn Gly Gln Ala Met Glu Cys Thr Val Ala Gln Tyr Phe Lys Gln
    290                 295                 300

Lys Tyr Ser Leu Gln Leu Lys Tyr Pro His Leu Pro Cys Leu Gln Val
305                 310                 315                 320

Gly Gln Glu Gln Lys His Thr Tyr Leu Pro Leu Glu Val Cys Asn Ile
                325                 330                 335

Val Ala Gly Gln Arg Cys Ile Lys Lys Leu Thr Asp Asn Gln Thr Ser
            340                 345                 350

Thr Met Ile Lys Ala Thr Ala Arg Ser Ala Pro Asp Arg Gln Glu Glu
        355                 360                 365

Ile Ser Arg Leu Val Lys Ser Asn Ser Met Val Gly Gly Pro Asp Pro
    370                 375                 380

Tyr Leu Lys Glu Phe Gly Ile Val Val His Asn Glu Met Thr Glu Leu
385                 390                 395                 400
```

```
Thr Gly Arg Val Leu Pro Ala Pro Met Leu Gln Tyr Gly Gly Arg Asn
                405                 410                 415

Lys Thr Val Ala Thr Pro Asn Gln Gly Val Trp Asp Met Arg Gly Lys
            420                 425                 430

Gln Phe Tyr Ala Gly Ile Glu Ile Lys Val Trp Ala Val Ala Cys Phe
        435                 440                 445

Ala Pro Gln Lys Gln Cys Arg Glu Asp Leu Leu Lys Ser Phe Thr Asp
    450                 455                 460

Gln Leu Arg Lys Ile Ser Lys Asp Ala Gly Met Pro Ile Gln Gly Gln
465                 470                 475                 480

Pro Cys Phe Cys Lys Tyr Ala Gln Gly Ala Asp Ser Val Glu Pro Met
                485                 490                 495

Phe Lys His Leu Lys Met Thr Tyr Val Gly Leu Gln Leu Ile Val Val
            500                 505                 510

Ile Leu Pro Gly Lys Thr Pro Val Tyr Ala Glu Val Lys Arg Val Gly
        515                 520                 525

Asp Thr Leu Leu Gly Met Ala Thr Gln Cys Val Gln Val Lys Asn Val
    530                 535                 540

Val Lys Thr Ser Pro Gln Thr Leu Ser Asn Leu Cys Leu Lys Ile Asn
545                 550                 555                 560

Ala Lys Leu Gly Gly Ile Asn Asn Val Leu Val Pro His Gln Arg Pro
                565                 570                 575

Ser Val Phe Gln Gln Pro Val Ile Phe Leu Gly Ala Asp Val Thr His
            580                 585                 590

Pro Pro Ala Gly Asp Gly Lys Lys Pro Ser Ile Ala Ala Val Val Gly
        595                 600                 605

Ser Met Asp Gly His Pro Ser Arg Tyr Cys Ala Thr Val Arg Val Gln
    610                 615                 620

Thr Ser Arg Gln Glu Ile Ser Gln Glu Leu Leu Tyr Ser Gln Glu Val
```

625 630 635 640

Ile Gln Asp Leu Thr Asn Met Val Arg Glu Leu Leu Ile Gln Phe Tyr
645 650 655

Lys Ser Thr Arg Phe Lys Pro Thr Arg Ile Ile Tyr Tyr Arg Gly Gly
660 665 670

Val Ser Glu Gly Gln Met Lys Gln Val Ala Trp Pro Glu Leu Ile Ala
675 680 685

Ile Arg Lys Ala Cys Ile Ser Leu Glu Glu Asp Tyr Arg Pro Gly Ile
690 695 700

Thr Tyr Ile Val Val Gln Lys Arg His His Thr Arg Leu Phe Cys Ala
705 710 715 720

Asp Lys Thr Glu Arg Val Gly Lys Ser Gly Asn Val Pro Ala Gly Thr
725 730 735

Thr Val Asp Ser Thr Ile Thr His Pro Ser Glu Phe Asp Phe Tyr Leu
740 745 750

Cys Ser His Ala Gly Ile Gln Gly Thr Ser Arg Pro Ser His Tyr Gln
755 760 765

Val Leu Trp Asp Asp Asn Cys Phe Thr Ala Asp Glu Leu Gln Leu Leu
770 775 780

Thr Tyr Gln Leu Cys His Thr Tyr Val Arg Cys Thr Arg Ser Val Ser
785 790 795 800

Ile Pro Ala Pro Ala Tyr Tyr Ala Arg Leu Val Ala Phe Arg Ala Arg
805 810 815

Tyr His Leu Val Asp Lys Asp His Asp Ser Ala Glu Gly Ser His Val
820 825 830

Ser Gly Gln Ser Asn Gly Arg Asp Pro Gln Ala Leu Ala Lys Ala Val
835 840 845

Gln Ile His His Asp Thr Gln His Thr Met Tyr Phe Ala
850 855 860

<210> 6277
<211> 517
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1363; "

<220>
<221> source
<223> /note="Gene Symbol: ARHGAP19-SLIT1; "

<220>
<221> source
<223> /note="Gene Name:
ARHGAP19-SLIT1 readthrough (NMD candidate); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000473567"

<400> 6277
Met Ala Thr Glu Ala Gln Ser Glu Gly Glu Val Pro Ala Arg Glu Ser
1 5 10 15

Gly Arg Ser Asp Ala Ile Cys Ser Phe Val Ile Cys Asn Asp Ser Ser
20 25 30

Leu Arg Gly Gln Pro Ile Ile Phe Asn Pro Asp Phe Phe Val Glu Lys
35 40 45

Leu Arg His Glu Lys Pro Glu Ile Phe Thr Glu Leu Val Val Ser Asn
50 55 60

Ile Thr Arg Leu Ile Asp Leu Pro Gly Thr Glu Leu Ala Gln Leu Met
65 70 75 80

Gly Glu Val Asp Leu Lys Leu Pro Gly Gly Ala Gly Pro Ala Ser Gly
85 90 95

Phe Phe Arg Ser Leu Met Ser Leu Lys Arg Lys Glu Lys Gly Val Ile
100 105 110

Phe Gly Ser Pro Leu Thr Glu Glu Gly Ile Ala Gln Ile Tyr Gln Leu
115 120 125

```
Ile Glu Tyr Leu His Lys Asn Leu Arg Val Glu Gly Leu Phe Arg Val
    130                 135                 140

Pro Gly Asn Ser Val Arg Gln Gln Ile Leu Arg Asp Ala Leu Asn Asn
145                 150                 155                 160

Gly Thr Asp Ile Asp Leu Glu Ser Gly Glu Phe His Ser Asn Asp Val
                165                 170                 175

Ala Thr Leu Leu Lys Met Phe Leu Gly Glu Leu Pro Glu Pro Leu Leu
            180                 185                 190

Thr His Lys His Phe Asn Ala His Leu Lys Ile Ala Asp Leu Met Gln
        195                 200                 205

Phe Asp Asp Lys Gly Asn Lys Thr Asn Ile Pro Asp Lys Asp Arg Gln
    210                 215                 220

Ile Glu Ala Leu Gln Leu Leu Phe Leu Ile Leu Pro Pro Pro Asn Arg
225                 230                 235                 240

Asn Leu Leu Lys Leu Leu Leu Asp Leu Leu Tyr Gln Thr Ala Lys Lys
                245                 250                 255

Gln Asp Lys Asn Lys Met Ser Ala Tyr Asn Leu Ala Leu Met Phe Ala
            260                 265                 270

Pro His Val Leu Trp Pro Lys Asn Val Thr Ala Asn Asp Leu Gln Glu
        275                 280                 285

Asn Ile Thr Lys Leu Asn Ser Gly Met Ala Phe Met Ile Lys His Ser
    290                 295                 300

Gln Lys Leu Phe Lys Ala Pro Ala Tyr Ile Arg Glu Cys Ala Arg Leu
305                 310                 315                 320

His Tyr Leu Gly Ser Arg Thr Gln Ala Ser Lys Asp Asp Leu Asp Leu
                325                 330                 335

Ile Ala Ser Cys His Thr Lys Ser Phe Gln Leu Ala Lys Ser Gln Lys
            340                 345                 350

Arg Asn Arg Val Asp Ser Cys Pro His Gln Glu Glu Thr Gln His His
```

```
        355                 360                 365

Thr Glu Glu Ala Leu Arg Glu Leu Phe Gln His Val His Asp Met Pro
    370                 375                 380

Glu Ser Ala Lys Lys Lys Gln Leu Ile Arg Gln Phe Asn Lys Gln Ser
385                 390                 395                 400

Leu Thr Gln Thr Pro Gly Arg Glu Pro Ser Thr Ser Gln Val Gln Lys
                405                 410                 415

Arg Ala Arg Ser Arg Ser Phe Ser Gly Leu Ile Lys Arg Lys Val Leu
            420                 425                 430

Gly Asn Gln Met Met Ser Glu Lys Lys Lys Lys Asn Pro Thr Pro Glu
        435                 440                 445

Ser Val Ala Ile Gly Glu Leu Lys Gly Thr Ser Lys Glu Asn Arg Asn
    450                 455                 460

Leu Leu Phe Ser Gly Ser Pro Ala Val Thr Met Thr Pro Thr Arg Leu
465                 470                 475                 480

Lys Trp Ser Glu Gly Lys Lys Glu Gly Lys Lys Gly Asn Ser Met Ala
                485                 490                 495

Thr Thr Ser Leu Gly Ser Ile Arg Met Thr Leu Arg Gly Ser Ser Ser
            500                 505                 510

Cys Gly Cys Cys Ser
        515


<210> 6278
<211> 290
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1364; "

<220>
<221> source
<223> /note="Gene Symbol: ARIH2OS; "

<220>
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<221> source
<223> /note="Gene Name:
ariadne homolog 2 opposite strand; "

<220>
<221> source
<223> /note="Uniprot ID: Q8N7S6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000386193"

<400> 6278

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Met Leu Gly Gln Arg Ala Gly Asp Gly Glu Arg Pro Gly Leu Pro Gly
1               5                   10                  15

Asp Gly Glu Gly Gly Val Pro Ala Arg Pro Gly Arg Arg Ala Glu Arg
            20                  25                  30

Pro Pro Gln Arg Pro Ala Lys Val Asn Lys Ala Val Thr Cys Ala Ala
        35                  40                  45

His Leu Pro Gly Ala Ala Ala Ser Arg Pro Leu Ser Pro Asn Lys Pro
    50                  55                  60

Asp Arg Val Arg Pro Gly Gln Arg Asp Arg Ile Gly Ala Lys Arg Gln
65                  70                  75                  80

Arg Arg Arg Arg Ala Asp Ala Gly Gln Ala Arg Ala Ala Ser Ser Arg
                85                  90                  95

Arg Val Val Pro Thr Ala Pro Glu Val Leu Gly Ala Val Ala Ser Leu
            100                 105                 110

Pro Asp Arg Gly Arg Pro Thr Val Ala Arg Val Ala Thr Gly Ser Arg
        115                 120                 125

Leu Glu Gly Leu Phe Ser Ala Ala Ser Leu Lys Leu Ser Ala Leu Thr
    130                 135                 140

Gln Ser Leu Thr Arg Val Arg Gln Ala Pro Thr Ala Ser Gly Ala Thr
145                 150                 155                 160

Ile Arg Leu Pro Ala Ser Pro Val Glu Met Phe Leu Thr Ser Ala Phe
                165                 170                 175
```

```
Leu Thr Gly Phe Ser Phe His Cys Leu Tyr Ser Gly Ile Gly His Gly
            180                 185                 190

Glu Asp Ile Leu Ala Ser Val Glu Gln Ile Thr Ile Val Ser Arg Pro
        195                 200                 205

Leu Ser Gly Gln Arg Gly Ala Gly Pro Gly Asn Ser Ala Tyr Thr Pro
    210                 215                 220

Arg Arg Ser Gln Gly Gly Pro Arg Ala Ala Thr Thr Pro Gly Phe Arg
225                 230                 235                 240

Phe Pro Cys Arg Gly Leu Val Arg Arg Ala Val Leu Arg Leu Thr Val
                245                 250                 255

Thr Val Gln Asp Cys Ile Leu Thr Ala Leu Leu Ala Val Ser Phe His
            260                 265                 270

Ser Ile Gly Val Val Ile Met Thr Ser Ser Tyr Leu Leu Gly Pro Val
        275                 280                 285

Val Lys
    290
```

<210> 6279
<211> 557
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1365; "

<220>
<221> source
<223> /note="Gene Symbol: ARIH1; "

<220>
<221> source
<223> /note="Gene Name:
ariadne RBR E3
ubiquitin
prt ligase 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q9Y4X5; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000369217"

<400> 6279
Met Asp Ser Asp Glu Gly Tyr Asn Tyr Glu Phe Asp Glu Asp Glu Glu
1 5 10 15

Cys Ser Glu Glu Asp Ser Gly Ala Glu Glu Glu Glu Asp Glu Asp Asp
20 25 30

Asp Glu Pro Asp Asp Asp Thr Leu Asp Leu Gly Glu Val Glu Leu Val
35 40 45

Glu Pro Gly Leu Gly Val Gly Gly Glu Arg Asp Gly Leu Leu Cys Gly
50 55 60

Glu Thr Gly Gly Gly Gly Gly Ser Ala Leu Gly Pro Gly Gly Gly Gly
65 70 75 80

Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Pro Gly His Glu Gln Glu
85 90 95

Glu Asp Tyr Arg Tyr Glu Val Leu Thr Ala Glu Gln Ile Leu Gln His
100 105 110

Met Val Glu Cys Ile Arg Glu Val Asn Glu Val Ile Gln Asn Pro Ala
115 120 125

Thr Ile Thr Arg Ile Leu Leu Ser His Phe Asn Trp Asp Lys Glu Lys
130 135 140

Leu Met Glu Arg Tyr Phe Asp Gly Asn Leu Glu Lys Leu Phe Ala Glu
145 150 155 160

Cys His Val Ile Asn Pro Ser Lys Lys Ser Arg Thr Arg Gln Met Asn
165 170 175

Thr Arg Ser Ser Ala Gln Asp Met Pro Cys Gln Ile Cys Tyr Leu Asn
180 185 190

Tyr Pro Asn Ser Tyr Phe Thr Gly Leu Glu Cys Gly His Lys Phe Cys
195 200 205

Met Gln Cys Trp Ser Glu Tyr Leu Thr Thr Lys Ile Met Glu Glu Gly

```
    210                 215                 220

Met Gly Gln Thr Ile Ser Cys Pro Ala His Gly Cys Asp Ile Leu Val
225                 230                 235                 240

Asp Asp Asn Thr Val Met Arg Leu Ile Thr Asp Ser Lys Val Lys Leu
                245                 250                 255

Lys Tyr Gln His Leu Ile Thr Asn Ser Phe Val Glu Cys Asn Arg Leu
            260                 265                 270

Leu Lys Trp Cys Pro Ala Pro Asp Cys His His Val Val Lys Val Gln
        275                 280                 285

Tyr Pro Asp Ala Lys Pro Val Arg Cys Lys Cys Gly Arg Gln Phe Cys
    290                 295                 300

Phe Asn Cys Gly Glu Asn Trp His Asp Pro Val Lys Cys Lys Trp Leu
305                 310                 315                 320

Lys Lys Trp Ile Lys Lys Cys Asp Asp Asp Ser Glu Thr Ser Asn Trp
                325                 330                 335

Ile Ala Ala Asn Thr Lys Glu Cys Pro Lys Cys His Val Thr Ile Glu
            340                 345                 350

Lys Asp Gly Gly Cys Asn His Met Val Cys Arg Asn Gln Asn Cys Lys
        355                 360                 365

Ala Glu Phe Cys Trp Val Cys Leu Gly Pro Trp Glu Pro His Gly Ser
    370                 375                 380

Ala Trp Tyr Asn Cys Asn Arg Tyr Asn Glu Asp Asp Ala Lys Ala Ala
385                 390                 395                 400

Arg Asp Ala Gln Glu Arg Ser Arg Ala Ala Leu Gln Arg Tyr Leu Phe
                405                 410                 415

Tyr Cys Asn Arg Tyr Met Asn His Met Gln Ser Leu Arg Phe Glu His
            420                 425                 430

Lys Leu Tyr Ala Gln Val Lys Gln Lys Met Glu Glu Met Gln Gln His
        435                 440                 445
```

```
Asn Met Ser Trp Ile Glu Val Gln Phe Leu Lys Lys Ala Val Asp Val
    450                 455                 460

Leu Cys Gln Cys Arg Ala Thr Leu Met Tyr Thr Tyr Val Phe Ala Phe
465                 470                 475                 480

Tyr Leu Lys Lys Asn Asn Gln Ser Ile Ile Phe Glu Asn Asn Gln Ala
                485                 490                 495

Asp Leu Glu Asn Ala Thr Glu Val Leu Ser Gly Tyr Leu Glu Arg Asp
            500                 505                 510

Ile Ser Gln Asp Ser Leu Gln Asp Ile Lys Gln Lys Val Gln Asp Lys
        515                 520                 525

Tyr Arg Tyr Cys Glu Ser Arg Arg Arg Val Leu Leu Gln His Val His
    530                 535                 540

Glu Gly Tyr Glu Lys Asp Leu Trp Glu Tyr Ile Glu Asp
545                 550                 555


<210> 6280
<211> 204
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1365; "

<220>
<221> source
<223> /note="Gene Symbol: ARIH1; "

<220>
<221> source
<223> /note="Gene Name:
      ariadne RBR E3
      ubiquitin
      prt ligase 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000454774"


<220>
<221> MOD_RES
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<222> (1)..(1)
<223> Any amino acid

<400> 6280
Xaa Ser Asp Glu Gly Tyr Asn Tyr Glu Phe Asp Glu Asp Glu Glu Cys
1 5 10 15

Ser Glu Glu Asp Ser Gly Ala Glu Glu Glu Glu Asp Glu Asp Asp Asp
20 25 30

Glu Pro Asp Asp Asp Thr Leu Asp Leu Gly Glu Val Glu Leu Val Glu
35 40 45

Pro Gly Leu Gly Val Gly Gly Glu Arg Asp Gly Leu Leu Cys Gly Glu
50 55 60

Thr Gly Gly Gly Gly Gly Ser Ala Leu Gly Pro Gly Gly Gly Gly Gly
65 70 75 80

Gly Gly Gly Gly Gly Gly Gly Gly Gly Pro Gly His Glu Gln Glu Glu
85 90 95

Asp Tyr Arg Tyr Glu Val Leu Thr Ala Glu Gln Ile Leu Gln His Met
100 105 110

Val Glu Cys Ile Arg Glu Val Asn Glu Val Ile Gln Asn Pro Ala Thr
115 120 125

Ile Thr Arg Ile Leu Leu Ser His Phe Asn Trp Asp Lys Glu Lys Leu
130 135 140

Met Glu Arg Arg Leu Ile Thr Asp Ser Lys Val Lys Leu Lys Tyr Gln
145 150 155 160

His Leu Ile Thr Asn Ser Phe Val Glu Cys Asn Arg Leu Leu Lys Trp
165 170 175

Cys Pro Ala Pro Asp Cys His His Val Val Lys Val Gln Tyr Pro Asp
180 185 190

Ala Lys Pro Val Arg Cys Lys Cys Gly Arg Gln Phe
195 200

<210> 6281

<211> 167
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1365; "

<220>
<221> source
<223> /note="Gene Symbol: ARIH1; "

<220>
<221> source
<223> /note="Gene Name:
ariadne RBR E3
ubiquitin
prt ligase 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000456746"

<400> 6281
Met Asp Ser Asp Glu Gly Tyr Asn Tyr Glu Phe Asp Glu Asp Glu Glu
1 5 10 15

Cys Ser Glu Glu Asp Ser Gly Ala Glu Glu Glu Glu Asp Glu Asp Asp
20 25 30

Asp Glu Pro Asp Asp Asp Thr Leu Asp Leu Gly Glu Val Glu Leu Val
35 40 45

Glu Pro Gly Leu Gly Val Gly Gly Glu Arg Asp Gly Leu Leu Cys Gly
50 55 60

Glu Thr Gly Gly Gly Gly Gly Ser Ala Leu Gly Pro Gly Gly Gly Gly
65 70 75 80

Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Pro Gly His Glu Gln Glu
85 90 95

Glu Asp Tyr Arg Tyr Glu Val Leu Thr Ala Glu Gln Ile Leu Gln His
100 105 110

Met Val Glu Cys Ile Arg Glu Val Asn Glu Val Ile Gln Asn Pro Ala
115 120 125

Thr Ile Thr Arg Ile Leu Leu Ser His Phe Asn Trp Asp Lys Glu Lys

```
    130                 135                 140

Leu Met Glu Ser Ile Ser Leu Ala Leu Asn Val Asp Ile Ser Phe Val
145                 150                 155                 160

Cys Ser Ala Gly Val Asn Ile
                165

<210> 6282
<211> 47
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1365; "

<220>
<221> source
<223> /note="Gene Symbol: ARIH1; "

<220>
<221> source
<223> /note="Gene Name:
      ariadne RBR E3
      ubiquitin
      prt ligase 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000457767"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6282
Xaa Asn Glu Asp Asp Ala Lys Ala Ala Arg Asp Ala Gln Glu Cys Leu
1               5                   10                  15

Ala Leu Ser Pro Arg Leu Glu Tyr Ser Gly Met Ile Ser Ala His Cys
            20                  25                  30

Asn Leu His Leu Leu Gly Ser Ser Asp Ser Pro Ala Ser Ala Ser
        35                  40                  45

<210> 6283
<211> 114
<212> PRT
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<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1365; "

<220>
<221> source
<223> /note="Gene Symbol: ARIH1; "

<220>
<221> source
<223> /note="Gene Name:
ariadne RBR E3
ubiquitin
prt ligase 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000477687"

<400> 6283

Arg	Ser	Arg	Ala	Ala	Leu	Gln	Arg	Tyr	Leu	Phe	Tyr	Cys	Asn	Arg	Tyr
1				5					10						15

Met	Asn	His	Met	Gln	Ser	Leu	Arg	Phe	Glu	His	Lys	Leu	Tyr	Ala	Gln
			20					25					30		

Val	Lys	Gln	Lys	Met	Glu	Glu	Met	Gln	Gln	His	Asn	Met	Ser	Trp	Ile
		35					40					45			

Glu	Asn	Asn	Gln	Ala	Asp	Leu	Glu	Asn	Ala	Thr	Glu	Val	Leu	Ser	Gly
	50					55					60				

Tyr	Leu	Glu	Arg	Asp	Ile	Ser	Gln	Asp	Ser	Leu	Gln	Asp	Ile	Lys	Gln
65					70					75					80

Lys	Val	Gln	Asp	Lys	Tyr	Arg	Tyr	Cys	Glu	Ser	Arg	Arg	Arg	Val	Leu
				85					90					95	

Leu	Gln	His	Val	His	Glu	Gly	Tyr	Glu	Lys	Asp	Leu	Trp	Glu	Tyr	Ile
			100					105					110		

Glu Asp

<210> 6284
<211> 493
<212> PRT

<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1366; "

<220>
<221> source
<223> /note="Gene Symbol: ARIH2; "

<220>
<221> source
<223> /note="Gene Name:
ariadne RBR E3
ubiquitin
prt ligase 2; "

<220>
<221> source
<223> /note="Uniprot ID: O95376; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000348769"

<400> 6284

```
Met Ser Val Asp Met Asn Ser Gln Gly Ser Asp Ser Asn Glu Glu Asp
1               5                  10                  15

Tyr Asp Pro Asn Cys Glu Glu Glu Glu Glu Glu Glu Glu Asp Asp Pro
            20                  25                  30

Gly Asp Ile Glu Asp Tyr Tyr Val Gly Val Ala Ser Asp Val Glu Gln
        35                  40                  45

Gln Gly Ala Asp Ala Phe Asp Pro Glu Glu Tyr Gln Phe Thr Cys Leu
    50                  55                  60

Thr Tyr Lys Glu Ser Glu Gly Ala Leu Asn Glu His Met Thr Ser Leu
65                  70                  75                  80

Ala Ser Val Leu Lys Val Ser His Ser Val Ala Lys Leu Ile Leu Val
                85                  90                  95

Asn Phe His Trp Gln Val Ser Glu Ile Leu Asp Arg Tyr Lys Ser Asn
            100                 105                 110

Ser Ala Gln Leu Leu Val Glu Ala Arg Val Gln Pro Asn Pro Ser Lys
        115                 120                 125
```

```
His Val Pro Thr Ser His Pro Pro His His Cys Ala Val Cys Met Gln
    130                 135                 140

Phe Val Arg Lys Glu Asn Leu Leu Ser Leu Ala Cys Gln His Gln Phe
145                 150                 155                 160

Cys Arg Ser Cys Trp Glu Gln His Cys Ser Val Leu Val Lys Asp Gly
                165                 170                 175

Val Gly Val Gly Val Ser Cys Met Ala Gln Asp Cys Pro Leu Arg Thr
            180                 185                 190

Pro Glu Asp Phe Val Phe Pro Leu Leu Pro Asn Glu Glu Leu Arg Glu
        195                 200                 205

Lys Tyr Arg Arg Tyr Leu Phe Arg Asp Tyr Val Glu Ser His Tyr Gln
    210                 215                 220

Leu Gln Leu Cys Pro Gly Ala Asp Cys Pro Met Val Ile Arg Val Gln
225                 230                 235                 240

Glu Pro Arg Ala Arg Arg Val Gln Cys Asn Arg Cys Asn Glu Val Phe
                245                 250                 255

Cys Phe Lys Cys Arg Gln Met Tyr His Ala Pro Thr Asp Cys Ala Thr
            260                 265                 270

Ile Arg Lys Trp Leu Thr Lys Cys Ala Asp Asp Ser Glu Thr Ala Asn
        275                 280                 285

Tyr Ile Ser Ala His Thr Lys Asp Cys Pro Lys Cys Asn Ile Cys Ile
    290                 295                 300

Glu Lys Asn Gly Gly Cys Asn His Met Gln Cys Ser Lys Cys Lys His
305                 310                 315                 320

Asp Phe Cys Trp Met Cys Leu Gly Asp Trp Lys Thr His Gly Ser Glu
                325                 330                 335

Tyr Tyr Glu Cys Ser Arg Tyr Lys Glu Asn Pro Asp Ile Val Asn Gln
            340                 345                 350
```

```
Ser Gln Gln Ala Gln Ala Arg Glu Ala Leu Lys Lys Tyr Leu Phe Tyr
        355                 360                 365

Phe Glu Arg Trp Glu Asn His Asn Lys Ser Leu Gln Leu Glu Ala Gln
    370                 375                 380

Thr Tyr Gln Arg Ile His Glu Lys Ile Gln Glu Arg Val Met Asn Asn
385                 390                 395                 400

Leu Gly Thr Trp Ile Asp Trp Gln Tyr Leu Gln Asn Ala Ala Lys Leu
                405                 410                 415

Leu Ala Lys Cys Arg Tyr Thr Leu Gln Tyr Thr Tyr Pro Tyr Ala Tyr
            420                 425                 430

Tyr Met Glu Ser Gly Pro Arg Lys Lys Leu Phe Glu Tyr Gln Gln Ala
        435                 440                 445

Gln Leu Glu Ala Glu Ile Glu Asn Leu Ser Trp Lys Val Glu Arg Ala
    450                 455                 460

Asp Ser Tyr Asp Arg Gly Asp Leu Glu Asn Gln Met His Ile Ala Glu
465                 470                 475                 480

Gln Arg Arg Arg Thr Leu Leu Lys Asp Phe His Asp Thr
                485                 490


<210> 6285
<211> 107
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1366; "

<220>
<221> source
<223> /note="Gene Symbol: ARIH2; "

<220>
<221> source
<223> /note="Gene Name:
      ariadne RBR E3
      ubiquitin
      prt ligase 2; "

<220>
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<221> source
<223> /note="ENSP ID: ENSP00000395560"

<400> 6285
Met Ser Val Asp Met Asn Ser Gln Gly Ser Asp Ser Asn Glu Glu Asp
1   5   10   15

Tyr Asp Pro Asn Cys Glu Glu Glu Glu Glu Glu Glu Glu Asp Asp Pro
            20   25   30

Gly Asp Ile Glu Asp Tyr Tyr Val Gly Val Ala Ser Asp Val Glu Gln
        35   40   45

Gln Gly Ala Asp Ala Phe Asp Pro Glu Glu Tyr Gln Phe Thr Cys Leu
    50   55   60

Thr Tyr Lys Glu Ser Glu Gly Ala Leu Asn Glu His Met Thr Ser Leu
65   70   75   80

Ala Ser Val Leu Lys Val Ser His Ser Val Ala Lys Leu Ile Leu Val
                85   90   95

Asn Phe His Trp Gln Val Ser Glu Ile Leu Asp
            100   105

<210> 6286
<211> 107
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1366; "

<220>
<221> source
<223> /note="Gene Symbol: ARIH2; "

<220>
<221> source
<223> /note="Gene Name:
ariadne RBR E3
ubiquitin
prt ligase 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000397225"

<400> 6286

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Met Ser Val Asp Met Asn Ser Gln Gly Ser Asp Ser Asn Glu Glu Asp
1               5                   10                  15

Tyr Asp Pro Asn Cys Glu Glu Glu Glu Glu Glu Glu Glu Asp Asp Pro
            20                  25                  30

Gly Asp Ile Glu Asp Tyr Tyr Val Gly Val Ala Ser Asp Val Glu Gln
        35                  40                  45

Gln Gly Ala Asp Ala Phe Asp Pro Glu Glu Tyr Gln Phe Thr Cys Leu
    50                  55                  60

Thr Tyr Lys Glu Ser Glu Gly Ala Leu Asn Glu His Met Thr Ser Leu
65                  70                  75                  80

Ala Ser Val Leu Lys Val Ser His Ser Val Ala Lys Leu Ile Leu Val
                85                  90                  95

Asn Phe His Trp Gln Val Ser Glu Ile Leu Asp
            100                 105


<210> 6287
<211> 138
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1366; "

<220>
<221> source
<223> /note="Gene Symbol: ARIH2; "

<220>
<221> source
<223> /note="Gene Name:
      ariadne RBR E3
      ubiquitin
      prt ligase 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000399788"

<400> 6287
Met Ser Val Asp Met Asn Ser Gln Gly Ser Asp Ser Asn Glu Glu Asp
1               5                   10                  15
```

```
Tyr Asp Pro Asn Cys Glu Glu Glu Glu Glu Glu Glu Glu Asp Asp Pro
            20                  25                  30

Gly Asp Ile Glu Asp Tyr Tyr Val Gly Val Ala Ser Asp Val Glu Gln
        35                  40                  45

Gln Gly Ala Asp Ala Phe Asp Pro Glu Glu Tyr Gln Phe Thr Cys Leu
    50                  55                  60

Thr Tyr Lys Glu Ser Glu Gly Ala Leu Asn Glu His Met Thr Ser Leu
65                  70                  75                  80

Ala Ser Val Leu Lys Val Ser His Ser Val Ala Lys Leu Ile Leu Val
                85                  90                  95

Asn Phe His Trp Gln Val Ser Glu Ile Leu Asp Arg Tyr Lys Ser Asn
            100                 105                 110

Ser Ala Gln Leu Leu Val Glu Ala Arg Val Gln Pro Asn Pro Ser Lys
        115                 120                 125

His Val Pro Thr Ser His Pro Pro His His
    130                 135


<210> 6288
<211> 493
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1366; "

<220>
<221> source
<223> /note="Gene Symbol: ARIH2; "

<220>
<221> source
<223> /note="Gene Name:
      ariadne RBR E3
      ubiquitin
      prt ligase 2; "

<220>
<221> source
<223> /note="Uniprot ID:  O95376; "

<220>
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<221> source
<223> /note="ENSP ID: ENSP00000403222"

<400> 6288
Met Ser Val Asp Met Asn Ser Gln Gly Ser Asp Ser Asn Glu Glu Asp
1 5 10 15

Tyr Asp Pro Asn Cys Glu Glu Glu Glu Glu Glu Glu Glu Asp Asp Pro
20 25 30

Gly Asp Ile Glu Asp Tyr Tyr Val Gly Val Ala Ser Asp Val Glu Gln
35 40 45

Gln Gly Ala Asp Ala Phe Asp Pro Glu Glu Tyr Gln Phe Thr Cys Leu
50 55 60

Thr Tyr Lys Glu Ser Glu Gly Ala Leu Asn Glu His Met Thr Ser Leu
65 70 75 80

Ala Ser Val Leu Lys Val Ser His Ser Val Ala Lys Leu Ile Leu Val
85 90 95

Asn Phe His Trp Gln Val Ser Glu Ile Leu Asp Arg Tyr Lys Ser Asn
100 105 110

Ser Ala Gln Leu Leu Val Glu Ala Arg Val Gln Pro Asn Pro Ser Lys
115 120 125

His Val Pro Thr Ser His Pro Pro His His Cys Ala Val Cys Met Gln
130 135 140

Phe Val Arg Lys Glu Asn Leu Leu Ser Leu Ala Cys Gln His Gln Phe
145 150 155 160

Cys Arg Ser Cys Trp Glu Gln His Cys Ser Val Leu Val Lys Asp Gly
165 170 175

Val Gly Val Gly Val Ser Cys Met Ala Gln Asp Cys Pro Leu Arg Thr
180 185 190

Pro Glu Asp Phe Val Phe Pro Leu Leu Pro Asn Glu Glu Leu Arg Glu
195 200 205

Lys Tyr Arg Arg Tyr Leu Phe Arg Asp Tyr Val Glu Ser His Tyr Gln

```
    210                 215                 220

Leu Gln Leu Cys Pro Gly Ala Asp Cys Pro Met Val Ile Arg Val Gln
225                 230                 235                 240

Glu Pro Arg Ala Arg Arg Val Gln Cys Asn Arg Cys Asn Glu Val Phe
                245                 250                 255

Cys Phe Lys Cys Arg Gln Met Tyr His Ala Pro Thr Asp Cys Ala Thr
            260                 265                 270

Ile Arg Lys Trp Leu Thr Lys Cys Ala Asp Asp Ser Glu Thr Ala Asn
        275                 280                 285

Tyr Ile Ser Ala His Thr Lys Asp Cys Pro Lys Cys Asn Ile Cys Ile
    290                 295                 300

Glu Lys Asn Gly Gly Cys Asn His Met Gln Cys Ser Lys Cys Lys His
305                 310                 315                 320

Asp Phe Cys Trp Met Cys Leu Gly Asp Trp Lys Thr His Gly Ser Glu
                325                 330                 335

Tyr Tyr Glu Cys Ser Arg Tyr Lys Glu Asn Pro Asp Ile Val Asn Gln
            340                 345                 350

Ser Gln Gln Ala Gln Ala Arg Glu Ala Leu Lys Lys Tyr Leu Phe Tyr
        355                 360                 365

Phe Glu Arg Trp Glu Asn His Asn Lys Ser Leu Gln Leu Glu Ala Gln
    370                 375                 380

Thr Tyr Gln Arg Ile His Glu Lys Ile Gln Glu Arg Val Met Asn Asn
385                 390                 395                 400

Leu Gly Thr Trp Ile Asp Trp Gln Tyr Leu Gln Asn Ala Ala Lys Leu
                405                 410                 415

Leu Ala Lys Cys Arg Tyr Thr Leu Gln Tyr Thr Tyr Pro Tyr Ala Tyr
            420                 425                 430

Tyr Met Glu Ser Gly Pro Arg Lys Lys Leu Phe Glu Tyr Gln Gln Ala
        435                 440                 445
```

```
Gln Leu Glu Ala Glu Ile Glu Asn Leu Ser Trp Lys Val Glu Arg Ala
    450                 455                 460

Asp Ser Tyr Asp Arg Gly Asp Leu Glu Asn Gln Met His Ile Ala Glu
465                 470                 475                 480

Gln Arg Arg Arg Thr Leu Leu Lys Asp Phe His Asp Thr
                485                 490


<210> 6289
<211> 106
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1366; "

<220>
<221> source
<223> /note="Gene Symbol: ARIH2; "

<220>
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<223> /note="Gene Name:
      ariadne RBR E3
      ubiquitin
      prt ligase 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000403845"

<400> 6289
Met Ser Val Asp Met Asn Ser Gln Gly Ser Asp Ser Asn Glu Glu Asp
1               5                   10                  15

Tyr Asp Pro Asn Cys Glu Glu Glu Glu Glu Glu Glu Glu Asp Asp Pro
            20                  25                  30

Gly Asp Ile Glu Asp Tyr Tyr Val Gly Val Ala Ser Asp Val Glu Gln
        35                  40                  45

Gln Gly Ala Asp Ala Phe Asp Pro Glu Glu Tyr Gln Phe Thr Cys Leu
    50                  55                  60

Thr Tyr Lys Glu Ser Glu Gly Ala Leu Asn Glu His Met Thr Ser Leu
65                  70                  75                  80
```

```
Ala Ser Val Leu Lys Ala Val Asp Ala His Cys His Gln Leu His Pro
                85                  90                  95


Pro Tyr Gly Thr Gly Ile Ser Phe Ser Cys
            100                 105


<210> 6290
<211> 85
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1366; "

<220>
<221> source
<223> /note="Gene Symbol: ARIH2; "

<220>
<221> source
<223> /note="Gene Name:
      ariadne RBR E3
      ubiquitin
      prt ligase 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000404838"

<400> 6290
Met Ser Val Asp Met Asn Ser Gln Gly Ser Asp Ser Asn Glu Glu Asp
1               5                  10                  15


Tyr Asp Pro Asn Cys Glu Glu Glu Glu Glu Glu Glu Glu Asp Asp Pro
            20                  25                  30


Gly Asp Ile Glu Asp Tyr Tyr Val Gly Val Ala Ser Asp Val Glu Gln
        35                  40                  45


Gln Gly Ala Asp Ala Phe Asp Pro Glu Glu Tyr Gln Phe Thr Cys Leu
    50                  55                  60


Thr Tyr Lys Glu Ser Glu Gly Ala Leu Asn Glu His Met Thr Ser Leu
65                  70                  75                  80


Ala Ser Val Leu Lys
                85
```

<210> 6291
<211> 55
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1366; "

<220>
<221> source
<223> /note="Gene Symbol: ARIH2; "

<220>
<221> source
<223> /note="Gene Name:
ariadne RBR E3
ubiquitin
prt ligase 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406063"

<400> 6291
Met Ser Val Asp Met Asn Ser Gln Gly Ser Asp Ser Asn Glu Glu Asp
1 5 10 15

Tyr Asp Pro Asn Cys Glu Glu Glu Glu Glu Glu Glu Glu Asp Asp Pro
20 25 30

Gly Asp Ile Glu Asp Tyr Tyr Val Gly Val Ala Ser Asp Val Glu Gln
35 40 45

Gln Gly Ala Asp Ala Phe Asp
50 55

<210> 6292
<211> 562
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1367; "

<220>
<221> source
<223> /note="Gene Symbol: ARX; "

<220>

<221> source
<223> /note="Gene Name:
aristaless related homeobox; "

<220>
<221> source
<223> /note="Uniprot ID: Q96QS3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000368332"

<400> 6292

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Met Ser Asn Gln Tyr Gln Glu Glu Gly Cys Ser Glu Arg Pro Glu Cys
1               5                  10                  15

Lys Ser Lys Ser Pro Thr Leu Leu Ser Ser Tyr Cys Ile Asp Ser Ile
            20                  25                  30

Leu Gly Arg Arg Ser Pro Cys Lys Met Arg Leu Leu Gly Ala Ala Gln
        35                  40                  45

Ser Leu Pro Ala Pro Leu Thr Ser Arg Ala Asp Pro Glu Lys Ala Val
    50                  55                  60

Gln Gly Ser Pro Lys Ser Ser Ser Ala Pro Phe Glu Ala Glu Leu His
65                  70                  75                  80

Leu Pro Pro Lys Leu Arg Arg Leu Tyr Gly Pro Gly Gly Gly Arg Leu
                85                  90                  95

Leu Gln Gly Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala
            100                 105                 110

Ala Ala Ala Thr Ala Thr Ala Gly Pro Arg Gly Glu Ala Pro Pro Pro
        115                 120                 125

Pro Pro Pro Thr Ala Arg Pro Gly Glu Arg Pro Asp Gly Ala Gly Ala
    130                 135                 140

Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Trp Asp Thr Leu Lys
145                 150                 155                 160

Ile Ser Gln Ala Pro Gln Val Ser Ile Ser Arg Ser Lys Ser Tyr Arg
                165                 170                 175
```

```
Glu Asn Gly Ala Pro Phe Val Pro Pro Pro Pro Ala Leu Asp Glu Leu
            180                 185                 190

Gly Gly Pro Gly Gly Val Thr His Pro Glu Glu Arg Leu Gly Val Ala
        195                 200                 205

Gly Gly Pro Gly Ser Ala Pro Ala Ala Gly Gly Gly Thr Gly Thr Glu
    210                 215                 220

Asp Asp Glu Glu Glu Leu Leu Glu Asp Glu Glu Asp Glu Asp Glu Glu
225                 230                 235                 240

Glu Glu Leu Leu Glu Asp Asp Glu Glu Glu Leu Leu Glu Asp Asp Ala
                245                 250                 255

Arg Ala Leu Leu Lys Glu Pro Arg Arg Cys Pro Val Ala Ala Thr Gly
            260                 265                 270

Ala Val Ala Ala Ala Ala Ala Ala Ala Val Ala Thr Glu Gly Gly Glu
        275                 280                 285

Leu Ser Pro Lys Glu Glu Leu Leu Leu His Pro Glu Asp Ala Glu Gly
    290                 295                 300

Lys Asp Gly Glu Asp Ser Val Cys Leu Ser Ala Gly Ser Asp Ser Glu
305                 310                 315                 320

Glu Gly Leu Leu Lys Arg Lys Gln Arg Arg Tyr Arg Thr Thr Phe Thr
                325                 330                 335

Ser Tyr Gln Leu Glu Glu Leu Glu Arg Ala Phe Gln Lys Thr His Tyr
            340                 345                 350

Pro Asp Val Phe Thr Arg Glu Glu Leu Ala Met Arg Leu Asp Leu Thr
        355                 360                 365

Glu Ala Arg Val Gln Val Trp Phe Gln Asn Arg Arg Ala Lys Trp Arg
    370                 375                 380

Lys Arg Glu Lys Ala Gly Ala Gln Thr His Pro Pro Gly Leu Pro Phe
385                 390                 395                 400

Pro Gly Pro Leu Ser Ala Thr His Pro Leu Ser Pro Tyr Leu Asp Ala
```

405 410 415

Ser Pro Phe Pro Pro His His Pro Ala Leu Asp Ser Ala Trp Thr Ala
420 425 430

Ala Ala Ala Ala Ala Ala Ala Ala Phe Pro Ser Leu Pro Pro Pro Pro
435 440 445

Gly Ser Ala Ser Leu Pro Pro Ser Gly Ala Pro Leu Gly Leu Ser Thr
450 455 460

Phe Leu Gly Ala Ala Val Phe Arg His Pro Ala Phe Ile Ser Pro Ala
465 470 475 480

Phe Gly Arg Leu Phe Ser Thr Met Ala Pro Leu Thr Ser Ala Ser Thr
485 490 495

Ala Ala Ala Leu Leu Arg Gln Pro Thr Pro Ala Val Glu Gly Ala Val
500 505 510

Ala Ser Gly Ala Leu Ala Asp Pro Ala Thr Ala Ala Ala Asp Arg Arg
515 520 525

Ala Ser Ser Ile Ala Ala Leu Arg Leu Lys Ala Lys Glu His Ala Ala
530 535 540

Gln Leu Thr Gln Leu Asn Ile Leu Pro Gly Thr Ser Thr Gly Lys Glu
545 550 555 560

Val Cys

<210> 6293
<211> 113
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1368; "

<220>
<221> source
<223> /note="Gene Symbol: ARL2-SNX15; "

<220>

<221> source
<223> /note="Gene Name:
ARL2-SNX15 readthrough (NMD candidate); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000476630"

<400> 6293
Met Gly Leu Leu Thr Ile Leu Lys Lys Met Lys Gln Lys Glu Arg Glu
1 5 10 15

Leu Arg Leu Leu Met Leu Gly Leu Asp Asn Ala Gly Lys Thr Thr Ile
20 25 30

Leu Lys Lys Phe Asn Gly Glu Asp Ile Asp Thr Ile Ser Pro Thr Leu
35 40 45

Gly Phe Asn Ile Lys Thr Leu Glu His Arg Gly Phe Lys Leu Asn Ile
50 55 60

Trp Asp Val Gly Gly Gln Lys Ser Leu Arg Ser Tyr Trp Arg Asn Tyr
65 70 75 80

Phe Glu Ser Thr Asp Gly Leu Ile Trp Val Val Asp Ser Ala Asp Arg
85 90 95

Gln Arg Met Gln Asp Cys Gln Arg Glu Leu Gln Ser Leu Leu Val Glu
100 105 110

Glu

<210> 6294
<211> 282
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1369; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC1; "

<220>
<221> source
<223> /note="Gene Name:

armadillo repeat containing 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NVT9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000276569"

<400> 6294
Met Asn Ser Ser Thr Ser Thr Met Ser Glu Glu Pro Asp Ala Leu Ser
1   5   10   15

Val Val Asn Gln Leu Arg Asp Leu Ala Ala Asp Pro Leu Asn Arg Arg
            20   25   30

Ala Ile Val Gln Asp Gln Gly Cys Leu Pro Gly Leu Ile Leu Phe Met
        35   40   45

Asp His Pro Asn Pro Pro Val Val His Ser Ala Leu Leu Ala Leu Arg
    50   55   60

Tyr Leu Ala Glu Cys Arg Ala Asn Arg Glu Lys Met Lys Gly Glu Leu
65   70   75   80

Gly Met Met Leu Ser Leu Gln Asn Val Ile Gln Lys Thr Thr Thr Pro
                85   90   95

Gly Glu Thr Lys Leu Leu Ala Ser Glu Ile Tyr Asp Ile Leu Gln Ser
            100   105   110

Ser Asn Met Ala Asp Gly Asp Ser Phe Asn Glu Met Asn Ser Arg Arg
        115   120   125

Arg Lys Ala Gln Phe Phe Leu Gly Thr Thr Asn Lys Arg Ala Lys Thr
    130   135   140

Val Val Leu His Ile Asp Gly Leu Asp Asp Thr Ser Arg Arg Asn Leu
145   150   155   160

Cys Glu Glu Ala Leu Leu Lys Ile Lys Gly Val Ile Ser Phe Thr Phe
                165   170   175

Gln Met Ala Val Gln Arg Cys Val Val Arg Ile Arg Ser Asp Leu Lys
            180   185   190

```
Ala Glu Ala Leu Ala Ser Ala Ile Ala Ser Thr Lys Val Met Lys Ala
        195                 200                 205

Gln Gln Val Val Lys Ser Glu Ser Gly Glu Glu Met Leu Val Pro Phe
    210                 215                 220

Gln Asp Thr Pro Val Glu Val Glu Gln Asn Thr Glu Leu Pro Asp Tyr
225                 230                 235                 240

Leu Pro Glu Asp Glu Ser Pro Thr Lys Glu Gln Asp Lys Ala Val Ser
                245                 250                 255

Arg Val Gly Ser His Pro Glu Gly Gly Ala Ser Trp Leu Ser Thr Ala
            260                 265                 270

Ala Asn Phe Leu Ser Arg Ser Phe Tyr Trp
        275                 280


<210> 6295
<211> 180
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1369; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC1; "

<220>
<221> source
<223> /note="Gene Name:
      armadillo repeat containing 1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9NVT9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000388572"

<400> 6295
Met Ser Ala Trp Pro Tyr Phe Ile Tyr Gly Pro Ser Gln Pro Ser Ser
1               5                   10                  15
```

```
Arg Pro Leu Arg Phe Ala Cys Ser Ser Ile Leu Gly Arg Met Pro Cys
            20                  25                  30

Lys Gln Arg Lys Asp Glu Arg Arg Thr Gly Tyr Asp Val Glu Leu Thr
        35                  40                  45

Lys Cys Tyr Thr Glu Ser Arg Arg Asn Leu Cys Glu Glu Ala Leu Leu
    50                  55                  60

Lys Ile Lys Gly Val Ile Ser Phe Thr Phe Gln Met Ala Val Gln Arg
65                  70                  75                  80

Cys Val Val Arg Ile Arg Ser Asp Leu Lys Ala Glu Ala Leu Ala Ser
                85                  90                  95

Ala Ile Ala Ser Thr Lys Val Met Lys Ala Gln Gln Val Val Lys Ser
            100                 105                 110

Glu Ser Gly Glu Glu Met Leu Val Pro Phe Gln Asp Thr Pro Val Glu
        115                 120                 125

Val Glu Gln Asn Thr Glu Leu Pro Asp Tyr Leu Pro Glu Asp Glu Ser
    130                 135                 140

Pro Thr Lys Glu Gln Asp Lys Ala Val Ser Arg Val Gly Ser His Pro
145                 150                 155                 160

Glu Gly Gly Ala Ser Trp Leu Ser Thr Ala Ala Asn Phe Leu Ser Arg
                165                 170                 175

Ser Phe Tyr Trp
            180


<210> 6296
<211> 190
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1369; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC1; "
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<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429191"

<400> 6296
Met Asn Ser Ser Thr Ser Thr Met Ser Glu Glu Pro Asp Ala Leu Ser
1 5 10 15

Val Val Asn Gln Leu Arg Asp Leu Ala Ala Asp Pro Leu Asn Arg Arg
20 25 30

Ala Ile Val Gln Asp Gln Gly Cys Leu Pro Gly Leu Ile Leu Phe Met
35 40 45

Asp His Pro Asn Pro Pro Val Val His Ser Ala Leu Leu Ala Leu Arg
50 55 60

Tyr Leu Ala Glu Cys Arg Ala Asn Arg Glu Lys Met Lys Gly Glu Leu
65 70 75 80

Gly Met Met Leu Ser Leu Gln Asn Val Ile Gln Lys Thr Thr Thr Pro
85 90 95

Gly Glu Thr Lys Leu Leu Ala Ser Glu Ile Tyr Asp Ile Leu Gln Ser
100 105 110

Ser Asn Met Ala Asp Gly Asp Ser Phe Asn Glu Met Asn Ser Arg Arg
115 120 125

Arg Lys Ala Gln Phe Phe Leu Gly Thr Thr Asn Lys Arg Ala Lys Thr
130 135 140

Val Val Leu His Ile Asp Gly Leu Asp Asp Thr Ser Arg Arg Asn Leu
145 150 155 160

Cys Glu Glu Ala Leu Leu Lys Ile Lys Gly Val Ile Ser Phe Thr Phe
165 170 175

Gln Met Ala Val Gln Arg Cys Val Val Arg Ile Arg Ser Asp
180 185 190

<210> 6297
<211> 123
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1369; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC1; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429715"

<400> 6297

```
Met Asn Ser Ser Thr Ser Thr Met Ser Glu Glu Pro Asp Ala Leu Ser
1               5                   10                  15


Val Val Asn Gln Leu Arg Asp Leu Ala Ala Asp Pro Leu Asn Arg Arg
            20                  25                  30


Ala Ile Val Gln Asp Gln Gly Cys Leu Pro Gly Leu Ile Leu Phe Met
        35                  40                  45


Asp His Pro Asn Pro Pro Val Val His Ser Ala Leu Leu Ala Leu Arg
    50                  55                  60


Tyr Leu Ala Glu Cys Arg Ala Asn Arg Glu Lys Met Lys Gly Glu Leu
65                  70                  75                  80


Gly Met Met Leu Ser Leu Gln Asn Val Ile Gln Lys Thr Thr Thr Pro
                85                  90                  95


Gly Glu Thr Lys Leu Leu Ala Ser Glu Ile Tyr Asp Ile Leu Gln Ser
            100                 105                 110


Ser Asn Met Ala Asp Gly Asp Ser Phe Asn Glu
        115                 120
```

<210> 6298

<211> 102
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1369; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC1; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000434297"

<400> 6298
Met Asn Ser Ser Thr Ser Thr Met Ser Glu Glu Pro Asp Ala Leu Ser
1 5 10 15

Val Val Asn Gln Leu Arg Asp Leu Ala Ala Asp Pro Leu Asn Arg Arg
20 25 30

Ala Ile Val Gln Asp Gln Gly Cys Leu Pro Gly Leu Ile Leu Phe Met
35 40 45

Asp His Pro Asn Pro Pro Val Val His Ser Ala Leu Leu Ala Leu Arg
50 55 60

Tyr Leu Ala Glu Cys Arg Ala Asn Arg Glu Lys Met Lys Gly Glu Leu
65 70 75 80

Gly Met Met Leu Ser Leu Gln Asn Val Ile Gln Asn Leu Gly Glu Ile
85 90 95

Tyr Val Lys Arg Leu Cys
100

<210> 6299
<211> 81
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1370; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC10; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000305395"

<400> 6299
Met Gly Gly Pro Arg Gly Ala Gly Trp Val Ala Ala Gly Leu Leu Leu
1 5 10 15

Gly Ala Gly Ala Cys Tyr Cys Ile Tyr Arg Leu Thr Arg Gly Arg Arg
20 25 30

Arg Gly Asp Arg Glu Leu Gly Ile Arg Ser Ser Lys Ser Ala Asp Glu
35 40 45

Lys Thr Glu Thr Pro Lys Asn Ser Lys Cys Ser Leu Asp Gly Cys Thr
50 55 60

Ser Phe Leu Lys Gly Glu Ala Lys Cys Tyr Gln His Leu Arg Arg Leu
65 70 75 80

Asn

<210> 6300
<211> 343
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1370; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC10; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 10; "

<220>
<221> source
<223> /note="Uniprot ID: Q8N2F6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000319412"

<400> 6300
Met Gly Gly Pro Arg Gly Ala Gly Trp Val Ala Ala Gly Leu Leu Leu
1   5   10   15

Gly Ala Gly Ala Cys Tyr Cys Ile Tyr Arg Leu Thr Arg Gly Arg Arg
            20   25   30

Arg Gly Asp Arg Glu Leu Gly Ile Arg Ser Ser Lys Ser Ala Gly Ala
        35   40   45

Leu Glu Glu Gly Thr Ser Glu Gly Gln Leu Cys Gly Arg Ser Ala Arg
    50   55   60

Pro Gln Thr Gly Gly Thr Trp Glu Ser Gln Trp Ser Lys Thr Ser Gln
65   70   75   80

Pro Glu Asp Leu Thr Asp Gly Ser Tyr Asp Asp Val Leu Asn Ala Glu
                85   90   95

Gln Leu Gln Lys Leu Leu Tyr Leu Leu Glu Ser Thr Glu Asp Pro Val
            100   105   110

Ile Ile Glu Arg Ala Leu Ile Thr Leu Gly Asn Asn Ala Ala Phe Ser
        115   120   125

Val Asn Gln Ala Ile Ile Arg Glu Leu Gly Gly Ile Pro Ile Val Ala
    130   135   140

Asn Lys Ile Asn His Ser Asn Gln Ser Ile Lys Glu Lys Ala Leu Asn
145   150   155   160

Ala Leu Asn Asn Leu Ser Val Asn Val Glu Asn Gln Ile Lys Ile Lys
                165   170   175

Ile Tyr Ile Ser Gln Val Cys Glu Asp Val Phe Ser Gly Pro Leu Asn
            180   185   190

```
Ser Ala Val Gln Leu Ala Gly Leu Thr Leu Leu Thr Asn Met Thr Val
        195                 200                 205

Thr Asn Asp His Gln His Met Leu His Ser Tyr Ile Thr Asp Leu Phe
    210                 215                 220

Gln Val Leu Leu Thr Gly Asn Gly Asn Thr Lys Val Gln Val Leu Lys
225                 230                 235                 240

Leu Leu Leu Asn Leu Ser Glu Asn Pro Ala Met Thr Glu Gly Leu Leu
                245                 250                 255

Arg Ala Gln Val Asp Ser Ser Phe Leu Ser Leu Tyr Asp Ser His Val
            260                 265                 270

Ala Lys Glu Ile Leu Leu Arg Val Leu Thr Leu Phe Gln Asn Ile Lys
        275                 280                 285

Asn Cys Leu Lys Ile Glu Gly His Leu Ala Val Gln Pro Thr Phe Thr
    290                 295                 300

Glu Gly Ser Leu Phe Phe Leu Leu His Gly Glu Glu Cys Ala Gln Lys
305                 310                 315                 320

Ile Arg Ala Leu Val Asp His His Asp Ala Glu Val Lys Glu Lys Val
                325                 330                 335

Val Thr Ile Ile Pro Lys Ile
            340


<210> 6301
<211> 193
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1370; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC10; "

<220>
<221> source
<223> /note="Gene Name:
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armadillo repeat containing 10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000319798"

<400> 6301

```
Met Gly Gly Pro Arg Gly Ala Gly Trp Val Ala Ala Gly Leu Leu Leu
1               5                   10                  15

Gly Ala Gly Ala Cys Tyr Cys Ile Tyr Arg Leu Thr Arg Gly Arg Arg
            20                  25                  30

Arg Gly Asp Arg Glu Leu Gly Ile Arg Ser Ser Lys Ser Ala Gly Ala
        35                  40                  45

Leu Glu Glu Gly Thr Ser Glu Gly Gln Leu Cys Gly Arg Ser Ala Arg
    50                  55                  60

Pro Gln Thr Gly Gly Thr Trp Glu Ser Gln Trp Ser Lys Thr Ser Gln
65                  70                  75                  80

Pro Glu Asp Leu Thr Asp Gly Ser Tyr Asp Asp Val Leu Asn Ala Glu
                85                  90                  95

Gln Leu Gln Lys Leu Leu Tyr Leu Leu Glu Ser Thr Glu Asp Pro Val
            100                 105                 110

Ile Ile Glu Arg Ala Leu Ile Thr Leu Gly Asn Asn Ala Ala Phe Ser
        115                 120                 125

Val Asn Gln Ala Ile Ile Arg Glu Leu Gly Gly Ile Pro Ile Val Ala
    130                 135                 140

Asn Lys Ile Asn His Ser Asn Gln Ser Ile Lys Glu Lys Ala Leu Asn
145                 150                 155                 160

Ala Leu Asn Asn Leu Ser Val Asn Val Glu Asn Gln Ile Lys Ile Lys
                165                 170                 175

Pro Arg Ile Thr Phe Arg Gly Met Glu Asn Lys Thr Glu Glu Gly Gly
            180                 185                 190

Thr
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<210> 6302
<211> 284
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1370; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC10; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 10; "

<220>
<221> source
<223> /note="Uniprot ID: Q8N2F6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000396654"

<400> 6302
Met Gly Gly Pro Arg Gly Ala Gly Trp Val Ala Ala Gly Leu Leu Leu
1   5   10   15

Gly Ala Gly Ala Cys Tyr Cys Ile Tyr Arg Leu Thr Arg Gly Arg Arg
            20   25   30

Arg Gly Asp Arg Glu Leu Gly Ile Arg Ser Ser Lys Ser Ala Gly Ala
        35   40   45

Leu Glu Glu Gly Thr Ser Glu Gly Gln Leu Cys Gly Arg Ser Ala Arg
    50   55   60

Pro Gln Thr Gly Gly Thr Trp Glu Ser Gln Trp Ser Lys Thr Ser Gln
65   70   75   80

Pro Glu Asp Leu Thr Asp Gly Ser Tyr Asp Asp Val Leu Asn Ala Glu
                85   90   95

Gln Leu Gln Lys Leu Leu Tyr Leu Leu Glu Ser Thr Glu Asp Pro Val
            100   105   110

```
Ile Ile Glu Arg Ala Leu Ile Thr Leu Gly Asn Asn Ala Ala Phe Ser
        115                 120                 125

Val Asn Gln Ala Ile Ile Arg Glu Leu Gly Gly Ile Pro Ile Val Ala
    130                 135                 140

Asn Lys Ile Asn His Ser Asn Gln Ser Ile Lys Glu Lys Ala Leu Asn
145                 150                 155                 160

Ala Leu Asn Asn Leu Ser Val Asn Val Glu Asn Gln Ile Lys Ile Lys
                165                 170                 175

Val Gln Val Leu Lys Leu Leu Leu Asn Leu Ser Glu Asn Pro Ala Met
            180                 185                 190

Thr Glu Gly Leu Leu Arg Ala Gln Val Asp Ser Ser Phe Leu Ser Leu
        195                 200                 205

Tyr Asp Ser His Val Ala Lys Glu Ile Leu Leu Arg Val Leu Thr Leu
    210                 215                 220

Phe Gln Asn Ile Lys Asn Cys Leu Lys Ile Glu Gly His Leu Ala Val
225                 230                 235                 240

Gln Pro Thr Phe Thr Glu Gly Ser Leu Phe Phe Leu Leu His Gly Glu
                245                 250                 255

Glu Cys Ala Gln Lys Ile Arg Ala Leu Val Asp His His Asp Ala Glu
            260                 265                 270

Val Lys Glu Lys Val Val Thr Ile Ile Pro Lys Ile
        275                 280


<210> 6303
<211> 284
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1370; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC10; "
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<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 10; "

<220>
<221> source
<223> /note="Uniprot ID: Q8N2F6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000397969"

<400> 6303
Met Gly Gly Pro Arg Gly Ala Gly Trp Val Ala Ala Gly Leu Leu Leu
1   5   10   15

Gly Ala Gly Ala Cys Tyr Cys Ile Tyr Arg Leu Thr Arg Gly Arg Arg
            20   25   30

Arg Gly Asp Arg Glu Leu Gly Ile Arg Ser Ser Lys Ser Ala Glu Asp
        35   40   45

Leu Thr Asp Gly Ser Tyr Asp Asp Val Leu Asn Ala Glu Gln Leu Gln
    50   55   60

Lys Leu Leu Tyr Leu Leu Glu Ser Thr Glu Asp Pro Val Ile Ile Glu
65   70   75   80

Arg Ala Leu Ile Thr Leu Gly Asn Asn Ala Ala Phe Ser Val Asn Gln
                85   90   95

Ala Ile Ile Arg Glu Leu Gly Gly Ile Pro Ile Val Ala Asn Lys Ile
            100   105   110

Asn His Ser Asn Gln Ser Ile Lys Glu Lys Ala Leu Asn Ala Leu Asn
        115   120   125

Asn Leu Ser Val Asn Val Glu Asn Gln Ile Lys Ile Lys Ile Tyr Ile
    130   135   140

Ser Gln Val Cys Glu Asp Val Phe Ser Gly Pro Leu Asn Ser Ala Val
145   150   155   160

Gln Leu Ala Gly Leu Thr Leu Leu Thr Asn Met Thr Val Thr Asn Asp
                165   170   175

```
His Gln His Met Leu His Ser Tyr Ile Thr Asp Leu Phe Gln Val Leu
            180                 185                 190

Leu Thr Gly Asn Gly Asn Thr Lys Val Asp Ser Ser Phe Leu Ser Leu
        195                 200                 205

Tyr Asp Ser His Val Ala Lys Glu Ile Leu Leu Arg Val Leu Thr Leu
    210                 215                 220

Phe Gln Asn Ile Lys Asn Cys Leu Lys Ile Glu Gly His Leu Ala Val
225                 230                 235                 240

Gln Pro Thr Phe Thr Glu Gly Ser Leu Phe Phe Leu Leu His Gly Glu
                245                 250                 255

Glu Cys Ala Gln Lys Ile Arg Ala Leu Val Asp His His Asp Ala Glu
            260                 265                 270

Val Lys Glu Lys Val Val Thr Ile Ile Pro Lys Ile
        275                 280
```

<210> 6304
<211> 233
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1370; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC10; "

<220>
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<223> /note="Gene Name:
armadillo repeat containing 10; "

<220>
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<223> /note="ENSP ID: ENSP00000398201"

<400> 6304

```
Met Gly Gly Pro Arg Gly Ala Gly Trp Val Ala Ala Gly Leu Leu Leu
1               5                   10                  15

Gly Ala Gly Ala Cys Tyr Cys Ile Tyr Arg Leu Thr Arg Gly Arg Arg
```

20 25 30

Arg Gly Asp Arg Glu Leu Gly Ile Arg Ser Ser Lys Ser Ala Gly Ala
35 40 45

Leu Glu Glu Gly Thr Ser Glu Gly Gln Leu Cys Gly Arg Ser Ala Arg
50 55 60

Pro Gln Thr Gly Gly Thr Trp Glu Ser Gln Trp Ser Lys Thr Ser Gln
65 70 75 80

Pro Glu Asp Leu Thr Asp Gly Ser Tyr Asp Asp Val Leu Asn Ala Glu
85 90 95

Gln Leu Gln Lys Leu Leu Tyr Leu Leu Glu Ser Thr Glu Asp Pro Val
100 105 110

Ile Ile Glu Arg Ala Leu Ile Thr Leu Gly Asn Asn Ala Ala Phe Ser
115 120 125

Val Asn Gln Ile Pro Met Lys Leu Val Thr Gly Ile Thr Phe Ala Ile
130 135 140

Ile Arg Glu Leu Gly Gly Ile Pro Ile Val Ala Asn Lys Ile Asn His
145 150 155 160

Ser Asn Gln Ser Ile Lys Glu Lys Ala Leu Asn Ala Leu Asn Asn Leu
165 170 175

Ser Val Asn Val Glu Asn Gln Ile Lys Ile Lys Val Asp Ser Ser Phe
180 185 190

Leu Ser Leu Tyr Asp Ser His Val Ala Lys Glu Ile Leu Leu Arg Val
195 200 205

Leu Thr Leu Phe Gln Asn Ile Lys Asn Cys Leu Lys Ile Glu Gly His
210 215 220

Leu Ala Val Gln Pro Thr Phe Thr Glu
225 230

<210> 6305
<211> 249

<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 10; "

<220>
<221> source
<223> /note="Uniprot ID: Q8N2F6; "

<220>
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<223> /note="ENSP ID: ENSP00000405612"

<400> 6305

```
Met Gly Gly Pro Arg Gly Ala Gly Trp Val Ala Ala Gly Leu Leu Leu
1               5                   10                  15


Gly Ala Gly Ala Cys Tyr Cys Ile Tyr Arg Leu Thr Arg Gly Arg Arg
            20                  25                  30


Arg Gly Asp Arg Glu Leu Gly Ile Arg Ser Ser Lys Ser Ala Glu Asp
        35                  40                  45


Leu Thr Asp Gly Ser Tyr Asp Asp Val Leu Asn Ala Glu Gln Leu Gln
    50                  55                  60


Lys Leu Leu Tyr Leu Leu Glu Ser Thr Glu Asp Pro Val Ile Ile Glu
65                  70                  75                  80


Arg Ala Leu Ile Thr Leu Gly Asn Asn Ala Ala Phe Ser Val Asn Gln
                85                  90                  95


Ala Ile Ile Arg Glu Leu Gly Gly Ile Pro Ile Val Ala Asn Lys Ile
            100                 105                 110


Asn His Ser Asn Gln Ser Ile Lys Glu Lys Ala Leu Asn Ala Leu Asn
        115                 120                 125
```

```
Asn Leu Ser Val Asn Val Glu Asn Gln Ile Lys Ile Lys Val Gln Val
    130                 135                 140

Leu Lys Leu Leu Leu Asn Leu Ser Glu Asn Pro Ala Met Thr Glu Gly
145                 150                 155                 160

Leu Leu Arg Ala Gln Val Asp Ser Ser Phe Leu Ser Leu Tyr Asp Ser
                165                 170                 175

His Val Ala Lys Glu Ile Leu Leu Arg Val Leu Thr Leu Phe Gln Asn
            180                 185                 190

Ile Lys Asn Cys Leu Lys Ile Glu Gly His Leu Ala Val Gln Pro Thr
        195                 200                 205

Phe Thr Glu Gly Ser Leu Phe Phe Leu Leu His Gly Glu Glu Cys Ala
    210                 215                 220

Gln Lys Ile Arg Ala Leu Val Asp His His Asp Ala Glu Val Lys Glu
225                 230                 235                 240

Lys Val Val Thr Ile Ile Pro Lys Ile
                245
```

<210> 6306
<211> 185
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1370; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC10; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406840"

<400> 6306

```
Arg Glu Leu Gly Gly Ile Pro Ile Val Ala Asn Lys Ile Asn His Ser
1               5                   10                  15
```

```
Asn Gln Ser Ile Lys Glu Lys Ala Leu Asn Ala Leu Asn Asn Leu Ser
            20                  25                  30

Val Asn Val Glu Asn Gln Ile Lys Ile Lys Ile Tyr Ile Ser Gln Val
        35                  40                  45

Cys Glu Asp Val Phe Ser Gly Pro Leu Asn Ser Ala Val Gln Leu Ala
    50                  55                  60

Gly Leu Thr Leu Leu Thr Asn Met Thr Val Thr Asn Asp His Gln His
65                  70                  75                  80

Met Leu His Ser Tyr Ile Thr Asp Leu Phe Gln Val Leu Leu Thr Gly
                85                  90                  95

Asn Gly Asn Thr Lys Val Asp Ser Ser Phe Leu Ser Leu Tyr Asp Ser
            100                 105                 110

His Val Ala Lys Glu Ile Leu Leu Arg Val Leu Thr Leu Phe Gln Asn
        115                 120                 125

Ile Lys Asn Cys Leu Lys Ile Glu Gly His Leu Ala Val Gln Pro Thr
    130                 135                 140

Phe Thr Glu Gly Ser Leu Phe Phe Leu Leu His Gly Glu Glu Cys Ala
145                 150                 155                 160

Gln Lys Ile Arg Ala Leu Val Asp His His Asp Ala Glu Val Lys Glu
                165                 170                 175

Lys Val Val Thr Ile Ile Pro Lys Ile
            180                 185


<210> 6307
<211> 308
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1370; "

<220>
<221> source
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<223> /note="Gene Symbol: ARMC10; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 10; "

<220>
<221> source
<223> /note="Uniprot ID: Q8N2F6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000413619"

<400> 6307

```
Met Gly Gly Pro Arg Gly Ala Gly Trp Val Ala Ala Gly Leu Leu Leu
1               5                   10                  15


Gly Ala Gly Ala Cys Tyr Cys Ile Tyr Arg Leu Thr Arg Gly Arg Arg
            20                  25                  30


Arg Gly Asp Arg Glu Leu Gly Ile Arg Ser Ser Lys Ser Ala Glu Asp
        35                  40                  45


Leu Thr Asp Gly Ser Tyr Asp Asp Val Leu Asn Ala Glu Gln Leu Gln
    50                  55                  60


Lys Leu Leu Tyr Leu Leu Glu Ser Thr Glu Asp Pro Val Ile Ile Glu
65                  70                  75                  80


Arg Ala Leu Ile Thr Leu Gly Asn Asn Ala Ala Phe Ser Val Asn Gln
                85                  90                  95


Ala Ile Ile Arg Glu Leu Gly Gly Ile Pro Ile Val Ala Asn Lys Ile
            100                 105                 110


Asn His Ser Asn Gln Ser Ile Lys Glu Lys Ala Leu Asn Ala Leu Asn
        115                 120                 125


Asn Leu Ser Val Asn Val Glu Asn Gln Ile Lys Ile Lys Ile Tyr Ile
    130                 135                 140


Ser Gln Val Cys Glu Asp Val Phe Ser Gly Pro Leu Asn Ser Ala Val
145                 150                 155                 160


Gln Leu Ala Gly Leu Thr Leu Leu Thr Asn Met Thr Val Thr Asn Asp
```

```
                165                 170                 175

His Gln His Met Leu His Ser Tyr Ile Thr Asp Leu Phe Gln Val Leu
            180                 185                 190

Leu Thr Gly Asn Gly Asn Thr Lys Val Gln Val Leu Lys Leu Leu Leu
        195                 200                 205

Asn Leu Ser Glu Asn Pro Ala Met Thr Glu Gly Leu Leu Arg Ala Gln
    210                 215                 220

Val Asp Ser Ser Phe Leu Ser Leu Tyr Asp Ser His Val Ala Lys Glu
225                 230                 235                 240

Ile Leu Leu Arg Val Leu Thr Leu Phe Gln Asn Ile Lys Asn Cys Leu
                245                 250                 255

Lys Ile Glu Gly His Leu Ala Val Gln Pro Thr Phe Thr Glu Gly Ser
            260                 265                 270

Leu Phe Phe Leu Leu His Gly Glu Glu Cys Ala Gln Lys Ile Arg Ala
        275                 280                 285

Leu Val Asp His His Asp Ala Glu Val Lys Glu Lys Val Val Thr Ile
    290                 295                 300

Ile Pro Lys Ile
305
```

<210> 6308
<211> 225
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1370; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC10; "

<220>
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<223> /note="Gene Name:
armadillo repeat containing 10; "

<220>
<221> source
<223> /note="Uniprot ID: Q8N2F6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000440463"

<400> 6308
Met Gly Gly Pro Arg Gly Ala Gly Trp Val Ala Ala Gly Leu Leu Leu
1   5   10   15

Gly Ala Gly Ala Cys Tyr Cys Ile Tyr Arg Leu Thr Arg Gly Arg Arg
            20   25   30

Arg Gly Asp Arg Glu Leu Gly Ile Arg Ser Ser Lys Ser Ala Glu Asp
        35   40   45

Leu Thr Asp Gly Ser Tyr Asp Asp Val Leu Asn Ala Glu Gln Leu Gln
    50   55   60

Lys Leu Leu Tyr Leu Leu Glu Ser Thr Glu Asp Pro Val Ile Ile Glu
65   70   75   80

Arg Ala Leu Ile Thr Leu Gly Asn Asn Ala Ala Phe Ser Val Asn Gln
                85   90   95

Ala Ile Ile Arg Glu Leu Gly Gly Ile Pro Ile Val Ala Asn Lys Ile
            100   105   110

Asn His Ser Asn Gln Ser Ile Lys Glu Lys Ala Leu Asn Ala Leu Asn
        115   120   125

Asn Leu Ser Val Asn Val Glu Asn Gln Ile Lys Ile Lys Val Asp Ser
    130   135   140

Ser Phe Leu Ser Leu Tyr Asp Ser His Val Ala Lys Glu Ile Leu Leu
145   150   155   160

Arg Val Leu Thr Leu Phe Gln Asn Ile Lys Asn Cys Leu Lys Ile Glu
                165   170   175

Gly His Leu Ala Val Gln Pro Thr Phe Thr Glu Gly Ser Leu Phe Phe
            180   185   190

```
Leu Leu His Gly Glu Glu Cys Ala Gln Lys Ile Arg Ala Leu Val Asp
        195                 200                 205

His His Asp Ala Glu Val Lys Glu Lys Val Val Thr Ile Ile Pro Lys
    210                 215                 220

Ile
225
```

<210> 6309
<211> 153
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1370; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC10; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000487721"

<400> 6309

```
Ala Ile Ile Arg Glu Leu Gly Gly Ile Pro Ile Val Ala Asn Lys Ile
1               5                   10                  15

Asn His Ser Asn Gln Ser Ile Lys Glu Lys Ala Leu Asn Ala Leu Asn
            20                  25                  30

Asn Leu Ser Val Asn Val Glu Asn Gln Ile Lys Ile Lys Val Gln Val
        35                  40                  45

Leu Lys Leu Leu Leu Asn Leu Ser Glu Asn Pro Ala Met Thr Glu Gly
    50                  55                  60

Leu Leu Arg Ala Gln Val Asp Ser Ser Phe Leu Ser Leu Tyr Asp Ser
65                  70                  75                  80

His Val Ala Lys Glu Ile Leu Leu Arg Val Leu Thr Leu Phe Gln Asn
                85                  90                  95
```

```
Ile Lys Asn Cys Leu Lys Ile Glu Gly His Leu Ala Val Gln Pro Thr
            100                 105                 110

Phe Thr Glu Gly Ser Leu Phe Phe Leu Leu His Gly Glu Glu Cys Ala
        115                 120                 125

Gln Lys Ile Arg Ala Leu Val Asp His His Asp Ala Glu Val Lys Glu
    130                 135                 140

Lys Val Val Thr Ile Ile Pro Lys Ile
145                 150
```

<210> 6310
<211> 185
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1370; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC10; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000487771"

<400> 6310

```
Arg Glu Leu Gly Gly Ile Pro Ile Val Ala Asn Lys Ile Asn His Ser
1               5                  10                  15

Asn Gln Ser Ile Lys Glu Lys Ala Leu Asn Ala Leu Asn Asn Leu Ser
            20                  25                  30

Val Asn Val Glu Asn Gln Ile Lys Ile Lys Ile Tyr Ile Ser Gln Val
        35                  40                  45

Cys Glu Asp Val Phe Ser Gly Pro Leu Asn Ser Ala Val Gln Leu Ala
    50                  55                  60
```

```
Gly Leu Thr Leu Leu Thr Asn Met Thr Val Thr Asn Asp His Gln His
65                  70                  75                  80

Met Leu His Ser Tyr Ile Thr Asp Leu Phe Gln Val Leu Leu Thr Gly
                85                  90                  95

Asn Gly Asn Thr Lys Val Asp Ser Ser Phe Leu Ser Leu Tyr Asp Ser
            100                 105                 110

His Val Ala Lys Glu Ile Leu Leu Arg Val Leu Thr Leu Phe Gln Asn
        115                 120                 125

Ile Lys Asn Cys Leu Lys Ile Glu Gly His Leu Ala Val Gln Pro Thr
    130                 135                 140

Phe Thr Glu Gly Ser Leu Phe Phe Leu Leu His Gly Glu Glu Cys Ala
145                 150                 155                 160

Gln Lys Ile Arg Ala Leu Val Asp His His Asp Ala Glu Val Lys Glu
                165                 170                 175

Lys Val Val Thr Ile Ile Pro Lys Ile
            180                 185


<210> 6311
<211> 153
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1370; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC10; "

<220>
<221> source
<223> /note="Gene Name:
      armadillo repeat containing 10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000488082"

<400> 6311
Ala Ile Ile Arg Glu Leu Gly Gly Ile Pro Ile Val Ala Asn Lys Ile
1               5                   10                  15
```

```
Asn His Ser Asn Gln Ser Ile Lys Glu Lys Ala Leu Asn Ala Leu Asn
            20                  25                  30

Asn Leu Ser Val Asn Val Glu Asn Gln Ile Lys Ile Lys Val Gln Val
        35                  40                  45

Leu Lys Leu Leu Leu Asn Leu Ser Glu Asn Pro Ala Met Thr Glu Gly
    50                  55                  60

Leu Leu Arg Ala Gln Val Asp Ser Ser Phe Leu Ser Leu Tyr Asp Ser
65                  70                  75                  80

His Val Ala Lys Glu Ile Leu Leu Arg Val Leu Thr Leu Phe Gln Asn
                85                  90                  95

Ile Lys Asn Cys Leu Lys Ile Glu Gly His Leu Ala Val Gln Pro Thr
            100                 105                 110

Phe Thr Glu Gly Ser Leu Phe Phe Leu Leu His Gly Glu Glu Cys Ala
        115                 120                 125

Gln Lys Ile Arg Ala Leu Val Asp His His Asp Ala Glu Val Lys Glu
    130                 135                 140

Lys Val Val Thr Ile Ile Pro Lys Ile
145                 150
```

<210> 6312
<211> 212
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1370; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC10; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 10; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000488365"

<400> 6312
Ala Ile Ile Arg Glu Leu Gly Gly Ile Pro Ile Val Ala Asn Lys Ile
1 5 10 15

Asn His Ser Asn Gln Ser Ile Lys Glu Lys Ala Leu Asn Ala Leu Asn
20 25 30

Asn Leu Ser Val Asn Val Glu Asn Gln Ile Lys Ile Lys Ile Tyr Ile
35 40 45

Ser Gln Val Cys Glu Asp Val Phe Ser Gly Pro Leu Asn Ser Ala Val
50 55 60

Gln Leu Ala Gly Leu Thr Leu Leu Thr Asn Met Thr Val Thr Asn Asp
65 70 75 80

His Gln His Met Leu His Ser Tyr Ile Thr Asp Leu Phe Gln Val Leu
85 90 95

Leu Thr Gly Asn Gly Asn Thr Lys Val Gln Val Leu Lys Leu Leu Leu
100 105 110

Asn Leu Ser Glu Asn Pro Ala Met Thr Glu Gly Leu Leu Arg Ala Gln
115 120 125

Val Asp Ser Ser Phe Leu Ser Leu Tyr Asp Ser His Val Ala Lys Glu
130 135 140

Ile Leu Leu Arg Val Leu Thr Leu Phe Gln Asn Ile Lys Asn Cys Leu
145 150 155 160

Lys Ile Glu Gly His Leu Ala Val Gln Pro Thr Phe Thr Glu Gly Ser
165 170 175

Leu Phe Phe Leu Leu His Gly Glu Glu Cys Ala Gln Lys Ile Arg Ala
180 185 190

Leu Val Asp His His Asp Ala Glu Val Lys Glu Lys Val Val Thr Ile
195 200 205

Ile Pro Lys Ile

210

<210> 6313
<211> 212
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1370; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC10; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000488536"

<400> 6313
Ala Ile Ile Arg Glu Leu Gly Gly Ile Pro Ile Val Ala Asn Lys Ile
1 5 10 15

Asn His Ser Asn Gln Ser Ile Lys Glu Lys Ala Leu Asn Ala Leu Asn
20 25 30

Asn Leu Ser Val Asn Val Glu Asn Gln Ile Lys Ile Lys Ile Tyr Ile
35 40 45

Ser Gln Val Cys Glu Asp Val Phe Ser Gly Pro Leu Asn Ser Ala Val
50 55 60

Gln Leu Ala Gly Leu Thr Leu Leu Thr Asn Met Thr Val Thr Asn Asp
65 70 75 80

His Gln His Met Leu His Ser Tyr Ile Thr Asp Leu Phe Gln Val Leu
85 90 95

Leu Thr Gly Asn Gly Asn Thr Lys Val Gln Val Leu Lys Leu Leu Leu
100 105 110

Asn Leu Ser Glu Asn Pro Ala Met Thr Glu Gly Leu Leu Arg Ala Gln
115 120 125

```
Val Asp Ser Ser Phe Leu Ser Leu Tyr Asp Ser His Val Ala Lys Glu
    130                 135                 140

Ile Leu Leu Arg Val Leu Thr Leu Phe Gln Asn Ile Lys Asn Cys Leu
145                 150                 155                 160

Lys Ile Glu Gly His Leu Ala Val Gln Pro Thr Phe Thr Glu Gly Ser
                165                 170                 175

Leu Phe Phe Leu Leu His Gly Glu Glu Cys Ala Gln Lys Ile Arg Ala
            180                 185                 190

Leu Val Asp His His Asp Ala Glu Val Lys Glu Lys Val Val Thr Ile
        195                 200                 205

Ile Pro Lys Ile
    210
```

<210> 6314
<211> 91
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1370; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC10; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000488561"

<400> 6314

```
Ala Ile Ile Arg Glu Leu Gly Gly Ile Pro Ile Val Ala Asn Lys Ile
1               5                   10                  15

Asn His Ser Asn Gln Ser Ile Lys Glu Lys Ala Leu Asn Ala Leu Asn
            20                  25                  30

Asn Leu Ser Val Asn Val Glu Asn Gln Ile Lys Ile Lys Val Asp Ser
```

```
        35                  40                  45

Ser Phe Leu Ser Leu Tyr Asp Ser His Val Ala Lys Glu Ile Leu Leu
    50                  55                  60

Arg Val Leu Thr Leu Phe Gln Asn Ile Lys Asn Cys Leu Lys Ile Glu
65                  70                  75                  80

Gly His Leu Ala Val Gln Pro Thr Phe Thr Glu
                85                  90


<210> 6315
<211> 62
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1370; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC10; "

<220>
<221> source
<223> /note="Gene Name:
      armadillo repeat containing 10; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000488674"

<400> 6315
Ala Ile Ile Arg Glu Leu Gly Gly Ile Pro Ile Val Ala Asn Lys Ile
1               5                   10                  15

Asn His Ser Asn Gln Ser Ile Lys Glu Lys Ala Leu Asn Ala Leu Asn
            20                  25                  30

Asn Leu Ser Val Asn Val Glu Asn Gln Ile Lys Ile Lys Pro Arg Ile
        35                  40                  45

Thr Phe Arg Gly Met Glu Asn Lys Thr Glu Glu Gly Gly Thr
    50                  55                  60


<210> 6316
<211> 367
<212> PRT
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<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1371; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC12; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 12; "

<220>
<221> source
<223> /note="Uniprot ID: Q5T9G4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000288065"

<400> 6316

```
Met Gly Lys Ser Ile Pro Gln Tyr Leu Gly Gln Leu Asp Ile Arg Lys
1               5                  10                  15


Ser Val Val Ser Leu Ala Thr Gly Ala Gly Ala Ile Tyr Leu Leu Tyr
            20                  25                  30


Lys Ala Ile Lys Ala Gly Ile Lys Cys Lys Pro Pro Leu Cys Ser Asn
        35                  40                  45


Ser Pro Ile Cys Ile Ala Arg Glu Cys Pro Gly Pro Gly Glu Arg Ala
    50                  55                  60


Leu Pro Gln Glu Ala Pro Ala Pro Glu Ala Ser Ala Val Gly Gly Pro
65                  70                  75                  80


Lys Gly Leu Ala Val Glu Arg Glu Arg His Gly Arg Asp Ser Gly Glu
                85                  90                  95


Leu Arg Arg Leu Leu Asn Ser Leu Glu Cys Lys Gln Asp Glu Tyr Ala
            100                 105                 110


Lys Ser Met Ile Leu His Ser Ile Thr Arg Cys Val Tyr Leu Leu Glu
        115                 120                 125


Ala Glu Ala Ser Ala Cys Thr Thr Asp Asp Ile Val Leu Leu Gly Tyr
```

```
    130                 135                 140

Met Leu Asp Asp Lys Asp Asn Ser Val Lys Thr Gln Ala Leu Asn Thr
145                 150                 155                 160

Leu Lys Ala Phe Ser Gly Ile Arg Lys Phe Arg Leu Lys Ile Gln Glu
                165                 170                 175

His Ser Ile Lys Val Leu Glu Leu Ile Ser Thr Ile Trp Asp Thr Glu
            180                 185                 190

Leu His Ile Ala Gly Leu Arg Leu Leu Asn Asn Leu Pro Leu Pro Asp
        195                 200                 205

Tyr Val His Pro Gln Leu Arg Arg Val Met Pro Ala Leu Met Glu Ile
    210                 215                 220

Leu Gln Ser Asp Tyr Ile Leu Ala Gln Val Gln Ala Val Arg Leu Leu
225                 230                 235                 240

Ser Tyr Leu Ala Gln Lys Asn Asp Leu Leu Tyr Asp Ile Leu Asn Cys
                245                 250                 255

Gln Val His Ser Asn Phe Leu Asn Leu Phe Gln Pro Thr Gln Ser Gly
            260                 265                 270

Ser Leu Leu Tyr Glu Val Leu Val Phe Ala Glu Arg Leu Ser Glu Gly
        275                 280                 285

Arg Asn Ala Pro His Tyr His Val Val Lys Trp His Tyr Asn Glu Gln
    290                 295                 300

Ser Leu His Glu Ser Leu Phe Gly Glu Glu Ser Arg Leu Ala Asp Arg
305                 310                 315                 320

Leu Leu Ala Leu Val Ile His Pro Glu Glu Asp Val Gln Ile Gln Ala
                325                 330                 335

Cys Lys Val Ile Val Ser Leu Gln Tyr Pro Gln Asp Leu Arg Ala Arg
            340                 345                 350

Pro Ser Ser Cys Gln Pro Ser Arg Ser Tyr Phe Lys Asn Thr Glu
        355                 360                 365
```

<210> 6317
<211> 340
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1371; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC12; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 12; "

<220>
<221> source
<223> /note="Uniprot ID: Q5T9G4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000362973"

<400> 6317
Met Gly Lys Ser Ile Pro Gln Tyr Leu Gly Gln Leu Asp Ile Arg Lys
1   5   10   15

Ser Val Val Ser Leu Ala Thr Gly Ala Gly Ala Ile Tyr Leu Leu Tyr
            20   25   30

Lys Ala Ile Lys Ala Gly Ile Lys Cys Lys Pro Pro Leu Cys Ser Asn
        35   40   45

Ser Pro Ile Cys Ile Ala Arg Leu Ala Val Glu Arg Glu Arg His Gly
    50   55   60

Arg Asp Ser Gly Glu Leu Arg Arg Leu Leu Asn Ser Leu Glu Cys Lys
65   70   75   80

Gln Asp Glu Tyr Ala Lys Ser Met Ile Leu His Ser Ile Thr Arg Cys
                85   90   95

Val Tyr Leu Leu Glu Ala Glu Ala Ser Ala Cys Thr Thr Asp Asp Ile
            100   105   110

```
Val Leu Leu Gly Tyr Met Leu Asp Asp Lys Asp Asn Ser Val Lys Thr
        115                 120                 125

Gln Ala Leu Asn Thr Leu Lys Ala Phe Ser Gly Ile Arg Lys Phe Arg
    130                 135                 140

Leu Lys Ile Gln Glu His Ser Ile Lys Val Leu Glu Leu Ile Ser Thr
145                 150                 155                 160

Ile Trp Asp Thr Glu Leu His Ile Ala Gly Leu Arg Leu Leu Asn Asn
                165                 170                 175

Leu Pro Leu Pro Asp Tyr Val His Pro Gln Leu Arg Arg Val Met Pro
            180                 185                 190

Ala Leu Met Glu Ile Leu Gln Ser Asp Tyr Ile Leu Ala Gln Val Gln
        195                 200                 205

Ala Val Arg Leu Leu Ser Tyr Leu Ala Gln Lys Asn Asp Leu Leu Tyr
    210                 215                 220

Asp Ile Leu Asn Cys Gln Val His Ser Asn Phe Leu Asn Leu Phe Gln
225                 230                 235                 240

Pro Thr Gln Ser Gly Ser Leu Leu Tyr Glu Val Leu Val Phe Ala Glu
                245                 250                 255

Arg Leu Ser Glu Gly Arg Asn Ala Pro His Tyr His Val Val Lys Trp
            260                 265                 270

His Tyr Asn Glu Gln Ser Leu His Glu Ser Leu Phe Gly Glu Glu Ser
        275                 280                 285

Arg Leu Ala Asp Arg Leu Leu Ala Leu Val Ile His Pro Glu Glu Asp
    290                 295                 300

Val Gln Ile Gln Ala Cys Lys Val Ile Val Ser Leu Gln Tyr Pro Gln
305                 310                 315                 320

Asp Leu Arg Ala Arg Pro Ser Ser Cys Gln Pro Ser Arg Ser Tyr Phe
                325                 330                 335

Lys Asn Thr Glu
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340

<210> 6318
<211> 330
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ARMC12; "

<220>
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<223> /note="Gene Name:
armadillo repeat containing 12; "

<220>
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<223> /note="Uniprot ID: Q5T9G4; "

<220>
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<223> /note="ENSP ID: ENSP00000362976"

<400> 6318
Met Gly Lys Ser Ile Pro Gln Tyr Leu Gly Gln Leu Asp Ile Arg Lys
1 5 10 15

Ser Val Val Ser Leu Ala Thr Gly Ala Gly Ala Ile Tyr Leu Leu Tyr
20 25 30

Lys Ala Ile Lys Ala Gly Ile Lys Cys Lys Pro Pro Leu Cys Ser Asn
35 40 45

Ser Pro Ile Cys Ile Ala Arg Leu Ala Val Glu Arg Glu Arg His Gly
50 55 60

Arg Asp Ser Gly Glu Leu Arg Arg Leu Leu Asn Ser Leu Glu Cys Lys
65 70 75 80

Gln Asp Glu Tyr Ala Lys Ser Met Ile Leu His Ser Ile Thr Arg Cys
85 90 95

Val Tyr Leu Leu Glu Ala Glu Ala Ser Ala Cys Thr Thr Asp Asp Ile
100 105 110

```
Val Leu Leu Gly Tyr Met Leu Asp Asp Lys Asp Asn Ser Val Lys Thr
        115                 120                 125

Gln Ala Leu Asn Thr Leu Lys Ala Phe Ser Gly Ile Arg Lys Phe Arg
    130                 135                 140

Leu Lys Ile Gln Glu His Ser Ile Lys Val Leu Glu Leu Ile Ser Thr
145                 150                 155                 160

Ile Trp Asp Thr Glu Leu His Ile Ala Gly Leu Arg Leu Leu Asn Asn
                165                 170                 175

Leu Pro Leu Pro Asp Tyr Val His Pro Gln Leu Arg Arg Val Met Pro
            180                 185                 190

Ala Leu Met Glu Ile Leu Gln Ser Asp Tyr Ile Leu Ala Gln Val Gln
        195                 200                 205

Ala Val Arg Leu Leu Ser Tyr Leu Ala Gln Lys Asn Asp Leu Leu Tyr
    210                 215                 220

Asp Ile Leu Asn Cys Gln Pro Thr Gln Ser Gly Ser Leu Leu Tyr Glu
225                 230                 235                 240

Val Leu Val Phe Ala Glu Arg Leu Ser Glu Gly Arg Asn Ala Pro His
                245                 250                 255

Tyr His Val Val Lys Trp His Tyr Asn Glu Gln Ser Leu His Glu Ser
            260                 265                 270

Leu Phe Gly Glu Glu Ser Arg Leu Ala Asp Arg Leu Leu Ala Leu Val
        275                 280                 285

Ile His Pro Glu Glu Asp Val Gln Ile Gln Ala Cys Lys Val Ile Val
    290                 295                 300

Ser Leu Gln Tyr Pro Gln Asp Leu Arg Ala Arg Pro Ser Ser Cys Gln
305                 310                 315                 320

Pro Ser Arg Ser Tyr Phe Lys Asn Thr Glu
                325                 330
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<210> 6319
<211> 55
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
armadillo repeat containing 12; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000418825"

<400> 6319
Met Gly Lys Ser Ile Pro Gln Tyr Leu Gly Gln Leu Asp Ile Arg Lys
1 5 10 15

Ser Val Val Ser Leu Ala Thr Gly Ala Gly Ala Ile Tyr Leu Leu Tyr
20 25 30

Lys Ala Ile Lys Ala Gly Ile Lys Cys Lys Pro Pro Leu Cys Ser Asn
35 40 45

Ser Pro Ile Cys Ile Ala Pro
50 55

<210> 6320
<211> 222
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1372; "

<220>
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<223> /note="Gene Symbol: ARMC2; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000237512"

<400> 6320
Met Leu Ser Pro Asn Asp Lys Met Leu Gly Lys Leu Asp Pro Phe Tyr
1   5   10   15

Gln Pro Ser Val Ser Lys Gln Lys Thr Ser Ala Glu Ile Ile Ser Glu
            20   25   30

Ala Arg Asn Ala Leu Arg Thr Val Arg Thr Gln Arg Pro Phe Thr Pro
        35   40   45

Gln Glu Ala Gln Arg Lys Leu Phe Gly Pro Ala Ser Ser Arg Thr Ser
    50   55   60

Glu Asn Arg Pro Pro Ser Ser Phe Ser Leu His Ala Ser Ser Phe Glu
65   70   75   80

Ser Ser Asp Ser Arg Pro Ile Ser Gly Thr Arg Leu Ser Pro Leu Glu
                85   90   95

Leu Lys Pro Lys Val Pro Ala Ser Pro Thr Arg Glu Glu Asp Ser Cys
            100   105   110

Phe Ser Phe Pro Lys Pro Pro Val Asp Pro Ala Lys Ile Arg Arg Val
        115   120   125

Ser Asn Ala Arg Ala Arg Leu Phe Arg Ala Ala Ser Gln Arg Ala Leu
    130   135   140

Leu Pro Asp Arg Ser Leu Pro Pro Ser Asp Ser Lys Lys Thr Val Glu
145   150   155   160

Ser Lys Glu Thr Val Met Met Gly Asp Ser Met Val Lys Ile Asn Gly
                165   170   175

Ile Tyr Leu Thr Lys Ser Asn Ala Ile Cys His Leu Lys Ser His Pro
            180   185   190

Leu Gln Leu Thr Asp Asp Gly Gly Phe Ser Glu Ile Lys Glu Gln Glu
        195   200   205

```
Met Phe Lys Gly Thr Thr Ser Leu Pro Ser His Leu Lys Asn
    210                 215                 220


<210> 6321
<211> 702
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ARMC2; "

<220>
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<223> /note="Gene Name:
      armadillo repeat containing 2; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8NEN0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000357968"

<400> 6321
Met Met Gly Asp Ser Met Val Lys Ile Asn Gly Ile Tyr Leu Thr Lys
1               5                   10                  15


Ser Asn Ala Ile Cys His Leu Lys Ser His Pro Leu Gln Leu Thr Asp
            20                  25                  30


Asp Gly Gly Phe Ser Glu Ile Lys Glu Gln Glu Met Phe Lys Gly Thr
        35                  40                  45


Thr Ser Leu Pro Ser His Leu Lys Asn Gly Gly Asp Gln Gly Lys Arg
    50                  55                  60


His Ala Arg Ala Ser Ser Cys Pro Ser Ser Ser Asp Leu Ser Arg Leu
65                  70                  75                  80


Gln Thr Lys Ala Val Pro Lys Ala Asp Leu Gln Glu Glu Asp Ala Glu
                85                  90                  95


Ile Glu Val Asp Glu Val Phe Trp Asn Thr Arg Ile Val Pro Ile Leu
            100                 105                 110
```

```
Arg Glu Leu Glu Lys Glu Glu Asn Ile Glu Thr Val Cys Ala Ala Cys
        115                 120                 125

Thr Gln Leu His His Ala Leu Glu Glu Gly Asn Met Leu Gly Asn Lys
    130                 135                 140

Phe Lys Gly Arg Ser Ile Leu Leu Lys Thr Leu Cys Lys Leu Val Asp
145                 150                 155                 160

Val Gly Ser Asp Ser Leu Ser Leu Lys Leu Ala Lys Ile Ile Leu Ala
                165                 170                 175

Leu Lys Val Ser Arg Lys Asn Leu Leu Asn Val Cys Lys Leu Ile Phe
            180                 185                 190

Lys Ile Ser Arg Asn Glu Lys Asn Asp Ser Leu Ile Gln Asn Asp Ser
        195                 200                 205

Ile Leu Glu Ser Leu Leu Glu Val Leu Arg Ser Glu Asp Leu Gln Thr
    210                 215                 220

Asn Met Glu Ala Phe Leu Tyr Cys Met Gly Ser Ile Lys Phe Ile Ser
225                 230                 235                 240

Gly Asn Leu Gly Phe Leu Asn Glu Met Ile Ser Lys Gly Ala Val Glu
                245                 250                 255

Ile Leu Ile Asn Leu Ile Lys Gln Ile Asn Glu Asn Ile Lys Lys Cys
            260                 265                 270

Gly Thr Phe Leu Pro Asn Ser Gly His Leu Leu Val Gln Val Thr Ala
        275                 280                 285

Thr Leu Arg Asn Leu Val Asp Ser Ser Leu Val Arg Ser Lys Phe Leu
    290                 295                 300

Asn Ile Ser Ala Leu Pro Gln Leu Cys Thr Ala Met Glu Gln Tyr Lys
305                 310                 315                 320

Gly Asp Lys Asp Val Cys Thr Asn Ile Ala Arg Ile Phe Ser Lys Leu
                325                 330                 335
```

```
Thr Ser Tyr Arg Asp Cys Cys Thr Ala Leu Ala Ser Tyr Ser Arg Cys
            340                 345                 350

Tyr Ala Leu Phe Leu Asn Leu Ile Asn Lys Tyr Gln Lys Lys Gln Asp
        355                 360                 365

Leu Val Val Arg Val Val Phe Ile Leu Gly Asn Leu Thr Ala Lys Asn
    370                 375                 380

Asn Gln Ala Arg Glu Gln Phe Ser Lys Glu Lys Gly Ser Ile Gln Thr
385                 390                 395                 400

Leu Leu Ser Leu Phe Gln Thr Phe His Gln Leu Asp Leu His Ser Gln
                405                 410                 415

Lys Pro Val Gly Gln Arg Gly Glu Gln His Arg Ala Gln Arg Pro Pro
            420                 425                 430

Ser Glu Ala Glu Asp Val Leu Ile Lys Leu Thr Arg Val Leu Ala Asn
        435                 440                 445

Ile Ala Ile His Pro Gly Val Gly Pro Val Leu Ala Ala Asn Pro Gly
    450                 455                 460

Ile Val Gly Leu Leu Leu Thr Thr Leu Glu Tyr Lys Ser Leu Asp Asp
465                 470                 475                 480

Cys Glu Glu Leu Val Ile Asn Ala Thr Ala Thr Ile Asn Asn Leu Ser
                485                 490                 495

Tyr Tyr Gln Val Lys Asn Ser Ile Ile Gln Asp Lys Lys Leu Tyr Ile
            500                 505                 510

Ala Glu Leu Leu Leu Lys Leu Leu Val Ser Asn Asn Met Asp Gly Ile
        515                 520                 525

Leu Glu Ala Val Arg Val Phe Gly Asn Leu Ser Gln Asp His Asp Val
    530                 535                 540

Cys Asp Phe Ile Val Gln Asn Asn Val His Arg Phe Met Met Ala Leu
545                 550                 555                 560
```

```
Leu Asp Ala Gln His Gln Asp Ile Cys Phe Ser Ala Cys Gly Val Leu
                565                 570                 575

Leu Asn Leu Thr Val Asp Lys Asp Lys Arg Val Ile Leu Lys Glu Gly
            580                 585                 590

Gly Gly Ile Lys Lys Leu Val Asp Cys Leu Arg Asp Leu Gly Pro Thr
        595                 600                 605

Asp Trp Gln Leu Ala Cys Leu Val Cys Lys Thr Leu Trp Asn Phe Ser
    610                 615                 620

Glu Asn Ile Thr Asn Ala Ser Ser Cys Phe Gly Asn Glu Asp Thr Asn
625                 630                 635                 640

Thr Leu Leu Leu Leu Leu Ser Ser Phe Leu Asp Glu Glu Leu Ala Leu
                645                 650                 655

Asp Gly Ser Phe Asp Pro Asp Leu Lys Asn Tyr His Lys Leu His Trp
            660                 665                 670

Glu Thr Glu Phe Lys Pro Val Ala Gln Gln Leu Leu Asn Arg Ile Gln
        675                 680                 685

Arg His His Thr Phe Leu Glu Pro Leu Pro Ile Pro Ser Phe
    690                 695                 700


<210> 6322
<211> 867
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1372; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC2; "

<220>
<221> source
<223> /note="Gene Name:
      armadillo repeat containing 2; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8NEN0; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000376417"

<400> 6322
Met Leu Ser Pro Asn Asp Lys Met Leu Gly Lys Leu Asp Pro Phe Tyr
1   5   10   15

Gln Pro Ser Val Ser Lys Gln Lys Thr Ser Ala Glu Ile Ile Ser Glu
            20   25   30

Ala Arg Asn Ala Leu Arg Thr Val Arg Thr Gln Arg Pro Phe Thr Pro
        35   40   45

Gln Glu Ala Gln Arg Lys Leu Phe Gly Pro Ala Ser Ser Arg Thr Ser
    50   55   60

Glu Asn Arg Pro Pro Ser Ser Phe Ser Leu His Ala Ser Ser Phe Glu
65   70   75   80

Ser Ser Asp Ser Arg Pro Ile Ser Gly Thr Arg Leu Ser Pro Leu Glu
                85   90   95

Leu Lys Pro Lys Val Pro Ala Ser Pro Thr Arg Glu Glu Asp Ser Cys
            100   105   110

Phe Ser Phe Pro Lys Pro Pro Val Asp Pro Ala Lys Ile Arg Arg Val
        115   120   125

Ser Asn Ala Arg Ala Arg Leu Phe Arg Ala Ala Ser Gln Arg Ala Leu
    130   135   140

Leu Pro Asp Arg Ser Leu Pro Pro Ser Asp Ser Lys Lys Thr Val Glu
145   150   155   160

Ser Lys Glu Thr Val Met Met Gly Asp Ser Met Val Lys Ile Asn Gly
                165   170   175

Ile Tyr Leu Thr Lys Ser Asn Ala Ile Cys His Leu Lys Ser His Pro
            180   185   190

Leu Gln Leu Thr Asp Asp Gly Gly Phe Ser Glu Ile Lys Glu Gln Glu
        195   200   205

```
Met Phe Lys Gly Thr Thr Ser Leu Pro Ser His Leu Lys Asn Gly Gly
    210                 215                 220

Asp Gln Gly Lys Arg His Ala Arg Ala Ser Ser Cys Pro Ser Ser Ser
225                 230                 235                 240

Asp Leu Ser Arg Leu Gln Thr Lys Ala Val Pro Lys Ala Asp Leu Gln
                245                 250                 255

Glu Glu Asp Ala Glu Ile Glu Val Asp Glu Val Phe Trp Asn Thr Arg
            260                 265                 270

Ile Val Pro Ile Leu Arg Glu Leu Glu Lys Glu Glu Asn Ile Glu Thr
        275                 280                 285

Val Cys Ala Ala Cys Thr Gln Leu His His Ala Leu Glu Glu Gly Asn
    290                 295                 300

Met Leu Gly Asn Lys Phe Lys Gly Arg Ser Ile Leu Leu Lys Thr Leu
305                 310                 315                 320

Cys Lys Leu Val Asp Val Gly Ser Asp Ser Leu Ser Leu Lys Leu Ala
                325                 330                 335

Lys Ile Ile Leu Ala Leu Lys Val Ser Arg Lys Asn Leu Leu Asn Val
            340                 345                 350

Cys Lys Leu Ile Phe Lys Ile Ser Arg Asn Glu Lys Asn Asp Ser Leu
        355                 360                 365

Ile Gln Asn Asp Ser Ile Leu Glu Ser Leu Leu Glu Val Leu Arg Ser
    370                 375                 380

Glu Asp Leu Gln Thr Asn Met Glu Ala Phe Leu Tyr Cys Met Gly Ser
385                 390                 395                 400

Ile Lys Phe Ile Ser Gly Asn Leu Gly Phe Leu Asn Glu Met Ile Ser
                405                 410                 415

Lys Gly Ala Val Glu Ile Leu Ile Asn Leu Ile Lys Gln Ile Asn Glu
            420                 425                 430
```

```
Asn Ile Lys Lys Cys Gly Thr Phe Leu Pro Asn Ser Gly His Leu Leu
        435                 440                 445

Val Gln Val Thr Ala Thr Leu Arg Asn Leu Val Asp Ser Ser Leu Val
    450                 455                 460

Arg Ser Lys Phe Leu Asn Ile Ser Ala Leu Pro Gln Leu Cys Thr Ala
465                 470                 475                 480

Met Glu Gln Tyr Lys Gly Asp Lys Asp Val Cys Thr Asn Ile Ala Arg
                485                 490                 495

Ile Phe Ser Lys Leu Thr Ser Tyr Arg Asp Cys Cys Thr Ala Leu Ala
            500                 505                 510

Ser Tyr Ser Arg Cys Tyr Ala Leu Phe Leu Asn Leu Ile Asn Lys Tyr
        515                 520                 525

Gln Lys Lys Gln Asp Leu Val Val Arg Val Val Phe Ile Leu Gly Asn
    530                 535                 540

Leu Thr Ala Lys Asn Asn Gln Ala Arg Glu Gln Phe Ser Lys Glu Lys
545                 550                 555                 560

Gly Ser Ile Gln Thr Leu Leu Ser Leu Phe Gln Thr Phe His Gln Leu
                565                 570                 575

Asp Leu His Ser Gln Lys Pro Val Gly Gln Arg Gly Glu Gln His Arg
            580                 585                 590

Ala Gln Arg Pro Pro Ser Glu Ala Glu Asp Val Leu Ile Lys Leu Thr
        595                 600                 605

Arg Val Leu Ala Asn Ile Ala Ile His Pro Gly Val Gly Pro Val Leu
    610                 615                 620

Ala Ala Asn Pro Gly Ile Val Gly Leu Leu Leu Thr Thr Leu Glu Tyr
625                 630                 635                 640

Lys Ser Leu Asp Asp Cys Glu Glu Leu Val Ile Asn Ala Thr Ala Thr
                645                 650                 655

Ile Asn Asn Leu Ser Tyr Tyr Gln Val Lys Asn Ser Ile Ile Gln Asp
```

660 665 670

Lys Lys Leu Tyr Ile Ala Glu Leu Leu Leu Lys Leu Leu Val Ser Asn
675 680 685

Asn Met Asp Gly Ile Leu Glu Ala Val Arg Val Phe Gly Asn Leu Ser
690 695 700

Gln Asp His Asp Val Cys Asp Phe Ile Val Gln Asn Asn Val His Arg
705 710 715 720

Phe Met Met Ala Leu Leu Asp Ala Gln His Gln Asp Ile Cys Phe Ser
725 730 735

Ala Cys Gly Val Leu Leu Asn Leu Thr Val Asp Lys Asp Lys Arg Val
740 745 750

Ile Leu Lys Glu Gly Gly Gly Ile Lys Lys Leu Val Asp Cys Leu Arg
755 760 765

Asp Leu Gly Pro Thr Asp Trp Gln Leu Ala Cys Leu Val Cys Lys Thr
770 775 780

Leu Trp Asn Phe Ser Glu Asn Ile Thr Asn Ala Ser Ser Cys Phe Gly
785 790 795 800

Asn Glu Asp Thr Asn Thr Leu Leu Leu Leu Leu Ser Ser Phe Leu Asp
805 810 815

Glu Glu Leu Ala Leu Asp Gly Ser Phe Asp Pro Asp Leu Lys Asn Tyr
820 825 830

His Lys Leu His Trp Glu Thr Glu Phe Lys Pro Val Ala Gln Gln Leu
835 840 845

Leu Asn Arg Ile Gln Arg His His Thr Phe Leu Glu Pro Leu Pro Ile
850 855 860

Pro Ser Phe
865

<210> 6323
<211> 85

<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1372; "

<220>
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<223> /note="Gene Symbol: ARMC2; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 2; "

<220>
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<223> /note="ENSP ID: ENSP00000393191"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6323
Xaa Leu Pro Pro Ser Asp Ser Lys Lys Thr Val Glu Ser Lys Glu Thr
1 5 10 15

Val Met Met Gly Asp Ser Met Val Lys Ile Asn Gly Ile Tyr Leu Thr
20 25 30

Lys Ser Asn Ala Ile Cys His Leu Lys Ser His Pro Leu Gln Leu Thr
35 40 45

Asp Asp Gly Gly Phe Ser Glu Ile Lys Glu Gln Glu Met Phe Lys Gly
50 55 60

Thr Thr Ser Leu Pro Ser His Leu Lys Asn Gly Gly Pro His Cys Arg
65 70 75 80

Leu Trp Asn Asp Asp
85

<210> 6324
<211> 872
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1373; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC3; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 3; "

<220>
<221> source
<223> /note="Uniprot ID: Q5W041; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000298032"

<400> 6324

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Met Gly Lys Lys Ile Lys Lys Glu Val Glu Pro Pro Pro Lys Asp Val
1               5                  10                  15

Phe Asp Pro Leu Met Ile Glu Ser Lys Lys Ala Ala Thr Val Val Leu
            20                  25                  30

Met Leu Asn Ser Pro Glu Glu Glu Ile Leu Ala Lys Ala Cys Glu Ala
        35                  40                  45

Ile Tyr Lys Phe Ala Leu Lys Gly Glu Glu Asn Lys Thr Thr Leu Leu
    50                  55                  60

Glu Leu Gly Ala Val Glu Pro Leu Thr Lys Leu Leu Thr His Glu Asp
65                  70                  75                  80

Lys Ile Val Arg Arg Asn Ala Thr Met Ile Phe Gly Ile Leu Ala Ser
                85                  90                  95

Asn Asn Asp Val Lys Lys Leu Leu Arg Glu Leu Asp Val Met Asn Ser
            100                 105                 110

Val Ile Ala Gln Leu Ala Pro Glu Glu Glu Val Val Ile His Glu Phe
        115                 120                 125

Ala Ser Leu Cys Leu Ala Asn Met Ser Ala Glu Tyr Thr Ser Lys Val
    130                 135                 140
```

```
Gln Ile Phe Glu His Gly Gly Leu Glu Pro Leu Ile Arg Leu Leu Ser
145                 150                 155                 160

Ser Pro Asp Pro Asp Val Lys Lys Asn Ser Met Glu Cys Ile Tyr Asn
                165                 170                 175

Leu Val Gln Asp Phe Gln Cys Arg Ala Lys Leu Gln Glu Leu Asn Ala
            180                 185                 190

Ile Pro Pro Ile Leu Asp Leu Leu Lys Ser Glu Tyr Pro Val Ile Gln
        195                 200                 205

Leu Leu Ala Leu Lys Thr Leu Gly Val Ile Ala Asn Asp Lys Glu Ser
    210                 215                 220

Arg Thr Met Leu Arg Asp Asn Gln Gly Leu Asp His Leu Ile Lys Ile
225                 230                 235                 240

Leu Glu Thr Lys Glu Leu Asn Asp Leu His Ile Glu Ala Leu Ala Val
                245                 250                 255

Ile Ala Asn Cys Leu Glu Asp Met Asp Thr Met Val Gln Ile Gln Gln
            260                 265                 270

Thr Gly Gly Leu Lys Lys Leu Leu Ser Phe Ala Glu Asn Ser Thr Ile
        275                 280                 285

Pro Asp Ile Gln Lys Asn Ala Ala Lys Ala Ile Thr Lys Ala Ala Tyr
    290                 295                 300

Asp Pro Glu Asn Arg Lys Leu Phe His Glu Gln Glu Val Glu Lys Cys
305                 310                 315                 320

Leu Val Ala Leu Leu Gly Ser Glu Asn Asp Gly Thr Lys Ile Ala Ala
                325                 330                 335

Ser Gln Ala Ile Ser Ala Met Cys Glu Asn Ser Gly Ser Lys Asp Phe
            340                 345                 350

Phe Asn Asn Gln Gly Ile Pro Gln Leu Ile Gln Leu Leu Lys Ser Asp
        355                 360                 365

Asn Glu Glu Val Arg Glu Ala Ala Ala Leu Ala Leu Ala Asn Leu Thr
```

```
    370                 375                 380

Thr Cys Asn Pro Ala Asn Ala Asn Ala Ala Ala Glu Ala Asp Gly Ile
385                 390                 395                 400

Asp Pro Leu Ile Asn Leu Leu Ser Ser Lys Arg Asp Gly Ala Ile Ala
                405                 410                 415

Asn Ala Ala Thr Val Leu Thr Asn Met Ala Met Gln Glu Pro Leu Arg
            420                 425                 430

Leu Asn Ile Gln Asn His Asp Ile Met His Ala Ile Ile Ser Pro Leu
        435                 440                 445

Arg Ser Ala Asn Thr Val Val Gln Ser Lys Ala Ala Leu Ala Val Thr
    450                 455                 460

Ala Thr Ala Cys Asp Val Glu Ala Arg Thr Glu Leu Arg Asn Ser Gly
465                 470                 475                 480

Gly Leu Glu Pro Leu Val Glu Leu Leu Arg Ser Lys Asn Asp Glu Val
                485                 490                 495

Arg Lys His Ala Ser Trp Ala Val Met Val Cys Ala Gly Asp Glu Leu
            500                 505                 510

Thr Ala Asn Glu Leu Cys Arg Leu Gly Ala Leu Asp Ile Leu Glu Glu
        515                 520                 525

Val Asn Val Ser Gly Thr Arg Lys Asn Lys Phe Ser Glu Ala Ala Tyr
    530                 535                 540

Asn Lys Leu Leu Asn Asn Asn Leu Ser Leu Lys Tyr Ser Gln Thr Gly
545                 550                 555                 560

Tyr Leu Ser Ser Ser Asn Ile Ile Asn Asp Gly Phe Tyr Asp Tyr Gly
                565                 570                 575

Arg Ile Asn Pro Gly Thr Lys Leu Leu Pro Leu Lys Glu Leu Cys Leu
            580                 585                 590

Gln Glu Pro Ser Asp Leu Arg Ala Val Leu Leu Ile Asn Ser Lys Ser
        595                 600                 605
```

Tyr Val Ser Pro Pro Ser Ser Met Glu Asp Lys Ser Asp Val Gly Tyr
610 615 620

Gly Arg Ser Ile Ser Ser Ser Ser Ser Leu Arg Arg Ser Ser Lys Glu
625 630 635 640

Lys Asn Lys Lys Asn Ser Tyr His Phe Ser Ala Gly Phe Gly Ser Pro
645 650 655

Ile Glu Asp Lys Ser Glu Pro Ala Ser Gly Arg Asn Thr Val Leu Ser
660 665 670

Lys Ser Ala Thr Lys Glu Lys Gly Trp Arg Lys Ser Lys Gly Lys Lys
675 680 685

Glu Glu Glu Lys Val Lys Glu Glu Glu Glu Val Met Val Val Pro Lys
690 695 700

Phe Val Gly Glu Gly Ser Ser Asp Lys Glu Trp Cys Pro Pro Ser Asp
705 710 715 720

Pro Asp Phe Ser Met Tyr Val Tyr Glu Val Thr Lys Ser Ile Leu Pro
725 730 735

Ile Thr Asn Ile Lys Glu Gln Ile Glu Asp Leu Ala Lys Tyr Val Ala
740 745 750

Glu Lys Met Gly Gly Lys Ile Pro Lys Glu Lys Leu Pro Asp Phe Ser
755 760 765

Trp Glu Leu His Ile Ser Glu Leu Lys Phe Gln Leu Lys Ser Asn Val
770 775 780

Ile Pro Ile Gly His Val Lys Lys Gly Ile Phe Tyr His Arg Ala Leu
785 790 795 800

Leu Phe Lys Ala Leu Ala Asp Arg Ile Gly Ile Gly Cys Ser Leu Val
805 810 815

Arg Gly Glu Tyr Gly Arg Ala Trp Asn Glu Val Met Leu Gln Asn Asp
820 825 830

Ser Arg Lys Gly Val Ile Gly Gly Leu Pro Ala Pro Glu Met Tyr Val
        835   840   845

Ile Asp Leu Met Phe His Pro Gly Gly Leu Met Lys Leu Arg Ser Arg
    850   855   860

Glu Ala Asp Leu Tyr Arg Phe Ile
865   870

<210> 6325
<211> 609
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1373; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC3; "

<220>
<221> source
<223> /note="Gene Name:
      armadillo repeat containing 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000365711"

<400> 6325
Met Asp Thr Met Val Gln Ile Gln Gln Thr Gly Gly Leu Lys Lys Leu
1   5   10   15

Leu Ser Phe Ala Glu Asn Ser Thr Ile Pro Asp Ile Gln Lys Asn Ala
            20   25   30

Ala Lys Ala Ile Thr Lys Ala Ala Tyr Asp Pro Glu Asn Arg Lys Leu
        35   40   45

Phe His Glu Gln Glu Val Glu Lys Cys Leu Val Ala Leu Leu Gly Ser
    50   55   60

Glu Asn Asp Gly Thr Lys Ile Ala Ala Ser Gln Ala Ile Ser Ala Met
65   70   75   80

Cys Glu Asn Ser Gly Ser Lys Asp Phe Phe Asn Asn Gln Gly Ile Pro

```
                85                  90                  95

Gln Leu Ile Gln Leu Leu Lys Ser Asp Asn Glu Glu Val Arg Glu Ala
            100                 105                 110

Ala Ala Leu Ala Leu Ala Asn Leu Thr Thr Cys Asn Pro Ala Asn Ala
        115                 120                 125

Asn Ala Ala Ala Glu Ala Asp Gly Ile Asp Pro Leu Ile Asn Leu Leu
    130                 135                 140

Ser Ser Lys Arg Asp Gly Ala Ile Ala Asn Ala Ala Thr Val Leu Thr
145                 150                 155                 160

Asn Met Ala Met Gln Glu Pro Leu Arg Leu Asn Ile Gln Asn His Asp
                165                 170                 175

Ile Met His Ala Ile Ile Ser Pro Leu Arg Ser Ala Asn Thr Val Val
            180                 185                 190

Gln Ser Lys Ala Ala Leu Ala Val Thr Ala Thr Ala Cys Asp Val Glu
        195                 200                 205

Ala Arg Thr Glu Leu Arg Asn Ser Gly Gly Leu Glu Pro Leu Val Glu
    210                 215                 220

Leu Leu Arg Ser Lys Asn Asp Glu Val Arg Lys His Ala Ser Trp Ala
225                 230                 235                 240

Val Met Val Cys Ala Gly Asp Glu Leu Thr Ala Asn Glu Leu Cys Arg
                245                 250                 255

Leu Gly Ala Leu Asp Ile Leu Glu Glu Val Asn Val Ser Gly Thr Arg
            260                 265                 270

Lys Asn Lys Phe Ser Glu Ala Ala Tyr Asn Lys Leu Leu Asn Asn Asn
        275                 280                 285

Leu Ser Leu Lys Tyr Ser Gln Thr Gly Tyr Leu Ser Ser Ser Asn Ile
    290                 295                 300

Ile Asn Asp Gly Phe Tyr Asp Tyr Gly Arg Ile Asn Pro Gly Thr Lys
305                 310                 315                 320
```

```
Leu Leu Pro Leu Lys Glu Leu Cys Leu Gln Glu Pro Ser Asp Leu Arg
                325                 330                 335

Ala Val Leu Leu Ile Asn Ser Lys Ser Tyr Val Ser Pro Pro Ser Ser
            340                 345                 350

Met Glu Asp Lys Ser Asp Val Gly Tyr Gly Arg Ser Ile Ser Ser Ser
        355                 360                 365

Ser Ser Leu Arg Arg Ser Ser Lys Glu Lys Asn Lys Lys Asn Ser Tyr
    370                 375                 380

His Phe Ser Ala Gly Phe Gly Ser Pro Ile Glu Asp Lys Ser Glu Pro
385                 390                 395                 400

Ala Ser Gly Arg Asn Thr Val Leu Ser Lys Ser Ala Thr Lys Glu Lys
                405                 410                 415

Gly Trp Arg Lys Ser Lys Gly Lys Lys Glu Glu Glu Lys Val Lys Glu
            420                 425                 430

Glu Glu Glu Val Met Val Val Pro Lys Phe Val Gly Glu Gly Ser Ser
        435                 440                 445

Asp Lys Glu Trp Cys Pro Pro Ser Asp Pro Asp Phe Ser Met Tyr Val
    450                 455                 460

Tyr Glu Val Thr Lys Ser Ile Leu Pro Ile Thr Asn Ile Lys Glu Gln
465                 470                 475                 480

Ile Glu Asp Leu Ala Lys Tyr Val Ala Glu Lys Met Gly Gly Lys Ile
                485                 490                 495

Pro Lys Glu Lys Leu Pro Asp Phe Ser Trp Glu Leu His Ile Ser Glu
            500                 505                 510

Leu Lys Phe Gln Leu Lys Ser Asn Val Ile Pro Ile Gly His Val Lys
        515                 520                 525

Lys Gly Ile Phe Tyr His Arg Ala Leu Leu Phe Lys Ala Leu Ala Asp
    530                 535                 540
```

```
Arg Ile Gly Ile Gly Cys Ser Leu Val Arg Gly Glu Tyr Gly Arg Ala
545                 550                 555                 560


Trp Asn Glu Val Met Leu Gln Asn Asp Ser Arg Lys Gly Val Ile Gly
                565                 570                 575


Gly Leu Pro Ala Pro Glu Met Tyr Val Ile Asp Leu Met Phe His Pro
            580                 585                 590


Gly Gly Leu Met Lys Leu Arg Ser Arg Glu Ala Asp Leu Tyr Arg Phe
        595                 600                 605


Ile
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<210> 6326
<211> 865
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1373; "

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 3; "

<220>
<221> source
<223> /note="Uniprot ID: Q5W041; "

<220>
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<223> /note="ENSP ID: ENSP00000386943"

<400> 6326

```
Met Gly Lys Lys Ile Lys Lys Glu Val Glu Pro Pro Pro Lys Asp Val
1               5                   10                  15


Phe Asp Pro Leu Met Ile Glu Ser Lys Lys Ala Ala Thr Val Val Leu
            20                  25                  30


Met Leu Asn Ser Pro Glu Glu Glu Ile Leu Ala Lys Ala Cys Glu Ala
```

```
        35                  40                  45

Ile Tyr Lys Phe Ala Leu Lys Gly Glu Glu Asn Lys Thr Thr Leu Leu
    50                  55                  60

Glu Leu Gly Ala Val Glu Pro Leu Thr Lys Leu Leu Thr His Glu Asp
65                  70                  75                  80

Lys Ile Val Arg Arg Asn Ala Thr Met Ile Phe Gly Ile Leu Ala Ser
                85                  90                  95

Asn Asn Asp Val Lys Lys Leu Leu Arg Glu Leu Asp Val Met Asn Ser
            100                 105                 110

Val Ile Ala Gln Leu Ala Pro Glu Glu Glu Val Val Ile His Glu Phe
        115                 120                 125

Ala Ser Leu Cys Leu Ala Asn Met Ser Ala Glu Tyr Thr Ser Lys Val
    130                 135                 140

Gln Ile Phe Glu His Gly Gly Leu Glu Pro Leu Ile Arg Leu Leu Ser
145                 150                 155                 160

Ser Pro Asp Pro Asp Val Lys Lys Asn Ser Met Glu Cys Ile Tyr Asn
                165                 170                 175

Leu Val Gln Asp Phe Gln Cys Arg Ala Lys Leu Gln Glu Leu Asn Ala
            180                 185                 190

Ile Pro Pro Ile Leu Asp Leu Leu Lys Ser Glu Tyr Pro Val Ile Gln
        195                 200                 205

Leu Leu Ala Leu Lys Thr Leu Gly Val Ile Ala Asn Asp Lys Glu Ser
    210                 215                 220

Arg Thr Met Leu Arg Asp Asn Gln Gly Leu Asp His Leu Ile Lys Ile
225                 230                 235                 240

Leu Glu Thr Lys Glu Leu Asn Asp Leu His Ile Glu Ala Leu Ala Val
                245                 250                 255

Ile Ala Asn Cys Leu Glu Asp Met Asp Thr Met Val Gln Ile Gln Gln
            260                 265                 270
```

```
Thr Gly Gly Leu Lys Lys Leu Leu Ser Phe Ala Glu Asn Ser Thr Ile
        275                 280                 285

Pro Asp Ile Gln Lys Asn Ala Ala Lys Ala Ile Thr Lys Ala Ala Tyr
    290                 295                 300

Asp Pro Glu Asn Arg Lys Leu Phe His Glu Gln Glu Val Glu Lys Cys
305                 310                 315                 320

Leu Val Ala Leu Leu Gly Ser Glu Asn Asp Gly Thr Lys Ile Ala Ala
                325                 330                 335

Ser Gln Ala Ile Ser Ala Met Cys Glu Asn Ser Gly Ser Lys Asp Phe
            340                 345                 350

Phe Asn Asn Gln Gly Ile Pro Gln Leu Ile Gln Leu Leu Lys Ser Asp
        355                 360                 365

Asn Glu Glu Val Arg Glu Ala Ala Ala Leu Ala Leu Ala Asn Leu Thr
    370                 375                 380

Thr Cys Asn Pro Ala Asn Ala Asn Ala Ala Ala Glu Ala Asp Gly Ile
385                 390                 395                 400

Asp Pro Leu Ile Asn Leu Leu Ser Ser Lys Arg Asp Gly Ala Ile Ala
                405                 410                 415

Asn Ala Ala Thr Val Leu Thr Asn Met Ala Met Gln Glu Pro Leu Arg
            420                 425                 430

Leu Asn Ile Gln Asn His Asp Ile Met His Ala Ile Ile Ser Pro Leu
        435                 440                 445

Arg Ser Ala Asn Thr Val Val Gln Ser Lys Ala Ala Leu Ala Val Thr
    450                 455                 460

Ala Thr Ala Cys Asp Val Glu Ala Arg Thr Glu Leu Arg Asn Ser Gly
465                 470                 475                 480

Gly Leu Glu Pro Leu Val Glu Leu Leu Arg Ser Lys Asn Asp Glu Val
                485                 490                 495
```

```
Arg Lys His Ala Ser Trp Ala Val Met Val Cys Ala Gly Asp Glu Leu
            500                 505                 510

Thr Ala Asn Glu Leu Cys Arg Leu Gly Ala Leu Asp Ile Leu Glu Glu
        515                 520                 525

Val Asn Val Ser Gly Thr Arg Lys Asn Lys Phe Ser Glu Ala Ala Tyr
    530                 535                 540

Asn Lys Leu Leu Asn Asn Asn Leu Ser Leu Lys Tyr Ser Gln Thr Gly
545                 550                 555                 560

Tyr Leu Ser Ser Ser Asn Ile Ile Asn Asp Gly Phe Tyr Asp Tyr Gly
                565                 570                 575

Arg Ile Asn Pro Gly Thr Lys Leu Leu Pro Leu Lys Glu Leu Cys Leu
            580                 585                 590

Gln Glu Pro Ser Asp Leu Arg Ala Val Leu Leu Ile Asn Ser Lys Ser
        595                 600                 605

Tyr Val Ser Pro Pro Ser Ser Met Glu Asp Lys Ser Asp Val Gly Tyr
    610                 615                 620

Gly Arg Ser Ile Ser Ser Ser Ser Ser Ser Leu Arg Arg Ser Ser Lys Glu
625                 630                 635                 640

Lys Asn Asn Ala Gly Phe Gly Ser Pro Ile Glu Asp Lys Ser Glu Pro
                645                 650                 655

Ala Ser Gly Arg Asn Thr Val Leu Ser Lys Ser Ala Thr Lys Glu Lys
            660                 665                 670

Gly Trp Arg Lys Ser Lys Gly Lys Lys Glu Glu Glu Lys Val Lys Glu
        675                 680                 685

Glu Glu Glu Val Met Val Val Pro Lys Phe Val Gly Glu Gly Ser Ser
    690                 695                 700

Asp Lys Glu Trp Cys Pro Pro Ser Asp Pro Asp Phe Ser Met Tyr Val
705                 710                 715                 720
```

```
Tyr Glu Val Thr Lys Ser Ile Leu Pro Ile Thr Asn Ile Lys Glu Gln
                725                 730                 735

Ile Glu Asp Leu Ala Lys Tyr Val Ala Glu Lys Met Gly Gly Lys Ile
            740                 745                 750

Pro Lys Glu Lys Leu Pro Asp Phe Ser Trp Glu Leu His Ile Ser Glu
        755                 760                 765

Leu Lys Phe Gln Leu Lys Ser Asn Val Ile Pro Ile Gly His Val Lys
    770                 775                 780

Lys Gly Ile Phe Tyr His Arg Ala Leu Leu Phe Lys Ala Leu Ala Asp
785                 790                 795                 800

Arg Ile Gly Ile Gly Cys Ser Leu Val Arg Gly Glu Tyr Gly Arg Ala
                805                 810                 815

Trp Asn Glu Val Met Leu Gln Asn Asp Ser Arg Lys Gly Val Ile Gly
            820                 825                 830

Gly Leu Pro Ala Pro Glu Met Tyr Val Ile Asp Leu Met Phe His Pro
        835                 840                 845

Gly Gly Leu Met Lys Leu Arg Ser Arg Glu Ala Asp Leu Tyr Arg Phe
    850                 855                 860

Ile
865
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<210> 6327
<211> 688
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1373; "

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<220>
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<220>
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<400> 6327
Met Gly Lys Lys Ile Lys Lys Glu Val Glu Pro Pro Pro Lys Asp Val
1   5   10   15

Phe Asp Pro Leu Met Ile Glu Ser Lys Lys Ala Ala Thr Val Val Leu
            20   25   30

Met Leu Asn Ser Pro Glu Glu Glu Ile Leu Ala Lys Ala Cys Glu Ala
        35   40   45

Ile Tyr Lys Phe Ala Leu Lys Gly Glu Glu Asn Lys Thr Thr Leu Leu
    50   55   60

Glu Leu Gly Ala Val Glu Pro Leu Thr Lys Leu Leu Thr His Glu Asp
65   70   75   80

Lys Ile Val Arg Arg Asn Ala Thr Met Ile Phe Gly Ile Leu Ala Ser
                85   90   95

Asn Asn Asp Val Lys Lys Leu Leu Arg Glu Leu Asp Val Met Asn Ser
            100   105   110

Val Ile Ala Gln Leu Ala Pro Glu Glu Glu Val Val Ile His Glu Phe
        115   120   125

Ala Ser Leu Cys Leu Ala Asn Met Ser Ala Glu Tyr Thr Ser Lys Val
    130   135   140

Gln Ile Phe Glu His Gly Gly Leu Glu Pro Leu Ile Arg Leu Leu Ser
145   150   155   160

Ser Pro Asp Pro Asp Val Lys Lys Asn Ser Met Glu Cys Ile Tyr Asn
                165   170   175

Leu Val Gln Asp Phe Gln Cys Arg Ala Lys Leu Gln Glu Leu Asn Ala
            180   185   190

```
Ile Pro Pro Ile Leu Asp Leu Leu Lys Ser Glu Tyr Pro Val Ile Gln
        195                 200                 205

Leu Leu Ala Leu Lys Thr Leu Gly Val Ile Ala Asn Asp Lys Glu Ser
    210                 215                 220

Arg Thr Met Leu Arg Asp Asn Gln Gly Leu Asp His Leu Ile Lys Ile
225                 230                 235                 240

Leu Glu Thr Lys Glu Leu Asn Asp Leu His Ile Glu Ala Leu Ala Val
                245                 250                 255

Ile Ala Asn Cys Leu Glu Asp Met Asp Thr Met Val Gln Ile Gln Gln
            260                 265                 270

Thr Gly Gly Leu Lys Lys Leu Leu Ser Phe Ala Glu Asn Ser Thr Ile
        275                 280                 285

Pro Asp Ile Gln Lys Asn Ala Ala Lys Ala Ile Thr Lys Ala Ala Tyr
    290                 295                 300

Asp Pro Glu Asn Arg Lys Leu Phe His Glu Gln Glu Val Glu Lys Cys
305                 310                 315                 320

Leu Val Ala Leu Leu Gly Ser Glu Asn Asp Gly Thr Lys Ile Ala Ala
                325                 330                 335

Ser Gln Ala Ile Ser Ala Met Cys Glu Asn Ser Gly Ser Lys Asp Phe
            340                 345                 350

Phe Asn Asn Gln Gly Ile Pro Gln Leu Ile Gln Leu Leu Lys Ser Asp
        355                 360                 365

Asn Glu Glu Val Arg Glu Ala Ala Ala Leu Ala Leu Ala Asn Leu Thr
    370                 375                 380

Thr Cys Asn Pro Ala Asn Ala Asn Ala Ala Ala Glu Ala Asp Gly Ile
385                 390                 395                 400

Asp Pro Leu Ile Asn Leu Leu Ser Ser Lys Arg Asp Gly Ala Ile Ala
                405                 410                 415
```

```
Asn Ala Ala Thr Val Leu Thr Asn Met Ala Met Gln Glu Pro Leu Arg
            420                 425                 430

Leu Asn Ile Gln Asn His Asp Ile Met His Ala Ile Ile Ser Pro Leu
        435                 440                 445

Arg Ser Ala Asn Thr Val Val Gln Ser Lys Ala Ala Leu Ala Val Thr
    450                 455                 460

Ala Thr Ala Cys Asp Val Glu Ala Arg Thr Glu Leu Arg Asn Ser Gly
465                 470                 475                 480

Gly Leu Glu Pro Leu Val Glu Leu Leu Arg Ser Lys Asn Asp Glu Val
                485                 490                 495

Arg Lys His Ala Ser Trp Ala Val Met Val Cys Ala Gly Asp Glu Leu
            500                 505                 510

Thr Ala Asn Glu Leu Cys Arg Leu Gly Ala Leu Asp Ile Leu Glu Glu
        515                 520                 525

Val Asn Val Ser Gly Thr Arg Lys Asn Lys Phe Ser Glu Ala Ala Tyr
    530                 535                 540

Asn Lys Leu Leu Asn Asn Asn Leu Ser Leu Lys Tyr Ser Gln Thr Gly
545                 550                 555                 560

Tyr Leu Ser Ser Ser Asn Ile Ile Asn Asp Gly Phe Tyr Asp Tyr Gly
                565                 570                 575

Arg Ile Asn Pro Gly Thr Lys Leu Leu Pro Leu Lys Glu Leu Cys Leu
            580                 585                 590

Gln Glu Pro Ser Asp Leu Arg Ala Val Leu Leu Ile Asn Ser Lys Ser
        595                 600                 605

Tyr Val Ser Pro Pro Ser Ser Met Glu Asp Lys Ser Asp Val Gly Tyr
    610                 615                 620

Gly Arg Ser Ile Ser Ser Ser Ser Ser Ser Leu Arg Arg Ser Ser Lys Glu
625                 630                 635                 640

Lys Asn Lys Lys Asn Ser Tyr His Phe Ser Ala Gly Phe Gly Ser Pro
```

645 650 655

Ile Glu Asp Lys Ser Glu Pro Ala Ser Gly Arg Asn Thr Val Leu Ser
660 665 670

Lys Ser Ala Thr Lys Glu Lys Gly Trp Ser Ser Leu Pro Thr Ser Arg
675 680 685

<210> 6328
<211> 118
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1373; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC3; "

<220>
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<223> /note="Gene Name:
armadillo repeat containing 3; "

<220>
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<223> /note="ENSP ID: ENSP00000396629"

<400> 6328
Met Ile Phe Gly Ile Leu Ala Ser Asn Asn Asp Val Lys Lys Leu Leu
1 5 10 15

Arg Glu Leu Asp Val Met Asn Ser Val Ile Ala Gln Leu Ala Pro Glu
20 25 30

Glu Glu Val Val Ile His Glu Phe Ala Ser Leu Cys Leu Ala Asn Met
35 40 45

Ser Ala Glu Tyr Thr Ser Lys Val Gln Ile Phe Glu His Gly Gly Leu
50 55 60

Glu Pro Leu Ile Arg Leu Leu Ser Ser Pro Asp Pro Asp Val Lys Lys
65 70 75 80

Asn Ser Met Glu Cys Ile Tyr Asn Leu Val Gln Asp Phe Gln Cys Arg
85 90 95

Ala Lys Leu Gln Glu Leu Asn Ala Ile Pro Pro Ile Leu Asp Leu Leu
100 105 110

Lys Ser Glu Tyr Pro Val
115

<210> 6329
<211> 1044
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 4; "

<220>
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<223> /note="Uniprot ID: Q5T2S8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000306410"

<400> 6329
Met Gly Val Ala Leu Arg Lys Leu Thr Gln Trp Thr Ala Ala Gly His
1 5 10 15

Gly Thr Gly Ile Leu Glu Ile Thr Pro Leu Asn Glu Ala Ile Leu Lys
20 25 30

Glu Ile Ile Val Phe Val Glu Ser Phe Ile Tyr Lys His Pro Gln Glu
35 40 45

Ala Lys Phe Val Phe Val Glu Pro Leu Glu Trp Asn Thr Ser Leu Ala
50 55 60

Pro Ser Ala Phe Glu Ser Gly Tyr Val Val Ser Glu Thr Thr Val Lys
65 70 75 80

Ser Glu Glu Val Asp Lys Asn Gly Gln Pro Leu Leu Phe Leu Ser Val

```
                85                  90                  95

Pro Gln Ile Lys Ile Arg Ser Phe Gly Gln Leu Ser Arg Leu Leu Leu
            100                 105                 110

Ile Ala Lys Thr Gly Lys Leu Lys Glu Ala Gln Ala Cys Val Glu Ala
        115                 120                 125

Asn Arg Asp Pro Ile Val Lys Ile Leu Gly Ser Asp Tyr Asn Thr Met
    130                 135                 140

Lys Glu Asn Ser Ile Ala Leu Asn Ile Leu Gly Lys Ile Thr Arg Asp
145                 150                 155                 160

Asp Asp Pro Glu Ser Glu Ile Lys Met Lys Ile Ala Met Leu Leu Lys
                165                 170                 175

Gln Leu Asp Leu His Leu Leu Asn His Ser Leu Lys His Ile Ser Leu
            180                 185                 190

Glu Ile Ser Leu Ser Pro Met Thr Val Lys Lys Asp Ile Glu Leu Leu
        195                 200                 205

Lys Arg Phe Ser Gly Lys Gly Asn Gln Thr Val Leu Glu Ser Ile Glu
    210                 215                 220

Tyr Thr Ser Asp Tyr Glu Phe Ser Asn Gly Cys Arg Ala Pro Pro Trp
225                 230                 235                 240

Arg Gln Ile Arg Gly Glu Ile Cys Tyr Val Leu Val Lys Pro His Asp
                245                 250                 255

Gly Glu Thr Leu Cys Ile Thr Cys Ser Ala Gly Gly Val Phe Leu Asn
            260                 265                 270

Gly Gly Lys Thr Asp Asp Glu Gly Asp Val Asn Tyr Glu Arg Lys Gly
        275                 280                 285

Ser Ile Tyr Lys Asn Leu Val Thr Phe Leu Arg Glu Lys Ser Pro Lys
    290                 295                 300

Phe Ser Glu Asn Met Ser Lys Leu Gly Ile Ser Phe Ser Glu Asp Gln
305                 310                 315                 320
```

```
Gln Lys Glu Lys Asp Gln Leu Gly Lys Ala Pro Lys Lys Glu Glu Ala
                325                 330                 335

Ala Ala Leu Arg Lys Asp Ile Ser Gly Ser Asp Lys Arg Ser Leu Glu
            340                 345                 350

Lys Asn Gln Ile Asn Phe Trp Arg Asn Gln Met Thr Lys Arg Trp Glu
        355                 360                 365

Pro Ser Leu Asn Trp Lys Thr Thr Val Asn Tyr Lys Gly Lys Gly Ser
    370                 375                 380

Ala Lys Glu Ile Gln Glu Asp Lys His Thr Gly Lys Leu Glu Lys Pro
385                 390                 395                 400

Arg Pro Ser Val Ser His Gly Arg Ala Gln Leu Leu Arg Lys Ser Ala
                405                 410                 415

Glu Lys Ile Glu Glu Thr Val Ser Asp Ser Ser Ser Glu Ser Glu Glu
            420                 425                 430

Asp Glu Glu Pro Pro Asp His Arg Gln Glu Ala Ser Ala Asp Leu Pro
        435                 440                 445

Ser Glu Tyr Trp Gln Ile Gln Lys Leu Val Lys Tyr Leu Lys Gly Gly
    450                 455                 460

Asn Gln Thr Ala Thr Val Ile Ala Leu Cys Ser Met Arg Asp Phe Ser
465                 470                 475                 480

Leu Ala Gln Glu Thr Cys Gln Leu Ala Ile Arg Asp Val Gly Gly Leu
                485                 490                 495

Glu Val Leu Ile Asn Leu Leu Glu Thr Asp Glu Val Lys Cys Lys Ile
            500                 505                 510

Gly Ser Leu Lys Ile Leu Lys Glu Ile Ser His Asn Pro Gln Ile Arg
        515                 520                 525

Gln Asn Ile Val Asp Leu Gly Gly Leu Pro Ile Met Val Asn Ile Leu
    530                 535                 540
```

```
Asp Ser Pro His Lys Ser Leu Lys Cys Leu Ala Ala Glu Thr Ile Ala
545                 550                 555                 560

Asn Val Ala Lys Phe Lys Arg Ala Arg Arg Val Val Arg Gln His Gly
                565                 570                 575

Gly Ile Thr Lys Leu Val Ala Leu Leu Asp Cys Ala His Asp Ser Thr
            580                 585                 590

Lys Pro Ala Gln Ser Ser Leu Tyr Glu Ala Arg Asp Val Glu Val Ala
        595                 600                 605

Arg Cys Gly Ala Leu Ala Leu Trp Ser Cys Ser Lys Ser His Thr Asn
    610                 615                 620

Lys Glu Ala Ile Arg Lys Ala Gly Gly Ile Pro Leu Leu Ala Arg Leu
625                 630                 635                 640

Leu Lys Thr Ser His Glu Asn Met Leu Ile Pro Val Val Gly Thr Leu
                645                 650                 655

Gln Glu Cys Ala Ser Glu Glu Asn Tyr Arg Ala Ala Ile Lys Ala Glu
            660                 665                 670

Arg Ile Ile Glu Asn Leu Val Lys Asn Leu Asn Ser Glu Asn Glu Gln
        675                 680                 685

Leu Gln Glu His Cys Ala Met Ala Ile Tyr Gln Cys Ala Glu Asp Lys
    690                 695                 700

Glu Thr Arg Asp Leu Val Arg Leu His Gly Gly Leu Lys Pro Leu Ala
705                 710                 715                 720

Ser Leu Leu Asn Asn Thr Asp Asn Lys Glu Arg Leu Ala Ala Val Thr
                725                 730                 735

Gly Ala Ile Trp Lys Cys Ser Ile Ser Lys Glu Asn Val Thr Lys Phe
            740                 745                 750

Arg Glu Tyr Lys Ala Ile Glu Thr Leu Val Gly Leu Leu Thr Asp Gln
        755                 760                 765
```

```
Pro Glu Glu Val Leu Val Asn Val Val Gly Ala Leu Gly Glu Cys Cys
    770                 775                 780

Gln Glu Arg Glu Asn Arg Val Ile Val Arg Lys Cys Gly Gly Ile Gln
785                 790                 795                 800

Pro Leu Val Asn Leu Leu Val Gly Ile Asn Gln Ala Leu Leu Val Asn
                805                 810                 815

Val Thr Lys Ala Val Gly Ala Cys Ala Val Glu Pro Glu Ser Met Met
            820                 825                 830

Ile Ile Asp Arg Leu Asp Gly Val Arg Leu Leu Trp Ser Leu Leu Lys
        835                 840                 845

Asn Pro His Pro Asp Val Lys Ala Ser Ala Ala Trp Ala Leu Cys Pro
    850                 855                 860

Cys Ile Lys Asn Ala Lys Asp Ala Gly Glu Met Val Arg Ser Phe Val
865                 870                 875                 880

Gly Gly Leu Glu Leu Ile Val Asn Leu Leu Lys Ser Asp Asn Lys Glu
                885                 890                 895

Val Leu Ala Ser Val Cys Ala Ala Ile Thr Asn Ile Ala Lys Asp Gln
            900                 905                 910

Glu Asn Leu Ala Val Ile Thr Asp His Gly Val Val Pro Leu Leu Ser
        915                 920                 925

Lys Leu Ala Asn Thr Asn Asn Asn Lys Leu Arg His His Leu Ala Glu
    930                 935                 940

Ala Ile Ser Arg Cys Cys Met Trp Gly Arg Asn Arg Val Ala Phe Gly
945                 950                 955                 960

Glu His Lys Ala Val Ala Pro Leu Val Arg Tyr Leu Lys Ser Asn Asp
                965                 970                 975

Thr Asn Val His Arg Ala Thr Ala Gln Ala Leu Tyr Gln Leu Ser Glu
            980                 985                 990

Asp Ala Asp Asn Cys Ile Thr Met  His Glu Asn Gly Ala  Val Lys
```

Leu
995 1000 1005

Leu Leu Asp Met Val Gly Ser Pro Asp Gln Asp Leu Gln Glu Ala
1010 1015 1020

Ala Ala Gly Cys Ile Ser Asn Ile Arg Arg Leu Ala Leu Ala Thr
1025 1030 1035

Glu Lys Ala Arg Tyr Thr
1040

<210> 6330
<211> 389
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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armadillo repeat containing 4; "

<220>
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<400> 6330
Leu Ser Arg Leu Leu Leu Ile Ala Lys Thr Gly Lys Leu Lys Glu Ala
1 5 10 15

Gln Ala Cys Val Glu Ala Asn Arg Asp Pro Ile Val Lys Ile Leu Gly
20 25 30

Ser Asp Tyr Asn Thr Met Lys Glu Asn Ser Ile Ala Leu Asn Ile Leu
35 40 45

Gly Lys Ile Thr Arg Asp Asp Asp Pro Glu Ser Glu Ile Lys Met Lys
50 55 60

Ile Ala Met Leu Leu Lys Gln Leu Asp Leu His Leu Leu Asn His Ser
65 70 75 80

```
Leu Lys His Ile Ser Leu Glu Ile Ser Leu Ser Pro Met Thr Val Lys
                85                  90                  95

Lys Asp Ile Glu Leu Leu Lys Arg Phe Ser Gly Lys Gly Asn Gln Thr
            100                 105                 110

Val Leu Glu Ser Ile Glu Tyr Thr Ser Asp Tyr Glu Phe Ser Asn Gly
        115                 120                 125

Cys Arg Ala Pro Pro Trp Arg Gln Ile Arg Gly Glu Ile Cys Tyr Val
    130                 135                 140

Leu Val Lys Pro His Asp Gly Glu Thr Leu Cys Ile Thr Cys Ser Ala
145                 150                 155                 160

Gly Gly Val Phe Leu Asn Gly Gly Lys Thr Asp Asp Glu Gly Asp Val
                165                 170                 175

Asn Tyr Glu Arg Lys Gly Ser Ile Tyr Lys Asn Leu Val Thr Phe Leu
            180                 185                 190

Arg Glu Lys Ser Pro Lys Phe Ser Glu Asn Met Ser Lys Leu Gly Ile
        195                 200                 205

Ser Phe Ser Glu Asp Gln Gln Lys Glu Lys Asp Gln Leu Gly Lys Ala
    210                 215                 220

Pro Lys Lys Glu Glu Ala Ala Ala Leu Arg Lys Asp Ile Ser Gly Ser
225                 230                 235                 240

Asp Lys Arg Ser Leu Glu Lys Asn Gln Ile Asn Phe Trp Arg Asn Gln
                245                 250                 255

Met Thr Lys Arg Trp Glu Pro Ser Leu Asn Trp Lys Thr Thr Val Asn
            260                 265                 270

Tyr Lys Gly Lys Gly Ser Ala Lys Glu Ile Gln Glu Asp Lys His Thr
        275                 280                 285

Gly Lys Leu Glu Lys Pro Arg Pro Ser Val Ser His Gly Arg Ala Gln
    290                 295                 300
```

```
Leu Leu Arg Lys Ser Ala Glu Lys Ile Glu Glu Thr Val Ser Asp Ser
305                 310                 315                 320

Ser Ser Glu Ser Glu Glu Asp Glu Glu Pro Pro Asp His Arg Gln Glu
                325                 330                 335

Ala Ser Ala Asp Leu Pro Ser Glu Tyr Trp Gln Ile Gln Lys Leu Val
            340                 345                 350

Lys Tyr Leu Lys Gln Lys Glu Thr Ser Gln Asn Gly Arg Asn Lys Arg
        355                 360                 365

Trp Ile Arg Lys Gln Asn Thr Arg Val Ile Arg Ser Met Ile Phe Asp
    370                 375                 380

Val Gly Lys Thr Ser
385


<210> 6331
<211> 57
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ARMC4; "

<220>
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      armadillo repeat containing 4; "

<220>
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<223> /note="ENSP ID: ENSP00000473438"

<400> 6331
Met Gly Val Ala Leu Arg Lys Leu Thr Gln Trp Thr Ala Ala Gly His
1               5                   10                  15

Gly Thr Gly Ile Leu Glu Ile Thr Pro Leu Asn Glu Ala Ile Leu Lys
            20                  25                  30

Glu Ile Ile Val Phe Val Glu Ser Phe Ile Tyr Lys His Pro Gln Glu
```

```
        35                  40                  45

Ala Lys Phe Val Phe Val Glu Pro Leu
    50                  55


<210> 6332
<211> 935
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1375; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC5; "

<220>
<221> source
<223> /note="Gene Name:
      armadillo repeat containing 5; "

<220>
<221> source
<223> /note="Uniprot ID:  Q96C12; "

<220>
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<223> /note="ENSP ID: ENSP00000268314"

<400> 6332
Met Ala Ala Ala Lys Pro Thr Leu Thr Asp Ser Leu Ser Phe Cys Leu
1               5                  10                  15


Ala Gln Leu Ala Ala Ala Ala Gly Glu Ala Leu Gly Gly Glu Lys Asp
            20                  25                  30


Pro Ala Thr Asn Glu Thr Pro Leu Ser Arg Ala Leu Leu Ala Leu Arg
        35                  40                  45


Thr Arg His Ile Lys Ala Ala Gly Gly Ile Glu Arg Phe Arg Ala Arg
    50                  55                  60


Gly Gly Leu Arg Pro Leu Leu Ala Leu Leu Arg Arg Ala Ala Ala Ala
65                  70                  75                  80


Gly Ser Ala Pro Ser Gln Ala Gly Pro Gly Ser Ala Pro Ser Ser Ala
                85                  90                  95
```

```
Ala Ser Gly Ala Ser Ser Pro Ala Pro Ala Ser Gly Pro Ala Pro Ser
            100                 105                 110

Ala Val Ser Ser Ser Ser Pro Thr Pro Pro Val Arg Leu Arg Lys Thr
        115                 120                 125

Leu Asp Leu Ala Leu Ser Ile Leu Ala Asp Cys Cys Thr Glu Gly Ala
    130                 135                 140

Cys Arg Thr Glu Val Arg Arg Leu Gly Gly Ile Leu Pro Leu Val Thr
145                 150                 155                 160

Ile Leu Gln Cys Met Lys Thr Asp Ser Ile Gln Asn Arg Thr Ala Arg
                165                 170                 175

Ala Leu Gly Asn Leu Ala Met Glu Pro Glu Ser Cys Gly Asp Ile His
            180                 185                 190

Cys Ala Gly Ala Val Pro Leu Leu Val Glu Ser Leu Thr Ala Cys Gln
        195                 200                 205

Asp Ser Gln Cys Leu Gln Ser Val Val Arg Ala Leu Arg Asn Leu Ala
    210                 215                 220

Asp Ser Pro Gln His Arg Leu Ala Leu Ala Gln Gln Gly Ala Val Arg
225                 230                 235                 240

Pro Leu Ala Glu Leu Leu Ala Thr Ala Pro Asp Ala Ala Leu Thr Leu
                245                 250                 255

Ala Leu Val Arg Ala Leu Leu Glu Leu Ser Arg Gly Cys Ser Arg Ala
            260                 265                 270

Cys Ala Glu Gln Leu Ser Leu Gly Gly Gly Leu Gly Pro Leu Val Ser
        275                 280                 285

Leu Ala Ser His Pro Lys Arg Ala Val Arg Glu Gly Thr Ile Leu Ile
    290                 295                 300

Leu Ala Asn Leu Cys Ala Gln Gly Leu Ile Arg Pro Ala Leu Gly Asn
305                 310                 315                 320
```

```
Ala Gly Gly Val Glu Val Leu Val Asp Glu Leu Arg Gln Arg Arg Asp
                325                 330                 335

Pro Asn Gly Ala Ser Pro Thr Ser Gln Gln Pro Leu Val Arg Ala Val
            340                 345                 350

Cys Leu Leu Cys Arg Glu Ala Ile Asn Arg Ala Arg Leu Arg Asp Ala
        355                 360                 365

Gly Gly Leu Asp Leu Leu Met Gly Leu Leu Arg Asp Pro Arg Ala Ser
    370                 375                 380

Ala Trp His Pro Arg Ile Val Ala Ala Leu Val Gly Phe Leu Tyr Asp
385                 390                 395                 400

Thr Gly Ala Leu Gly Arg Leu Gln Ala Leu Gly Leu Val Pro Leu Leu
                405                 410                 415

Ala Gly Gln Leu Cys Gly Glu Ala Gly Glu Glu Glu Glu Glu Gly Arg
            420                 425                 430

Glu Ala Ala Ser Trp Asp Phe Pro Glu Glu Arg Thr Pro Glu Arg Ala
        435                 440                 445

Gln Gly Gly Ser Phe Arg Ser Leu Arg Ser Trp Leu Ile Ser Glu Gly
    450                 455                 460

Tyr Ala Thr Gly Pro Asp Asp Ile Ser Pro Asp Trp Ser Pro Glu Gln
465                 470                 475                 480

Cys Pro Pro Glu Pro Met Glu Pro Ala Ser Pro Ala Pro Thr Pro Thr
                485                 490                 495

Ser Leu Arg Ala Pro Arg Thr Gln Arg Thr Pro Gly Arg Ser Pro Ala
            500                 505                 510

Ala Ala Ile Glu Glu Pro Trp Gly Arg Glu Gly Pro Ala Leu Leu Leu
        515                 520                 525

Leu Ser Arg Phe Ser Gln Ala Pro Asp Pro Ser Gly Ala Leu Val Thr
    530                 535                 540

Gly Pro Ala Leu Tyr Gly Leu Leu Thr Tyr Val Thr Gly Ala Pro Gly
```

545 550 555 560

Pro Pro Ser Pro Arg Ala Leu Arg Ile Leu Ser Arg Leu Thr Cys Asn
565 570 575

Pro Ala Cys Leu Glu Ala Phe Val Arg Ser Tyr Gly Ala Ala Leu Leu
580 585 590

Arg Ala Trp Leu Val Leu Gly Val Ala Pro Asp Asp Trp Pro Ala Pro
595 600 605

Arg Ala Arg Pro Thr Leu His Ser Arg His Arg Glu Leu Gly Glu Arg
610 615 620

Leu Leu Gln Asn Leu Thr Val Gln Ala Glu Ser Pro Phe Gly Val Gly
625 630 635 640

Ala Leu Thr His Leu Leu Leu Ser Gly Ser Pro Glu Asp Arg Val Ala
645 650 655

Cys Ala Leu Thr Leu Pro Phe Ile Cys Arg Lys Pro Ser Leu Trp Arg
660 665 670

Arg Leu Leu Leu Glu Gln Gly Gly Leu Arg Leu Leu Leu Ala Ala Leu
675 680 685

Thr Arg Pro Ala Pro His Pro Leu Phe Leu Phe Phe Ala Ala Asp Ser
690 695 700

Leu Ser Cys Leu Gln Asp Leu Val Ser Pro Thr Val Ser Pro Ala Val
705 710 715 720

Pro Gln Ala Val Pro Met Asp Leu Asp Ser Pro Ser Pro Cys Leu Tyr
725 730 735

Glu Pro Leu Leu Gly Pro Ala Pro Val Pro Ala Pro Asp Leu His Phe
740 745 750

Leu Leu Asp Ser Gly Leu Gln Leu Pro Ala Gln Arg Ala Ala Ser Ala
755 760 765

Thr Ala Ser Pro Phe Phe Arg Ala Leu Leu Ser Gly Ser Phe Ala Glu
770 775 780

```
Ala Gln Met Asp Leu Val Pro Leu Arg Gly Leu Ser Pro Gly Ala Ala
785                 790                 795                 800

Trp Pro Val Leu His His Leu His Gly Cys Arg Gly Cys Gly Ala Ala
                805                 810                 815

Leu Gly Pro Val Pro Pro Pro Gly Gln Pro Leu Leu Gly Ser Glu Ala
            820                 825                 830

Glu Glu Ala Leu Glu Ala Ala Gly Arg Phe Leu Leu Pro Gly Leu Glu
        835                 840                 845

Glu Glu Leu Glu Glu Ala Val Gly Arg Ile His Leu Gly Pro Gln Gly
    850                 855                 860

Gly Pro Glu Ser Val Gly Glu Val Phe Arg Leu Gly Arg Pro Arg Leu
865                 870                 875                 880

Ala Ala His Cys Ala Arg Trp Thr Leu Gly Ser Glu Gln Cys Pro Arg
                885                 890                 895

Lys Arg Gly Leu Ala Leu Val Gly Leu Val Glu Ala Ala Gly Glu Glu
            900                 905                 910

Ala Gly Pro Leu Thr Glu Ala Leu Leu Ala Val Val Met Gly Ile Glu
        915                 920                 925

Leu Gly Ala Arg Val Pro Ala
    930                 935


<210> 6333
<211> 1030
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1375; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC5; "

<220>
<221> source
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<223> /note="Gene Name:
armadillo repeat containing 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000386125"

<400> 6333

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Met Val Thr Leu Gly Ala Gly Val Arg Leu Phe Thr Gly Val Tyr Pro
1               5                  10                  15

Val Val Leu Asn Gln Ile Arg Ala Thr Ser Glu Ala Ser Ala Ile Thr
            20                  25                  30

Arg Thr Thr Met Pro Ala Pro Glu Leu Thr Ser Thr Ser Arg Ala Glu
        35                  40                  45

Asp Thr Arg Asp Thr Gly Val Gln Leu Arg Lys Arg Lys Ile Pro Gln
    50                  55                  60

Ala Arg His Ser Arg Lys Arg Gln Arg Thr Phe Ser Phe Arg Ser Leu
65                  70                  75                  80

Gly Ser Ala Ala Arg Ser Gly Ala Glu Ser Glu Ala Arg Ala Lys Met
                85                  90                  95

Ala Ala Ala Lys Pro Thr Leu Thr Asp Ser Leu Ser Phe Cys Leu Ala
            100                 105                 110

Gln Leu Ala Ala Ala Ala Gly Glu Ala Leu Gly Gly Glu Lys Asp Pro
        115                 120                 125

Ala Thr Asn Glu Thr Pro Leu Ser Arg Ala Leu Leu Ala Leu Arg Thr
    130                 135                 140

Arg His Ile Lys Ala Ala Gly Gly Ile Glu Arg Phe Arg Ala Arg Gly
145                 150                 155                 160

Gly Leu Arg Pro Leu Leu Ala Leu Leu Arg Arg Ala Ala Ala Ala Gly
                165                 170                 175

Ser Ala Pro Ser Gln Ala Gly Pro Gly Ser Ala Pro Ser Ser Ala Ala
            180                 185                 190

Ser Gly Ala Ser Ser Pro Ala Pro Ala Ser Gly Pro Ala Pro Ser Ala
```

```
        195                 200                 205

Val Ser Ser Ser Ser Pro Thr Pro Pro Val Arg Leu Arg Lys Thr Leu
    210                 215                 220

Asp Leu Ala Leu Ser Ile Leu Ala Asp Cys Cys Thr Glu Gly Ala Cys
225                 230                 235                 240

Arg Thr Glu Val Arg Arg Leu Gly Gly Ile Leu Pro Leu Val Thr Ile
                245                 250                 255

Leu Gln Cys Met Lys Thr Asp Ser Ile Gln Asn Arg Thr Ala Arg Ala
            260                 265                 270

Leu Gly Asn Leu Ala Met Glu Pro Glu Ser Cys Gly Asp Ile His Cys
        275                 280                 285

Ala Gly Ala Val Pro Leu Leu Val Glu Ser Leu Thr Ala Cys Gln Asp
    290                 295                 300

Ser Gln Cys Leu Gln Ser Val Val Arg Ala Leu Arg Asn Leu Ala Asp
305                 310                 315                 320

Ser Pro Gln His Arg Leu Ala Leu Ala Gln Gln Gly Ala Val Arg Pro
                325                 330                 335

Leu Ala Glu Leu Leu Ala Thr Ala Pro Asp Ala Ala Leu Thr Leu Ala
            340                 345                 350

Leu Val Arg Ala Leu Leu Glu Leu Ser Arg Gly Cys Ser Arg Ala Cys
        355                 360                 365

Ala Glu Gln Leu Ser Leu Gly Gly Gly Leu Gly Pro Leu Val Ser Leu
    370                 375                 380

Ala Ser His Pro Lys Arg Ala Val Arg Glu Gly Thr Ile Leu Ile Leu
385                 390                 395                 400

Ala Asn Leu Cys Ala Gln Gly Leu Ile Arg Pro Ala Leu Gly Asn Ala
                405                 410                 415

Gly Gly Val Glu Val Leu Val Asp Glu Leu Arg Gln Arg Arg Asp Pro
            420                 425                 430
```

```
Asn Gly Ala Ser Pro Thr Ser Gln Gln Pro Leu Val Arg Ala Val Cys
        435                 440                 445

Leu Leu Cys Arg Glu Ala Ile Asn Arg Ala Arg Leu Arg Asp Ala Gly
    450                 455                 460

Gly Leu Asp Leu Leu Met Gly Leu Leu Arg Asp Pro Arg Ala Ser Ala
465                 470                 475                 480

Trp His Pro Arg Ile Val Ala Ala Leu Val Gly Phe Leu Tyr Asp Thr
                485                 490                 495

Gly Ala Leu Gly Arg Leu Gln Ala Leu Gly Leu Val Pro Leu Leu Ala
            500                 505                 510

Gly Gln Leu Cys Gly Glu Ala Gly Glu Glu Glu Glu Glu Gly Arg Glu
        515                 520                 525

Ala Ala Ser Trp Asp Phe Pro Glu Glu Arg Thr Pro Glu Arg Ala Gln
    530                 535                 540

Gly Gly Ser Phe Arg Ser Leu Arg Ser Trp Leu Ile Ser Glu Gly Tyr
545                 550                 555                 560

Ala Thr Gly Pro Asp Asp Ile Ser Pro Asp Trp Ser Pro Glu Gln Cys
                565                 570                 575

Pro Pro Glu Pro Met Glu Pro Ala Ser Pro Ala Pro Thr Pro Thr Ser
            580                 585                 590

Leu Arg Ala Pro Arg Thr Gln Arg Thr Pro Gly Arg Ser Pro Ala Ala
        595                 600                 605

Ala Ile Glu Glu Pro Trp Gly Arg Glu Gly Pro Ala Leu Leu Leu Leu
    610                 615                 620

Ser Arg Phe Ser Gln Ala Pro Asp Pro Ser Gly Ala Leu Val Thr Gly
625                 630                 635                 640

Pro Ala Leu Tyr Gly Leu Leu Thr Tyr Val Thr Gly Ala Pro Gly Pro
                645                 650                 655
```

```
Pro Ser Pro Arg Ala Leu Arg Ile Leu Ser Arg Leu Thr Cys Asn Pro
            660                 665                 670

Ala Cys Leu Glu Ala Phe Val Arg Ser Tyr Gly Ala Ala Leu Leu Arg
        675                 680                 685

Ala Trp Leu Val Leu Gly Val Ala Pro Asp Asp Trp Pro Ala Pro Arg
    690                 695                 700

Ala Arg Pro Thr Leu His Ser Arg His Arg Glu Leu Gly Glu Arg Leu
705                 710                 715                 720

Leu Gln Asn Leu Thr Val Gln Ala Glu Ser Pro Phe Gly Val Gly Ala
                725                 730                 735

Leu Thr His Leu Leu Leu Ser Gly Ser Pro Glu Asp Arg Val Ala Cys
            740                 745                 750

Ala Leu Thr Leu Pro Phe Ile Cys Arg Lys Pro Ser Leu Trp Arg Arg
        755                 760                 765

Leu Leu Leu Glu Gln Gly Gly Leu Arg Leu Leu Leu Ala Ala Leu Thr
    770                 775                 780

Arg Pro Ala Pro His Pro Leu Phe Leu Phe Phe Ala Ala Asp Ser Leu
785                 790                 795                 800

Ser Cys Leu Gln Asp Leu Val Ser Pro Thr Val Ser Pro Ala Val Pro
                805                 810                 815

Gln Ala Val Pro Met Asp Leu Asp Ser Pro Ser Pro Cys Leu Tyr Glu
            820                 825                 830

Pro Leu Leu Gly Pro Ala Pro Val Pro Ala Pro Asp Leu His Phe Leu
        835                 840                 845

Leu Asp Ser Gly Leu Gln Leu Pro Ala Gln Arg Ala Ala Ser Ala Thr
    850                 855                 860

Ala Ser Pro Phe Phe Arg Ala Leu Leu Ser Gly Ser Phe Ala Glu Ala
865                 870                 875                 880
```

```
Gln Met Asp Leu Val Pro Leu Arg Gly Leu Ser Pro Gly Ala Ala Trp
                885                 890                 895

Pro Val Leu His His Leu His Gly Cys Arg Gly Cys Gly Ala Ala Leu
            900                 905                 910

Gly Pro Val Pro Pro Pro Gly Gln Pro Leu Leu Gly Ser Glu Ala Glu
        915                 920                 925

Glu Ala Leu Glu Ala Ala Gly Arg Phe Leu Leu Pro Gly Leu Glu Glu
    930                 935                 940

Glu Leu Glu Glu Ala Val Gly Arg Ile His Leu Gly Pro Gln Gly Gly
945                 950                 955                 960

Pro Glu Ser Val Gly Glu Val Phe Arg Leu Gly Arg Pro Arg Leu Ala
                965                 970                 975

Ala His Cys Ala Arg Trp Thr Leu Gly Ser Glu Gln Cys Pro Arg Lys
            980                 985                 990

Arg Gly Leu Ala Leu Val Gly Leu  Val Glu Ala Ala Gly  Glu Glu
Ala
        995                 1000                1005

Gly Pro  Leu Thr Glu Ala Leu  Leu Ala Val Val Met  Gly Ile Glu
    1010                1015                1020

Leu Gly  Ala Arg Val Pro Ala
    1025                1030


<210> 6334
<211> 725
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1375; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC5; "

<220>
<221> source
<223> /note="Gene Name:
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armadillo repeat containing 5; "

<220>
<221> source
<223> /note="Uniprot ID: Q96C12; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000399561"

<400> 6334
Met Ala Ala Ala Lys Pro Thr Leu Thr Asp Ser Leu Ser Phe Cys Leu
1   5   10   15

Ala Gln Leu Ala Ala Ala Ala Gly Glu Ala Leu Gly Gly Glu Lys Asp
            20   25   30

Pro Ala Thr Asn Glu Thr Pro Leu Ser Arg Ala Leu Leu Ala Leu Arg
        35   40   45

Thr Arg His Ile Lys Ala Ala Gly Gly Ile Glu Arg Phe Arg Ala Arg
    50   55   60

Gly Gly Leu Arg Pro Leu Leu Ala Leu Leu Arg Arg Ala Ala Ala Ala
65   70   75   80

Gly Ser Ala Pro Ser Gln Ala Gly Pro Gly Ser Ala Pro Ser Ser Ala
                85   90   95

Ala Ser Gly Ala Ser Ser Pro Ala Pro Ala Ser Gly Pro Ala Pro Ser
            100   105   110

Ala Val Ser Ser Ser Ser Pro Thr Pro Pro Val Arg Leu Arg Lys Thr
        115   120   125

Leu Asp Leu Ala Leu Ser Ile Leu Ala Asp Cys Cys Thr Glu Gly Ala
    130   135   140

Cys Arg Thr Glu Val Arg Arg Leu Gly Gly Ile Leu Pro Leu Val Thr
145   150   155   160

Ile Leu Gln Cys Met Lys Thr Asp Ser Ile Gln Asn Arg Thr Ala Arg
                165   170   175

Ala Leu Gly Asn Leu Ala Met Glu Pro Glu Ser Cys Gly Asp Ile His
            180   185   190

```
Cys Ala Gly Ala Val Pro Leu Leu Val Glu Ser Leu Thr Ala Cys Gln
        195                 200                 205

Asp Ser Gln Cys Leu Gln Ser Val Val Arg Ala Leu Arg Asn Leu Ala
    210                 215                 220

Asp Ser Pro Gln His Arg Leu Ala Leu Ala Gln Gln Gly Ala Val Arg
225                 230                 235                 240

Pro Leu Ala Glu Leu Leu Ala Thr Ala Pro Asp Ala Ala Leu Thr Leu
                245                 250                 255

Ala Leu Val Arg Ala Leu Leu Glu Leu Ser Arg Gly Cys Ser Arg Ala
            260                 265                 270

Cys Ala Glu Gln Leu Ser Leu Gly Gly Gly Leu Gly Pro Leu Val Ser
        275                 280                 285

Leu Ala Ser His Pro Lys Arg Ala Val Arg Glu Gly Thr Ile Leu Ile
    290                 295                 300

Leu Ala Asn Leu Cys Ala Gln Gly Leu Ile Arg Pro Ala Leu Gly Asn
305                 310                 315                 320

Ala Gly Gly Val Glu Val Leu Val Asp Glu Leu Arg Gln Arg Arg Asp
                325                 330                 335

Pro Asn Gly Ala Ser Pro Thr Ser Gln Gln Pro Leu Val Arg Ala Val
            340                 345                 350

Cys Leu Leu Cys Arg Glu Ala Ile Asn Arg Ala Arg Leu Arg Asp Ala
        355                 360                 365

Gly Gly Leu Asp Leu Leu Met Gly Leu Leu Arg Asp Pro Arg Ala Ser
    370                 375                 380

Ala Trp His Pro Arg Ile Val Ala Ala Leu Val Gly Phe Leu Tyr Asp
385                 390                 395                 400

Thr Gly Ala Leu Gly Arg Leu Gln Ala Leu Gly Leu Val Pro Leu Leu
                405                 410                 415
```

```
Ala Gly Gln Leu Cys Gly Glu Ala Gly Glu Glu Glu Glu Glu Gly Arg
            420                 425                 430

Glu Ala Ala Ser Trp Asp Phe Pro Glu Glu Arg Thr Pro Glu Arg Ala
        435                 440                 445

Gln Gly Gly Ser Phe Arg Ser Leu Arg Ser Trp Leu Ile Ser Glu Gly
    450                 455                 460

Tyr Ala Thr Gly Pro Asp Asp Ile Ser Pro Asp Trp Ser Pro Glu Gln
465                 470                 475                 480

Cys Pro Pro Glu Pro Met Glu Pro Ala Ser Pro Ala Pro Thr Pro Thr
                485                 490                 495

Ser Leu Arg Ala Pro Arg Thr Gln Arg Thr Pro Gly Arg Ser Pro Ala
            500                 505                 510

Ala Ala Ile Glu Glu Pro Trp Gly Arg Glu Gly Pro Ala Leu Leu Leu
        515                 520                 525

Leu Ser Arg Phe Ser Gln Ala Pro Asp Pro Ser Gly Ala Leu Val Thr
    530                 535                 540

Gly Pro Ala Leu Tyr Gly Leu Leu Thr Tyr Val Thr Gly Ala Pro Gly
545                 550                 555                 560

Pro Pro Ser Pro Arg Ala Leu Arg Ile Leu Ser Arg Leu Thr Cys Asn
                565                 570                 575

Pro Ala Cys Leu Glu Ala Phe Val Arg Ser Tyr Gly Ala Ala Leu Leu
            580                 585                 590

Arg Ala Trp Leu Val Leu Gly Val Ala Pro Asp Asp Trp Pro Ala Pro
        595                 600                 605

Arg Ala Arg Pro Thr Leu His Ser Arg His Arg Glu Leu Gly Glu Phe
    610                 615                 620

Pro Tyr Pro Pro Val Ser Leu Pro Pro Cys Glu Ser Pro Ser Ser Pro
625                 630                 635                 640
```

```
Met Ala Ser Met Gly Pro Glu Pro His Leu Pro Thr His Leu Ser Ser
                645                 650                 655

Pro Ala Arg Pro Pro Asp Asn Leu Ser Pro Glu Trp Gly Gly Glu Gln
            660                 665                 670

Gly Val Pro Val Pro Pro Trp Ala His Arg Gln Ser Ser Ala Val Ser
        675                 680                 685

Ser Ala Leu Ala Leu Gly Pro Arg Tyr Pro Asn Ser Arg Cys Ser Pro
    690                 695                 700

Ala Pro Arg Ile Trp Ala Gly Leu Cys Phe Phe Pro Gly Ser Ala Ile
705                 710                 715                 720

Gly Ser Ala Leu Ser
                725
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<210> 6335
<211> 771
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1375; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC5; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 5; "

<220>
<221> source
<223> /note="Uniprot ID: Q96C12; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000443995"

<400> 6335

```
Met Lys Thr Asp Ser Ile Gln Asn Arg Thr Ala Arg Ala Leu Gly Asn
1               5                   10                  15

Leu Ala Met Glu Pro Glu Ser Cys Gly Asp Ile His Cys Ala Gly Ala
            20                  25                  30
```

```
Val Pro Leu Leu Val Glu Ser Leu Thr Ala Cys Gln Asp Ser Gln Cys
        35                  40                  45

Leu Gln Ser Val Val Arg Ala Leu Arg Asn Leu Ala Asp Ser Pro Gln
    50                  55                  60

His Arg Leu Ala Leu Ala Gln Gln Gly Ala Val Arg Pro Leu Ala Glu
65                  70                  75                  80

Leu Leu Ala Thr Ala Pro Asp Ala Ala Leu Thr Leu Ala Leu Val Arg
                85                  90                  95

Ala Leu Leu Glu Leu Ser Arg Gly Cys Ser Arg Ala Cys Ala Glu Gln
            100                 105                 110

Leu Ser Leu Gly Gly Gly Leu Gly Pro Leu Val Ser Leu Ala Ser His
        115                 120                 125

Pro Lys Arg Ala Val Arg Glu Gly Thr Ile Leu Ile Leu Ala Asn Leu
    130                 135                 140

Cys Ala Gln Gly Leu Ile Arg Pro Ala Leu Gly Asn Ala Gly Gly Val
145                 150                 155                 160

Glu Val Leu Val Asp Glu Leu Arg Gln Arg Arg Asp Pro Asn Gly Ala
                165                 170                 175

Ser Pro Thr Ser Gln Gln Pro Leu Val Arg Ala Val Cys Leu Leu Cys
            180                 185                 190

Arg Glu Ala Ile Asn Arg Ala Arg Leu Arg Asp Ala Gly Gly Leu Asp
        195                 200                 205

Leu Leu Met Gly Leu Leu Arg Asp Pro Arg Ala Ser Ala Trp His Pro
    210                 215                 220

Arg Ile Val Ala Ala Leu Val Gly Phe Leu Tyr Asp Thr Gly Ala Leu
225                 230                 235                 240

Gly Arg Leu Gln Ala Leu Gly Leu Val Pro Leu Leu Ala Gly Gln Leu
                245                 250                 255
```

```
Cys Gly Glu Ala Gly Glu Glu Glu Glu Glu Gly Arg Glu Ala Ala Ser
            260                 265                 270

Trp Asp Phe Pro Glu Glu Arg Thr Pro Glu Arg Ala Gln Gly Gly Ser
        275                 280                 285

Phe Arg Ser Leu Arg Ser Trp Leu Ile Ser Glu Gly Tyr Ala Thr Gly
    290                 295                 300

Pro Asp Asp Ile Ser Pro Asp Trp Ser Pro Glu Gln Cys Pro Pro Glu
305                 310                 315                 320

Pro Met Glu Pro Ala Ser Pro Ala Pro Thr Pro Thr Ser Leu Arg Ala
                325                 330                 335

Pro Arg Thr Gln Arg Thr Pro Gly Arg Ser Pro Ala Ala Ala Ile Glu
            340                 345                 350

Glu Pro Trp Gly Arg Glu Gly Pro Ala Leu Leu Leu Leu Ser Arg Phe
        355                 360                 365

Ser Gln Ala Pro Asp Pro Ser Gly Ala Leu Val Thr Gly Pro Ala Leu
    370                 375                 380

Tyr Gly Leu Leu Thr Tyr Val Thr Gly Ala Pro Gly Pro Pro Ser Pro
385                 390                 395                 400

Arg Ala Leu Arg Ile Leu Ser Arg Leu Thr Cys Asn Pro Ala Cys Leu
                405                 410                 415

Glu Ala Phe Val Arg Ser Tyr Gly Ala Ala Leu Leu Arg Ala Trp Leu
            420                 425                 430

Val Leu Gly Val Ala Pro Asp Asp Trp Pro Ala Pro Arg Ala Arg Pro
        435                 440                 445

Thr Leu His Ser Arg His Arg Glu Leu Gly Glu Arg Leu Leu Gln Asn
    450                 455                 460

Leu Thr Val Gln Ala Glu Ser Pro Phe Gly Val Gly Ala Leu Thr His
465                 470                 475                 480
```

```
Leu Leu Leu Ser Gly Ser Pro Glu Asp Arg Val Ala Cys Ala Leu Thr
                485                 490                 495

Leu Pro Phe Ile Cys Arg Lys Pro Ser Leu Trp Arg Arg Leu Leu Leu
            500                 505                 510

Glu Gln Gly Gly Leu Arg Leu Leu Leu Ala Ala Leu Thr Arg Pro Ala
        515                 520                 525

Pro His Pro Leu Phe Leu Phe Phe Ala Ala Asp Ser Leu Ser Cys Leu
    530                 535                 540

Gln Asp Leu Val Ser Pro Thr Val Ser Pro Ala Val Pro Gln Ala Val
545                 550                 555                 560

Pro Met Asp Leu Asp Ser Pro Ser Pro Cys Leu Tyr Glu Pro Leu Leu
                565                 570                 575

Gly Pro Ala Pro Val Pro Ala Pro Asp Leu His Phe Leu Leu Asp Ser
            580                 585                 590

Gly Leu Gln Leu Pro Ala Gln Arg Ala Ala Ser Ala Thr Ala Ser Pro
        595                 600                 605

Phe Phe Arg Ala Leu Leu Ser Gly Ser Phe Ala Glu Ala Gln Met Asp
    610                 615                 620

Leu Val Pro Leu Arg Gly Leu Ser Pro Gly Ala Ala Trp Pro Val Leu
625                 630                 635                 640

His His Leu His Gly Cys Arg Gly Cys Gly Ala Ala Leu Gly Pro Val
                645                 650                 655

Pro Pro Pro Gly Gln Pro Leu Leu Gly Ser Glu Ala Glu Glu Ala Leu
            660                 665                 670

Glu Ala Ala Gly Arg Phe Leu Leu Pro Gly Leu Glu Glu Glu Leu Glu
        675                 680                 685

Glu Ala Val Gly Arg Ile His Leu Gly Pro Gln Gly Gly Pro Glu Ser
    690                 695                 700

Val Gly Glu Val Phe Arg Leu Gly Arg Pro Arg Leu Ala Ala His Cys
```

705 710 715 720

Ala Arg Trp Thr Leu Gly Ser Glu Gln Cys Pro Arg Lys Arg Gly Leu
725 730 735

Ala Leu Val Gly Leu Val Glu Ala Ala Gly Glu Glu Ala Gly Pro Leu
740 745 750

Thr Glu Ala Leu Leu Ala Val Val Met Gly Ile Glu Leu Gly Ala Arg
755 760 765

Val Pro Ala
770

<210> 6336
<211> 10
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1375; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC5; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000454430"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6336
Xaa Leu Gly Lys Cys Ser Ala Pro Val Ser
1 5 10

<210> 6337
<211> 598
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1375; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC5; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000456571"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6337
Xaa Thr Glu Val Arg Arg Leu Gly Gly Ile Leu Pro Leu Val Thr Ile
1 5 10 15

Leu Gln Cys Met Lys Thr Asp Ser Ile Gln Asn Arg Thr Ala Arg Ala
20 25 30

Leu Gly Asn Leu Ala Met Glu Pro Glu Ser Cys Gly Asp Ile His Cys
35 40 45

Ala Gly Ala Val Pro Leu Leu Val Glu Ser Leu Thr Ala Cys Gln Asp
50 55 60

Ser Gln Cys Leu Gln Ser Val Ala Leu Gly Leu Val Pro Leu Leu Ala
65 70 75 80

Gly Gln Leu Cys Gly Glu Ala Gly Glu Glu Glu Glu Gly Arg Glu
85 90 95

Ala Ala Ser Trp Asp Phe Pro Glu Glu Arg Thr Pro Glu Arg Ala Gln
100 105 110

Gly Gly Ser Phe Arg Ser Leu Arg Ser Trp Leu Ile Ser Glu Gly Tyr
115 120 125

Ala Thr Gly Pro Asp Asp Ile Ser Pro Asp Trp Ser Pro Glu Gln Cys

130 135 140

Pro Pro Glu Pro Met Glu Pro Ala Ser Pro Ala Pro Thr Pro Thr Ser
145 150 155 160

Leu Arg Ala Pro Arg Thr Gln Arg Thr Pro Gly Arg Ser Pro Ala Ala
165 170 175

Ala Ile Glu Glu Pro Trp Gly Arg Glu Gly Pro Ala Leu Leu Leu Leu
180 185 190

Ser Arg Phe Ser Gln Ala Pro Asp Pro Ser Gly Ala Leu Val Thr Gly
195 200 205

Pro Ala Leu Tyr Gly Leu Leu Thr Tyr Val Thr Gly Ala Pro Gly Pro
210 215 220

Pro Ser Pro Arg Ala Leu Arg Ile Leu Ser Arg Leu Thr Cys Asn Pro
225 230 235 240

Ala Cys Leu Glu Ala Phe Val Arg Ser Tyr Gly Ala Ala Leu Leu Arg
245 250 255

Ala Trp Leu Val Leu Gly Val Ala Pro Asp Asp Trp Pro Ala Pro Arg
260 265 270

Ala Arg Pro Thr Leu His Ser Arg His Arg Glu Leu Gly Glu Arg Leu
275 280 285

Leu Gln Asn Leu Thr Val Gln Ala Glu Ser Pro Phe Gly Val Gly Ala
290 295 300

Leu Thr His Leu Leu Leu Ser Gly Ser Pro Glu Asp Arg Val Ala Cys
305 310 315 320

Ala Leu Thr Leu Pro Phe Ile Cys Arg Lys Pro Ser Leu Trp Arg Arg
325 330 335

Leu Leu Leu Glu Gln Gly Gly Leu Arg Leu Leu Leu Ala Ala Leu Thr
340 345 350

Arg Pro Ala Pro His Pro Leu Phe Leu Phe Phe Ala Ala Asp Ser Leu
355 360 365

```
Ser Cys Leu Gln Asp Leu Val Ser Pro Thr Val Ser Pro Ala Val Pro
    370                 375                 380

Gln Ala Val Pro Met Asp Leu Asp Ser Pro Ser Pro Cys Leu Tyr Glu
385                 390                 395                 400

Pro Leu Leu Gly Pro Ala Pro Val Pro Ala Pro Asp Leu His Phe Leu
                405                 410                 415

Leu Asp Ser Gly Leu Gln Leu Pro Ala Gln Arg Ala Ala Ser Ala Thr
            420                 425                 430

Ala Ser Pro Phe Phe Arg Ala Leu Leu Ser Gly Ser Phe Ala Glu Ala
        435                 440                 445

Gln Met Asp Leu Val Pro Leu Arg Gly Leu Ser Pro Gly Ala Ala Trp
    450                 455                 460

Pro Val Leu His His Leu His Gly Cys Arg Gly Cys Gly Ala Ala Leu
465                 470                 475                 480

Gly Pro Val Pro Pro Pro Gly Gln Pro Leu Leu Gly Ser Glu Ala Glu
                485                 490                 495

Glu Ala Leu Glu Ala Ala Gly Arg Phe Leu Leu Pro Gly Leu Glu Glu
            500                 505                 510

Glu Leu Glu Glu Ala Val Gly Arg Ile His Leu Gly Pro Gln Gly Gly
        515                 520                 525

Pro Glu Ser Val Gly Glu Val Phe Arg Leu Gly Arg Pro Arg Leu Ala
    530                 535                 540

Ala His Cys Ala Arg Trp Thr Leu Gly Ser Glu Gln Cys Pro Arg Lys
545                 550                 555                 560

Arg Gly Leu Ala Leu Val Gly Leu Val Glu Ala Ala Gly Glu Glu Ala
                565                 570                 575

Gly Pro Leu Thr Glu Ala Leu Leu Ala Val Val Met Gly Ile Glu Leu
            580                 585                 590
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Gly Ala Arg Val Pro Ala
595

<210> 6338
<211> 935
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1375; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC5; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 5; "

<220>
<221> source
<223> /note="Uniprot ID: Q96C12; "

<220>
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<223> /note="ENSP ID: ENSP00000456877"

<400> 6338
Met Ala Ala Ala Lys Pro Thr Leu Thr Asp Ser Leu Ser Phe Cys Leu
1 5 10 15

Ala Gln Leu Ala Ala Ala Ala Gly Glu Ala Leu Gly Gly Glu Lys Asp
20 25 30

Pro Ala Thr Asn Glu Thr Pro Leu Ser Arg Ala Leu Leu Ala Leu Arg
35 40 45

Thr Arg His Ile Lys Ala Ala Gly Gly Ile Glu Arg Phe Arg Ala Arg
50 55 60

Gly Gly Leu Arg Pro Leu Leu Ala Leu Leu Arg Arg Ala Ala Ala Ala
65 70 75 80

Gly Ser Ala Pro Ser Gln Ala Gly Pro Gly Ser Ala Pro Ser Ser Ala
85 90 95

Ala Ser Gly Ala Ser Ser Pro Ala Pro Ala Ser Gly Pro Ala Pro Ser

```
            100                 105                 110

Ala Val Ser Ser Ser Ser Pro Thr Pro Pro Val Arg Leu Arg Lys Thr
        115                 120                 125

Leu Asp Leu Ala Leu Ser Ile Leu Ala Asp Cys Cys Thr Glu Gly Ala
    130                 135                 140

Cys Arg Thr Glu Val Arg Arg Leu Gly Gly Ile Leu Pro Leu Val Thr
145                 150                 155                 160

Ile Leu Gln Cys Met Lys Thr Asp Ser Ile Gln Asn Arg Thr Ala Arg
                165                 170                 175

Ala Leu Gly Asn Leu Ala Met Glu Pro Glu Ser Cys Gly Asp Ile His
            180                 185                 190

Cys Ala Gly Ala Val Pro Leu Leu Val Glu Ser Leu Thr Ala Cys Gln
        195                 200                 205

Asp Ser Gln Cys Leu Gln Ser Val Val Arg Ala Leu Arg Asn Leu Ala
    210                 215                 220

Asp Ser Pro Gln His Arg Leu Ala Leu Ala Gln Gln Gly Ala Val Arg
225                 230                 235                 240

Pro Leu Ala Glu Leu Leu Ala Thr Ala Pro Asp Ala Ala Leu Thr Leu
                245                 250                 255

Ala Leu Val Arg Ala Leu Leu Glu Leu Ser Arg Gly Cys Ser Arg Ala
            260                 265                 270

Cys Ala Glu Gln Leu Ser Leu Gly Gly Gly Leu Gly Pro Leu Val Ser
        275                 280                 285

Leu Ala Ser His Pro Lys Arg Ala Val Arg Glu Gly Thr Ile Leu Ile
    290                 295                 300

Leu Ala Asn Leu Cys Ala Gln Gly Leu Ile Arg Pro Ala Leu Gly Asn
305                 310                 315                 320

Ala Gly Gly Val Glu Val Leu Val Asp Glu Leu Arg Gln Arg Arg Asp
                325                 330                 335
```

```
Pro Asn Gly Ala Ser Pro Thr Ser Gln Gln Pro Leu Val Arg Ala Val
            340                 345                 350

Cys Leu Leu Cys Arg Glu Ala Ile Asn Arg Ala Arg Leu Arg Asp Ala
        355                 360                 365

Gly Gly Leu Asp Leu Leu Met Gly Leu Leu Arg Asp Pro Arg Ala Ser
    370                 375                 380

Ala Trp His Pro Arg Ile Val Ala Ala Leu Val Gly Phe Leu Tyr Asp
385                 390                 395                 400

Thr Gly Ala Leu Gly Arg Leu Gln Ala Leu Gly Leu Val Pro Leu Leu
                405                 410                 415

Ala Gly Gln Leu Cys Gly Glu Ala Gly Glu Glu Glu Glu Glu Gly Arg
            420                 425                 430

Glu Ala Ala Ser Trp Asp Phe Pro Glu Glu Arg Thr Pro Glu Arg Ala
        435                 440                 445

Gln Gly Gly Ser Phe Arg Ser Leu Arg Ser Trp Leu Ile Ser Glu Gly
    450                 455                 460

Tyr Ala Thr Gly Pro Asp Asp Ile Ser Pro Asp Trp Ser Pro Glu Gln
465                 470                 475                 480

Cys Pro Pro Glu Pro Met Glu Pro Ala Ser Pro Ala Pro Thr Pro Thr
                485                 490                 495

Ser Leu Arg Ala Pro Arg Thr Gln Arg Thr Pro Gly Arg Ser Pro Ala
            500                 505                 510

Ala Ala Ile Glu Glu Pro Trp Gly Arg Glu Gly Pro Ala Leu Leu Leu
        515                 520                 525

Leu Ser Arg Phe Ser Gln Ala Pro Asp Pro Ser Gly Ala Leu Val Thr
    530                 535                 540

Gly Pro Ala Leu Tyr Gly Leu Leu Thr Tyr Val Thr Gly Ala Pro Gly
545                 550                 555                 560
```

```
Pro Pro Ser Pro Arg Ala Leu Arg Ile Leu Ser Arg Leu Thr Cys Asn
                565                 570                 575

Pro Ala Cys Leu Glu Ala Phe Val Arg Ser Tyr Gly Ala Ala Leu Leu
            580                 585                 590

Arg Ala Trp Leu Val Leu Gly Val Ala Pro Asp Asp Trp Pro Ala Pro
        595                 600                 605

Arg Ala Arg Pro Thr Leu His Ser Arg His Arg Glu Leu Gly Glu Arg
    610                 615                 620

Leu Leu Gln Asn Leu Thr Val Gln Ala Glu Ser Pro Phe Gly Val Gly
625                 630                 635                 640

Ala Leu Thr His Leu Leu Leu Ser Gly Ser Pro Glu Asp Arg Val Ala
                645                 650                 655

Cys Ala Leu Thr Leu Pro Phe Ile Cys Arg Lys Pro Ser Leu Trp Arg
            660                 665                 670

Arg Leu Leu Leu Glu Gln Gly Gly Leu Arg Leu Leu Leu Ala Ala Leu
        675                 680                 685

Thr Arg Pro Ala Pro His Pro Leu Phe Leu Phe Phe Ala Ala Asp Ser
    690                 695                 700

Leu Ser Cys Leu Gln Asp Leu Val Ser Pro Thr Val Ser Pro Ala Val
705                 710                 715                 720

Pro Gln Ala Val Pro Met Asp Leu Asp Ser Pro Ser Pro Cys Leu Tyr
                725                 730                 735

Glu Pro Leu Leu Gly Pro Ala Pro Val Pro Ala Pro Asp Leu His Phe
            740                 745                 750

Leu Leu Asp Ser Gly Leu Gln Leu Pro Ala Gln Arg Ala Ala Ser Ala
        755                 760                 765

Thr Ala Ser Pro Phe Phe Arg Ala Leu Leu Ser Gly Ser Phe Ala Glu
    770                 775                 780
```

```
Ala Gln Met Asp Leu Val Pro Leu Arg Gly Leu Ser Pro Gly Ala Ala
785                 790                 795                 800

Trp Pro Val Leu His His Leu His Gly Cys Arg Gly Cys Gly Ala Ala
                805                 810                 815

Leu Gly Pro Val Pro Pro Pro Gly Gln Pro Leu Leu Gly Ser Glu Ala
            820                 825                 830

Glu Glu Ala Leu Glu Ala Ala Gly Arg Phe Leu Leu Pro Gly Leu Glu
        835                 840                 845

Glu Glu Leu Glu Glu Ala Val Gly Arg Ile His Leu Gly Pro Gln Gly
    850                 855                 860

Gly Pro Glu Ser Val Gly Glu Val Phe Arg Leu Gly Arg Pro Arg Leu
865                 870                 875                 880

Ala Ala His Cys Ala Arg Trp Thr Leu Gly Ser Glu Gln Cys Pro Arg
                885                 890                 895

Lys Arg Gly Leu Ala Leu Val Gly Leu Val Glu Ala Ala Gly Glu Glu
            900                 905                 910

Ala Gly Pro Leu Thr Glu Ala Leu Leu Ala Val Val Met Gly Ile Glu
        915                 920                 925

Leu Gly Ala Arg Val Pro Ala
    930                 935


<210> 6339
<211> 476
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1376; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC6; "

<220>
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<223> /note="Gene Name:
      armadillo repeat containing 6; "
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<220>
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<223> /note="Uniprot ID: Q6NXE6; "

<220>
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<223> /note="ENSP ID: ENSP00000269932"

<400> 6339
Met Val Ser Lys Arg Ile Ala Gln Glu Thr Phe Asp Ala Ala Val Arg
1   5   10   15

Glu Asn Ile Glu Glu Phe Ala Met Gly Pro Glu Glu Ala Val Lys Glu
            20   25   30

Ala Val Glu Gln Phe Glu Ser Gln Gly Val Asp Leu Ser Asn Ile Val
        35   40   45

Lys Thr Ala Pro Lys Val Ser Ala Asp Gly Ser Gln Glu Pro Thr His
    50   55   60

Asp Ile Leu Gln Met Leu Ser Asp Leu Gln Glu Ser Val Ala Ser Ser
65   70   75   80

Arg Pro Gln Glu Val Ser Ala Tyr Leu Thr Arg Phe Cys Asp Gln Cys
                85   90   95

Lys Gln Asp Lys Ala Cys Arg Phe Leu Ala Ala Gln Lys Gly Ala Tyr
            100   105   110

Pro Ile Ile Phe Thr Ala Trp Lys Leu Ala Thr Ala Gly Asp Gln Gly
        115   120   125

Leu Leu Leu Gln Ser Leu Asn Ala Leu Ser Val Leu Thr Asp Gly Gln
    130   135   140

Pro Asp Leu Leu Asp Ala Gln Gly Leu Gln Leu Leu Val Ala Thr Leu
145   150   155   160

Thr Gln Asn Ala Asp Glu Ala Asp Leu Thr Cys Ser Gly Ile Arg Cys
                165   170   175

Val Arg His Ala Cys Leu Lys His Glu Gln Asn Arg Gln Asp Leu Val
            180   185   190

```
Lys Ala Gly Val Leu Pro Leu Leu Thr Gly Ala Ile Thr His His Gly
        195                 200                 205

His His Thr Asp Val Val Arg Glu Ala Cys Trp Ala Leu Arg Val Met
    210                 215                 220

Thr Phe Asp Asp Asp Ile Arg Val Pro Phe Gly His Ala His Asn His
225                 230                 235                 240

Ala Lys Met Ile Val Gln Glu Asn Lys Gly Leu Lys Val Leu Ile Glu
                245                 250                 255

Ala Thr Lys Ala Phe Leu Asp Asn Pro Gly Ile Leu Ser Glu Leu Cys
            260                 265                 270

Gly Thr Leu Ser Arg Leu Ala Ile Arg Asn Glu Phe Cys Gln Glu Val
        275                 280                 285

Val Asp Leu Gly Gly Leu Ser Ile Leu Val Ser Leu Leu Ala Asp Cys
    290                 295                 300

Asn Asp His Gln Met Arg Asp Gln Ser Gly Val Gln Glu Leu Val Lys
305                 310                 315                 320

Gln Val Leu Ser Thr Leu Arg Ala Ile Ala Gly Asn Asp Asp Val Lys
                325                 330                 335

Asp Ala Ile Val Arg Ala Gly Gly Thr Glu Ser Ile Val Ala Ala Met
            340                 345                 350

Thr Gln His Leu Thr Ser Pro Gln Val Cys Glu Gln Ser Cys Ala Ala
        355                 360                 365

Leu Cys Phe Leu Ala Leu Arg Lys Pro Asp Asn Ser Arg Ile Ile Val
    370                 375                 380

Glu Gly Gly Gly Ala Val Ala Ala Leu Gln Ala Met Lys Ala His Pro
385                 390                 395                 400

Gln Lys Ala Gly Val Gln Lys Gln Ala Cys Met Leu Ile Arg Asn Leu
                405                 410                 415
```

```
Val Ala His Gly Gln Ala Phe Ser Lys Pro Ile Leu Asp Leu Gly Ala
            420                 425                 430

Glu Ala Leu Ile Met Gln Ala Arg Ser Ala His Arg Asp Cys Glu Asp
        435                 440                 445

Val Ala Lys Ala Ala Leu Arg Asp Leu Gly Cys His Val Glu Leu Arg
    450                 455                 460

Glu Leu Trp Thr Gly Gln Arg Gly Asn Leu Ala Pro
465                 470                 475


<210> 6340
<211> 476
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1376; "

<220>
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<223> /note="Gene Symbol: ARMC6; "

<220>
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<223> /note="Gene Name:
      armadillo repeat containing 6; "

<220>
<221> source
<223> /note="Uniprot ID:  Q6NXE6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000376147"

<400> 6340
Met Val Ser Lys Arg Ile Ala Gln Glu Thr Phe Asp Ala Ala Val Arg
1               5                  10                  15

Glu Asn Ile Glu Glu Phe Ala Met Gly Pro Glu Glu Ala Val Lys Glu
            20                  25                  30

Ala Val Glu Gln Phe Glu Ser Gln Gly Val Asp Leu Ser Asn Ile Val
        35                  40                  45

Lys Thr Ala Pro Lys Val Ser Ala Asp Gly Ser Gln Glu Pro Thr His
    50                  55                  60
```

```
Asp Ile Leu Gln Met Leu Ser Asp Leu Gln Glu Ser Val Ala Ser Ser
65                  70                  75                  80

Arg Pro Gln Glu Val Ser Ala Tyr Leu Thr Arg Phe Cys Asp Gln Cys
                85                  90                  95

Lys Gln Asp Lys Ala Cys Arg Phe Leu Ala Ala Gln Lys Gly Ala Tyr
            100                 105                 110

Pro Ile Ile Phe Thr Ala Trp Lys Leu Ala Thr Ala Gly Asp Gln Gly
        115                 120                 125

Leu Leu Leu Gln Ser Leu Asn Ala Leu Ser Val Leu Thr Asp Gly Gln
    130                 135                 140

Pro Asp Leu Leu Asp Ala Gln Gly Leu Gln Leu Leu Val Ala Thr Leu
145                 150                 155                 160

Thr Gln Asn Ala Asp Glu Ala Asp Leu Thr Cys Ser Gly Ile Arg Cys
                165                 170                 175

Val Arg His Ala Cys Leu Lys His Glu Gln Asn Arg Gln Asp Leu Val
            180                 185                 190

Lys Ala Gly Val Leu Pro Leu Leu Thr Gly Ala Ile Thr His His Gly
        195                 200                 205

His His Thr Asp Val Val Arg Glu Ala Cys Trp Ala Leu Arg Val Met
    210                 215                 220

Thr Phe Asp Asp Asp Ile Arg Val Pro Phe Gly His Ala His Asn His
225                 230                 235                 240

Ala Lys Met Ile Val Gln Glu Asn Lys Gly Leu Lys Val Leu Ile Glu
                245                 250                 255

Ala Thr Lys Ala Phe Leu Asp Asn Pro Gly Ile Leu Ser Glu Leu Cys
            260                 265                 270

Gly Thr Leu Ser Arg Leu Ala Ile Arg Asn Glu Phe Cys Gln Glu Val
        275                 280                 285
```

```
Val Asp Leu Gly Gly Leu Ser Ile Leu Val Ser Leu Leu Ala Asp Cys
    290                 295                 300

Asn Asp His Gln Met Arg Asp Gln Ser Gly Val Gln Glu Leu Val Lys
305                 310                 315                 320

Gln Val Leu Ser Thr Leu Arg Ala Ile Ala Gly Asn Asp Asp Val Lys
                325                 330                 335

Asp Ala Ile Val Arg Ala Gly Gly Thr Glu Ser Ile Val Ala Ala Met
            340                 345                 350

Thr Gln His Leu Thr Ser Pro Gln Val Cys Glu Gln Ser Cys Ala Ala
        355                 360                 365

Leu Cys Phe Leu Ala Leu Arg Lys Pro Asp Asn Ser Arg Ile Ile Val
    370                 375                 380

Glu Gly Gly Gly Ala Val Ala Ala Leu Gln Ala Met Lys Ala His Pro
385                 390                 395                 400

Gln Lys Ala Gly Val Gln Lys Gln Ala Cys Met Leu Ile Arg Asn Leu
                405                 410                 415

Val Ala His Gly Gln Ala Phe Ser Lys Pro Ile Leu Asp Leu Gly Ala
            420                 425                 430

Glu Ala Leu Ile Met Gln Ala Arg Ser Ala His Arg Asp Cys Glu Asp
        435                 440                 445

Val Ala Lys Ala Ala Leu Arg Asp Leu Gly Cys His Val Glu Leu Arg
    450                 455                 460

Glu Leu Trp Thr Gly Gln Arg Gly Asn Leu Ala Pro
465                 470                 475


<210> 6341
<211> 501
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1376; "
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<220>
<221> source
<223> /note="Gene Symbol: ARMC6; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 6; "

<220>
<221> source
<223> /note="Uniprot ID: Q6NXE6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000376148"

<400> 6341
Met Ser Glu Arg Cys Cys Ser Arg Tyr Ser Ser Gly Ala Ser Ile Gly
1   5   10   15

Cys Thr Pro Thr Ser Thr Gln Ala Lys Met Val Ser Lys Arg Ile Ala
            20   25   30

Gln Glu Thr Phe Asp Ala Ala Val Arg Glu Asn Ile Glu Glu Phe Ala
        35   40   45

Met Gly Pro Glu Glu Ala Val Lys Glu Ala Val Glu Gln Phe Glu Ser
    50   55   60

Gln Gly Val Asp Leu Ser Asn Ile Val Lys Thr Ala Pro Lys Val Ser
65   70   75   80

Ala Asp Gly Ser Gln Glu Pro Thr His Asp Ile Leu Gln Met Leu Ser
                85   90   95

Asp Leu Gln Glu Ser Val Ala Ser Ser Arg Pro Gln Glu Val Ser Ala
            100   105   110

Tyr Leu Thr Arg Phe Cys Asp Gln Cys Lys Gln Asp Lys Ala Cys Arg
        115   120   125

Phe Leu Ala Ala Gln Lys Gly Ala Tyr Pro Ile Ile Phe Thr Ala Trp
    130   135   140

Lys Leu Ala Thr Ala Gly Asp Gln Gly Leu Leu Leu Gln Ser Leu Asn
145   150   155   160

```
Ala Leu Ser Val Leu Thr Asp Gly Gln Pro Asp Leu Leu Asp Ala Gln
                165                 170                 175

Gly Leu Gln Leu Leu Val Ala Thr Leu Thr Gln Asn Ala Asp Glu Ala
            180                 185                 190

Asp Leu Thr Cys Ser Gly Ile Arg Cys Val Arg His Ala Cys Leu Lys
        195                 200                 205

His Glu Gln Asn Arg Gln Asp Leu Val Lys Ala Gly Val Leu Pro Leu
    210                 215                 220

Leu Thr Gly Ala Ile Thr His His Gly His His Thr Asp Val Val Arg
225                 230                 235                 240

Glu Ala Cys Trp Ala Leu Arg Val Met Thr Phe Asp Asp Asp Ile Arg
                245                 250                 255

Val Pro Phe Gly His Ala His Asn His Ala Lys Met Ile Val Gln Glu
            260                 265                 270

Asn Lys Gly Leu Lys Val Leu Ile Glu Ala Thr Lys Ala Phe Leu Asp
        275                 280                 285

Asn Pro Gly Ile Leu Ser Glu Leu Cys Gly Thr Leu Ser Arg Leu Ala
    290                 295                 300

Ile Arg Asn Glu Phe Cys Gln Glu Val Val Asp Leu Gly Gly Leu Ser
305                 310                 315                 320

Ile Leu Val Ser Leu Leu Ala Asp Cys Asn Asp His Gln Met Arg Asp
                325                 330                 335

Gln Ser Gly Val Gln Glu Leu Val Lys Gln Val Leu Ser Thr Leu Arg
            340                 345                 350

Ala Ile Ala Gly Asn Asp Asp Val Lys Asp Ala Ile Val Arg Ala Gly
        355                 360                 365

Gly Thr Glu Ser Ile Val Ala Ala Met Thr Gln His Leu Thr Ser Pro
    370                 375                 380
```

```
Gln Val Cys Glu Gln Ser Cys Ala Ala Leu Cys Phe Leu Ala Leu Arg
385                 390                 395                 400

Lys Pro Asp Asn Ser Arg Ile Ile Val Glu Gly Gly Gly Ala Val Ala
                405                 410                 415

Ala Leu Gln Ala Met Lys Ala His Pro Gln Lys Ala Gly Val Gln Lys
            420                 425                 430

Gln Ala Cys Met Leu Ile Arg Asn Leu Val Ala His Gly Gln Ala Phe
        435                 440                 445

Ser Lys Pro Ile Leu Asp Leu Gly Ala Glu Ala Leu Ile Met Gln Ala
    450                 455                 460

Arg Ser Ala His Arg Asp Cys Glu Asp Val Ala Lys Ala Ala Leu Arg
465                 470                 475                 480

Asp Leu Gly Cys His Val Glu Leu Arg Glu Leu Trp Thr Gly Gln Arg
                485                 490                 495

Gly Asn Leu Ala Pro
            500
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<210> 6342
<211> 156
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
armadillo repeat containing 6; "

<220>
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<223> /note="ENSP ID: ENSP00000437580"

<400> 6342
Met Leu Ser Asp Leu Gln Glu Ser Val Ala Ser Ser Arg Pro Gln Glu

```
1               5                   10                  15

Val Ser Ala Tyr Leu Thr Arg Phe Cys Asp Gln Cys Lys Gln Asp Lys
            20                  25                  30

Ala Cys Arg Phe Leu Ala Ala Gln Lys Gly Ala Tyr Pro Ile Ile Phe
        35                  40                  45

Thr Ala Trp Lys Leu Ala Thr Ala Gly Asp Gln Gly Leu Leu Leu Gln
    50                  55                  60

Ser Leu Asn Ala Leu Ser Val Leu Thr Asp Gly Gln Pro Asp Leu Leu
65                  70                  75                  80

Asp Ala Gln Gly Leu Gln Leu Leu Val Ala Thr Leu Thr Gln Asn Ala
                85                  90                  95

Asp Glu Ala Asp Leu Thr Cys Ser Gly Ile Arg Cys Val Arg His Ala
            100                 105                 110

Cys Leu Lys His Glu Gln Asn Arg Gln Asp Leu Val Lys Ala Gly Val
        115                 120                 125

Leu Pro Leu Leu Thr Gly Ala Ile Thr His His Gly His His Thr Asp
    130                 135                 140

Val Val Arg Glu Ala Cys Trp Ala Leu Arg Val Met
145                 150                 155


<210> 6343
<211> 103
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1376; "

<220>
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<223> /note="Gene Symbol: ARMC6; "

<220>
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<223> /note="Gene Name:
      armadillo repeat containing 6; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000438369"

<400> 6343
Met Val Ser Lys Arg Ile Ala Gln Glu Thr Phe Asp Ala Ala Val Arg
1   5   10   15

Glu Asn Ile Glu Glu Phe Ala Met Gly Pro Glu Glu Ala Val Lys Glu
            20   25   30

Ala Val Glu Gln Phe Glu Ser Gln Gly Val Asp Leu Ser Asn Ile Val
        35   40   45

Lys Thr Ala Pro Lys Val Ser Ala Asp Gly Ser Gln Glu Pro Thr His
    50   55   60

Asp Ile Leu Gln Met Leu Ser Asp Leu Gln Glu Ser Val Ala Ser Ser
65   70   75   80

Arg Pro Gln Glu Val Ser Ala Tyr Leu Thr Arg Phe Cys Asp Gln Cys
                85   90   95

Lys Gln Asp Lys Ala Cys Arg
            100

<210> 6344
<211> 63
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ARMC6; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000439003"

<400> 6344
Met Ser Glu Arg Cys Cys Ser Arg Tyr Arg Asp Gly Ala Leu Leu Cys

1 5 10 15

Cys Pro Cys Trp Ser Gln Thr Pro Asp Leu Lys Gln Ser Ser His Leu
20 25 30

Gly Leu Leu Lys His Trp Asp His Ser Ser Gly Ala Ser Ile Gly Cys
35 40 45

Thr Pro Thr Ser Thr Gln Ala Lys Met Val Ser Lys Arg Ile Ala
50 55 60

<210> 6345
<211> 70
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ARMC6; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000439038"

<400> 6345
Met Val Ser Lys Arg Ile Ala Gln Glu Thr Phe Asp Ala Ala Val Arg
1 5 10 15

Glu Asn Ile Glu Glu Phe Ala Met Gly Pro Glu Glu Ala Val Lys Glu
20 25 30

Ala Val Glu Gln Phe Glu Ser Gln Gly Val Asp Leu Ser Asn Ile Val
35 40 45

Lys Thr Ala Pro Lys Val Ser Ala Asp Gly Ser Gln Glu Pro Thr His
50 55 60

Asp Ile Leu Gln Met Leu
65 70

<210> 6346
<211> 161
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ARMC6; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000439269"

<400> 6346
Met Val Ser Lys Arg Ile Ala Gln Glu Thr Phe Asp Ala Ala Val Arg
1 5 10 15

Glu Asn Ile Glu Glu Phe Ala Met Gly Pro Glu Glu Ala Val Lys Glu
20 25 30

Ala Val Glu Gln Phe Glu Ser Gln Gly Val Asp Leu Ser Asn Ile Val
35 40 45

Lys Thr Ala Pro Lys Val Ser Ala Asp Gly Ser Gln Glu Pro Thr His
50 55 60

Asp Ile Leu Gln Met Leu Ser Asp Leu Gln Glu Ser Val Ala Ser Ser
65 70 75 80

Arg Pro Gln Glu Val Ser Ala Tyr Leu Thr Arg Phe Cys Asp Gln Cys
85 90 95

Lys Gln Asp Lys Ala Cys Arg Phe Leu Ala Ala Gln Lys Gly Ala Tyr
100 105 110

Pro Ile Ile Phe Thr Ala Trp Lys Leu Ala Thr Ala Gly Asp Gln Gly
115 120 125

Leu Leu Leu Gln Ser Leu Asn Ala Leu Ser Val Leu Thr Asp Gly Gln

```
    130                 135                 140

Pro Asp Leu Leu Asp Ala Gln Gly Leu Gln Leu Leu Val Ala Thr Leu
145                 150                 155                 160

Thr
```

<210> 6347
<211> 47
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ARMC6; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000441420"

<400> 6347

```
Met Ser Glu Arg Cys Cys Ser Arg Tyr Arg Asp Gly Val Ser Pro Arg
1               5                   10                  15

Val Gln Ala Gly Leu Lys Leu Leu Ala Ser Cys Asp Pro Ser Ala Ser
            20                  25                  30

Ala Ser Gln Ser Ala Gly His His Ala Trp Pro Glu Val Glu Thr
        35                  40                  45
```

<210> 6348
<211> 256
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1376; "

<220>
<221> source

<223> /note="Gene Symbol: ARMC6; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000441948"

<400> 6348

```
Met Val Ser Lys Arg Ile Ala Gln Glu Thr Phe Asp Ala Ala Val Arg
1               5                  10                  15

Glu Asn Ile Glu Glu Phe Ala Met Gly Pro Glu Glu Ala Val Lys Glu
            20                  25                  30

Ala Val Glu Gln Phe Glu Ser Gln Gly Val Asp Leu Ser Asn Ile Val
        35                  40                  45

Lys Thr Ala Pro Lys Val Ser Ala Asp Gly Ser Gln Glu Pro Thr His
    50                  55                  60

Asp Ile Leu Gln Met Leu Ser Asp Leu Gln Glu Ser Val Ala Ser Ser
65                  70                  75                  80

Arg Pro Gln Glu Val Ser Ala Tyr Leu Thr Arg Phe Cys Asp Gln Cys
                85                  90                  95

Lys Gln Asp Lys Ala Cys Arg Phe Leu Ala Ala Gln Lys Gly Ala Tyr
            100                 105                 110

Pro Ile Ile Phe Thr Ala Trp Lys Leu Ala Thr Ala Gly Asp Gln Gly
        115                 120                 125

Leu Leu Leu Gln Ser Leu Asn Ala Leu Ser Val Leu Thr Asp Gly Gln
    130                 135                 140

Pro Asp Leu Leu Asp Ala Gln Gly Leu Gln Leu Leu Val Ala Thr Leu
145                 150                 155                 160

Thr Gln Asn Ala Asp Glu Ala Asp Leu Thr Cys Ser Gly Ile Arg Cys
                165                 170                 175

Val Arg His Ala Cys Leu Lys His Glu Gln Asn Arg Gln Asp Leu Val
```

```
            180                 185                 190

Lys Ala Gly Val Leu Pro Leu Leu Thr Gly Ala Ile Thr His His Gly
        195                 200                 205

His His Thr Asp Val Val Arg Glu Ala Cys Trp Ala Leu Arg Val Met
    210                 215                 220

Thr Phe Asp Asp Asp Ile Arg Val Pro Phe Gly His Ala His Asn His
225                 230                 235                 240

Ala Lys Met Ile Val Gln Glu Asn Lys Gly Leu Lys Val Leu Ile Glu
                245                 250                 255


<210> 6349
<211> 30
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1376; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC6; "

<220>
<221> source
<223> /note="Gene Name:
      armadillo repeat containing 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000442263"

<400> 6349
Met Val Ser Lys Arg Ile Ala Gln Glu Thr Phe Asp Ala Ala Val Arg
1               5                   10                  15

Glu Asn Ile Glu Glu Phe Ala Met Gly Pro Glu Glu Ala Val
            20                  25                  30


<210> 6350
<211> 81
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<223> /note="Payload ID: 1376; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC6; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000443719"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6350
Xaa Lys Ala His Pro Gln Lys Ala Gly Val Gln Lys Gln Ala Cys Met
1 5 10 15

Leu Ile Arg Asn Leu Val Ala His Gly Gln Ala Phe Ser Lys Pro Ile
20 25 30

Leu Asp Leu Gly Ala Glu Ala Leu Ile Met Gln Ala Arg Ser Ala His
35 40 45

Arg Asp Cys Glu Asp Val Ala Lys Ala Ala Leu Arg Asp Leu Gly Cys
50 55 60

His Val Glu Leu Arg Glu Leu Trp Thr Gly Gln Arg Gly Asn Leu Ala
65 70 75 80

Pro

<210> 6351
<211> 501
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source

<223> /note="Gene Symbol: ARMC6; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 6; "

<220>
<221> source
<223> /note="Uniprot ID: Q6NXE6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000444156"

<400> 6351

```
Met Ser Glu Arg Cys Cys Ser Arg Tyr Ser Ser Gly Ala Ser Ile Gly
1               5                  10                  15

Cys Thr Pro Thr Ser Thr Gln Ala Lys Met Val Ser Lys Arg Ile Ala
            20                  25                  30

Gln Glu Thr Phe Asp Ala Ala Val Arg Glu Asn Ile Glu Glu Phe Ala
        35                  40                  45

Met Gly Pro Glu Glu Ala Val Lys Glu Ala Val Glu Gln Phe Glu Ser
    50                  55                  60

Gln Gly Val Asp Leu Ser Asn Ile Val Lys Thr Ala Pro Lys Val Ser
65                  70                  75                  80

Ala Asp Gly Ser Gln Glu Pro Thr His Asp Ile Leu Gln Met Leu Ser
                85                  90                  95

Asp Leu Gln Glu Ser Val Ala Ser Ser Arg Pro Gln Glu Val Ser Ala
            100                 105                 110

Tyr Leu Thr Arg Phe Cys Asp Gln Cys Lys Gln Asp Lys Ala Cys Arg
        115                 120                 125

Phe Leu Ala Ala Gln Lys Gly Ala Tyr Pro Ile Ile Phe Thr Ala Trp
    130                 135                 140

Lys Leu Ala Thr Ala Gly Asp Gln Gly Leu Leu Leu Gln Ser Leu Asn
145                 150                 155                 160

Ala Leu Ser Val Leu Thr Asp Gly Gln Pro Asp Leu Leu Asp Ala Gln
```

```
                165                 170                 175

Gly Leu Gln Leu Leu Val Ala Thr Leu Thr Gln Asn Ala Asp Glu Ala
            180                 185                 190

Asp Leu Thr Cys Ser Gly Ile Arg Cys Val Arg His Ala Cys Leu Lys
        195                 200                 205

His Glu Gln Asn Arg Gln Asp Leu Val Lys Ala Gly Val Leu Pro Leu
    210                 215                 220

Leu Thr Gly Ala Ile Thr His His Gly His His Thr Asp Val Val Arg
225                 230                 235                 240

Glu Ala Cys Trp Ala Leu Arg Val Met Thr Phe Asp Asp Asp Ile Arg
                245                 250                 255

Val Pro Phe Gly His Ala His Asn His Ala Lys Met Ile Val Gln Glu
            260                 265                 270

Asn Lys Gly Leu Lys Val Leu Ile Glu Ala Thr Lys Ala Phe Leu Asp
        275                 280                 285

Asn Pro Gly Ile Leu Ser Glu Leu Cys Gly Thr Leu Ser Arg Leu Ala
    290                 295                 300

Ile Arg Asn Glu Phe Cys Gln Glu Val Val Asp Leu Gly Gly Leu Ser
305                 310                 315                 320

Ile Leu Val Ser Leu Leu Ala Asp Cys Asn Asp His Gln Met Arg Asp
                325                 330                 335

Gln Ser Gly Val Gln Glu Leu Val Lys Gln Val Leu Ser Thr Leu Arg
            340                 345                 350

Ala Ile Ala Gly Asn Asp Asp Val Lys Asp Ala Ile Val Arg Ala Gly
        355                 360                 365

Gly Thr Glu Ser Ile Val Ala Ala Met Thr Gln His Leu Thr Ser Pro
    370                 375                 380

Gln Val Cys Glu Gln Ser Cys Ala Ala Leu Cys Phe Leu Ala Leu Arg
385                 390                 395                 400
```

```
Lys Pro Asp Asn Ser Arg Ile Ile Val Glu Gly Gly Gly Ala Val Ala
                405                 410                 415

Ala Leu Gln Ala Met Lys Ala His Pro Gln Lys Ala Gly Val Gln Lys
            420                 425                 430

Gln Ala Cys Met Leu Ile Arg Asn Leu Val Ala His Gly Gln Ala Phe
        435                 440                 445

Ser Lys Pro Ile Leu Asp Leu Gly Ala Glu Ala Leu Ile Met Gln Ala
    450                 455                 460

Arg Ser Ala His Arg Asp Cys Glu Asp Val Ala Lys Ala Ala Leu Arg
465                 470                 475                 480

Asp Leu Gly Cys His Val Glu Leu Arg Glu Leu Trp Thr Gly Gln Arg
                485                 490                 495

Gly Asn Leu Ala Pro
            500
```

<210> 6352
<211> 137
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1376; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC6; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000444265"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6352
Xaa Ser Gly Val Gln Glu Leu Val Lys Gln Val Leu Ser Thr Leu Arg
1 5 10 15

Ala Ile Ala Gly Asn Asp Asp Val Lys Asp Ala Ile Val Arg Ala Gly
20 25 30

Gly Thr Glu Ser Ile Val Ala Ala Met Thr Gln His Leu Thr Ser Pro
35 40 45

Gln Val Cys Glu Gln Ser Cys Ala Ala Leu Cys Phe Leu Ala Leu Arg
50 55 60

Lys Pro Asp Asn Ser Arg Ile Ile Val Glu Gly Gly Gly Ala Val Ala
65 70 75 80

Ala Leu Gln Ala Met Lys Ala His Pro Gln Lys Ala Gly Val Gln Val
85 90 95

Gly Arg Ala Gly Asp Gly Gly Arg Gln Ala Gly Val Gly Cys Ala Glu
100 105 110

Thr Gly Leu His Ala Asp Pro Lys Pro Gly Gly Pro Arg Pro Gly Leu
115 120 125

Leu Glu Ala His Pro Gly Pro Gly Gly
130 135

<210> 6353
<211> 43
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1376; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC6; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 6; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000444317"

<400> 6353
Met Val Ser Lys Arg Ile Ala Gln Glu Thr Phe Asp Ala Ala Val Arg
1 5 10 15

Glu Asn Ile Glu Glu Phe Ala Met Gly Pro Glu Glu Ala Val Lys Glu
20 25 30

Ala Val Glu Gln Phe Glu Ser Gln Asp Ala Gln
35 40

<210> 6354
<211> 408
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1376; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC6; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000444341"

<400> 6354
Met Leu Ser Asp Leu Gln Glu Ser Val Ala Ser Ser Arg Pro Gln Glu
1 5 10 15

Val Ser Ala Tyr Leu Thr Arg Phe Cys Asp Gln Cys Lys Gln Asp Lys
20 25 30

Ala Cys Arg Phe Leu Ala Ala Gln Lys Gly Ala Tyr Pro Ile Ile Phe
35 40 45

Thr Ala Trp Lys Leu Ala Thr Ala Gly Asp Gln Gly Leu Leu Leu Gln
50 55 60

Ser Leu Asn Ala Leu Ser Val Leu Thr Asp Gly Gln Pro Asp Leu Leu
65 70 75 80

```
Asp Ala Gln Gly Leu Gln Leu Leu Val Ala Thr Leu Thr Gln Asn Ala
                85                  90                  95

Asp Glu Ala Asp Leu Thr Cys Ser Gly Ile Arg Cys Val Arg His Ala
            100                 105                 110

Cys Leu Lys His Glu Gln Asn Arg Gln Asp Leu Val Lys Ala Gly Val
        115                 120                 125

Leu Pro Leu Leu Thr Gly Ala Ile Thr His His Gly His His Thr Asp
    130                 135                 140

Val Val Arg Glu Ala Cys Trp Ala Leu Arg Val Met Thr Phe Asp Asp
145                 150                 155                 160

Asp Ile Arg Val Pro Phe Gly His Ala His Asn His Ala Lys Met Ile
                165                 170                 175

Val Gln Glu Asn Lys Gly Leu Lys Val Leu Ile Glu Ala Thr Lys Ala
            180                 185                 190

Phe Leu Asp Asn Pro Gly Ile Leu Ser Glu Leu Cys Gly Thr Leu Ser
        195                 200                 205

Arg Leu Ala Ile Arg Asn Glu Phe Cys Gln Glu Val Val Asp Leu Gly
    210                 215                 220

Gly Leu Ser Ile Leu Val Ser Leu Leu Ala Asp Cys Asn Asp His Gln
225                 230                 235                 240

Met Arg Asp Gln Ser Gly Val Gln Glu Leu Val Lys Gln Val Leu Ser
                245                 250                 255

Thr Leu Arg Ala Ile Ala Gly Asn Asp Asp Val Lys Asp Ala Ile Val
            260                 265                 270

Arg Ala Gly Gly Thr Glu Ser Ile Val Ala Ala Met Thr Gln His Leu
        275                 280                 285

Thr Ser Pro Gln Val Cys Glu Gln Ser Cys Ala Ala Leu Cys Phe Leu
    290                 295                 300
```

```
Ala Leu Arg Lys Pro Asp Asn Ser Arg Ile Ile Val Glu Gly Gly Gly
305                 310                 315                 320

Ala Val Ala Ala Leu Gln Ala Met Lys Ala His Pro Gln Lys Ala Gly
                325                 330                 335

Val Gln Lys Gln Ala Cys Met Leu Ile Arg Asn Leu Val Ala His Gly
            340                 345                 350

Gln Ala Phe Ser Lys Pro Ile Leu Asp Leu Gly Ala Glu Ala Leu Ile
        355                 360                 365

Met Gln Ala Arg Ser Ala His Arg Asp Cys Glu Asp Val Ala Lys Ala
    370                 375                 380

Ala Leu Arg Asp Leu Gly Cys His Val Glu Leu Arg Glu Leu Trp Thr
385                 390                 395                 400

Gly Gln Arg Gly Asn Leu Ala Pro
                405
```

<210> 6355
<211> 70
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1376; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC6; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000444916"

<400> 6355

```
Met Ser Glu Arg Cys Cys Ser Arg Tyr Ser Gln Ala Gly Val Gln Trp
1               5                   10                  15

His Asp Leu Gly Ser Leu Gln Pro Pro Pro Leu Cys Ser Ser Gly Ser
```

```
            20                  25                  30

Pro Thr Ser Val Ser Leu Ile Ala Gly Ile Thr Asp Leu Arg Ser Ile
        35                  40                  45

Tyr Arg Leu His Ala Asn Ile Asn Thr Gly Glu Asp Gly Leu Gln Ala
    50                  55                  60

His Cys Pro Gly Asp Leu
65                  70


<210> 6356
<211> 259
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1376; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC6; "

<220>
<221> source
<223> /note="Gene Name:
      armadillo repeat containing 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000446037"

<400> 6356
Met Val Ser Lys Arg Ile Ala Gln Glu Thr Phe Asp Ala Ala Val Arg
1               5                   10                  15

Glu Asn Ile Glu Glu Phe Ala Met Gly Pro Glu Glu Ala Val Lys Glu
            20                  25                  30

Ala Val Glu Gln Phe Glu Ser Gln Gly Val Asp Leu Ser Asn Ile Val
        35                  40                  45

Lys Thr Ala Pro Lys Val Ser Ala Asp Gly Ser Gln Glu Pro Thr His
    50                  55                  60

Asp Ile Leu Gln Met Leu Ser Asp Leu Gln Glu Ser Val Ala Ser Ser
65                  70                  75                  80
```

```
Arg Pro Gln Glu Val Ser Ala Tyr Leu Thr Arg Phe Cys Asp Gln Cys
                85                  90                  95

Lys Gln Asp Lys Ala Cys Arg Phe Leu Ala Ala Gln Lys Gly Ala Tyr
            100                 105                 110

Pro Ile Ile Phe Thr Ala Trp Lys Leu Ala Thr Ala Gly Asp Gln Gly
        115                 120                 125

Leu Leu Leu Gln Ser Leu Asn Ala Leu Ser Val Leu Thr Asp Gly Gln
    130                 135                 140

Pro Asp Leu Leu Asp Ala Gln Gly Leu Gln Leu Leu Val Ala Thr Leu
145                 150                 155                 160

Thr Gln Asn Ala Asp Glu Ala Asp Leu Thr Cys Ser Gly Ile Arg Cys
                165                 170                 175

Val Arg His Ala Cys Leu Lys His Glu Gln Asn Arg Gln Asp Leu Val
            180                 185                 190

Lys Ala Gly Val Leu Pro Leu Leu Thr Gly Ala Ile Thr His His Gly
        195                 200                 205

His His Thr Asp Val Val Arg Glu Ala Cys Trp Ala Leu Arg Val Met
    210                 215                 220

Thr Phe Asp Asp Asp Ile Arg Val Pro Phe Gly His Ala His Asn His
225                 230                 235                 240

Ala Lys Met Ile Val Gln Glu Asn Lys Gly Leu Lys Val Leu Ile Glu
                245                 250                 255

Ala Thr Lys
```

<210> 6357
<211> 163
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1376; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC6; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000446209"

<400> 6357
Met Ser Glu Arg Cys Cys Ser Arg Tyr Ser Ser Gly Ala Ser Ile Gly
1 5 10 15

Cys Thr Pro Thr Ser Thr Gln Ala Lys Met Val Ser Lys Arg Ile Ala
20 25 30

Gln Glu Thr Phe Asp Ala Ala Val Arg Glu Asn Ile Glu Glu Phe Ala
35 40 45

Met Gly Pro Glu Glu Ala Val Lys Glu Ala Val Glu Gln Phe Glu Ser
50 55 60

Gln Gly Val Asp Leu Ser Asn Ile Val Lys Thr Ala Pro Lys Val Ser
65 70 75 80

Ala Asp Gly Ser Gln Glu Pro Thr His Asp Ile Leu Gln Met Leu Ser
85 90 95

Asp Leu Gln Glu Ser Val Ala Ser Ser Arg Pro Gln Glu Val Ser Ala
100 105 110

Tyr Leu Thr Arg Phe Cys Asp Gln Cys Lys Gln Asp Lys Ala Cys Arg
115 120 125

Phe Leu Ala Ala Gln Lys Gly Ala Tyr Pro Ile Ile Phe Thr Ala Trp
130 135 140

Lys Leu Ala Thr Ala Gly Asp Gln Gly Leu Leu Leu Gln Ser Leu Asn
145 150 155 160

Ala Leu Ser

<210> 6358
<211> 145
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1376; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC6; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000446234"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6358
Xaa Glu Val Val Asp Leu Gly Gly Leu Ser Ile Leu Val Ser Leu Leu
1 5 10 15

Ala Asp Cys Asn Asp His Gln Met Arg Asp Gln Ser Gly Val Gln Glu
20 25 30

Leu Val Lys Gln Val Leu Ser Thr Leu Arg Ala Ile Ala Gly Asn Asp
35 40 45

Asp Val Lys Asp Ala Ile Val Arg Ala Gly Gly Thr Glu Ser Ile Val
50 55 60

Ala Ala Met Thr Gln His Leu Thr Ser Pro Gln Lys Gln Ala Cys Met
65 70 75 80

Leu Ile Arg Asn Leu Val Ala His Gly Gln Ala Phe Ser Lys Pro Ile
85 90 95

Leu Asp Leu Gly Ala Glu Ala Leu Ile Met Gln Ala Arg Ser Ala His
100 105 110

```
Arg Asp Cys Glu Asp Val Ala Lys Ala Ala Leu Arg Asp Leu Gly Cys
        115                 120                 125

His Val Glu Leu Arg Glu Leu Trp Thr Gly Gln Arg Gly Asn Leu Ala
    130                 135                 140

Pro
145
```

<210> 6359
<211> 198
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1377; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC7; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 7; "

<220>
<221> source
<223> /note="Uniprot ID: Q9H6L4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000245543"

<400> 6359

```
Met Ala Gln Lys Pro Lys Val Asp Pro His Val Gly Arg Leu Gly Tyr
1               5                   10                  15

Leu Gln Ala Leu Val Thr Glu Phe Gln Glu Thr Gln Ser Gln Asp Ala
            20                  25                  30

Lys Glu Gln Val Leu Ala Asn Leu Ala Asn Phe Ala Tyr Asp Pro Ser
        35                  40                  45

Asn Tyr Glu Tyr Leu Arg Gln Leu Gln Val Leu Asp Leu Phe Leu Asp
    50                  55                  60
```

```
Ser Leu Ser Glu Glu Asn Glu Thr Leu Val Glu Phe Ala Ile Gly Gly
65                  70                  75                  80

Leu Cys Asn Leu Cys Pro Asp Arg Ala Asn Lys Glu His Ile Leu His
                85                  90                  95

Ala Gly Gly Val Pro Leu Ile Ile Asn Cys Leu Ser Ser Pro Asn Glu
            100                 105                 110

Glu Thr Val Leu Ser Ala Ile Thr Thr Leu Met His Leu Ser Pro Pro
        115                 120                 125

Gly Arg Ser Phe Leu Pro Glu Leu Thr Ala Thr Pro Val Val Gln Cys
    130                 135                 140

Met Leu Arg Phe Ser Leu Ser Ala Ser Ala Arg Leu Arg Asn Leu Ala
145                 150                 155                 160

Gln Ile Phe Leu Glu Asp Phe Cys Ser Pro Arg Gln Val Ala Glu Ala
                165                 170                 175

Arg Ser Arg Gln Ala His Ser Ala Leu Gly Ile Pro Leu Pro Arg Ser
            180                 185                 190

Val Ala Pro Arg Gln Arg
        195


<210> 6360
<211> 82
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1377; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC7; "

<220>
<221> source
<223> /note="Gene Name:
      armadillo repeat containing 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000462642"
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<400> 6360
Met Ala Gln Lys Pro Lys Val Asp Pro His Val Gly Arg Leu Gly Tyr
1 5 10 15

Leu Gln Ala Leu Val Thr Glu Phe Gln Glu Thr Gln Ser Gln Asp Ala
20 25 30

Lys Glu Gln Val Leu Ala Asn Leu Ala Asn Phe Ala Tyr Asp Pro Ser
35 40 45

Asn Tyr Glu Tyr Leu Arg Gln Leu Gln Val Leu Asp Leu Phe Leu Asp
50 55 60

Ser Leu Ser Glu Glu Asn Glu Thr Leu Val Glu Phe Ala Ile Ala Ala
65 70 75 80

Ala Val

<210> 6361
<211> 101
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1377; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC7; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000462939"

<400> 6361
Met Ala Gln Lys Pro Lys Val Asp Pro His Val Gly Arg Leu Gly Tyr
1 5 10 15

Leu Gln Ala Leu Val Thr Glu Phe Gln Glu Thr Gln Ser Gln Asp Ala
20 25 30

Lys Glu Gln Val Leu Ala Asn Leu Ala Asn Phe Ala Tyr Asp Pro Ser
35 40 45

Asn Tyr Glu Tyr Leu Arg Gln Leu Gln Val Leu Asp Leu Phe Leu Asp
50 55 60

Ser Leu Ser Glu Glu Asn Glu Thr Leu Val Glu Phe Ala Ile Ala Arg
65 70 75 80

Pro Pro Arg Pro Lys His Ser Ser Phe Leu Ser Val Glu Ser Leu Arg
85 90 95

Gly Thr Met Leu Gln
100

<210> 6362
<211> 103
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1377; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC7; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 7; "

<220>
<221> source
<223> /note="Uniprot ID: Q9H6L4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000462962"

<400> 6362
Met Ala Gln Lys Pro Lys Val Asp Pro His Val Gly Arg Leu Gly Tyr
1 5 10 15

Leu Gln Ala Leu Val Thr Glu Phe Gln Glu Thr Gln Ser Gln Asp Ala
20 25 30

Lys Glu Gln Val Leu Ala Asn Leu Ala Asn Phe Ala Tyr Asp Pro Ser
35 40 45

```
Asn Tyr Glu Tyr Leu Arg Gln Leu Gln Glu Ala Cys Ala Thr Cys Ala
    50                  55                  60

Gln Thr Gly Pro Thr Arg Ser Thr Ser Cys Thr Gln Glu Val Ser His
65                  70                  75                  80

Ser Ser Ser Thr Ala Tyr Pro Ala Pro Met Arg Arg Arg Cys Cys Leu
                85                  90                  95

Pro Ser Pro Arg Ser Cys Thr
            100


<210> 6363
<211> 385
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1378; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC8; "

<220>
<221> source
<223> /note="Gene Name:
      armadillo repeat containing 8; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8IUR7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000351221"

<400> 6363
Met Glu Val Thr Ala Ser Ser Arg His Tyr Val Asp Arg Leu Phe Asp
1               5                   10                  15

Pro Asp Pro Gln Lys Val Leu Gln Gly Val Ile Asp Met Lys Asn Ala
            20                  25                  30

Val Ile Gly Asn Asn Lys Gln Lys Ala Asn Leu Ile Val Leu Gly Ala
        35                  40                  45
```

```
Val Pro Arg Leu Leu Tyr Leu Leu Gln Gln Glu Thr Ser Ser Thr Glu
    50                  55                  60

Leu Lys Thr Glu Cys Ala Val Val Leu Gly Ser Leu Ala Met Gly Thr
65                  70                  75                  80

Glu Asn Asn Val Lys Ser Leu Leu Asp Cys His Ile Ile Pro Ala Leu
                85                  90                  95

Leu Gln Gly Leu Leu Ser Pro Asp Leu Lys Phe Ile Glu Ala Cys Leu
            100                 105                 110

Arg Cys Leu Arg Thr Ile Phe Thr Ser Pro Val Thr Pro Glu Glu Leu
        115                 120                 125

Leu Tyr Thr Asp Ala Thr Val Ile Pro His Leu Met Ala Leu Leu Ser
    130                 135                 140

Arg Ser Arg Tyr Thr Gln Glu Tyr Ile Cys Gln Ile Phe Ser His Cys
145                 150                 155                 160

Cys Lys Gly Pro Asp His Gln Thr Ile Leu Phe Asn His Gly Ala Val
                165                 170                 175

Gln Asn Ile Ala His Leu Leu Thr Ser Leu Ser Tyr Lys Val Arg Met
            180                 185                 190

Gln Ala Leu Lys Cys Phe Ser Val Leu Ala Phe Glu Asn Pro Gln Val
        195                 200                 205

Ser Met Thr Leu Val Asn Val Leu Val Asp Gly Glu Leu Leu Pro Gln
    210                 215                 220

Ile Phe Val Lys Met Leu Gln Arg Asp Lys Pro Ile Glu Met Gln Leu
225                 230                 235                 240

Thr Ser Ala Lys Cys Leu Thr Tyr Met Cys Arg Ala Gly Ala Ile Arg
                245                 250                 255

Thr Asp Asp Asn Cys Ile Val Leu Lys Thr Leu Pro Cys Leu Val Arg
            260                 265                 270

Met Cys Ser Lys Glu Arg Leu Leu Glu Glu Arg Val Glu Gly Ala Glu
```

```
        275                 280                 285

Thr Leu Ala Tyr Leu Ile Glu Pro Asp Val Glu Leu Gln Arg Ile Ala
    290                 295                 300

Ser Ile Thr Asp His Leu Ile Ala Met Leu Ala Asp Tyr Phe Lys Tyr
305                 310                 315                 320

Pro Ser Ser Val Ser Ala Ile Thr Asp Ile Lys Arg Leu Asp His Asp
                325                 330                 335

Leu Lys His Ala His Glu Leu Arg Gln Ala Ala Phe Lys Leu Tyr Ala
            340                 345                 350

Ser Leu Gly Ala Asn Asp Glu Asp Ile Arg Lys Lys Val Ser Leu Gly
        355                 360                 365

Glu Gly Arg Pro Pro Val Leu Thr Ala Ser Arg Gln Gly Val Thr Ser
    370                 375                 380

Thr
385


<210> 6364
<211> 600
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1378; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC8; "

<220>
<221> source
<223> /note="Gene Name:
      armadillo repeat containing 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000417049"

<400> 6364
Met Lys Asn Ala Val Ile Gly Asn Asn Lys Gln Lys Ala Asn Leu Ile
1               5                   10                  15
```

```
Val Leu Gly Ala Val Pro Arg Leu Leu Tyr Leu Leu Gln Gln Glu Thr
            20                  25                  30

Ser Ser Thr Glu Leu Lys Thr Glu Cys Ala Val Val Leu Gly Ser Leu
        35                  40                  45

Ala Met Gly Thr Glu Asn Asn Val Lys Ser Leu Leu Asp Cys His Ile
    50                  55                  60

Ile Pro Ala Leu Leu Gln Gly Leu Leu Ser Pro Asp Leu Lys Phe Ile
65                  70                  75                  80

Glu Ala Cys Leu Arg Cys Leu Arg Thr Ile Phe Thr Ser Pro Val Thr
                85                  90                  95

Pro Glu Glu Leu Leu Tyr Thr Gly Pro Asp His Gln Thr Ile Leu Phe
            100                 105                 110

Asn His Gly Ala Val Gln Asn Ile Ala His Leu Leu Thr Ser Leu Ser
        115                 120                 125

Tyr Lys Val Arg Met Gln Ala Leu Lys Cys Phe Ser Val Leu Ala Phe
    130                 135                 140

Glu Asn Pro Gln Val Ser Met Thr Leu Val Asn Val Leu Val Asp Gly
145                 150                 155                 160

Glu Leu Leu Pro Gln Ile Phe Val Lys Met Leu Gln Arg Asp Lys Pro
                165                 170                 175

Ile Glu Met Gln Leu Thr Ser Ala Lys Cys Leu Thr Tyr Met Cys Arg
            180                 185                 190

Ala Gly Ala Ile Arg Thr Asp Asp Asn Cys Ile Val Leu Lys Thr Leu
        195                 200                 205

Pro Cys Leu Val Arg Met Cys Ser Lys Glu Arg Leu Leu Glu Glu Arg
    210                 215                 220

Val Glu Gly Ala Glu Thr Leu Ala Tyr Leu Ile Glu Pro Asp Val Glu
225                 230                 235                 240
```

```
Leu Gln Arg Ile Ala Ser Ile Thr Asp His Leu Ile Ala Met Leu Ala
                245                 250                 255

Asp Tyr Phe Lys Tyr Pro Ser Ser Val Ser Ala Ile Thr Asp Ile Lys
            260                 265                 270

Arg Leu Asp His Asp Leu Lys His Ala His Glu Leu Arg Gln Ala Ala
        275                 280                 285

Phe Lys Leu Tyr Ala Ser Leu Gly Ala Asn Asp Glu Asp Ile Arg Lys
    290                 295                 300

Lys Ile Ile Glu Thr Glu Asn Met Met Asp Arg Ile Val Thr Gly Leu
305                 310                 315                 320

Ser Glu Ser Ser Val Lys Val Arg Leu Ala Ala Val Arg Cys Leu His
                325                 330                 335

Ser Leu Ser Arg Ser Val Gln Gln Leu Arg Thr Ser Phe Gln Asp His
            340                 345                 350

Ala Val Trp Lys Pro Leu Met Lys Val Leu Gln Asn Ala Pro Asp Glu
        355                 360                 365

Ile Leu Val Val Ala Ser Ser Met Leu Cys Asn Leu Leu Leu Glu Phe
    370                 375                 380

Ser Pro Ser Lys Glu Pro Ile Leu Glu Ser Gly Ala Val Glu Leu Leu
385                 390                 395                 400

Cys Gly Leu Thr Gln Ser Glu Asn Pro Ala Leu Arg Val Asn Gly Ile
                405                 410                 415

Trp Ala Leu Met Asn Met Ala Phe Gln Ala Glu Gln Lys Ile Lys Ala
            420                 425                 430

Asp Ile Leu Arg Ser Leu Ser Thr Glu Gln Leu Phe Arg Leu Leu Ser
        435                 440                 445

Asp Ser Asp Leu Asn Val Leu Met Lys Thr Leu Gly Leu Leu Arg Asn
    450                 455                 460

Leu Leu Ser Thr Arg Pro His Ile Asp Lys Ile Met Ser Thr His Gly
```

```
465                 470                 475                 480

Lys Gln Ile Met Gln Ala Val Thr Leu Ile Leu Glu Gly Glu His Asn
                485                 490                 495

Ile Glu Val Lys Glu Gln Thr Leu Cys Ile Leu Ala Asn Ile Ala Asp
            500                 505                 510

Gly Thr Thr Ala Lys Asp Leu Ile Met Thr Asn Asp Asp Ile Leu Gln
        515                 520                 525

Lys Ile Lys Tyr Tyr Met Gly His Ser His Val Lys Leu Gln Leu Ala
    530                 535                 540

Ala Met Phe Cys Ile Ser Asn Leu Ile Trp Asn Glu Glu Glu Gly Ser
545                 550                 555                 560

Gln Glu Arg Gln Asp Lys Leu Arg Asp Met Gly Ile Val Asp Ile Leu
                565                 570                 575

His Lys Leu Ser Gln Ser Pro Asp Ser Asn Leu Cys Asp Lys Ala Lys
            580                 585                 590

Met Ala Leu Gln Gln Tyr Leu Ala
        595                 600


<210> 6365
<211> 631
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1378; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC8; "

<220>
<221> source
<223> /note="Gene Name:
      armadillo repeat containing 8; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8IUR7; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000417304"

<400> 6365
Met Lys Asn Ala Val Ile Gly Asn Asn Lys Gln Lys Ala Asn Leu Ile
1   5   10   15

Val Leu Gly Ala Val Pro Arg Leu Leu Tyr Leu Leu Gln Gln Glu Thr
            20   25   30

Ser Ser Thr Glu Leu Lys Thr Glu Cys Ala Val Val Leu Gly Ser Leu
        35   40   45

Ala Met Gly Thr Glu Asn Asn Val Lys Ser Leu Leu Asp Cys His Ile
    50   55   60

Ile Pro Ala Leu Leu Gln Gly Leu Leu Ser Pro Asp Leu Lys Phe Ile
65   70   75   80

Glu Ala Cys Leu Arg Cys Leu Arg Thr Ile Phe Thr Ser Pro Val Thr
                85   90   95

Pro Glu Glu Leu Leu Tyr Thr Asp Ala Thr Val Ile Pro His Leu Met
            100   105   110

Ala Leu Leu Ser Arg Ser Arg Tyr Thr Gln Glu Tyr Ile Cys Gln Ile
        115   120   125

Phe Ser His Cys Cys Lys Gly Pro Asp His Gln Thr Ile Leu Phe Asn
    130   135   140

His Gly Ala Val Gln Asn Ile Ala His Leu Leu Thr Ser Leu Ser Tyr
145   150   155   160

Lys Val Arg Met Gln Ala Leu Lys Cys Phe Ser Val Leu Ala Phe Glu
                165   170   175

Asn Pro Gln Val Ser Met Thr Leu Val Asn Val Leu Val Asp Gly Glu
            180   185   190

Leu Leu Pro Gln Ile Phe Val Lys Met Leu Gln Arg Asp Lys Pro Ile
        195   200   205

```
Glu Met Gln Leu Thr Ser Ala Lys Cys Leu Thr Tyr Met Cys Arg Ala
    210                 215                 220

Gly Ala Ile Arg Thr Asp Asp Asn Cys Ile Val Leu Lys Thr Leu Pro
225                 230                 235                 240

Cys Leu Val Arg Met Cys Ser Lys Glu Arg Leu Leu Glu Glu Arg Val
                245                 250                 255

Glu Gly Ala Glu Thr Leu Ala Tyr Leu Ile Glu Pro Asp Val Glu Leu
            260                 265                 270

Gln Arg Ile Ala Ser Ile Thr Asp His Leu Ile Ala Met Leu Ala Asp
        275                 280                 285

Tyr Phe Lys Tyr Pro Ser Ser Val Ser Ala Ile Thr Asp Ile Lys Arg
    290                 295                 300

Leu Asp His Asp Leu Lys His Ala His Glu Leu Arg Gln Ala Ala Phe
305                 310                 315                 320

Lys Leu Tyr Ala Ser Leu Gly Ala Asn Asp Glu Asp Ile Arg Lys Lys
                325                 330                 335

Ile Ile Glu Thr Glu Asn Met Met Asp Arg Ile Val Thr Gly Leu Ser
            340                 345                 350

Glu Ser Ser Val Lys Val Arg Leu Ala Ala Val Arg Cys Leu His Ser
        355                 360                 365

Leu Ser Arg Ser Val Gln Gln Leu Arg Thr Ser Phe Gln Asp His Ala
    370                 375                 380

Val Trp Lys Pro Leu Met Lys Val Leu Gln Asn Ala Pro Asp Glu Ile
385                 390                 395                 400

Leu Val Val Ala Ser Ser Met Leu Cys Asn Leu Leu Leu Glu Phe Ser
                405                 410                 415

Pro Ser Lys Glu Pro Ile Leu Glu Ser Gly Ala Val Glu Leu Leu Cys
            420                 425                 430

Gly Leu Thr Gln Ser Glu Asn Pro Ala Leu Arg Val Asn Gly Ile Trp
```

435 440 445

Ala Leu Met Asn Met Ala Phe Gln Ala Glu Gln Lys Ile Lys Ala Asp
450 455 460

Ile Leu Arg Ser Leu Ser Thr Glu Gln Leu Phe Arg Leu Leu Ser Asp
465 470 475 480

Ser Asp Leu Asn Val Leu Met Lys Thr Leu Gly Leu Leu Arg Asn Leu
485 490 495

Leu Ser Thr Arg Pro His Ile Asp Lys Ile Met Ser Thr His Gly Lys
500 505 510

Gln Ile Met Gln Ala Val Thr Leu Ile Leu Glu Gly Glu His Asn Ile
515 520 525

Glu Val Lys Glu Gln Thr Leu Cys Ile Leu Ala Asn Ile Ala Asp Gly
530 535 540

Thr Thr Ala Lys Asp Leu Ile Met Thr Asn Asp Asp Ile Leu Gln Lys
545 550 555 560

Ile Lys Tyr Tyr Met Gly His Ser His Val Lys Leu Gln Leu Ala Ala
565 570 575

Met Phe Cys Ile Ser Asn Leu Ile Trp Asn Glu Glu Glu Gly Ser Gln
580 585 590

Glu Arg Gln Asp Lys Leu Arg Asp Met Gly Ile Val Asp Ile Leu His
595 600 605

Lys Leu Ser Gln Ser Pro Asp Ser Asn Leu Cys Asp Lys Ala Lys Met
610 615 620

Ala Leu Gln Gln Tyr Leu Ala
625 630

<210> 6366
<211> 352
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1378; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC8; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000417403"

<400> 6366

```
Met Ala Cys Leu Leu Glu Thr Pro Ile Arg Met Ser Val Leu Ser Arg
1               5                  10                  15

His Glu Lys Cys Cys Asn Trp Lys Gln Gln Ala Glu Ser Gln Ser His
            20                  25                  30

Cys Phe Arg Ser Cys Ser Lys Asp Ala Thr Val Ile Pro His Leu Met
        35                  40                  45

Ala Leu Leu Ser Arg Ser Arg Tyr Thr Gln Glu Tyr Ile Cys Gln Ile
    50                  55                  60

Phe Ser His Cys Cys Lys Gly Pro Asp His Gln Thr Ile Leu Phe Asn
65                  70                  75                  80

His Gly Ala Val Gln Asn Ile Ala His Leu Leu Thr Ser Leu Ser Tyr
                85                  90                  95

Lys Val Arg Met Gln Ala Leu Lys Cys Phe Ser Val Leu Ala Phe Glu
            100                 105                 110

Asn Pro Gln Val Ser Met Thr Leu Val Asn Val Leu Val Asp Gly Glu
        115                 120                 125

Leu Leu Pro Gln Ile Phe Val Lys Met Leu Gln Arg Asp Lys Pro Ile
    130                 135                 140

Glu Met Gln Leu Thr Ser Ala Lys Cys Leu Thr Tyr Met Cys Arg Ala
145                 150                 155                 160
```

```
Gly Ala Ile Arg Thr Asp Asp Asn Cys Ile Val Leu Lys Thr Leu Pro
                165                 170                 175

Cys Leu Val Arg Met Cys Ser Lys Glu Arg Leu Leu Glu Glu Arg Val
            180                 185                 190

Glu Gly Ala Glu Thr Leu Ala Tyr Leu Ile Glu Pro Asp Val Glu Leu
        195                 200                 205

Gln Arg Ile Ala Ser Ile Thr Asp His Leu Ile Ala Met Leu Ala Asp
    210                 215                 220

Tyr Phe Lys Tyr Pro Ser Ser Val Ser Ala Ile Thr Asp Ile Lys Arg
225                 230                 235                 240

Leu Asp His Asp Leu Lys His Ala His Glu Leu Arg Gln Ala Ala Phe
                245                 250                 255

Lys Leu Tyr Ala Ser Leu Gly Ala Asn Asp Glu Asp Ile Arg Lys Lys
            260                 265                 270

Ile Ile Glu Thr Glu Asn Met Met Asp Arg Ile Val Thr Gly Leu Ser
        275                 280                 285

Glu Ser Ser Val Lys Val Arg Leu Ala Ala Val Arg Cys Leu His Ser
    290                 295                 300

Leu Ser Arg Ser Val Gln Gln Leu Arg Thr Ser Phe Gln Asp His Ala
305                 310                 315                 320

Val Trp Lys Pro Leu Met Lys Val Leu Gln Asn Ala Pro Asp Glu Ile
                325                 330                 335

Leu Val Val Ala Ser Ser Met Leu Cys Asn Leu Leu Leu Glu Phe Ser
            340                 345                 350


<210> 6367
<211> 90
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1378; "
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<220>
<221> source
<223> /note="Gene Symbol: ARMC8; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000417457"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6367
Xaa Leu Gly Leu Leu Arg Asn Leu Leu Ser Thr Arg Pro His Ile Asp
1 5 10 15

Lys Ile Met Ser Thr His Gly Lys Gln Ile Met Gln Ala Val Thr Leu
20 25 30

Ile Leu Glu Gly Glu His Asn Ile Glu Val Lys Glu Gln Thr Leu Cys
35 40 45

Ile Leu Ala Asn Ile Ala Asp Gly Thr Thr Ala Lys Asp Leu Ile Met
50 55 60

Thr Asn Asp Asp Ile Leu Gln Lys Ile Lys Tyr Tyr Met Gly Ala Gln
65 70 75 80

Thr Gly His Leu Leu Lys Ser Val Gly Ser
85 90

<210> 6368
<211> 130
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1378; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC8; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000417699"

<400> 6368
Met Lys Asn Ala Val Ile Gly Asn Asn Lys Gln Lys Ala Asn Leu Ile
1 5 10 15

Val Leu Gly Ala Val Pro Arg Leu Leu Tyr Leu Leu Gln Gln Glu Thr
20 25 30

Ser Ser Thr Glu Leu Lys Thr Glu Cys Ala Val Val Leu Gly Ser Leu
35 40 45

Ala Met Gly Thr Glu Asn Asn Val Lys Ser Leu Leu Asp Cys His Ile
50 55 60

Ile Pro Ala Leu Leu Gln Gly Leu Leu Ser Pro Asp Leu Lys Phe Ile
65 70 75 80

Glu Ala Cys Leu Arg Cys Leu Arg Thr Ile Phe Thr Ser Pro Val Thr
85 90 95

Pro Glu Glu Leu Leu Tyr Thr Asp Ala Thr Val Ile Pro His Leu Met
100 105 110

Ala Leu Leu Ser Arg Ser Arg Tyr Thr Gln Glu Tyr Ile Cys Gln Ile
115 120 125

Phe Ser
130

<210> 6369
<211> 198
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1378; "

<220>
<221> source

<223> /note="Gene Symbol: ARMC8; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000418074"

<400> 6369

```
Met Ala Cys Leu Leu Glu Thr Pro Ile Arg Met Ser Val Leu Ser Glu
1               5                  10                  15

Val Thr Ala Ser Ser Arg His Tyr Val Asp Arg Leu Phe Asp Pro Asp
            20                  25                  30

Pro Gln Lys Val Leu Gln Gly Val Ile Asp Met Lys Asn Ala Val Ile
        35                  40                  45

Gly Asn Asn Lys Gln Lys Ala Asn Leu Ile Val Leu Gly Ala Val Pro
    50                  55                  60

Arg Leu Leu Tyr Leu Leu Gln Gln Glu Thr Ser Ser Thr Glu Leu Lys
65                  70                  75                  80

Thr Glu Cys Ala Val Val Leu Gly Ser Leu Ala Met Gly Thr Glu Asn
                85                  90                  95

Asn Val Lys Ser Leu Leu Asp Cys His Ile Ile Pro Ala Leu Leu Gln
            100                 105                 110

Gly Leu Leu Ser Pro Asp Leu Lys Phe Ile Glu Ala Cys Leu Arg Cys
        115                 120                 125

Leu Arg Thr Ile Phe Thr Ser Pro Val Thr Pro Glu Glu Leu Leu Tyr
    130                 135                 140

Thr Asp Ala Thr Val Ile Pro His Leu Met Ala Leu Leu Ser Arg Ser
145                 150                 155                 160

Arg Tyr Thr Gln Glu Tyr Ile Cys Gln Ile Phe Ser His Cys Cys Lys
                165                 170                 175

Gly Pro Asp His Gln Thr Ile Leu Phe Asn His Gly Ala Val Gln Asn
```

180 185 190

Ile Ala His Leu Leu Thr
195

<210> 6370
<211> 399
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1378; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC8; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000418405"

<400> 6370
Met Ala Cys Leu Leu Glu Thr Pro Ile Arg Met Ser Val Leu Ser Glu
1 5 10 15

Val Thr Ala Ser Ser Arg His Tyr Val Asp Arg Leu Phe Asp Pro Asp
20 25 30

Pro Gln Lys Val Leu Gln Gly Val Ile Asp Met Lys Asn Ala Val Ile
35 40 45

Gly Asn Asn Lys Gln Lys Ala Asn Leu Ile Val Leu Gly Ala Val Pro
50 55 60

Arg Leu Leu Tyr Leu Leu Gln Gln Glu Thr Ser Ser Thr Glu Leu Lys
65 70 75 80

Thr Glu Cys Ala Val Val Leu Gly Ser Leu Ala Met Gly Thr Glu Asn
85 90 95

Asn Val Lys Ser Leu Leu Asp Cys His Ile Ile Pro Ala Leu Leu Gln
100 105 110

```
Gly Leu Leu Ser Pro Asp Leu Lys Phe Ile Glu Ala Cys Leu Arg Cys
        115                 120                 125

Leu Arg Thr Ile Phe Thr Ser Pro Val Thr Pro Glu Glu Leu Leu Tyr
    130                 135                 140

Thr Asp Ala Thr Val Ile Pro His Leu Met Ala Leu Leu Ser Arg Ser
145                 150                 155                 160

Arg Tyr Thr Gln Glu Tyr Ile Cys Gln Ile Phe Ser His Cys Cys Lys
                165                 170                 175

Gly Pro Asp His Gln Thr Ile Leu Phe Asn His Gly Ala Val Gln Asn
            180                 185                 190

Ile Ala His Leu Leu Thr Ser Leu Ser Tyr Lys Val Arg Met Gln Ala
        195                 200                 205

Leu Lys Cys Phe Ser Val Leu Ala Phe Glu Asn Pro Gln Val Ser Met
    210                 215                 220

Thr Leu Val Asn Val Leu Val Asp Gly Glu Leu Leu Pro Gln Ile Phe
225                 230                 235                 240

Val Lys Met Leu Gln Arg Asp Lys Pro Ile Glu Met Gln Leu Thr Ser
                245                 250                 255

Ala Lys Cys Leu Thr Tyr Met Cys Arg Ala Gly Ala Ile Arg Thr Asp
            260                 265                 270

Asp Asn Cys Ile Val Leu Lys Thr Leu Pro Cys Leu Val Arg Met Cys
        275                 280                 285

Ser Lys Glu Arg Leu Leu Glu Glu Arg Val Glu Gly Ala Glu Thr Leu
    290                 295                 300

Ala Tyr Leu Ile Glu Pro Asp Val Glu Leu Gln Arg Ile Ala Ser Ile
305                 310                 315                 320

Thr Asp His Leu Ile Ala Met Leu Ala Asp Tyr Phe Lys Tyr Pro Ser
                325                 330                 335
```

```
Ser Val Ser Ala Ile Thr Asp Ile Lys Arg Leu Asp His Asp Leu Lys
            340                 345                 350

His Ala His Glu Leu Arg Gln Ala Ala Phe Lys Leu Tyr Ala Ser Leu
        355                 360                 365

Gly Ala Asn Asp Glu Asp Ile Arg Lys Lys Val Ser Leu Gly Glu Gly
    370                 375                 380

Arg Pro Pro Val Leu Thr Ala Ser Arg Gln Gly Val Thr Ser Thr
385                 390                 395
```

<210> 6371
<211> 357
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1378; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC8; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000418412"

<400> 6371

```
Met Lys Asn Ala Val Ile Gly Asn Asn Lys Gln Lys Ala Asn Leu Ile
1               5                   10                  15

Val Leu Gly Ala Val Pro Arg Leu Leu Tyr Leu Leu Gln Gln Glu Thr
            20                  25                  30

Ser Ser Thr Glu Leu Lys Thr Glu Cys Ala Val Val Leu Gly Ser Leu
        35                  40                  45

Ala Met Gly Thr Glu Asn Asn Val Lys Ser Leu Leu Asp Cys His Ile
    50                  55                  60

Ile Pro Ala Leu Leu Gln Gly Leu Leu Ser Pro Asp Leu Lys Phe Ile
65                  70                  75                  80
```

```
Glu Ala Cys Leu Arg Cys Leu Arg Thr Ile Phe Thr Ser Pro Val Thr
                85                  90                  95

Pro Glu Glu Leu Leu Tyr Thr Asp Ala Thr Val Ile Pro His Leu Met
            100                 105                 110

Ala Leu Leu Ser Arg Ser Arg Tyr Thr Gln Glu Tyr Ile Cys Gln Ile
        115                 120                 125

Phe Ser His Cys Cys Lys Gly Pro Asp His Gln Thr Ile Leu Phe Asn
    130                 135                 140

His Gly Ala Val Gln Asn Ile Ala His Leu Leu Thr Ser Leu Ser Tyr
145                 150                 155                 160

Lys Val Arg Met Gln Ala Leu Lys Cys Phe Ser Val Leu Ala Phe Glu
                165                 170                 175

Asn Pro Gln Val Ser Met Thr Leu Val Asn Val Leu Val Asp Gly Glu
            180                 185                 190

Leu Leu Pro Gln Ile Phe Val Lys Met Leu Gln Arg Asp Lys Pro Ile
        195                 200                 205

Glu Met Gln Leu Thr Ser Ala Lys Cys Leu Thr Tyr Met Cys Arg Ala
    210                 215                 220

Gly Ala Ile Arg Thr Asp Asp Asn Cys Ile Val Leu Lys Thr Leu Pro
225                 230                 235                 240

Cys Leu Val Arg Met Cys Ser Lys Glu Arg Leu Leu Glu Glu Arg Val
                245                 250                 255

Glu Gly Ala Glu Thr Leu Ala Tyr Leu Ile Glu Pro Asp Val Glu Leu
            260                 265                 270

Gln Arg Ile Ala Ser Ile Thr Asp His Leu Ile Ala Met Leu Ala Asp
        275                 280                 285

Tyr Phe Lys Tyr Pro Ser Ser Val Ser Ala Ile Thr Asp Ile Lys Arg
    290                 295                 300
```

Leu Asp His Asp Leu Lys His Ala His Glu Leu Arg Gln Ala Ala Phe
305 310 315 320

Lys Leu Tyr Ala Ser Leu Gly Ala Asn Asp Glu Asp Ile Arg Lys Lys
325 330 335

Val Ser Leu Gly Glu Gly Arg Pro Pro Val Leu Thr Ala Ser Arg Gln
340 345 350

Gly Val Thr Ser Thr
355

<210> 6372
<211> 25
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1378; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC8; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000418457"

<400> 6372
Met Glu Val Thr Ala Ser Ser Arg His Tyr Val Asp Arg Leu Phe Asp
1 5 10 15

Pro Asp Pro Gln Lys Val Leu Gln Gly
20 25

<210> 6373
<211> 673
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1378; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC8; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 8; "

<220>
<221> source
<223> /note="Uniprot ID: Q8IUR7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419413"

<400> 6373
Met Ala Cys Leu Leu Glu Thr Pro Ile Arg Met Ser Val Leu Ser Glu
1 5 10 15

Val Thr Ala Ser Ser Arg His Tyr Val Asp Arg Leu Phe Asp Pro Asp
20 25 30

Pro Gln Lys Val Leu Gln Gly Val Ile Asp Met Lys Asn Ala Val Ile
35 40 45

Gly Asn Asn Lys Gln Lys Ala Asn Leu Ile Val Leu Gly Ala Val Pro
50 55 60

Arg Leu Leu Tyr Leu Leu Gln Gln Glu Thr Ser Ser Thr Glu Leu Lys
65 70 75 80

Thr Glu Cys Ala Val Val Leu Gly Ser Leu Ala Met Gly Thr Glu Asn
85 90 95

Asn Val Lys Ser Leu Leu Asp Cys His Ile Ile Pro Ala Leu Leu Gln
100 105 110

Gly Leu Leu Ser Pro Asp Leu Lys Phe Ile Glu Ala Cys Leu Arg Cys
115 120 125

Leu Arg Thr Ile Phe Thr Ser Pro Val Thr Pro Glu Glu Leu Leu Tyr
130 135 140

Thr Asp Ala Thr Val Ile Pro His Leu Met Ala Leu Leu Ser Arg Ser
145 150 155 160

```
Arg Tyr Thr Gln Glu Tyr Ile Cys Gln Ile Phe Ser His Cys Cys Lys
                165                 170                 175

Gly Pro Asp His Gln Thr Ile Leu Phe Asn His Gly Ala Val Gln Asn
            180                 185                 190

Ile Ala His Leu Leu Thr Ser Leu Ser Tyr Lys Val Arg Met Gln Ala
        195                 200                 205

Leu Lys Cys Phe Ser Val Leu Ala Phe Glu Asn Pro Gln Val Ser Met
    210                 215                 220

Thr Leu Val Asn Val Leu Val Asp Gly Glu Leu Leu Pro Gln Ile Phe
225                 230                 235                 240

Val Lys Met Leu Gln Arg Asp Lys Pro Ile Glu Met Gln Leu Thr Ser
                245                 250                 255

Ala Lys Cys Leu Thr Tyr Met Cys Arg Ala Gly Ala Ile Arg Thr Asp
            260                 265                 270

Asp Asn Cys Ile Val Leu Lys Thr Leu Pro Cys Leu Val Arg Met Cys
        275                 280                 285

Ser Lys Glu Arg Leu Leu Glu Glu Arg Val Glu Gly Ala Glu Thr Leu
    290                 295                 300

Ala Tyr Leu Ile Glu Pro Asp Val Glu Leu Gln Arg Ile Ala Ser Ile
305                 310                 315                 320

Thr Asp His Leu Ile Ala Met Leu Ala Asp Tyr Phe Lys Tyr Pro Ser
                325                 330                 335

Ser Val Ser Ala Ile Thr Asp Ile Lys Arg Leu Asp His Asp Leu Lys
            340                 345                 350

His Ala His Glu Leu Arg Gln Ala Ala Phe Lys Leu Tyr Ala Ser Leu
        355                 360                 365

Gly Ala Asn Asp Glu Asp Ile Arg Lys Lys Ile Ile Glu Thr Glu Asn
    370                 375                 380
```

```
Met Met Asp Arg Ile Val Thr Gly Leu Ser Glu Ser Ser Val Lys Val
385                 390                 395                 400

Arg Leu Ala Ala Val Arg Cys Leu His Ser Leu Ser Arg Ser Val Gln
                405                 410                 415

Gln Leu Arg Thr Ser Phe Gln Asp His Ala Val Trp Lys Pro Leu Met
            420                 425                 430

Lys Val Leu Gln Asn Ala Pro Asp Glu Ile Leu Val Val Ala Ser Ser
        435                 440                 445

Met Leu Cys Asn Leu Leu Leu Glu Phe Ser Pro Ser Lys Glu Pro Ile
    450                 455                 460

Leu Glu Ser Gly Ala Val Glu Leu Leu Cys Gly Leu Thr Gln Ser Glu
465                 470                 475                 480

Asn Pro Ala Leu Arg Val Asn Gly Ile Trp Ala Leu Met Asn Met Ala
                485                 490                 495

Phe Gln Ala Glu Gln Lys Ile Lys Ala Asp Ile Leu Arg Ser Leu Ser
            500                 505                 510

Thr Glu Gln Leu Phe Arg Leu Leu Ser Asp Ser Asp Leu Asn Val Leu
        515                 520                 525

Met Lys Thr Leu Gly Leu Leu Arg Asn Leu Leu Ser Thr Arg Pro His
    530                 535                 540

Ile Asp Lys Ile Met Ser Thr His Gly Lys Gln Ile Met Gln Ala Val
545                 550                 555                 560

Thr Leu Ile Leu Glu Gly Glu His Asn Ile Glu Val Lys Glu Gln Thr
                565                 570                 575

Leu Cys Ile Leu Ala Asn Ile Ala Asp Gly Thr Thr Ala Lys Asp Leu
            580                 585                 590

Ile Met Thr Asn Asp Asp Ile Leu Gln Lys Ile Lys Tyr Tyr Met Gly
        595                 600                 605

His Ser His Val Lys Leu Gln Leu Ala Ala Met Phe Cys Ile Ser Asn
```

610 615 620

Leu Ile Trp Asn Glu Glu Glu Gly Ser Gln Glu Arg Gln Asp Lys Leu
625 630 635 640

Arg Asp Met Gly Ile Val Asp Ile Leu His Lys Leu Ser Gln Ser Pro
645 650 655

Asp Ser Asn Leu Cys Asp Lys Ala Lys Met Ala Leu Gln Gln Tyr Leu
660 665 670

Ala

<210> 6374
<211> 113
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1378; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC8; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419473"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6374
Xaa Leu Leu Ser Pro Asp Leu Lys Phe Ile Glu Ala Cys Leu Arg Cys
1 5 10 15

Leu Arg Thr Ile Phe Thr Ser Pro Val Thr Pro Glu Glu Leu Leu Tyr
20 25 30

Thr Gly Pro Asp His Gln Thr Ile Leu Phe Asn His Gly Ala Val Gln

```
        35                  40                  45

Asn Ile Ala His Leu Leu Thr Ser Leu Ser Tyr Lys Leu Asp His Asp
    50                  55                  60

Leu Lys His Ala His Glu Leu Arg Gln Ala Ala Phe Lys Leu Tyr Ala
65                  70                  75                  80

Ser Leu Gly Ala Asn Asp Glu Asp Ile Arg Lys Lys Val Ser Leu Gly
                85                  90                  95

Glu Gly Arg Pro Pro Val Leu Thr Ala Ser Arg Gln Gly Val Thr Ser
            100                 105                 110

Thr
```

<210> 6375
<211> 117
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1378; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC8; "

<220>
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armadillo repeat containing 8; "

<220>
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<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6375

```
Xaa Leu Leu Ser Pro Asp Leu Lys Phe Ile Glu Ala Cys Leu Arg Cys
1               5                   10                  15

Leu Arg Thr Ile Phe Thr Ser Pro Val Thr Pro Glu Glu Leu Leu Tyr
```

```
            20                  25                  30

Thr Asp Ala Thr Val Ile Pro His Leu Met Ala Leu Leu Ser Arg Ser
        35                  40                  45

Arg Tyr Thr Gln Glu Tyr Ile Cys Gln Ile Phe Ser His Cys Cys Lys
    50                  55                  60

Gly Pro Asp His Gln Thr Ile Leu Phe Asn His Gly Ala Val Gln Asn
65                  70                  75                  80

Ile Ala His Leu Leu Thr Ser Leu Ser Tyr Lys Val Arg Met Gln Ala
                85                  90                  95

Leu Lys Cys Phe Ser Val Leu Ala Phe Glu Asn Pro Gln Val Ser Met
            100                 105                 110

Thr Leu Val Asn Val
        115


<210> 6376
<211> 659
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1378; "

<220>
<221> source
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<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID:  Q8IUR7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420333"

<400> 6376
Met Glu Val Thr Ala Ser Ser Arg His Tyr Val Asp Arg Leu Phe Asp
1               5                   10                  15
```

```
Pro Asp Pro Gln Lys Val Leu Gln Gly Val Ile Asp Met Lys Asn Ala
            20                  25                  30

Val Ile Gly Asn Asn Lys Gln Lys Ala Asn Leu Ile Val Leu Gly Ala
        35                  40                  45

Val Pro Arg Leu Leu Tyr Leu Leu Gln Gln Glu Thr Ser Ser Thr Glu
    50                  55                  60

Leu Lys Thr Glu Cys Ala Val Val Leu Gly Ser Leu Ala Met Gly Thr
65                  70                  75                  80

Glu Asn Asn Val Lys Ser Leu Leu Asp Cys His Ile Ile Pro Ala Leu
                85                  90                  95

Leu Gln Gly Leu Leu Ser Pro Asp Leu Lys Phe Ile Glu Ala Cys Leu
            100                 105                 110

Arg Cys Leu Arg Thr Ile Phe Thr Ser Pro Val Thr Pro Glu Glu Leu
        115                 120                 125

Leu Tyr Thr Asp Ala Thr Val Ile Pro His Leu Met Ala Leu Leu Ser
    130                 135                 140

Arg Ser Arg Tyr Thr Gln Glu Tyr Ile Cys Gln Ile Phe Ser His Cys
145                 150                 155                 160

Cys Lys Gly Pro Asp His Gln Thr Ile Leu Phe Asn His Gly Ala Val
                165                 170                 175

Gln Asn Ile Ala His Leu Leu Thr Ser Leu Ser Tyr Lys Val Arg Met
            180                 185                 190

Gln Ala Leu Lys Cys Phe Ser Val Leu Ala Phe Glu Asn Pro Gln Val
        195                 200                 205

Ser Met Thr Leu Val Asn Val Leu Val Asp Gly Glu Leu Leu Pro Gln
    210                 215                 220

Ile Phe Val Lys Met Leu Gln Arg Asp Lys Pro Ile Glu Met Gln Leu
225                 230                 235                 240
```

```
Thr Ser Ala Lys Cys Leu Thr Tyr Met Cys Arg Ala Gly Ala Ile Arg
                245                 250                 255

Thr Asp Asp Asn Cys Ile Val Leu Lys Thr Leu Pro Cys Leu Val Arg
            260                 265                 270

Met Cys Ser Lys Glu Arg Leu Leu Glu Glu Arg Val Glu Gly Ala Glu
        275                 280                 285

Thr Leu Ala Tyr Leu Ile Glu Pro Asp Val Glu Leu Gln Arg Ile Ala
    290                 295                 300

Ser Ile Thr Asp His Leu Ile Ala Met Leu Ala Asp Tyr Phe Lys Tyr
305                 310                 315                 320

Pro Ser Ser Val Ser Ala Ile Thr Asp Ile Lys Arg Leu Asp His Asp
                325                 330                 335

Leu Lys His Ala His Glu Leu Arg Gln Ala Ala Phe Lys Leu Tyr Ala
            340                 345                 350

Ser Leu Gly Ala Asn Asp Glu Asp Ile Arg Lys Lys Ile Ile Glu Thr
        355                 360                 365

Glu Asn Met Met Asp Arg Ile Val Thr Gly Leu Ser Glu Ser Ser Val
    370                 375                 380

Lys Val Arg Leu Ala Ala Val Arg Cys Leu His Ser Leu Ser Arg Ser
385                 390                 395                 400

Val Gln Gln Leu Arg Thr Ser Phe Gln Asp His Ala Val Trp Lys Pro
                405                 410                 415

Leu Met Lys Val Leu Gln Asn Ala Pro Asp Glu Ile Leu Val Val Ala
            420                 425                 430

Ser Ser Met Leu Cys Asn Leu Leu Leu Glu Phe Ser Pro Ser Lys Glu
        435                 440                 445

Pro Ile Leu Glu Ser Gly Ala Val Glu Leu Leu Cys Gly Leu Thr Gln
    450                 455                 460

Ser Glu Asn Pro Ala Leu Arg Val Asn Gly Ile Trp Ala Leu Met Asn
```

```
465                 470                 475                 480

Met Ala Phe Gln Ala Glu Gln Lys Ile Lys Ala Asp Ile Leu Arg Ser
                485                 490                 495

Leu Ser Thr Glu Gln Leu Phe Arg Leu Leu Ser Asp Ser Asp Leu Asn
            500                 505                 510

Val Leu Met Lys Thr Leu Gly Leu Leu Arg Asn Leu Leu Ser Thr Arg
        515                 520                 525

Pro His Ile Asp Lys Ile Met Ser Thr His Gly Lys Gln Ile Met Gln
    530                 535                 540

Ala Val Thr Leu Ile Leu Glu Gly Glu His Asn Ile Glu Val Lys Glu
545                 550                 555                 560

Gln Thr Leu Cys Ile Leu Ala Asn Ile Ala Asp Gly Thr Thr Ala Lys
                565                 570                 575

Asp Leu Ile Met Thr Asn Asp Asp Ile Leu Gln Lys Ile Lys Tyr Tyr
            580                 585                 590

Met Gly His Ser His Val Lys Leu Gln Leu Ala Ala Met Phe Cys Ile
        595                 600                 605

Ser Asn Leu Ile Trp Asn Glu Glu Glu Gly Ser Gln Glu Arg Gln Asp
    610                 615                 620

Lys Leu Arg Asp Met Gly Ile Val Asp Ile Leu His Lys Leu Ser Gln
625                 630                 635                 640

Ser Pro Asp Ser Asn Leu Cys Asp Lys Ala Lys Met Ala Leu Gln Gln
                645                 650                 655

Tyr Leu Ala
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<210> 6377
<211> 385
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1378; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC8; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 8; "

<220>
<221> source
<223> /note="Uniprot ID: Q8IUR7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420440"

<400> 6377

```
Met Glu Val Thr Ala Ser Ser Arg His Tyr Val Asp Arg Leu Phe Asp
1               5                  10                  15

Pro Asp Pro Gln Lys Val Leu Gln Gly Val Ile Asp Met Lys Asn Ala
            20                  25                  30

Val Ile Gly Asn Asn Lys Gln Lys Ala Asn Leu Ile Val Leu Gly Ala
        35                  40                  45

Val Pro Arg Leu Leu Tyr Leu Leu Gln Gln Glu Thr Ser Ser Thr Glu
    50                  55                  60

Leu Lys Thr Glu Cys Ala Val Val Leu Gly Ser Leu Ala Met Gly Thr
65                  70                  75                  80

Glu Asn Asn Val Lys Ser Leu Leu Asp Cys His Ile Ile Pro Ala Leu
                85                  90                  95

Leu Gln Gly Leu Leu Ser Pro Asp Leu Lys Phe Ile Glu Ala Cys Leu
            100                 105                 110

Arg Cys Leu Arg Thr Ile Phe Thr Ser Pro Val Thr Pro Glu Glu Leu
        115                 120                 125

Leu Tyr Thr Asp Ala Thr Val Ile Pro His Leu Met Ala Leu Leu Ser
    130                 135                 140
```

```
Arg Ser Arg Tyr Thr Gln Glu Tyr Ile Cys Gln Ile Phe Ser His Cys
145                 150                 155                 160

Cys Lys Gly Pro Asp His Gln Thr Ile Leu Phe Asn His Gly Ala Val
                165                 170                 175

Gln Asn Ile Ala His Leu Leu Thr Ser Leu Ser Tyr Lys Val Arg Met
            180                 185                 190

Gln Ala Leu Lys Cys Phe Ser Val Leu Ala Phe Glu Asn Pro Gln Val
        195                 200                 205

Ser Met Thr Leu Val Asn Val Leu Val Asp Gly Glu Leu Leu Pro Gln
    210                 215                 220

Ile Phe Val Lys Met Leu Gln Arg Asp Lys Pro Ile Glu Met Gln Leu
225                 230                 235                 240

Thr Ser Ala Lys Cys Leu Thr Tyr Met Cys Arg Ala Gly Ala Ile Arg
                245                 250                 255

Thr Asp Asp Asn Cys Ile Val Leu Lys Thr Leu Pro Cys Leu Val Arg
            260                 265                 270

Met Cys Ser Lys Glu Arg Leu Leu Glu Glu Arg Val Glu Gly Ala Glu
        275                 280                 285

Thr Leu Ala Tyr Leu Ile Glu Pro Asp Val Glu Leu Gln Arg Ile Ala
    290                 295                 300

Ser Ile Thr Asp His Leu Ile Ala Met Leu Ala Asp Tyr Phe Lys Tyr
305                 310                 315                 320

Pro Ser Ser Val Ser Ala Ile Thr Asp Ile Lys Arg Leu Asp His Asp
                325                 330                 335

Leu Lys His Ala His Glu Leu Arg Gln Ala Ala Phe Lys Leu Tyr Ala
            340                 345                 350

Ser Leu Gly Ala Asn Asp Glu Asp Ile Arg Lys Lys Val Ser Leu Gly
        355                 360                 365

Glu Gly Arg Pro Pro Val Leu Thr Ala Ser Arg Gln Gly Val Thr Ser
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370 375 380

Thr
385

<210> 6378
<211> 606
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1378; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC8; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 8; "

<220>
<221> source
<223> /note="Uniprot ID: Q8IUR7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420706"

<400> 6378
Met Ala Cys Leu Leu Glu Thr Pro Ile Arg Met Ser Val Leu Ser Glu
1 5 10 15

Val Thr Ala Ser Ser Arg His Tyr Val Asp Arg Leu Phe Asp Pro Asp
20 25 30

Pro Gln Lys Val Leu Gln Gly Val Ile Asp Met Lys Asn Ala Val Ile
35 40 45

Gly Asn Asn Lys Gln Lys Ala Asn Leu Ile Val Leu Gly Ala Val Pro
50 55 60

Arg Leu Leu Tyr Leu Leu Gln Gln Glu Thr Ser Ser Thr Glu Leu Lys
65 70 75 80

Thr Glu Cys Ala Val Val Leu Gly Ser Leu Ala Met Gly Thr Glu Asn
85 90 95

```
Asn Val Lys Ser Leu Leu Asp Cys His Ile Ile Pro Ala Leu Leu Gln
            100                 105                 110

Gly Leu Leu Ser Pro Asp Leu Lys Phe Ile Glu Ala Cys Leu Arg Cys
        115                 120                 125

Leu Arg Thr Ile Phe Thr Ser Pro Val Thr Pro Glu Glu Leu Leu Tyr
    130                 135                 140

Thr Asp Ala Thr Val Ile Pro His Leu Met Ala Leu Leu Ser Arg Ser
145                 150                 155                 160

Arg Tyr Thr Gln Glu Tyr Ile Cys Gln Ile Phe Ser His Cys Cys Lys
                165                 170                 175

Gly Pro Asp His Gln Thr Ile Leu Phe Asn His Gly Ala Val Gln Asn
            180                 185                 190

Ile Ala His Leu Leu Thr Ser Leu Ser Tyr Lys Val Arg Met Gln Ala
        195                 200                 205

Leu Lys Cys Phe Ser Val Leu Ala Phe Glu Asn Pro Gln Val Ser Met
    210                 215                 220

Thr Leu Val Asn Val Leu Val Asp Gly Glu Leu Leu Pro Gln Ile Phe
225                 230                 235                 240

Val Lys Met Leu Gln Arg Asp Lys Pro Ile Glu Met Gln Leu Thr Ser
                245                 250                 255

Ala Lys Cys Leu Thr Tyr Met Cys Arg Ala Gly Ala Ile Arg Thr Asp
            260                 265                 270

Asp Asn Cys Ile Val Leu Lys Leu Asp His Asp Leu Lys His Ala His
        275                 280                 285

Glu Leu Arg Gln Ala Ala Phe Lys Leu Tyr Ala Ser Leu Gly Ala Asn
    290                 295                 300

Asp Glu Asp Ile Arg Lys Lys Ile Ile Glu Thr Glu Asn Met Met Asp
305                 310                 315                 320
```

```
Arg Ile Val Thr Gly Leu Ser Glu Ser Ser Val Lys Val Arg Leu Ala
                325                 330                 335

Ala Val Arg Cys Leu His Ser Leu Ser Arg Ser Val Gln Gln Leu Arg
            340                 345                 350

Thr Ser Phe Gln Asp His Ala Val Trp Lys Pro Leu Met Lys Val Leu
        355                 360                 365

Gln Asn Ala Pro Asp Glu Ile Leu Val Val Ala Ser Ser Met Leu Cys
    370                 375                 380

Asn Leu Leu Leu Glu Phe Ser Pro Ser Lys Glu Pro Ile Leu Glu Ser
385                 390                 395                 400

Gly Ala Val Glu Leu Leu Cys Gly Leu Thr Gln Ser Glu Asn Pro Ala
                405                 410                 415

Leu Arg Val Asn Gly Ile Trp Ala Leu Met Asn Met Ala Phe Gln Ala
            420                 425                 430

Glu Gln Lys Ile Lys Ala Asp Ile Leu Arg Ser Leu Ser Thr Glu Gln
        435                 440                 445

Leu Phe Arg Leu Leu Ser Asp Ser Asp Leu Asn Val Leu Met Lys Thr
    450                 455                 460

Leu Gly Leu Leu Arg Asn Leu Leu Ser Thr Arg Pro His Ile Asp Lys
465                 470                 475                 480

Ile Met Ser Thr His Gly Lys Gln Ile Met Gln Ala Val Thr Leu Ile
                485                 490                 495

Leu Glu Gly Glu His Asn Ile Glu Val Lys Glu Gln Thr Leu Cys Ile
            500                 505                 510

Leu Ala Asn Ile Ala Asp Gly Thr Thr Ala Lys Asp Leu Ile Met Thr
        515                 520                 525

Asn Asp Asp Ile Leu Gln Lys Ile Lys Tyr Tyr Met Gly His Ser His
    530                 535                 540

Val Lys Leu Gln Leu Ala Ala Met Phe Cys Ile Ser Asn Leu Ile Trp
```

```
545                 550                 555                 560

Asn Glu Glu Glu Gly Ser Gln Glu Arg Gln Asp Lys Leu Arg Asp Met
                565                 570                 575

Gly Ile Val Asp Ile Leu His Lys Leu Ser Gln Ser Pro Asp Ser Asn
            580                 585                 590

Leu Cys Asp Lys Ala Lys Met Ala Leu Gln Gln Tyr Leu Ala
        595                 600                 605


<210> 6379
<211> 227
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1378; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC8; "

<220>
<221> source
<223> /note="Gene Name:
      armadillo repeat containing 8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420719"

<400> 6379
Met Ala Cys Leu Leu Glu Thr Pro Ile Arg Met Ser Val Leu Ser Glu
1               5                   10                  15

Val Thr Ala Ser Ser Arg His Tyr Val Asp Arg Leu Phe Asp Pro Asp
            20                  25                  30

Pro Gln Lys Val Leu Gln Gly Val Ile Asp Met Lys Asn Ala Val Ile
        35                  40                  45

Gly Asn Asn Lys Gln Lys Ala Asn Leu Ile Val Leu Gly Ala Val Pro
    50                  55                  60

Arg Leu Leu Tyr Leu Leu Gln Gln Glu Thr Ser Ser Thr Glu Leu Lys
65                  70                  75                  80
```

```
Thr Glu Cys Ala Val Val Leu Gly Ser Leu Ala Met Gly Thr Glu Asn
                85                  90                  95

Asn Val Lys Ser Leu Leu Asp Cys His Ile Ile Pro Ala Leu Leu Gln
            100                 105                 110

Gly Leu Leu Ser Pro Asp Leu Lys Phe Ile Glu Ala Cys Leu Arg Cys
        115                 120                 125

Leu Arg Thr Ile Phe Thr Ser Pro Val Thr Pro Glu Glu Leu Leu Tyr
    130                 135                 140

Thr Gly Pro Asp His Gln Thr Ile Leu Phe Asn His Gly Ala Val Gln
145                 150                 155                 160

Asn Ile Ala His Leu Leu Thr Ser Leu Ser Tyr Lys Val Arg Met Gln
                165                 170                 175

Ala Leu Lys Cys Phe Ser Val Leu Ala Phe Glu Asn Pro Gln Val Ser
            180                 185                 190

Met Thr Leu Val Asn Val Leu Val Asp Gly Glu Leu Leu Pro Gln Ile
        195                 200                 205

Phe Val Lys Met Leu Gln Arg Asp Lys Pro Ile Glu Met Gln Leu Thr
    210                 215                 220

Ser Ala Lys
225


<210> 6380
<211> 642
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1378; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC8; "

<220>
<221> source
<223> /note="Gene Name:
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armadillo repeat containing 8; "

<220>
<221> source
<223> /note="Uniprot ID: Q8IUR7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000441592"

<400> 6380
Met Ala Cys Leu Leu Glu Thr Pro Ile Arg Met Ser Val Leu Ser Glu
1   5   10   15

Val Thr Ala Ser Ser Arg His Tyr Val Asp Arg Leu Phe Asp Pro Asp
            20   25   30

Pro Gln Lys Val Leu Gln Gly Val Ile Asp Met Lys Asn Ala Val Ile
        35   40   45

Gly Asn Asn Lys Gln Lys Ala Asn Leu Ile Val Leu Gly Ala Val Pro
    50   55   60

Arg Leu Leu Tyr Leu Leu Gln Gln Glu Thr Ser Ser Thr Glu Leu Lys
65   70   75   80

Thr Glu Cys Ala Val Val Leu Gly Ser Leu Ala Met Gly Thr Glu Asn
                85   90   95

Asn Val Lys Ser Leu Leu Asp Cys His Ile Ile Pro Ala Leu Leu Gln
            100   105   110

Gly Leu Leu Ser Pro Asp Leu Lys Phe Ile Glu Ala Cys Leu Arg Cys
        115   120   125

Leu Arg Thr Ile Phe Thr Ser Pro Val Thr Pro Glu Glu Leu Leu Tyr
    130   135   140

Thr Gly Pro Asp His Gln Thr Ile Leu Phe Asn His Gly Ala Val Gln
145   150   155   160

Asn Ile Ala His Leu Leu Thr Ser Leu Ser Tyr Lys Val Arg Met Gln
                165   170   175

Ala Leu Lys Cys Phe Ser Val Leu Ala Phe Glu Asn Pro Gln Val Ser
            180   185   190

```
Met Thr Leu Val Asn Val Leu Val Asp Gly Glu Leu Leu Pro Gln Ile
        195                 200                 205

Phe Val Lys Met Leu Gln Arg Asp Lys Pro Ile Glu Met Gln Leu Thr
    210                 215                 220

Ser Ala Lys Cys Leu Thr Tyr Met Cys Arg Ala Gly Ala Ile Arg Thr
225                 230                 235                 240

Asp Asp Asn Cys Ile Val Leu Lys Thr Leu Pro Cys Leu Val Arg Met
                245                 250                 255

Cys Ser Lys Glu Arg Leu Leu Glu Glu Arg Val Glu Gly Ala Glu Thr
            260                 265                 270

Leu Ala Tyr Leu Ile Glu Pro Asp Val Glu Leu Gln Arg Ile Ala Ser
        275                 280                 285

Ile Thr Asp His Leu Ile Ala Met Leu Ala Asp Tyr Phe Lys Tyr Pro
    290                 295                 300

Ser Ser Val Ser Ala Ile Thr Asp Ile Lys Arg Leu Asp His Asp Leu
305                 310                 315                 320

Lys His Ala His Glu Leu Arg Gln Ala Ala Phe Lys Leu Tyr Ala Ser
                325                 330                 335

Leu Gly Ala Asn Asp Glu Asp Ile Arg Lys Lys Ile Ile Glu Thr Glu
            340                 345                 350

Asn Met Met Asp Arg Ile Val Thr Gly Leu Ser Glu Ser Ser Val Lys
        355                 360                 365

Val Arg Leu Ala Ala Val Arg Cys Leu His Ser Leu Ser Arg Ser Val
    370                 375                 380

Gln Gln Leu Arg Thr Ser Phe Gln Asp His Ala Val Trp Lys Pro Leu
385                 390                 395                 400

Met Lys Val Leu Gln Asn Ala Pro Asp Glu Ile Leu Val Val Ala Ser
                405                 410                 415
```

```
Ser Met Leu Cys Asn Leu Leu Leu Glu Phe Ser Pro Ser Lys Glu Pro
            420                 425                 430

Ile Leu Glu Ser Gly Ala Val Glu Leu Leu Cys Gly Leu Thr Gln Ser
        435                 440                 445

Glu Asn Pro Ala Leu Arg Val Asn Gly Ile Trp Ala Leu Met Asn Met
    450                 455                 460

Ala Phe Gln Ala Glu Gln Lys Ile Lys Ala Asp Ile Leu Arg Ser Leu
465                 470                 475                 480

Ser Thr Glu Gln Leu Phe Arg Leu Leu Ser Asp Ser Asp Leu Asn Val
                485                 490                 495

Leu Met Lys Thr Leu Gly Leu Leu Arg Asn Leu Leu Ser Thr Arg Pro
            500                 505                 510

His Ile Asp Lys Ile Met Ser Thr His Gly Lys Gln Ile Met Gln Ala
        515                 520                 525

Val Thr Leu Ile Leu Glu Gly Glu His Asn Ile Glu Val Lys Glu Gln
    530                 535                 540

Thr Leu Cys Ile Leu Ala Asn Ile Ala Asp Gly Thr Thr Ala Lys Asp
545                 550                 555                 560

Leu Ile Met Thr Asn Asp Asp Ile Leu Gln Lys Ile Lys Tyr Tyr Met
                565                 570                 575

Gly His Ser His Val Lys Leu Gln Leu Ala Ala Met Phe Cys Ile Ser
            580                 585                 590

Asn Leu Ile Trp Asn Glu Glu Glu Gly Ser Gln Glu Arg Gln Asp Lys
        595                 600                 605

Leu Arg Asp Met Gly Ile Val Asp Ile Leu His Lys Leu Ser Gln Ser
    610                 615                 620

Pro Asp Ser Asn Leu Cys Asp Lys Ala Lys Met Ala Leu Gln Gln Tyr
625                 630                 635                 640
```

Leu Ala

<210> 6381
<211> 665
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1379; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC9; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 9; "

<220>
<221> source
<223> /note="Uniprot ID: Q7Z3E5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000258417"

<400> 6381

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Met Gly Asp Ile Leu Ala His Glu Ser Glu Leu Leu Gly Leu Val Lys
1               5                  10                  15

Glu Tyr Leu Asp Phe Ala Glu Phe Glu Asp Thr Leu Lys Thr Phe Ser
            20                  25                  30

Lys Glu Cys Lys Ile Lys Gly Lys Pro Leu Cys Lys Thr Val Gly Gly
        35                  40                  45

Ser Phe Arg Asp Ser Lys Ser Leu Thr Ile Gln Lys Asp Leu Val Ala
    50                  55                  60

Ala Phe Asp Asn Gly Asp Gln Lys Val Phe Phe Asp Leu Trp Glu Glu
65                  70                  75                  80

His Ile Ser Ser Ser Ile Arg Asp Gly Asp Ser Phe Ala Gln Lys Leu
                85                  90                  95

Glu Phe Tyr Leu His Ile His Phe Ala Ile Tyr Leu Leu Lys Tyr Ser
            100                 105                 110
```

```
Val Gly Arg Pro Asp Lys Glu Glu Leu Asp Glu Lys Ile Ser Tyr Phe
        115                 120                 125

Lys Thr Tyr Leu Glu Thr Lys Gly Ala Ala Leu Ser Gln Thr Thr Glu
    130                 135                 140

Phe Leu Pro Phe Tyr Ala Leu Pro Phe Val Pro Asn Pro Met Val His
145                 150                 155                 160

Pro Ser Phe Lys Glu Leu Phe Gln Asp Ser Trp Thr Pro Glu Leu Lys
                165                 170                 175

Leu Lys Leu Ile Lys Phe Leu Ala Leu Ile Ser Lys Ala Ser Asn Thr
            180                 185                 190

Pro Lys Leu Leu Thr Ile Tyr Lys Glu Asn Gly Gln Ser Asn Lys Glu
        195                 200                 205

Ile Leu Gln Gln Leu His Gln Gln Leu Val Glu Ala Glu Arg Arg Ser
    210                 215                 220

Val Thr Tyr Leu Lys Arg Tyr Asn Lys Ile Gln Ala Asp Tyr His Asn
225                 230                 235                 240

Leu Ile Gly Val Thr Ala Glu Leu Val Asp Ser Leu Glu Ala Thr Val
                245                 250                 255

Ser Gly Lys Met Ile Thr Pro Glu Tyr Leu Gln Ser Val Cys Val Arg
            260                 265                 270

Leu Phe Ser Asn Gln Met Arg Gln Ser Leu Ala His Ser Val Asp Phe
        275                 280                 285

Thr Arg Pro Gly Thr Ala Ser Thr Met Leu Arg Ala Ser Leu Ala Pro
    290                 295                 300

Val Lys Leu Lys Asp Val Pro Leu Leu Pro Ser Leu Asp Tyr Glu Lys
305                 310                 315                 320

Leu Lys Lys Asp Leu Ile Leu Gly Ser Asp Arg Leu Lys Ala Phe Leu
                325                 330                 335
```

```
Leu Gln Ala Leu Arg Trp Arg Leu Thr Thr Ser His Pro Gly Glu Gln
            340                 345                 350

Arg Glu Thr Val Leu Gln Ala Tyr Ile Ser Asn Asp Leu Leu Asp Cys
        355                 360                 365

Tyr Ser His Asn Gln Arg Ser Val Leu Gln Leu Leu His Ser Thr Ser
    370                 375                 380

Asp Val Val Arg Gln Tyr Met Ala Arg Leu Ile Asn Ala Phe Ala Ser
385                 390                 395                 400

Leu Ala Glu Gly Arg Leu Tyr Leu Ala Gln Asn Thr Lys Val Leu Gln
                405                 410                 415

Met Leu Glu Gly Arg Leu Lys Glu Glu Asp Lys Asp Ile Ile Thr Arg
            420                 425                 430

Glu Asn Val Leu Gly Ala Leu Gln Lys Phe Ser Leu Arg Arg Pro Leu
        435                 440                 445

Gln Thr Ala Met Ile Gln Asp Gly Leu Ile Phe Trp Leu Val Asp Val
    450                 455                 460

Leu Lys Asp Pro Asp Cys Leu Ser Asp Tyr Thr Leu Glu Tyr Ser Val
465                 470                 475                 480

Ala Leu Leu Met Asn Leu Cys Leu Arg Ser Thr Gly Lys Asn Met Cys
                485                 490                 495

Ala Lys Val Ala Gly Leu Val Leu Lys Val Leu Ser Asp Leu Leu Gly
            500                 505                 510

His Glu Asn His Glu Ile Gln Pro Tyr Val Asn Gly Ala Leu Tyr Ser
        515                 520                 525

Ile Leu Ser Val Pro Ser Ile Arg Glu Glu Ala Arg Ala Met Gly Met
    530                 535                 540

Glu Asp Ile Leu Arg Cys Phe Ile Lys Glu Gly Asn Ala Glu Met Ile
545                 550                 555                 560
```

```
Arg Gln Ile Glu Phe Ile Ile Lys Gln Leu Asn Ser Glu Glu Leu Pro
                565                 570                 575

Asp Gly Val Leu Glu Ser Asp Asp Asp Glu Asp Glu Asp Asp Glu Glu
            580                 585                 590

Asp His Asp Ile Met Glu Ala Asp Leu Asp Lys Asp Glu Leu Ile Gln
        595                 600                 605

Pro Gln Leu Gly Glu Leu Ser Gly Glu Lys Leu Leu Thr Thr Glu Tyr
    610                 615                 620

Leu Gly Ile Met Thr Asn Thr Gly Lys Thr Arg Arg Lys Gly Leu Ala
625                 630                 635                 640

Asn Val Gln Trp Ser Gly Asp Glu Pro Leu Gln Arg Pro Val Thr Pro
                645                 650                 655

Gly Gly His Arg Asn Gly Tyr Pro Val
            660                 665


<210> 6382
<211> 166
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1379; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC9; "

<220>
<221> source
<223> /note="Gene Name:
      armadillo repeat containing 9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000387391"

<400> 6382
Met Gly Asp Ile Leu Ala His Glu Ser Glu Leu Leu Gly Leu Val Lys
1               5                   10                  15

Glu Tyr Leu Asp Phe Ala Glu Phe Glu Asp Thr Leu Lys Thr Phe Ser
            20                  25                  30
```

```
Lys Glu Cys Lys Ile Lys Gly Lys Pro Leu Cys Lys Thr Val Gly Gly
        35                  40                  45

Ser Phe Arg Asp Ser Lys Ser Leu Thr Ile Gln Lys Asp Leu Val Ala
    50                  55                  60

Ala Phe Asp Asn Gly Asp Gln Lys Val Phe Phe Asp Leu Trp Glu Glu
65                  70                  75                  80

His Ile Ser Ser Ser Ile Arg Asp Gly Asp Ser Phe Ala Gln Lys Leu
                85                  90                  95

Glu Phe Tyr Leu His Ile His Phe Ala Ile Tyr Leu Leu Lys Tyr Ser
            100                 105                 110

Val Gly Arg Pro Asp Lys Glu Glu Leu Asp Glu Lys Ile Ser Tyr Phe
        115                 120                 125

Lys Thr Tyr Leu Glu Thr Lys Gly Ala Ala Leu Ser Gln Thr Thr Glu
    130                 135                 140

Phe Leu Pro Phe Tyr Ala Leu Pro Phe Val Pro Asn Pro Met Val His
145                 150                 155                 160

Pro Ser Phe Lys Glu Leu
                165
```

<210> 6383
<211> 172
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1379; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC9; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 9; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000388527"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6383
Xaa Arg Ser Val Leu Gln Leu Leu His Ser Thr Ser Asp Val Val Arg
1 5 10 15

Gln Tyr Met Ala Arg Leu Ile Asn Ala Phe Ala Ser Leu Ala Glu Gly
20 25 30

Arg Leu Tyr Leu Ala Gln Asn Thr Lys Val Leu Gln Met Leu Glu Gly
35 40 45

Arg Leu Lys Glu Glu Asp Lys Asp Ile Ile Thr Arg Glu Asn Val Leu
50 55 60

Gly Ala Leu Gln Lys Phe Ser Leu Arg Arg Pro Leu Gln Thr Ala Met
65 70 75 80

Ile Gln Asp Gly Leu Ile Phe Trp Leu Val Asp Val Leu Lys Asp Pro
85 90 95

Asp Cys Leu Ser Asp Tyr Thr Leu Glu Tyr Ser Val Ala Leu Leu Met
100 105 110

Asn Leu Cys Leu Arg Ser Thr Gly Lys Asn Met Cys Ala Lys Val Ala
115 120 125

Gly Leu Val Leu Lys Val Leu Ser Asp Leu Leu Gly His Glu Asn His
130 135 140

Glu Ile Gln Pro Tyr Val Asn Gly Ala Leu Tyr Ser Ile Leu Ser Val
145 150 155 160

Pro Ser Ile Arg Glu Glu Ala Arg Ala Met Val Pro
165 170

<210> 6384
<211> 208
<212> PRT

<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1379; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC9; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000392086"

<400> 6384

```
Ser Leu Glu Ala Thr Val Ser Gly Lys Met Ala Ser Thr Met Leu Arg
1               5                  10                  15

Ala Ser Leu Ala Pro Val Lys Leu Lys Asp Val Pro Leu Leu Pro Ser
            20                  25                  30

Leu Asp Tyr Glu Lys Leu Lys Lys Asp Leu Ile Leu Gly Ser Asp Arg
        35                  40                  45

Leu Lys Ala Phe Leu Leu Gln Ala Leu Arg Trp Arg Leu Thr Thr Ser
    50                  55                  60

His Pro Gly Glu Gln Arg Glu Thr Val Leu Gln Ala Tyr Ile Ser Asn
65                  70                  75                  80

Asp Leu Leu Asp Cys Tyr Ser His Asn Gln Arg Ser Val Leu Gln Leu
                85                  90                  95

Leu His Ser Thr Ser Asp Val Val Arg Gln Tyr Met Ala Arg Leu Ile
            100                 105                 110

Asn Ala Phe Ala Ser Leu Ala Glu Gly Arg Leu Tyr Leu Ala Gln Asn
        115                 120                 125

Thr Lys Val Leu Gln Met Leu Glu Gly Arg Leu Lys Glu Glu Asp Lys
    130                 135                 140

Asp Ile Ile Thr Arg Glu Asn Val Leu Gly Ala Leu Gln Lys Phe Ser
```

145 150 155 160

Leu Arg Arg Pro Leu Gln Thr Ala Met Ile Gln Asp Gly Leu Ile Phe
165 170 175

Trp Leu Val Asp Val Leu Lys Asp Pro Asp Cys Leu Ser Asp Tyr Thr
180 185 190

Leu Glu Tyr Ser Val Ala Leu Leu Met Asn Leu Cys Leu Arg Ser Thr
195 200 205

<210> 6385
<211> 73
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1379; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC9; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000407146"

<400> 6385
Glu Leu Val Asp Ser Leu Glu Ala Thr Val Ser Gly Lys Met Ile Thr
1 5 10 15

Pro Glu Tyr Leu Gln Ser Val Cys Val Arg Leu Phe Ser Asn Gln Met
20 25 30

Arg Gln Ser Leu Ala His Ser Val Asp Phe Thr Arg Pro Gly Thr Val
35 40 45

Arg Leu Cys Ala Gln Gly Arg Val Pro Val Val Tyr Pro Pro Lys Phe
50 55 60

Lys Lys Asn Val Thr Leu Lys Ile Ala
65 70

<210> 6386
<211> 158
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1379; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC9; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000411778"

<400> 6386
Met Cys Leu Gly Ser Ala Ile Leu Thr Trp Lys Thr Ala Ala Thr Arg
1 5 10 15

Ser Val Leu Gln Leu Leu His Ser Thr Ser Asp Val Val Arg Gln Tyr
20 25 30

Met Ala Arg Leu Ile Asn Ala Phe Ala Ser Leu Ala Glu Gly Arg Leu
35 40 45

Tyr Leu Ala Gln Asn Thr Lys Val Leu Gln Met Leu Glu Gly Arg Leu
50 55 60

Lys Glu Glu Asp Lys Asp Ile Ile Thr Arg Glu Asn Val Leu Gly Ala
65 70 75 80

Leu Gln Lys Phe Ser Leu Arg Arg Pro Leu Gln Thr Ala Met Ile Gln
85 90 95

Asp Gly Leu Ile Phe Trp Leu Val Asp Val Leu Lys Asp Pro Asp Cys
100 105 110

Leu Ser Asp Tyr Thr Leu Glu Tyr Ser Val Ala Leu Leu Met Asn Leu
115 120 125

Cys Leu Arg Ser Thr Gly Lys Asn Met Cys Ala Lys Val Ala Gly Leu

```
    130                 135                 140

Val Leu Lys Val Leu Ser Asp Leu Leu Gly His Glu Asn His
145                 150                 155


<210> 6387
<211> 194
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1379; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC9; "

<220>
<221> source
<223> /note="Gene Name:
      armadillo repeat containing 9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000413932"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6387
Xaa Glu Leu Val Leu Leu Ser Arg Lys Leu Lys Asp Val Pro Leu Leu
1               5                   10                  15


Pro Ser Leu Asp Tyr Glu Lys Leu Lys Lys Asp Leu Ile Leu Gly Ser
            20                  25                  30


Asp Arg Leu Lys Ala Phe Leu Leu Gln Ala Leu Arg Trp Arg Leu Thr
        35                  40                  45


Thr Ser His Pro Gly Glu Gln Arg Glu Thr Val Leu Gln Ala Tyr Ile
    50                  55                  60


Ser Asn Asp Leu Leu Asp Cys Tyr Ser His Asn Gln Arg Ser Val Leu
65                  70                  75                  80


Gln Leu Leu His Ser Thr Ser Asp Val Val Arg Gln Tyr Met Ala Arg
```

```
                85                  90                  95

Leu Ile Asn Ala Phe Ala Ser Leu Ala Glu Gly Arg Leu Tyr Leu Ala
            100                 105                 110

Gln Asn Thr Lys Val Leu Gln Met Leu Glu Gly Arg Leu Lys Glu Glu
        115                 120                 125

Asp Lys Asp Ile Ile Thr Arg Glu Asn Val Leu Gly Ala Leu Gln Lys
    130                 135                 140

Phe Ser Leu Arg Arg Pro Leu Gln Thr Ala Met Ile Gln Asp Gly Leu
145                 150                 155                 160

Ile Phe Trp Leu Val Asp Val Leu Lys Asp Pro Asp Cys Leu Ser Asp
                165                 170                 175

Tyr Thr Leu Glu Tyr Ser Val Ala Leu Leu Met Asn Leu Cys Leu Arg
            180                 185                 190

Ser Thr
```

<210> 6388
<211> 818
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1379; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC9; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000484241"

<400> 6388

```
Met Gly Asp Ile Leu Ala His Glu Ser Glu Leu Leu Gly Leu Val Lys
1               5                   10                  15
```

```
Glu Tyr Leu Asp Phe Ala Glu Phe Glu Asp Thr Leu Lys Thr Phe Ser
            20                  25                  30

Lys Glu Cys Lys Ile Lys Gly Lys Pro Leu Cys Lys Thr Val Gly Gly
        35                  40                  45

Ser Phe Arg Asp Ser Lys Ser Leu Thr Ile Gln Lys Asp Leu Val Ala
    50                  55                  60

Ala Phe Asp Asn Gly Asp Gln Lys Val Phe Phe Asp Leu Trp Glu Glu
65                  70                  75                  80

His Ile Ser Ser Ser Ile Arg Asp Gly Asp Ser Phe Ala Gln Lys Leu
                85                  90                  95

Glu Phe Tyr Leu His Ile His Phe Ala Ile Tyr Leu Leu Lys Tyr Ser
            100                 105                 110

Val Gly Arg Pro Asp Lys Glu Glu Leu Asp Glu Lys Ile Ser Tyr Phe
        115                 120                 125

Lys Thr Tyr Leu Glu Thr Lys Gly Ala Ala Leu Ser Gln Thr Thr Glu
    130                 135                 140

Phe Leu Pro Phe Tyr Ala Leu Pro Phe Val Pro Asn Pro Met Val His
145                 150                 155                 160

Pro Ser Phe Lys Glu Leu Phe Gln Asp Ser Trp Thr Pro Glu Leu Lys
                165                 170                 175

Leu Lys Leu Ile Lys Phe Leu Ala Leu Ile Ser Lys Ala Ser Asn Thr
            180                 185                 190

Pro Lys Leu Leu Thr Ile Tyr Lys Glu Asn Gly Gln Ser Asn Lys Glu
        195                 200                 205

Ile Leu Gln Gln Leu His Gln Gln Leu Val Glu Ala Glu Arg Arg Ser
    210                 215                 220

Val Thr Tyr Leu Lys Arg Tyr Asn Lys Ile Gln Ala Asp Tyr His Asn
225                 230                 235                 240
```

```
Leu Ile Gly Val Thr Ala Glu Leu Val Asp Ser Leu Glu Ala Thr Val
                245                 250                 255

Ser Gly Lys Met Ile Thr Pro Glu Tyr Leu Gln Ser Val Cys Val Arg
            260                 265                 270

Leu Phe Ser Asn Gln Met Arg Gln Ser Leu Ala His Ser Val Asp Phe
        275                 280                 285

Thr Arg Pro Gly Thr Ala Ser Thr Met Leu Arg Ala Ser Leu Ala Pro
    290                 295                 300

Val Lys Leu Lys Asp Val Pro Leu Leu Pro Ser Leu Asp Tyr Glu Lys
305                 310                 315                 320

Leu Lys Lys Asp Leu Ile Leu Gly Ser Asp Arg Leu Lys Ala Phe Leu
                325                 330                 335

Leu Gln Ala Leu Arg Trp Arg Leu Thr Thr Ser His Pro Gly Glu Gln
            340                 345                 350

Arg Glu Thr Val Leu Gln Ala Tyr Ile Ser Asn Asp Leu Leu Asp Cys
        355                 360                 365

Tyr Ser His Asn Gln Arg Ser Val Leu Gln Leu Leu His Ser Thr Ser
    370                 375                 380

Asp Val Val Arg Gln Tyr Met Ala Arg Leu Ile Asn Ala Phe Ala Ser
385                 390                 395                 400

Leu Ala Glu Gly Arg Leu Tyr Leu Ala Gln Asn Thr Lys Val Leu Gln
                405                 410                 415

Met Leu Glu Gly Arg Leu Lys Glu Glu Asp Lys Asp Ile Ile Thr Arg
            420                 425                 430

Glu Asn Val Leu Gly Ala Leu Gln Lys Phe Ser Leu Arg Arg Pro Leu
        435                 440                 445

Gln Thr Ala Met Ile Gln Asp Gly Leu Ile Phe Trp Leu Val Asp Val
    450                 455                 460

Leu Lys Asp Pro Asp Cys Leu Ser Asp Tyr Thr Leu Glu Tyr Ser Val
```

```
465                 470                 475                 480

Ala Leu Leu Met Asn Leu Cys Leu Arg Ser Thr Gly Lys Asn Met Cys
                485                 490                 495

Ala Lys Val Ala Gly Leu Val Leu Lys Val Leu Ser Asp Leu Leu Gly
            500                 505                 510

His Glu Asn His Glu Ile Gln Pro Tyr Val Asn Gly Ala Leu Tyr Ser
        515                 520                 525

Ile Leu Ser Val Pro Ser Ile Arg Glu Glu Ala Arg Ala Met Gly Met
    530                 535                 540

Glu Asp Ile Leu Arg Cys Phe Ile Lys Glu Gly Asn Ala Glu Met Ile
545                 550                 555                 560

Arg Gln Ile Glu Phe Ile Ile Lys Gln Leu Asn Ser Glu Glu Leu Pro
                565                 570                 575

Asp Gly Val Leu Glu Ser Asp Asp Asp Glu Asp Glu Asp Asp Glu Glu
            580                 585                 590

Asp His Asp Ile Met Glu Ala Asp Leu Asp Lys Asp Glu Leu Ile Gln
        595                 600                 605

Pro Gln Leu Gly Glu Leu Ser Gly Glu Lys Leu Leu Thr Thr Glu Tyr
    610                 615                 620

Leu Gly Ile Met Thr Asn Thr Gly Lys Thr Arg Arg Lys Gly Leu Ala
625                 630                 635                 640

Asn Val Gln Trp Ser Gly Asp Glu Pro Leu Gln Arg Pro Val Thr Pro
                645                 650                 655

Gly Gly His Arg Asn Gly Tyr Pro Val Val Glu Asp Gln His Thr Pro
            660                 665                 670

Pro Gln Thr Ala Gln His Ala Arg Asn Gly His Pro Gln Ala Leu Pro
        675                 680                 685

Ala Ala His Glu Ala Val Tyr Arg Glu Gly Lys Pro Ser Thr Pro Glu
    690                 695                 700
```

```
Ser Cys Val Ser Ser Ser Ser Ala Ile Ile Ala Lys Pro Gly Glu Trp
705                 710                 715                 720

Leu Pro Arg Gly Arg Gln Glu Glu Pro Arg Pro Ala Pro Thr Gly Thr
                725                 730                 735

Pro Arg Gln Pro Arg Glu Ala Pro Gln Asp Pro Gly Asn Gly Val Thr
            740                 745                 750

Thr Arg Glu Cys Ala Ser Ala Phe Thr Cys Lys Pro Arg Ala Pro Cys
        755                 760                 765

Thr Pro Glu Met Leu Asp Trp Asn Pro Pro Lys Ala Lys Ala Ser Val
    770                 775                 780

Leu Ala Pro Leu Phe Ser Ser Cys Gly Pro Gln Gln Ala Ser Arg Pro
785                 790                 795                 800

Gly Ser Thr Ala Ser Ser Thr Arg Gly Leu Pro Ser Ser Gln Ser His
                805                 810                 815

Arg Lys
```

<210> 6389
<211> 818
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1379; "

<220>
<221> source
<223> /note="Gene Symbol: ARMC9; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing 9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000484804"

<400> 6389

```
Met Gly Asp Ile Leu Ala His Glu Ser Glu Leu Leu Gly Leu Val Lys
1               5                  10                  15

Glu Tyr Leu Asp Phe Ala Glu Phe Glu Asp Thr Leu Lys Thr Phe Ser
            20                  25                  30

Lys Glu Cys Lys Ile Lys Gly Lys Pro Leu Cys Lys Thr Val Gly Gly
        35                  40                  45

Ser Phe Arg Asp Ser Lys Ser Leu Thr Ile Gln Lys Asp Leu Val Ala
    50                  55                  60

Ala Phe Asp Asn Gly Asp Gln Lys Val Phe Phe Asp Leu Trp Glu Glu
65                  70                  75                  80

His Ile Ser Ser Ser Ile Arg Asp Gly Asp Ser Phe Ala Gln Lys Leu
                85                  90                  95

Glu Phe Tyr Leu His Ile His Phe Ala Ile Tyr Leu Leu Lys Tyr Ser
            100                 105                 110

Val Gly Arg Pro Asp Lys Glu Glu Leu Asp Glu Lys Ile Ser Tyr Phe
        115                 120                 125

Lys Thr Tyr Leu Glu Thr Lys Gly Ala Ala Leu Ser Gln Thr Thr Glu
    130                 135                 140

Phe Leu Pro Phe Tyr Ala Leu Pro Phe Val Pro Asn Pro Met Val His
145                 150                 155                 160

Pro Ser Phe Lys Glu Leu Phe Gln Asp Ser Trp Thr Pro Glu Leu Lys
                165                 170                 175

Leu Lys Leu Ile Lys Phe Leu Ala Leu Ile Ser Lys Ala Ser Asn Thr
            180                 185                 190

Pro Lys Leu Leu Thr Ile Tyr Lys Glu Asn Gly Gln Ser Asn Lys Glu
        195                 200                 205

Ile Leu Gln Gln Leu His Gln Gln Leu Val Glu Ala Glu Arg Arg Ser
    210                 215                 220

Val Thr Tyr Leu Lys Arg Tyr Asn Lys Ile Gln Ala Asp Tyr His Asn
```

225 230 235 240

Leu Ile Gly Val Thr Ala Glu Leu Val Asp Ser Leu Glu Ala Thr Val
245 250 255

Ser Gly Lys Met Ile Thr Pro Glu Tyr Leu Gln Ser Val Cys Val Arg
260 265 270

Leu Phe Ser Asn Gln Met Arg Gln Ser Leu Ala His Ser Val Asp Phe
275 280 285

Thr Arg Pro Gly Thr Ala Ser Thr Met Leu Arg Ala Ser Leu Ala Pro
290 295 300

Val Lys Leu Lys Asp Val Pro Leu Leu Pro Ser Leu Asp Tyr Glu Lys
305 310 315 320

Leu Lys Lys Asp Leu Ile Leu Gly Ser Asp Arg Leu Lys Ala Phe Leu
325 330 335

Leu Gln Ala Leu Arg Trp Arg Leu Thr Thr Ser His Pro Gly Glu Gln
340 345 350

Arg Glu Thr Val Leu Gln Ala Tyr Ile Ser Asn Asp Leu Leu Asp Cys
355 360 365

Tyr Ser His Asn Gln Arg Ser Val Leu Gln Leu Leu His Ser Thr Ser
370 375 380

Asp Val Val Arg Gln Tyr Met Ala Arg Leu Ile Asn Ala Phe Ala Ser
385 390 395 400

Leu Ala Glu Gly Arg Leu Tyr Leu Ala Gln Asn Thr Lys Val Leu Gln
405 410 415

Met Leu Glu Gly Arg Leu Lys Glu Glu Asp Lys Asp Ile Ile Thr Arg
420 425 430

Glu Asn Val Leu Gly Ala Leu Gln Lys Phe Ser Leu Arg Arg Pro Leu
435 440 445

Gln Thr Ala Met Ile Gln Asp Gly Leu Ile Phe Trp Leu Val Asp Val
450 455 460

```
Leu Lys Asp Pro Asp Cys Leu Ser Asp Tyr Thr Leu Glu Tyr Ser Val
465                 470                 475                 480

Ala Leu Leu Met Asn Leu Cys Leu Arg Ser Thr Gly Lys Asn Met Cys
                485                 490                 495

Ala Lys Val Ala Gly Leu Val Leu Lys Val Leu Ser Asp Leu Leu Gly
            500                 505                 510

His Glu Asn His Glu Ile Gln Pro Tyr Val Asn Gly Ala Leu Tyr Ser
        515                 520                 525

Ile Leu Ser Val Pro Ser Ile Arg Glu Glu Ala Arg Ala Met Gly Met
    530                 535                 540

Glu Asp Ile Leu Arg Cys Phe Ile Lys Glu Gly Asn Ala Glu Met Ile
545                 550                 555                 560

Arg Gln Ile Glu Phe Ile Ile Lys Gln Leu Asn Ser Glu Glu Leu Pro
                565                 570                 575

Asp Gly Val Leu Glu Ser Asp Asp Asp Glu Asp Glu Asp Asp Glu Glu
            580                 585                 590

Asp His Asp Ile Met Glu Ala Asp Leu Asp Lys Asp Glu Leu Ile Gln
        595                 600                 605

Pro Gln Leu Gly Glu Leu Ser Gly Glu Lys Leu Leu Thr Thr Glu Tyr
    610                 615                 620

Leu Gly Ile Met Thr Asn Thr Gly Lys Thr Arg Arg Lys Gly Leu Ala
625                 630                 635                 640

Asn Val Gln Trp Ser Gly Asp Glu Pro Leu Gln Arg Pro Val Thr Pro
                645                 650                 655

Gly Gly His Arg Asn Gly Tyr Pro Val Val Glu Asp Gln His Thr Pro
            660                 665                 670

Pro Gln Thr Ala Gln His Ala Arg Asn Gly His Pro Gln Ala Leu Pro
        675                 680                 685
```

```
Ala Ala His Glu Ala Val Tyr Arg Glu Gly Lys Pro Ser Thr Pro Glu
    690                 695                 700

Ser Cys Val Ser Ser Ser Ser Ala Ile Ile Ala Lys Pro Gly Glu Trp
705                 710                 715                 720

Leu Pro Arg Gly Arg Gln Glu Glu Pro Arg Pro Ala Pro Thr Gly Thr
                725                 730                 735

Pro Arg Gln Pro Arg Glu Ala Pro Gln Asp Pro Gly Asn Gly Val Thr
            740                 745                 750

Thr Arg Glu Cys Ala Ser Ala Phe Thr Cys Lys Pro Arg Ala Pro Cys
        755                 760                 765

Thr Pro Glu Met Leu Asp Trp Asn Pro Pro Lys Ala Lys Ala Ser Val
    770                 775                 780

Leu Ala Pro Leu Phe Ser Ser Cys Gly Pro Gln Gln Ala Ser Arg Pro
785                 790                 795                 800

Gly Ser Thr Ala Ser Ser Thr Arg Gly Leu Pro Ser Ser Gln Ser His
                805                 810                 815

Arg Lys
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<210> 6390
<211> 453
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1380; "

<220>
<221> source
<223> /note="Gene Symbol: ARMCX1; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing, X-linked 1; "

<220>
<221> source

<223> /note="Uniprot ID: Q9P291; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000361917"

<400> 6390
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Met Gly Arg Thr Arg Glu Ala Gly Cys Val Ala Ala Gly Val Val Ile
1               5                  10                  15

Gly Ala Gly Ala Cys Tyr Cys Val Tyr Arg Leu Ala Trp Gly Arg Asp
            20                  25                  30

Glu Asn Glu Lys Ile Trp Asp Glu Asp Glu Glu Ser Thr Asp Thr Ser
        35                  40                  45

Glu Ile Gly Val Glu Thr Val Lys Gly Ala Lys Thr Asn Ala Gly Ala
    50                  55                  60

Gly Ser Gly Ala Lys Leu Gln Gly Asp Ser Glu Val Lys Pro Glu Val
65                  70                  75                  80

Ser Leu Gly Leu Glu Asp Cys Pro Gly Val Lys Glu Lys Ala His Ser
                85                  90                  95

Gly Ser His Ser Gly Gly Gly Leu Glu Ala Lys Ala Lys Ala Leu Phe
            100                 105                 110

Asn Thr Leu Lys Glu Gln Ala Ser Ala Lys Ala Gly Lys Gly Ala Arg
        115                 120                 125

Val Gly Thr Ile Ser Gly Asn Arg Thr Leu Ala Pro Ser Leu Pro Cys
    130                 135                 140

Pro Gly Gly Arg Gly Gly Gly Cys His Pro Thr Arg Ser Gly Ser Arg
145                 150                 155                 160

Ala Gly Gly Arg Ala Ser Gly Lys Ser Lys Gly Lys Ala Arg Ser Lys
                165                 170                 175

Ser Thr Arg Ala Pro Ala Thr Thr Trp Pro Val Arg Arg Gly Lys Phe
            180                 185                 190

Asn Phe Pro Tyr Lys Ile Asp Asp Ile Leu Ser Ala Pro Asp Leu Gln
        195                 200                 205
```

```
Lys Val Leu Asn Ile Leu Glu Arg Thr Asn Asp Pro Phe Ile Gln Glu
    210                 215                 220

Val Ala Leu Val Thr Leu Gly Asn Asn Ala Ala Tyr Ser Phe Asn Gln
225                 230                 235                 240

Asn Ala Ile Arg Glu Leu Gly Gly Val Pro Ile Ile Ala Lys Leu Ile
                245                 250                 255

Lys Thr Lys Asp Pro Ile Ile Arg Glu Lys Thr Tyr Asn Ala Leu Asn
            260                 265                 270

Asn Leu Ser Val Asn Ala Glu Asn Gln Gly Lys Ile Lys Thr Tyr Ile
        275                 280                 285

Ser Gln Val Cys Asp Asp Thr Met Val Cys Arg Leu Asp Ser Ala Val
    290                 295                 300

Gln Met Ala Gly Leu Arg Leu Leu Thr Asn Met Thr Val Thr Asn His
305                 310                 315                 320

Tyr Gln His Leu Leu Ser Tyr Ser Phe Pro Asp Phe Phe Ala Leu Leu
                325                 330                 335

Phe Leu Gly Asn His Phe Thr Lys Ile Gln Ile Met Lys Leu Ile Ile
            340                 345                 350

Asn Phe Thr Glu Asn Pro Ala Met Thr Arg Glu Leu Val Ser Cys Lys
        355                 360                 365

Val Pro Ser Glu Leu Ile Ser Leu Phe Asn Lys Glu Trp Asp Arg Glu
    370                 375                 380

Ile Leu Leu Asn Ile Leu Thr Leu Phe Glu Asn Ile Asn Asp Asn Ile
385                 390                 395                 400

Lys Asn Glu Gly Leu Ala Ser Ser Arg Lys Glu Phe Ser Arg Ser Ser
                405                 410                 415

Leu Phe Phe Leu Phe Lys Glu Ser Gly Val Cys Val Lys Lys Ile Lys
            420                 425                 430
```

Ala Leu Ala Asn His Asn Asp Leu Val Val Lys Val Lys Val Leu Lys
435 440 445

Val Leu Thr Lys Leu
450

<210> 6391
<211> 365
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1380; "

<220>
<221> source
<223> /note="Gene Symbol: ARMCX1; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing, X-linked 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000477961"

<400> 6391
Met Gly Arg Thr Arg Glu Ala Gly Cys Val Ala Ala Gly Val Val Ile
1 5 10 15

Gly Ala Gly Ala Cys Tyr Cys Val Tyr Arg Leu Ala Trp Gly Arg Asp
20 25 30

Glu Asn Glu Lys Ile Trp Asp Glu Asp Glu Glu Ser Thr Asp Thr Ser
35 40 45

Glu Ile Gly Val Glu Thr Val Lys Gly Ala Lys Thr Asn Ala Gly Ala
50 55 60

Gly Ser Gly Ala Lys Leu Gln Gly Asp Ser Glu Val Lys Pro Glu Val
65 70 75 80

Ser Leu Gly Leu Glu Asp Cys Pro Gly Val Lys Glu Lys Ala His Ser
85 90 95

Gly Ser His Ser Gly Gly Gly Leu Glu Ala Lys Ala Lys Ala Leu Phe

```
            100                 105                 110

Asn Thr Leu Lys Glu Gln Ala Ser Ala Lys Ala Gly Lys Gly Ala Arg
        115                 120                 125

Val Gly Thr Ile Ser Gly Asn Arg Thr Leu Ala Pro Ser Leu Pro Cys
    130                 135                 140

Pro Gly Gly Arg Gly Gly Gly Cys His Pro Thr Arg Ser Gly Ser Arg
145                 150                 155                 160

Ala Gly Gly Arg Ala Ser Gly Lys Ser Lys Gly Lys Ala Arg Ser Lys
                165                 170                 175

Ser Thr Arg Ala Pro Ala Thr Thr Trp Pro Val Arg Arg Gly Lys Phe
            180                 185                 190

Asn Phe Pro Tyr Lys Ile Asp Asp Ile Leu Ser Ala Pro Asp Leu Gln
        195                 200                 205

Lys Val Leu Asn Ile Leu Glu Arg Thr Asn Asp Pro Phe Ile Gln Glu
    210                 215                 220

Val Ala Leu Val Thr Leu Gly Asn Asn Ala Ala Tyr Ser Phe Asn Gln
225                 230                 235                 240

Asn Ala Ile Arg Glu Leu Gly Gly Val Pro Ile Ile Ala Lys Leu Ile
                245                 250                 255

Lys Thr Lys Asp Pro Ile Ile Arg Glu Lys Thr Tyr Asn Ala Leu Asn
            260                 265                 270

Asn Leu Ser Val Asn Ala Glu Asn Gln Gly Lys Ile Lys Thr Tyr Ile
        275                 280                 285

Ser Gln Val Cys Asp Asp Thr Met Val Cys Arg Leu Asp Ser Ala Val
    290                 295                 300

Gln Met Ala Gly Leu Arg Leu Leu Thr Asn Met Thr Val Thr Asn His
305                 310                 315                 320

Tyr Gln His Leu Leu Ser Tyr Ser Phe Pro Asp Phe Phe Ala Leu Leu
                325                 330                 335
```

```
Phe Leu Gly Asn His Phe Thr Lys Ile Gln Ile Met Lys Leu Ile Ile
            340                 345                 350

Asn Phe Thr Glu Asn Pro Ala Met Thr Ala Gly Gln Leu
        355                 360                 365


<210> 6392
<211> 632
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1381; "

<220>
<221> source
<223> /note="Gene Symbol: ARMCX2; "

<220>
<221> source
<223> /note="Gene Name:
      armadillo repeat containing, X-linked 2; "

<220>
<221> source
<223> /note="Uniprot ID:  Q7L311; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000328631"

<400> 6392
Met Ser Arg Val Arg Asp Ala Gly Cys Val Ala Ala Gly Ile Val Ile
1               5                   10                  15

Gly Ala Gly Ala Trp Tyr Cys Val Tyr Lys Tyr Thr Arg Gly Arg Asp
            20                  25                  30

Gln Thr Lys Lys Arg Met Ala Lys Pro Lys Asn Arg Ala Val Ala Gly
        35                  40                  45

Thr Gly Ala Arg Ala Arg Ala Gly Leu Arg Ala Gly Phe Thr Ile Asp
    50                  55                  60

Leu Gly Ser Gly Phe Ser Pro Pro Thr Pro Val Arg Ala Glu Ala Glu
65                  70                  75                  80
```

```
Asp Arg Ala Gln Asp Glu Ala Ser Ala Leu Asp Thr Val Gly Ala Glu
                85                  90                  95

Ala Val Ala Pro Ala Ala Ser Ser Ala Glu Ala Gln Ser Gly Ala Gly
            100                 105                 110

Ser Gln Ala Gln Glu Ala Asp Gly Ala Gly Val Gly Pro Lys Ala Glu
        115                 120                 125

Ser Val Val Gly Ala Ala Met Ala Ser Ala Ile Ala Pro Pro Pro Gly
    130                 135                 140

Val Thr Glu Ala Leu Gly Ala Ala Glu Ala Pro Ala Met Ala Gly Ala
145                 150                 155                 160

Pro Lys Val Ala Glu Ala Pro Arg Glu Ala Glu Thr Ser Arg Ala Ala
                165                 170                 175

Val Pro Pro Gly Thr Val Val Pro Thr Glu Ala Ala Ala Pro Thr Glu
            180                 185                 190

Val Thr Glu Gly Pro Gly Val Ala Ala Pro Thr Lys Val Ala Glu Ala
        195                 200                 205

Pro Gly Val Ala Ser Pro Thr Glu Ala Ala Glu Ala Pro Val Pro Ala
    210                 215                 220

Thr Pro Thr Gly Ala Ala Ala Pro Thr Gly Ala Ala Glu Ser Pro Gly
225                 230                 235                 240

Thr Ser Gly Ser Pro Arg Thr Ala Val Val Pro Gly Thr Ser Ala Ala
                245                 250                 255

Lys Lys Ala Thr Pro Gly Ala His Thr Gly Ala Ile Pro Lys Ala Thr
            260                 265                 270

Ser Ala Thr Gly Ala Val Pro Lys Gly Gly Gly Lys Gly Val Thr Arg
        275                 280                 285

Ser Arg Asn Gly Gly Lys Gly Lys Gly Lys Lys Ser Lys Val Glu Val
    290                 295                 300

Asp Glu Leu Gly Met Gly Phe Arg Pro Gly Asp Gly Ala Ala Ala Ala
```

305 310 315 320

Ala Ala Ala Ser Ala Asn Gly Gly Gln Ala Phe Leu Ala Glu Val Pro
325 330 335

Asp Ser Glu Glu Gly Glu Ser Gly Trp Thr Asp Thr Glu Ser Asp Ser
340 345 350

Asp Ser Glu Pro Glu Thr Gln Arg Arg Gly Arg Gly Arg Arg Pro Val
355 360 365

Ala Met Gln Lys Arg Pro Phe Pro Tyr Glu Ile Asp Glu Ile Leu Gly
370 375 380

Val Arg Asp Leu Arg Lys Val Leu Ala Leu Leu Gln Lys Ser Asp Asp
385 390 395 400

Pro Phe Ile Gln Gln Val Ala Leu Leu Thr Leu Ser Asn Asn Ala Asn
405 410 415

Tyr Ser Cys Asn Gln Glu Thr Ile Arg Lys Leu Gly Gly Leu Pro Ile
420 425 430

Ile Ala Asn Met Ile Asn Lys Thr Asp Pro His Ile Lys Glu Lys Ala
435 440 445

Leu Met Ala Met Asn Asn Leu Ser Glu Asn Tyr Glu Asn Gln Gly Arg
450 455 460

Leu Gln Val Tyr Met Asn Lys Val Met Asp Asp Ile Met Ala Ser Asn
465 470 475 480

Leu Asn Ser Ala Val Gln Val Val Gly Leu Lys Phe Leu Thr Asn Met
485 490 495

Thr Ile Thr Asn Asp Tyr Gln His Leu Leu Val Asn Ser Ile Ala Asn
500 505 510

Phe Phe Arg Leu Leu Ser Gln Gly Gly Gly Lys Ile Lys Val Glu Ile
515 520 525

Leu Lys Ile Leu Ser Asn Phe Ala Glu Asn Pro Asp Met Leu Lys Lys
530 535 540

```
Leu Leu Ser Thr Gln Val Pro Ala Ser Phe Ser Ser Leu Tyr Asn Ser
545                 550                 555                 560

Tyr Val Glu Ser Glu Ile Leu Ile Asn Ala Leu Thr Leu Phe Glu Ile
                565                 570                 575

Ile Tyr Asp Asn Leu Arg Ala Glu Val Phe Asn Tyr Arg Glu Phe Asn
            580                 585                 590

Lys Gly Ser Leu Phe Tyr Leu Cys Thr Thr Ser Gly Val Cys Val Lys
        595                 600                 605

Lys Ile Arg Ala Leu Ala Asn His His Asp Leu Leu Val Lys Val Lys
    610                 615                 620

Val Ile Lys Leu Val Asn Lys Phe
625                 630
```

<210> 6393
<211> 632
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1381; "

<220>
<221> source
<223> /note="Gene Symbol: ARMCX2; "

<220>
<221> source
<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID: Q7L311; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000331662"

<400> 6393

```
Met Ser Arg Val Arg Asp Ala Gly Cys Val Ala Ala Gly Ile Val Ile
1               5                   10                  15
```

```
Gly Ala Gly Ala Trp Tyr Cys Val Tyr Lys Tyr Thr Arg Gly Arg Asp
            20                  25                  30

Gln Thr Lys Lys Arg Met Ala Lys Pro Lys Asn Arg Ala Val Ala Gly
        35                  40                  45

Thr Gly Ala Arg Ala Arg Ala Gly Leu Arg Ala Gly Phe Thr Ile Asp
    50                  55                  60

Leu Gly Ser Gly Phe Ser Pro Pro Thr Pro Val Arg Ala Glu Ala Glu
65                  70                  75                  80

Asp Arg Ala Gln Asp Glu Ala Ser Ala Leu Asp Thr Val Gly Ala Glu
                85                  90                  95

Ala Val Ala Pro Ala Ala Ser Ser Ala Glu Ala Gln Ser Gly Ala Gly
            100                 105                 110

Ser Gln Ala Gln Glu Ala Asp Gly Ala Gly Val Gly Pro Lys Ala Glu
        115                 120                 125

Ser Val Val Gly Ala Ala Met Ala Ser Ala Ile Ala Pro Pro Pro Gly
    130                 135                 140

Val Thr Glu Ala Leu Gly Ala Ala Glu Ala Pro Ala Met Ala Gly Ala
145                 150                 155                 160

Pro Lys Val Ala Glu Ala Pro Arg Glu Ala Glu Thr Ser Arg Ala Ala
                165                 170                 175

Val Pro Pro Gly Thr Val Val Pro Thr Glu Ala Ala Ala Pro Thr Glu
            180                 185                 190

Val Thr Glu Gly Pro Gly Val Ala Ala Pro Thr Lys Val Ala Glu Ala
        195                 200                 205

Pro Gly Val Ala Ser Pro Thr Glu Ala Ala Glu Ala Pro Val Pro Ala
    210                 215                 220

Thr Pro Thr Gly Ala Ala Ala Pro Thr Gly Ala Ala Glu Ser Pro Gly
225                 230                 235                 240

Thr Ser Gly Ser Pro Arg Thr Ala Val Val Pro Gly Thr Ser Ala Ala
```

```
                245                 250                 255

Lys Lys Ala Thr Pro Gly Ala His Thr Gly Ala Ile Pro Lys Ala Thr
            260                 265                 270

Ser Ala Thr Gly Ala Val Pro Lys Gly Gly Gly Lys Gly Val Thr Arg
        275                 280                 285

Ser Arg Asn Gly Gly Lys Gly Lys Gly Lys Lys Ser Lys Val Glu Val
    290                 295                 300

Asp Glu Leu Gly Met Gly Phe Arg Pro Gly Asp Gly Ala Ala Ala Ala
305                 310                 315                 320

Ala Ala Ala Ser Ala Asn Gly Gly Gln Ala Phe Leu Ala Glu Val Pro
                325                 330                 335

Asp Ser Glu Glu Gly Glu Ser Gly Trp Thr Asp Thr Glu Ser Asp Ser
            340                 345                 350

Asp Ser Glu Pro Glu Thr Gln Arg Arg Gly Arg Gly Arg Arg Pro Val
        355                 360                 365

Ala Met Gln Lys Arg Pro Phe Pro Tyr Glu Ile Asp Glu Ile Leu Gly
    370                 375                 380

Val Arg Asp Leu Arg Lys Val Leu Ala Leu Leu Gln Lys Ser Asp Asp
385                 390                 395                 400

Pro Phe Ile Gln Gln Val Ala Leu Leu Thr Leu Ser Asn Asn Ala Asn
                405                 410                 415

Tyr Ser Cys Asn Gln Glu Thr Ile Arg Lys Leu Gly Gly Leu Pro Ile
            420                 425                 430

Ile Ala Asn Met Ile Asn Lys Thr Asp Pro His Ile Lys Glu Lys Ala
        435                 440                 445

Leu Met Ala Met Asn Asn Leu Ser Glu Asn Tyr Glu Asn Gln Gly Arg
    450                 455                 460

Leu Gln Val Tyr Met Asn Lys Val Met Asp Asp Ile Met Ala Ser Asn
465                 470                 475                 480
```

```
Leu Asn Ser Ala Val Gln Val Val Gly Leu Lys Phe Leu Thr Asn Met
                485                 490                 495

Thr Ile Thr Asn Asp Tyr Gln His Leu Leu Val Asn Ser Ile Ala Asn
            500                 505                 510

Phe Phe Arg Leu Leu Ser Gln Gly Gly Gly Lys Ile Lys Val Glu Ile
        515                 520                 525

Leu Lys Ile Leu Ser Asn Phe Ala Glu Asn Pro Asp Met Leu Lys Lys
    530                 535                 540

Leu Leu Ser Thr Gln Val Pro Ala Ser Phe Ser Ser Leu Tyr Asn Ser
545                 550                 555                 560

Tyr Val Glu Ser Glu Ile Leu Ile Asn Ala Leu Thr Leu Phe Glu Ile
                565                 570                 575

Ile Tyr Asp Asn Leu Arg Ala Glu Val Phe Asn Tyr Arg Glu Phe Asn
            580                 585                 590

Lys Gly Ser Leu Phe Tyr Leu Cys Thr Thr Ser Gly Val Cys Val Lys
        595                 600                 605

Lys Ile Arg Ala Leu Ala Asn His His Asp Leu Leu Val Lys Val Lys
    610                 615                 620

Val Ile Lys Leu Val Asn Lys Phe
625                 630


<210> 6394
<211> 632
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1381; "

<220>
<221> source
<223> /note="Gene Symbol: ARMCX2; "

<220>
<221> source
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<223> /note="Gene Name:
armadillo repeat containing, X-linked 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q7L311; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000349281"

<400> 6394

```
Met Ser Arg Val Arg Asp Ala Gly Cys Val Ala Ala Gly Ile Val Ile
1               5                  10                  15

Gly Ala Gly Ala Trp Tyr Cys Val Tyr Lys Tyr Thr Arg Gly Arg Asp
            20                  25                  30

Gln Thr Lys Lys Arg Met Ala Lys Pro Lys Asn Arg Ala Val Ala Gly
        35                  40                  45

Thr Gly Ala Arg Ala Arg Ala Gly Leu Arg Ala Gly Phe Thr Ile Asp
    50                  55                  60

Leu Gly Ser Gly Phe Ser Pro Pro Thr Pro Val Arg Ala Glu Ala Glu
65                  70                  75                  80

Asp Arg Ala Gln Asp Glu Ala Ser Ala Leu Asp Thr Val Gly Ala Glu
                85                  90                  95

Ala Val Ala Pro Ala Ala Ser Ser Ala Glu Ala Gln Ser Gly Ala Gly
            100                 105                 110

Ser Gln Ala Gln Glu Ala Asp Gly Ala Gly Val Gly Pro Lys Ala Glu
        115                 120                 125

Ser Val Val Gly Ala Ala Met Ala Ser Ala Ile Ala Pro Pro Pro Gly
    130                 135                 140

Val Thr Glu Ala Leu Gly Ala Ala Glu Ala Pro Ala Met Ala Gly Ala
145                 150                 155                 160

Pro Lys Val Ala Glu Ala Pro Arg Glu Ala Glu Thr Ser Arg Ala Ala
                165                 170                 175

Val Pro Pro Gly Thr Val Val Pro Thr Glu Ala Ala Ala Pro Thr Glu
```

```
            180                 185                 190

Val Thr Glu Gly Pro Gly Val Ala Ala Pro Thr Lys Val Ala Glu Ala
        195                 200                 205

Pro Gly Val Ala Ser Pro Thr Glu Ala Ala Glu Ala Pro Val Pro Ala
    210                 215                 220

Thr Pro Thr Gly Ala Ala Ala Pro Thr Gly Ala Ala Glu Ser Pro Gly
225                 230                 235                 240

Thr Ser Gly Ser Pro Arg Thr Ala Val Val Pro Gly Thr Ser Ala Ala
                245                 250                 255

Lys Lys Ala Thr Pro Gly Ala His Thr Gly Ala Ile Pro Lys Ala Thr
            260                 265                 270

Ser Ala Thr Gly Ala Val Pro Lys Gly Gly Gly Lys Gly Val Thr Arg
        275                 280                 285

Ser Arg Asn Gly Gly Lys Gly Lys Gly Lys Lys Ser Lys Val Glu Val
    290                 295                 300

Asp Glu Leu Gly Met Gly Phe Arg Pro Gly Asp Gly Ala Ala Ala Ala
305                 310                 315                 320

Ala Ala Ala Ser Ala Asn Gly Gly Gln Ala Phe Leu Ala Glu Val Pro
                325                 330                 335

Asp Ser Glu Glu Gly Glu Ser Gly Trp Thr Asp Thr Glu Ser Asp Ser
            340                 345                 350

Asp Ser Glu Pro Glu Thr Gln Arg Arg Gly Arg Gly Arg Arg Pro Val
        355                 360                 365

Ala Met Gln Lys Arg Pro Phe Pro Tyr Glu Ile Asp Glu Ile Leu Gly
    370                 375                 380

Val Arg Asp Leu Arg Lys Val Leu Ala Leu Leu Gln Lys Ser Asp Asp
385                 390                 395                 400

Pro Phe Ile Gln Gln Val Ala Leu Leu Thr Leu Ser Asn Asn Ala Asn
                405                 410                 415
```

```
Tyr Ser Cys Asn Gln Glu Thr Ile Arg Lys Leu Gly Gly Leu Pro Ile
            420                 425                 430

Ile Ala Asn Met Ile Asn Lys Thr Asp Pro His Ile Lys Glu Lys Ala
        435                 440                 445

Leu Met Ala Met Asn Asn Leu Ser Glu Asn Tyr Glu Asn Gln Gly Arg
    450                 455                 460

Leu Gln Val Tyr Met Asn Lys Val Met Asp Asp Ile Met Ala Ser Asn
465                 470                 475                 480

Leu Asn Ser Ala Val Gln Val Val Gly Leu Lys Phe Leu Thr Asn Met
                485                 490                 495

Thr Ile Thr Asn Asp Tyr Gln His Leu Leu Val Asn Ser Ile Ala Asn
            500                 505                 510

Phe Phe Arg Leu Leu Ser Gln Gly Gly Gly Lys Ile Lys Val Glu Ile
        515                 520                 525

Leu Lys Ile Leu Ser Asn Phe Ala Glu Asn Pro Asp Met Leu Lys Lys
    530                 535                 540

Leu Leu Ser Thr Gln Val Pro Ala Ser Phe Ser Ser Leu Tyr Asn Ser
545                 550                 555                 560

Tyr Val Glu Ser Glu Ile Leu Ile Asn Ala Leu Thr Leu Phe Glu Ile
                565                 570                 575

Ile Tyr Asp Asn Leu Arg Ala Glu Val Phe Asn Tyr Arg Glu Phe Asn
            580                 585                 590

Lys Gly Ser Leu Phe Tyr Leu Cys Thr Thr Ser Gly Val Cys Val Lys
        595                 600                 605

Lys Ile Arg Ala Leu Ala Asn His His Asp Leu Leu Val Lys Val Lys
    610                 615                 620

Val Ile Lys Leu Val Asn Lys Phe
625                 630
```

<210> 6395
<211> 104
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1381; "

<220>
<221> source
<223> /note="Gene Symbol: ARMCX2; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing, X-linked 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000393778"

<400> 6395
Met Ser Arg Val Arg Asp Ala Gly Cys Val Ala Ala Gly Ile Val Ile
1 5 10 15

Gly Ala Gly Ala Trp Tyr Cys Val Tyr Lys Tyr Thr Arg Gly Arg Asp
20 25 30

Gln Thr Lys Lys Arg Met Ala Lys Pro Lys Asn Arg Ala Val Ala Gly
35 40 45

Thr Gly Ala Arg Ala Arg Ala Gly Leu Arg Ala Gly Phe Thr Ile Asp
50 55 60

Leu Gly Ser Gly Phe Ser Pro Pro Thr Pro Val Arg Ala Glu Ala Glu
65 70 75 80

Asp Arg Ala Gln Asp Glu Ala Ser Ala Leu Asp Thr Val Gly Ala Glu
85 90 95

Ala Val Ala Pro Ala Ala Ser Ser
100

<210> 6396
<211> 62
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1381; "

<220>
<221> source
<223> /note="Gene Symbol: ARMCX2; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing, X-linked 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000405376"

<400> 6396
Met Ser Arg Val Arg Asp Ala Gly Cys Val Ala Ala Gly Ile Val Ile
1 5 10 15

Gly Ala Gly Ala Trp Tyr Cys Val Tyr Lys Tyr Thr Arg Gly Arg Asp
20 25 30

Gln Thr Lys Lys Arg Met Ala Lys Pro Lys Asn Arg Ala Val Ala Gly
35 40 45

Thr Gly Ala Arg Ala Arg Ala Gly Leu Arg Ala Gly Phe Thr
50 55 60

<210> 6397
<211> 165
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1381; "

<220>
<221> source
<223> /note="Gene Symbol: ARMCX2; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing, X-linked 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000410151"

<400> 6397

```
Met Ser Arg Val Arg Asp Ala Gly Cys Val Ala Ala Gly Ile Val Ile
1               5                   10                  15

Gly Ala Gly Ala Trp Tyr Cys Val Tyr Lys Tyr Thr Arg Gly Arg Asp
            20                  25                  30

Gln Thr Lys Lys Arg Met Ala Lys Pro Lys Asn Arg Ala Val Ala Gly
        35                  40                  45

Thr Gly Ala Arg Ala Arg Ala Gly Leu Arg Ala Gly Phe Thr Ile Asp
    50                  55                  60

Leu Gly Ser Gly Phe Ser Pro Pro Thr Pro Val Arg Ala Glu Ala Glu
65                  70                  75                  80

Asp Arg Ala Gln Asp Glu Ala Ser Ala Leu Asp Thr Val Gly Ala Glu
                85                  90                  95

Ala Val Ala Pro Ala Ala Ser Ser Ala Glu Ala Gln Ser Gly Ala Gly
            100                 105                 110

Ser Gln Ala Gln Glu Ala Asp Gly Ala Gly Val Gly Pro Lys Ala Glu
        115                 120                 125

Ser Val Val Gly Ala Ala Met Ala Ser Ala Ile Ala Pro Pro Pro Gly
    130                 135                 140

Val Thr Glu Ala Leu Gly Ala Ala Glu Ala Pro Ala Met Ala Gly Ala
145                 150                 155                 160

Pro Lys Val Ala Glu
                165
```

<210> 6398
<211> 167
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1381; "

<220>
<221> source
<223> /note="Gene Symbol: ARMCX2; "

<220>
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<223> /note="Gene Name:
armadillo repeat containing, X-linked 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000412481"

<400> 6398
Met Ser Arg Val Arg Asp Ala Gly Cys Val Ala Ala Gly Ile Val Ile
1 5 10 15

Gly Ala Gly Ala Trp Tyr Cys Val Tyr Lys Tyr Thr Arg Gly Arg Asp
20 25 30

Gln Thr Lys Lys Arg Met Ala Lys Pro Lys Asn Arg Ala Val Ala Gly
35 40 45

Thr Gly Ala Arg Ala Arg Ala Gly Leu Arg Ala Gly Phe Thr Ile Asp
50 55 60

Leu Gly Ser Gly Phe Ser Pro Pro Thr Pro Val Arg Ala Glu Ala Glu
65 70 75 80

Asp Arg Ala Gln Asp Glu Ala Ser Ala Leu Asp Thr Val Gly Ala Glu
85 90 95

Ala Val Ala Pro Ala Ala Ser Ser Ala Glu Ala Gln Ser Gly Ala Gly
100 105 110

Ser Gln Ala Gln Glu Ala Asp Gly Ala Gly Val Gly Pro Lys Ala Glu
115 120 125

Ser Val Val Gly Ala Ala Met Ala Ser Ala Ile Ala Pro Pro Pro Gly
130 135 140

Val Thr Glu Ala Leu Gly Ala Ala Glu Ala Pro Ala Met Ala Gly Ala
145 150 155 160

Pro Lys Val Ala Glu Ala Pro
165

<210> 6399
<211> 92
<212> PRT

<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1381; "

<220>
<221> source
<223> /note="Gene Symbol: ARMCX2; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing, X-linked 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000415490"

<400> 6399
Met Ser Arg Val Arg Asp Ala Gly Cys Val Ala Ala Gly Ile Val Ile
1 5 10 15

Gly Ala Gly Ala Trp Tyr Cys Val Tyr Lys Tyr Thr Arg Gly Arg Asp
20 25 30

Gln Thr Lys Lys Arg Met Ala Lys Pro Lys Asn Arg Ala Val Ala Gly
35 40 45

Thr Gly Ala Arg Ala Arg Ala Gly Leu Arg Ala Gly Phe Thr Ile Asp
50 55 60

Leu Gly Ser Gly Phe Ser Pro Pro Thr Pro Val Arg Ala Glu Ala Glu
65 70 75 80

Asp Arg Ala Gln Asp Glu Ala Ser Ala Leu Asp Thr
85 90

<210> 6400
<211> 379
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1382; "

<220>
<221> source
<223> /note="Gene Symbol: ARMCX3; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing, X-linked 3; "

<220>
<221> source
<223> /note="Uniprot ID: Q9UH62; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000340672"

<400> 6400
Met Gly Tyr Ala Arg Lys Val Gly Trp Val Thr Ala Gly Leu Val Ile
1   5   10   15

Gly Ala Gly Ala Cys Tyr Cys Ile Tyr Arg Leu Thr Arg Gly Arg Lys
            20   25   30

Gln Asn Lys Glu Lys Met Ala Glu Gly Gly Ser Gly Asp Val Asp Asp
        35   40   45

Ala Gly Asp Cys Ser Gly Ala Arg Tyr Asn Asp Trp Ser Asp Asp Asp
    50   55   60

Asp Asp Ser Asn Glu Ser Lys Ser Ile Val Trp Tyr Pro Pro Trp Ala
65   70   75   80

Arg Ile Gly Thr Glu Ala Gly Thr Arg Ala Arg Ala Arg Ala Arg Ala
                85   90   95

Arg Ala Thr Arg Ala Arg Arg Ala Val Gln Lys Arg Ala Ser Pro Asn
            100   105   110

Ser Asp Asp Thr Val Leu Ser Pro Gln Glu Leu Gln Lys Val Leu Cys
        115   120   125

Leu Val Glu Met Ser Glu Lys Pro Tyr Ile Leu Glu Ala Ala Leu Ile
    130   135   140

Ala Leu Gly Asn Asn Ala Ala Tyr Ala Phe Asn Arg Asp Ile Ile Arg
145   150   155   160

Asp Leu Gly Gly Leu Pro Ile Val Ala Lys Ile Leu Asn Thr Arg Asp
                165   170   175

```
Pro Ile Val Lys Glu Lys Ala Leu Ile Val Leu Asn Asn Leu Ser Val
            180                 185                 190

Asn Ala Glu Asn Gln Arg Arg Leu Lys Val Tyr Met Asn Gln Val Cys
        195                 200                 205

Asp Asp Thr Ile Thr Ser Arg Leu Asn Ser Ser Val Gln Leu Ala Gly
    210                 215                 220

Leu Arg Leu Leu Thr Asn Met Thr Val Thr Asn Glu Tyr Gln His Met
225                 230                 235                 240

Leu Ala Asn Ser Ile Ser Asp Phe Phe Arg Leu Phe Ser Ala Gly Asn
                245                 250                 255

Glu Glu Thr Lys Leu Gln Val Leu Lys Leu Leu Leu Asn Leu Ala Glu
            260                 265                 270

Asn Pro Ala Met Thr Arg Glu Leu Leu Arg Ala Gln Val Pro Ser Ser
        275                 280                 285

Leu Gly Ser Leu Phe Asn Lys Lys Glu Asn Lys Glu Val Ile Leu Lys
    290                 295                 300

Leu Leu Val Ile Phe Glu Asn Ile Asn Asp Asn Phe Lys Trp Glu Glu
305                 310                 315                 320

Asn Glu Pro Thr Gln Asn Gln Phe Gly Glu Gly Ser Leu Phe Phe Phe
                325                 330                 335

Leu Lys Glu Phe Gln Val Cys Ala Asp Lys Val Leu Gly Ile Glu Ser
            340                 345                 350

His His Asp Phe Leu Val Lys Val Lys Val Gly Lys Phe Met Ala Lys
        355                 360                 365

Leu Ala Glu His Met Phe Pro Lys Ser Gln Glu
    370                 375
```

<210> 6401
<211> 379
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1382; "

<220>
<221> source
<223> /note="Gene Symbol: ARMCX3; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing, X-linked 3; "

<220>
<221> source
<223> /note="Uniprot ID: Q9UH62; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000439032"

<400> 6401
Met Gly Tyr Ala Arg Lys Val Gly Trp Val Thr Ala Gly Leu Val Ile
1   5   10   15

Gly Ala Gly Ala Cys Tyr Cys Ile Tyr Arg Leu Thr Arg Gly Arg Lys
            20   25   30

Gln Asn Lys Glu Lys Met Ala Glu Gly Gly Ser Gly Asp Val Asp Asp
        35   40   45

Ala Gly Asp Cys Ser Gly Ala Arg Tyr Asn Asp Trp Ser Asp Asp Asp
    50   55   60

Asp Asp Ser Asn Glu Ser Lys Ser Ile Val Trp Tyr Pro Pro Trp Ala
65   70   75   80

Arg Ile Gly Thr Glu Ala Gly Thr Arg Ala Arg Ala Arg Ala Arg Ala
                85   90   95

Arg Ala Thr Arg Ala Arg Arg Ala Val Gln Lys Arg Ala Ser Pro Asn
            100   105   110

Ser Asp Asp Thr Val Leu Ser Pro Gln Glu Leu Gln Lys Val Leu Cys
        115   120   125

Leu Val Glu Met Ser Glu Lys Pro Tyr Ile Leu Glu Ala Ala Leu Ile
    130   135   140

```
Ala Leu Gly Asn Asn Ala Ala Tyr Ala Phe Asn Arg Asp Ile Ile Arg
145                 150                 155                 160

Asp Leu Gly Gly Leu Pro Ile Val Ala Lys Ile Leu Asn Thr Arg Asp
                165                 170                 175

Pro Ile Val Lys Glu Lys Ala Leu Ile Val Leu Asn Asn Leu Ser Val
            180                 185                 190

Asn Ala Glu Asn Gln Arg Arg Leu Lys Val Tyr Met Asn Gln Val Cys
        195                 200                 205

Asp Asp Thr Ile Thr Ser Arg Leu Asn Ser Ser Val Gln Leu Ala Gly
    210                 215                 220

Leu Arg Leu Leu Thr Asn Met Thr Val Thr Asn Glu Tyr Gln His Met
225                 230                 235                 240

Leu Ala Asn Ser Ile Ser Asp Phe Phe Arg Leu Phe Ser Ala Gly Asn
                245                 250                 255

Glu Glu Thr Lys Leu Gln Val Leu Lys Leu Leu Leu Asn Leu Ala Glu
            260                 265                 270

Asn Pro Ala Met Thr Arg Glu Leu Leu Arg Ala Gln Val Pro Ser Ser
        275                 280                 285

Leu Gly Ser Leu Phe Asn Lys Lys Glu Asn Lys Glu Val Ile Leu Lys
    290                 295                 300

Leu Leu Val Ile Phe Glu Asn Ile Asn Asp Asn Phe Lys Trp Glu Glu
305                 310                 315                 320

Asn Glu Pro Thr Gln Asn Gln Phe Gly Glu Gly Ser Leu Phe Phe Phe
                325                 330                 335

Leu Lys Glu Phe Gln Val Cys Ala Asp Lys Val Leu Gly Ile Glu Ser
            340                 345                 350

His His Asp Phe Leu Val Lys Val Lys Val Gly Lys Phe Met Ala Lys
        355                 360                 365
```

```
Leu Ala Glu His Met Phe Pro Lys Ser Gln Glu
    370                 375


<210> 6402
<211> 63
<212> PRT
<213> Homo sapiens

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<223> /note="Gene Symbol: ARMCX3; "

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<223> /note="Gene Name:
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<220>
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<400> 6402
Met Gly Tyr Ala Arg Lys Val Gly Trp Val Thr Ala Gly Leu Val Ile
1               5                   10                  15


Gly Ala Gly Ala Cys Tyr Cys Ile Tyr Arg Leu Thr Arg Gly Arg Lys
            20                  25                  30


Gln Asn Lys Glu Lys Met Ala Glu Gly Gly Ser Gly Asp Val Asp Asp
        35                  40                  45


Ala Gly Asp Cys Ser Gly Ala Arg Tyr Asn Asp Trp Ser Asp Asp
    50                  55                  60


<210> 6403
<211> 379
<212> PRT
<213> Homo sapiens

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<220>
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<223> /note="Uniprot ID: Q9UH62; "

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<400> 6403
Met Gly Tyr Ala Arg Lys Val Gly Trp Val Thr Ala Gly Leu Val Ile
1 5 10 15

Gly Ala Gly Ala Cys Tyr Cys Ile Tyr Arg Leu Thr Arg Gly Arg Lys
20 25 30

Gln Asn Lys Glu Lys Met Ala Glu Gly Gly Ser Gly Asp Val Asp Asp
35 40 45

Ala Gly Asp Cys Ser Gly Ala Arg Tyr Asn Asp Trp Ser Asp Asp Asp
50 55 60

Asp Asp Ser Asn Glu Ser Lys Ser Ile Val Trp Tyr Pro Pro Trp Ala
65 70 75 80

Arg Ile Gly Thr Glu Ala Gly Thr Arg Ala Arg Ala Arg Ala Arg Ala
85 90 95

Arg Ala Thr Arg Ala Arg Arg Ala Val Gln Lys Arg Ala Ser Pro Asn
100 105 110

Ser Asp Asp Thr Val Leu Ser Pro Gln Glu Leu Gln Lys Val Leu Cys
115 120 125

Leu Val Glu Met Ser Glu Lys Pro Tyr Ile Leu Glu Ala Ala Leu Ile
130 135 140

Ala Leu Gly Asn Asn Ala Ala Tyr Ala Phe Asn Arg Asp Ile Ile Arg
145 150 155 160

Asp Leu Gly Gly Leu Pro Ile Val Ala Lys Ile Leu Asn Thr Arg Asp
165 170 175

```
Pro Ile Val Lys Glu Lys Ala Leu Ile Val Leu Asn Asn Leu Ser Val
            180                 185                 190

Asn Ala Glu Asn Gln Arg Arg Leu Lys Val Tyr Met Asn Gln Val Cys
        195                 200                 205

Asp Asp Thr Ile Thr Ser Arg Leu Asn Ser Ser Val Gln Leu Ala Gly
    210                 215                 220

Leu Arg Leu Leu Thr Asn Met Thr Val Thr Asn Glu Tyr Gln His Met
225                 230                 235                 240

Leu Ala Asn Ser Ile Ser Asp Phe Phe Arg Leu Phe Ser Ala Gly Asn
                245                 250                 255

Glu Glu Thr Lys Leu Gln Val Leu Lys Leu Leu Leu Asn Leu Ala Glu
            260                 265                 270

Asn Pro Ala Met Thr Arg Glu Leu Leu Arg Ala Gln Val Pro Ser Ser
        275                 280                 285

Leu Gly Ser Leu Phe Asn Lys Lys Glu Asn Lys Glu Val Ile Leu Lys
    290                 295                 300

Leu Leu Val Ile Phe Glu Asn Ile Asn Asp Asn Phe Lys Trp Glu Glu
305                 310                 315                 320

Asn Glu Pro Thr Gln Asn Gln Phe Gly Glu Gly Ser Leu Phe Phe Phe
                325                 330                 335

Leu Lys Glu Phe Gln Val Cys Ala Asp Lys Val Leu Gly Ile Glu Ser
            340                 345                 350

His His Asp Phe Leu Val Lys Val Lys Val Gly Lys Phe Met Ala Lys
        355                 360                 365

Leu Ala Glu His Met Phe Pro Lys Ser Gln Glu
    370                 375
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<210> 6404
<211> 94
<212> PRT
<213> Homo sapiens

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<400> 6404
Met Gly Tyr Ala Arg Lys Val Gly Trp Val Thr Ala Gly Leu Val Ile
1 5 10 15

Gly Ala Gly Ala Cys Tyr Cys Ile Tyr Arg Leu Thr Arg Gly Arg Lys
20 25 30

Gln Asn Lys Glu Lys Met Ala Glu Gly Gly Ser Gly Asp Val Asp Asp
35 40 45

Ala Gly Asp Cys Ser Gly Ala Arg Tyr Asn Asp Trp Ser Asp Asp Asp
50 55 60

Asp Asp Ser Asn Glu Ser Lys Ser Ile Val Trp Tyr Pro Pro Trp Ala
65 70 75 80

Arg Ile Gly Thr Glu Ala Gly Thr Arg Ala Arg Ala Arg Ala
85 90

<210> 6405
<211> 2290
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ARMCX4; "

<220>

<221> source
<223> /note="Gene Name:
armadillo repeat containing, X-linked 4; "

<220>
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<400> 6405
Met Gly Arg Ile Gln Glu Val Gly Trp Val Thr Ala Gly Leu Val Ile
1 5 10 15

Trp Ala Gly Thr Cys Tyr Tyr Ile Tyr Lys Phe Thr Lys Gly Arg Ala
20 25 30

Gln Ser Val Arg Thr Leu Ala Arg Asn Gly Ser Thr Val Lys Met Glu
35 40 45

Thr Val Val Gly Val Gln Ser Gln Thr Leu Ala Ile Asn Glu Ala Glu
50 55 60

Ile Lys Thr Lys Pro Gln Val Glu Ile Gly Ala Glu Thr Gly Ala Arg
65 70 75 80

Ser Gly Pro Arg Ala Glu Val Glu Thr Lys Ala Thr Ala Ile Ala Ile
85 90 95

His Arg Ala Asn Ser Gln Ala Lys Ala Met Val Gly Ala Glu Pro Glu
100 105 110

Thr Gln Ser Glu Ser Lys Val Val Ala Gly Thr Leu Val Met Thr Glu
115 120 125

Ala Val Thr Leu Thr Glu Val Lys Ala Lys Ala Arg Glu Val Ala Met
130 135 140

Lys Glu Ala Val Thr Gln Thr Asp Ala Glu Ala Gly Lys Ile Val Lys
145 150 155 160

Lys Glu Ala Val Thr Gln Thr Lys Ala Lys Ala Trp Ala Leu Val Ala
165 170 175

Lys Thr Glu Ala Lys Arg Glu Ala Met Thr Gln Thr Lys Ala Glu Thr
180 185 190

```
His Ile Leu Ala Glu Lys Glu Thr Glu Ile Asn Arg Val Met Val Thr
        195                 200                 205

Gln Ser Glu Thr Leu Ala Val Pro Arg Glu Val Ala Lys Met Gly Ala
    210                 215                 220

Thr Asn Lys Thr Gly Ile Val Asp Glu Thr Lys Thr Arg Ala Leu Glu
225                 230                 235                 240

Glu Thr Val Ser Val Ala Lys Thr Gln Ser Glu Ala Arg Pro Gly Ala
                245                 250                 255

Thr Val Asp Ala Arg Gly Asn Pro Asn Gly Met Ser Arg Glu Val Ala
            260                 265                 270

Gly Val Asp Met Lys Ser Cys Ala Gln Ser Gln Ala Val Thr Lys Ile
        275                 280                 285

Gln Gly Asp Asp Met Pro Gly Thr Gly Val Glu Asp Met Gly Asn Cys
    290                 295                 300

Lys Thr Met Ser Arg Ala Glu Ser Gly Ala Asp Thr Arg Ala Ser Ala
305                 310                 315                 320

Gln Pro Gln Ile Phe Ala Lys Thr Gln Thr Glu Ala Ile Pro Gly Ala
                325                 330                 335

Lys Ile Asp Ala Gly Gly Asn Thr Asn Ala Met Cys Lys Val Gly Ala
            340                 345                 350

Gly Ala Asp Val Arg Ala Cys Ile Gln Pro Gln Thr Val Ala Lys Lys
        355                 360                 365

Gln Ala Glu Val Thr Ser Gly Ala Arg Val Asp Gly Arg Gly Asn Thr
    370                 375                 380

Asn Val Ile Ser Lys Ala Ile Thr Gly Ala Asp Met Arg Ala Ala Ala
385                 390                 395                 400

Gln Pro Gln Ala Val Ala Ser Thr His Ala Glu Ala Met Ser Asp Ala
                405                 410                 415

Lys Val Lys Asn Arg Gly Asn Pro Asn Ala Met Thr Lys Ala Gly Ala
```

```
            420                 425                 430

Lys Ala Asn Leu Arg Ala Asn Ser Gln Val Glu Ala Leu Pro Asp Ala
        435                 440                 445

Arg Asp Lys Ser Arg Gly Asn Pro Asn Val Met Ala Lys Val Gly Asp
    450                 455                 460

Gly Thr Asp Met Leu Ser Cys Thr Gln Pro Gln Leu Val Ala Ser Val
465                 470                 475                 480

Gln Ala Asp Thr Leu Ser Asp Gly Lys Ile Lys Val Arg Gly Asn Val
                485                 490                 495

Asn Thr Met Pro Lys Glu Gly Ala Gly Val Asp Met Lys Ala Gln Gly
            500                 505                 510

Met Ala Gln Ser Gln Gly Glu Ala Leu Pro Asn Thr Arg Gly Lys Ala
        515                 520                 525

Arg Gly Lys Ala Lys Ala Lys Cys Lys Thr Gly Pro Gly Met Asp Met
    530                 535                 540

Lys Thr Cys Thr Gln Pro Gln Ala Gly Val Lys Thr Pro Ala Glu Ala
545                 550                 555                 560

Leu Leu Asp Ser Arg Val Asp Gly Arg Gly Asn Pro Asn Ala Thr Ser
                565                 570                 575

Lys Ala Gly Thr Lys Ala Asp Gln Arg Val Cys Gly Gln Pro Leu Val
            580                 585                 590

Val Ala Asn Pro Gln Gly Glu Ala Leu Pro Gly Ala Lys Asn Lys Val
        595                 600                 605

Lys Gly Asn Pro His Thr Val Leu Lys Val Gly Ala Gly Glu Gly Thr
    610                 615                 620

Thr Asp Ser Ala Gln Pro Glu Ala Val Val Ser Phe Gln Gly Glu Ala
625                 630                 635                 640

Leu Leu Gly Thr Lys Asn Lys Val Lys Gly Asn Pro Asn Val Val Leu
                645                 650                 655
```

Lys Ala Glu Val Gly Glu Gly Ala Met Gly Thr Ala Gln Leu Gln Ile
660 665 670

Met Ala Ser Ser Lys Gly Glu Ala Leu Leu Asp Ser Lys Asn Lys Val
675 680 685

Lys Gly Asn Ser Asn Ala Val Ser Lys Ala Gly Ala Gly Thr Asp Thr
690 695 700

Thr Gly Ser Val Gln Pro Gln Ile Val Ala Asn Ser Gln Gly Glu Val
705 710 715 720

Leu Pro Gly Ala Lys Asn Lys Ile Arg Gly Asn Pro Thr Thr Val Pro
725 730 735

Asn Ser Gly Val Gly Pro Tyr Thr Thr Asp Ser Ala Arg Leu Gln Ala
740 745 750

Val Ala Asn Ser Gln Gly Glu Val Leu Pro Gly Ala Lys Asn Lys Val
755 760 765

Lys Ala Asn Leu Asn Ala Val Ser Lys Ala Glu Ala Gly Met Gly Ala
770 775 780

Thr Gly Ser Val Gln Pro Gln Ala Val Ala Asn Ser His Cys Glu Thr
785 790 795 800

Leu Pro Gly Ala Lys Asn Lys Val Arg Gly Asn Trp Asn Ala Val Ser
805 810 815

Lys Ala Gly Ala Gly Met Asp Thr Arg Gly Ser Ala Gln Pro Gln Ala
820 825 830

Val Ala Asn Ser Gln Gly Glu Val Leu Pro Gly Ala Lys Asn Lys Val
835 840 845

Lys Gly Asn Pro Asn Val Val Ser Lys Ala Gly Ala Arg Glu Asp Thr
850 855 860

Val Gly Ser Thr Gln Pro Gln Val Leu Ala Ser Ser Gln Arg Glu Thr
865 870 875 880

```
Leu Pro Gly Ala Arg Asn Lys Val Lys Gly Asn Ser Asn Val Val Ser
                885                 890                 895

Lys Ala Gly Ala Arg Glu Asp Thr Met Gly Ser Ala Gln Pro Gln Val
            900                 905                 910

Val Ala Asn Ser Gln Arg Glu Thr Leu Pro Gly Ala Arg Asn Lys Val
        915                 920                 925

Lys Gly Asn Ser Asn Ala Ile Ser Lys Ala Glu Ala Gly Ala Gly Ile
    930                 935                 940

Met Gly Ser Val Gln Val Gln Val Val Ala Ser Phe Gln Gly Glu Val
945                 950                 955                 960

Leu Pro Gly Ala Lys Asn Lys Val Arg Gly Asn Ser Asn Ala Val Pro
                965                 970                 975

Lys Ala Glu Ala Gly Ala Asp Thr Val Gly Ser Ala Gln Pro Gln Ala
            980                 985                 990

Val Ala Asn Ser Gln Ser Glu Thr  Leu Leu Gly Ala Arg  Asn Lys
Val
        995                 1000                1005

Lys Gly  Asn Thr Ile Ala Val  Pro Lys Ala Gly Thr  Gly Ala Gly
    1010                1015                1020

Thr Arg  His Ser Ala Gln Pro  Gln Ile Val Ala Gly  Ser Gln Gly
    1025                1030                1035

Glu Thr  Leu Pro Gly Ala Arg  Asp Lys Ser Met Ser  Thr Ser Glu
    1040                1045                1050

Ala Glu  Ala Thr Ala Glu Asp  Glu Ala Tyr Ala Lys  Pro Glu Ala
    1055                1060                1065

Glu Ala  Met Pro Thr Ser Glu  Ser Glu Gly Gly Ser  Gly Thr Gln
    1070                1075                1080

Ala Cys  Arg Lys Thr Gln Pro  Asn Ile His Asp Tyr  Tyr Trp Asn
    1085                1090                1095
```

```
Gly Ile  Gly Val Glu Asp Trp  Ile Ala Ala Glu Arg  Trp Ile Lys
    1100                1105                1110

Phe Arg  Phe Gln Thr Met Asp  Gly Asp Trp Glu Asn  Ser Val Ser
    1115                1120                1125

Trp Ala  Asp Asp Glu Asn Glu  Ala Ser Ile Gly Ser  Trp Ser Gly
    1130                1135                1140

Ala Ser  Asp Lys Ala Gly Ile  Ile Arg Ser Trp Ala  Val Ala Cys
    1145                1150                1155

Asp Glu  Thr Ser Val Lys Ser  Trp Ala Gly Ala Arg  Ala Glu Asn
    1160                1165                1170

Val Val  Gly Ile Gly Thr Trp  Ala Arg Ala Gly Glu  Gln Ala Ser
    1175                1180                1185

Gly Gly  Leu Trp Ala Gly Gly  Gln Thr Ser Glu Gly  Thr Trp Ala
    1190                1195                1200

Gly Asp  Lys Ala Ser Gly Gly  Ala Trp Thr Gly Ala  Glu Asn Gln
    1205                1210                1215

Ala Ser  Gly Gly Ser Trp Ala  Leu Ala Gly Asn Gln  Ala Ile Gly
    1220                1225                1230

Glu Leu  Trp Ala Ala Gly Gln  Ala Ser Asp Gly Ser  Trp Pro Gly
    1235                1240                1245

Gly Gln  Ala Ser Gly Val Ser  Trp Val Gly Glu Glu  Ala Ile Gly
    1250                1255                1260

Gly Ser  Trp Thr Gly Ala Glu  Asn Gln Ala Ser Glu  Gly Ser Trp
    1265                1270                1275

Ala Gly  Ala Gly Ala Gly Asn  Met Ser Ser Val Ser  Tyr Trp Ala
    1280                1285                1290

Gly Val  Val Asp Gln Ala Gly  Gly Gly Ser Trp Ala  Gly Thr Ser
    1295                1300                1305
```

```
Asp Gln  Ser Gly Gly Gly Ser  Lys Pro Arg Phe Glu  Asp Gln Ala
    1310                 1315                 1320

Ser Gly  Glu Gly Ser Trp Ala  Gly Ala Gly Gly Gln  Ala Ser Gly
    1325                 1330                 1335

Gly Ser  Met Leu Gly Pro Glu  Asp Gln Ser Ser Gly  Arg Ser Trp
    1340                 1345                 1350

Ala Asp  Thr Ala Asp Gln Ala  Ser Gly Gly Ser Arg  Leu Gly His
    1355                 1360                 1365

Val Asp  Gln Ser Ser Gly Gly  Ala Trp Ala Gly Thr  Leu Asp Gln
    1370                 1375                 1380

Ser Gly  Gly Gly Ser Lys Pro  Arg Phe Glu Asn Gln  Thr Thr Glu
    1385                 1390                 1395

Glu Gly  Ser Trp Ala Gly Ala  Gly Gly Gln Ala Gly  Gly Gly Ser
    1400                 1405                 1410

Lys Val  Gly Pro Glu Asp Gln  Ser Ser Gly Arg Ser  Trp Ala Asn
    1415                 1420                 1425

Ser Gly  Asp Gln Ile Ser Gly  Gly Phe Leu Val Gly  Ile Val Asp
    1430                 1435                 1440

Gln Ala  Asn Gly Gly Ser Trp  Thr Gly Ala Gly His  Pro Ala Ser
    1445                 1450                 1455

Val Gly  Pro Lys Pro Ile Phe  Glu Asp Gln Val Ser  Gly Arg Gly
    1460                 1465                 1470

Ser Trp  Ala Asp Ala Arg Glu  Gln Val Val Gly Asp  Ser Arg Leu
    1475                 1480                 1485

Gly Leu  Arg Asp Gln Ser Ser  Gly Asp Ser Trp Ala  Gly Thr Gly
    1490                 1495                 1500

Asp Gln  Ala Ser Gly Trp Phe  Cys Val Cys Pro Gly  Ser Gln Thr
    1505                 1510                 1515

Asn Gly  Gly Ser Trp Gly Gly  Ala Ser Gly Gln Asp  Val Gly Gly
```

1520 1525 1530

Ser Arg Pro Gly Pro Thr Asn Gln Ser Ser Ala Gly Ser Trp Asp
1535 1540 1545

Ser Pro Gly Ser Gln Val Ser Gly Ser Cys Trp Thr Gly Ala Gly
1550 1555 1560

Ala Val Asp Gln Ala Gly Gly Cys Ser Lys Pro Gly Phe Glu Asp
1565 1570 1575

Gln Ala Ile Gly Gly Gly Phe Trp Pro Gly Ala Gly Asp Gln Thr
1580 1585 1590

Gly Gly Gly Ser Arg Pro Gly Ser Glu Asp Gln Ser Ser Gly Ile
1595 1600 1605

Gly Ser Trp Gly Val Ala Gly Gly Gln Val Leu Gly Gly Ala Arg
1610 1615 1620

Pro Gly Pro Ala Asp Gln Ser Ser Gly Gly Ser Trp Ala Gly Thr
1625 1630 1635

Gly Asn Gln Ser Ser Gly Arg Ser Trp Ile Gly Pro Gly Asp Gln
1640 1645 1650

Ala Val Asp Cys Ser Lys Pro Glu Phe Glu Asp Gln Ala Cys Gly
1655 1660 1665

Gly Gly Ser Trp Ala Gly Ala Gly Ser Gln Ala Ser Gly Glu Ser
1670 1675 1680

Trp Ala Gly Ser Arg Pro Gly Asn Glu Ala Ile Gly Gly Ser Arg
1685 1690 1695

Met Gly Ser Glu Asp Gln Ala Thr Gly Gly Ser Trp Ala Arg Ser
1700 1705 1710

Glu Asp Gln Ala Ser Gly Arg Phe Gln Val Ser Phe Glu Val Glu
1715 1720 1725

Ala Asn Glu Gly Phe Trp Phe Gly Pro Gly Ala Glu Ala Val Ile
1730 1735 1740

```
Gly Ser  Trp Cys Trp Thr Glu  Glu Lys Ala Asp Ile  Val Ser Arg
    1745                1750                1755

Pro Asp  Asp Lys Asp Glu Ala  Thr Thr Ala Ser Arg  Ser Gly Ala
    1760                1765                1770

Gly Glu  Glu Ala Met Ile Cys  Ser Arg Ile Glu Ala  Glu Asn Lys
    1775                1780                1785

Ala Ser  Ser Gly Ser Trp Ile  Arg Ser Glu Glu Val  Ala Tyr Met
    1790                1795                1800

Gly Ser  Cys Val Gly Ala Glu  Ala Gly Ala Gly Ala  Glu Ala Gly
    1805                1810                1815

Ala Gly  Ala Glu Ala Gly Ala  Gly Ala Gly Ala Glu  Ala Gly Ala
    1820                1825                1830

Glu Ala  Gly Ala Gly Ala Gly  Ala Gly Pro Gly Thr  Glu Ser Gly
    1835                1840                1845

Ala Gly  Ile Trp Ser Trp Asp  Gly Asp Ala Thr Thr  Val Glu Ser
    1850                1855                1860

Arg Leu  Gly Ala Gly Glu Glu  Ala Gly Val Glu Ser  Trp Thr Leu
    1865                1870                1875

Ala Arg  Asn Val Gly Glu Asp  Glu Leu Ser Arg Glu  Ser Ser Pro
    1880                1885                1890

Asp Ile  Glu Glu Ile Ser Leu  Arg Ser Leu Phe Trp  Ala Glu Ser
    1895                1900                1905

Glu Asn  Ser Asn Thr Phe Arg  Ser Lys Ser Gly Lys  Asp Ala Ser
    1910                1915                1920

Phe Glu  Ser Gly Ala Gly Asp  Asn Thr Ser Ile Lys  Asp Lys Phe
    1925                1930                1935

Glu Ala  Ala Gly Gly Val Asp  Ile Gly Ser Trp Phe  Cys Ala Gly
    1940                1945                1950
```

```
Asn Glu  Asn Thr Ser Glu Asp  Lys Ser Ala Pro Lys  Ala Lys Ala
    1955                1960                1965

Lys Lys  Ser Ser Glu Ser Arg  Gly Ile Tyr Pro Tyr  Met Val Pro
    1970                1975                1980

Gly Ala  Gly Met Gly Ser Trp  Asp Gly Ala Met Ile  Trp Ser Glu
    1985                1990                1995

Thr Lys  Phe Ala His Gln Ser  Glu Ala Ser Phe Pro  Val Glu Asp
    2000                2005                2010

Glu Ser  Arg Lys Gln Thr Arg  Thr Gly Glu Lys Thr  Arg Pro Trp
    2015                2020                2025

Ser Cys  Arg Cys Lys His Glu  Ala Asn Met Asp Pro  Arg Asp Leu
    2030                2035                2040

Glu Lys  Leu Ile Cys Met Ile  Glu Met Thr Glu Asp  Pro Ser Val
    2045                2050                2055

His Glu  Ile Ala Asn Asn Ala  Leu Tyr Asn Ser Ala  Asp Tyr Ser
    2060                2065                2070

Tyr Ser  His Glu Val Val Arg  Asn Val Gly Gly Ile  Ser Val Ile
    2075                2080                2085

Glu Ser  Leu Leu Asn Asn Pro  Tyr Pro Ser Val Arg  Gln Lys Ala
    2090                2095                2100

Leu Asn  Ala Leu Asn Asn Ile  Ser Val Ala Ala Glu  Asn His Arg
    2105                2110                2115

Lys Val  Lys Thr Tyr Leu Asn  Gln Val Cys Glu Asp  Thr Val Thr
    2120                2125                2130

Tyr Pro  Leu Asn Ser Asn Val  Gln Leu Ala Gly Leu  Arg Leu Ile
    2135                2140                2145

Arg His  Leu Thr Ile Thr Ser  Glu Tyr Gln His Met  Val Thr Asn
    2150                2155                2160
```

```
Tyr Ile  Ser Glu Phe Leu Arg  Leu Leu Thr Val Gly  Ser Gly Glu
    2165                 2170                 2175

Thr Lys  Asp His Val Leu Gly  Met Leu Leu Asn Phe  Ser Lys Asn
    2180                 2185                 2190

Pro Ser  Met Thr Lys Asp Leu  Leu Ile Ala Asn Ala  Pro Thr Ser
    2195                 2200                 2205

Leu Ile  Asn Ile Phe Ser Lys  Lys Glu Thr Lys Glu  Asn Ile Leu
    2210                 2215                 2220

Asn Ala  Leu Ser Leu Phe Glu  Asn Ile Asn Tyr His  Phe Lys Arg
    2225                 2230                 2235

Arg Ala  Lys Ala Phe Thr Gln  Asp Lys Phe Ser Lys  Asn Ser Leu
    2240                 2245                 2250

Tyr Phe  Leu Phe Gln Arg Pro  Lys Ala Cys Ala Lys  Lys Leu Arg
    2255                 2260                 2265

Ala Leu  Ala Ala Glu Cys Asn  Asp Pro Glu Val Lys  Glu Arg Val
    2270                 2275                 2280

Glu Leu  Leu Ile Ser Lys Leu
    2285                 2290


<210> 6406
<211> 51
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
<221> source
<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000422573"
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<400> 6406
Met Ser Ala Ala Gly Leu Lys Ile Thr Gly Ser Lys Glu Thr Lys Arg
1   5   10   15

Arg Leu Leu Leu Ile Ser Ile Asp Trp Val Tyr Cys Gln Glu Lys Gln
            20   25   30

Glu Glu Arg Arg Glu Leu Pro Arg Ile Ile Thr Gly Val Asp Pro Lys
        35   40   45

Ser Ile Pro
    50

<210> 6407
<211> 348
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
armadillo repeat containing, X-linked 4; "

<220>
<221> source
<223> /note="Uniprot ID: Q5H9R4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000423440"

<400> 6407
Met Ser Ala Ala Gly Leu Lys Ile Thr Gly Ser Lys Glu Thr Lys Arg
1   5   10   15

Arg Leu Leu Leu Ile Ser Ile Asp Trp Val Tyr Cys Gln Glu Lys Gln
            20   25   30

Glu Glu Arg Arg Glu Leu Pro Arg Ile Ile Thr Gly Pro Pro Pro Glu
        35   40   45

```
Ala Ala Val Val Ala Phe Glu Trp Leu Lys Thr Ser Thr Leu Thr Gly
    50                  55                  60

Leu His Pro Gln Leu Pro Leu Ser Leu Pro Gln Pro Glu Cys Ala Leu
65                  70                  75                  80

Pro Tyr Leu Val Arg Ala Phe Ser Arg Gly Asp Tyr Met Gly Arg Ile
                85                  90                  95

Gln Glu Val Gly Trp Val Thr Ala Gly Leu Val Ile Trp Ala Gly Thr
            100                 105                 110

Cys Tyr Tyr Ile Tyr Lys Phe Thr Lys Gly Arg Ala Gln Ser Val Arg
        115                 120                 125

Thr Leu Ala Arg Asn Gly Ser Thr Val Lys Met Glu Thr Val Val Gly
    130                 135                 140

Val Gln Ser Gln Thr Leu Ala Ile Asn Glu Ala Glu Ile Lys Thr Lys
145                 150                 155                 160

Pro Gln Val Glu Ile Gly Ala Glu Thr Gly Ala Arg Ser Gly Pro Arg
                165                 170                 175

Ala Glu Val Glu Thr Lys Ala Thr Ala Ile Ala Ile His Arg Ala Asn
            180                 185                 190

Ser Gln Ala Lys Ala Met Val Gly Ala Glu Pro Glu Thr Gln Ser Glu
        195                 200                 205

Ser Lys Val Val Ala Gly Thr Leu Val Met Thr Glu Ala Val Thr Leu
    210                 215                 220

Thr Glu Val Lys Ala Lys Ala Arg Glu Val Ala Met Lys Glu Ala Val
225                 230                 235                 240

Thr Gln Thr Asp Ala Glu Ala Gly Lys Ile Val Lys Lys Glu Ala Val
                245                 250                 255

Thr Gln Thr Lys Ala Lys Ala Trp Ala Leu Val Ala Lys Thr Glu Ala
            260                 265                 270

Lys Arg Glu Ala Met Thr Gln Thr Lys Ala Glu Thr His Ile Leu Ala
```

```
        275                 280                 285

Glu Lys Glu Thr Glu Ile Asn Arg Val Met Val Thr Gln Ser Glu Thr
    290                 295                 300

Leu Ala Val Pro Arg Glu Val Ala Lys Met Gly Ala Thr Asn Lys Thr
305                 310                 315                 320

Gly Ile Val Asp Glu Thr Lys Thr Arg Ala Leu Glu Glu Thr Val Leu
                325                 330                 335

Ile Pro Arg Ala Phe Pro Ser Lys Asn Ala Ser Cys
            340                 345


<210> 6408
<211> 348
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<220>
<221> source
<223> /note="Uniprot ID:  Q5H9R4; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000423927"

<400> 6408
Met Ser Ala Ala Gly Leu Lys Ile Thr Gly Ser Lys Glu Thr Lys Arg
1               5                   10                  15

Arg Leu Leu Leu Ile Ser Ile Asp Trp Val Tyr Cys Gln Glu Lys Gln
            20                  25                  30

Glu Glu Arg Arg Glu Leu Pro Arg Ile Ile Thr Gly Pro Pro Pro Glu
        35                  40                  45
```

```
Ala Ala Val Val Ala Phe Glu Trp Leu Lys Thr Ser Thr Leu Thr Gly
    50                  55                  60

Leu His Pro Gln Leu Pro Leu Ser Leu Pro Gln Pro Glu Cys Ala Leu
65                  70                  75                  80

Pro Tyr Leu Val Arg Ala Phe Ser Arg Gly Asp Tyr Met Gly Arg Ile
                85                  90                  95

Gln Glu Val Gly Trp Val Thr Ala Gly Leu Val Ile Trp Ala Gly Thr
            100                 105                 110

Cys Tyr Tyr Ile Tyr Lys Phe Thr Lys Gly Arg Ala Gln Ser Val Arg
        115                 120                 125

Thr Leu Ala Arg Asn Gly Ser Thr Val Lys Met Glu Thr Val Val Gly
    130                 135                 140

Val Gln Ser Gln Thr Leu Ala Ile Asn Glu Ala Glu Ile Lys Thr Lys
145                 150                 155                 160

Pro Gln Val Glu Ile Gly Ala Glu Thr Gly Ala Arg Ser Gly Pro Arg
                165                 170                 175

Ala Glu Val Glu Thr Lys Ala Thr Ala Ile Ala Ile His Arg Ala Asn
            180                 185                 190

Ser Gln Ala Lys Ala Met Val Gly Ala Glu Pro Glu Thr Gln Ser Glu
        195                 200                 205

Ser Lys Val Val Ala Gly Thr Leu Val Met Thr Glu Ala Val Thr Leu
    210                 215                 220

Thr Glu Val Lys Ala Lys Ala Arg Glu Val Ala Met Lys Glu Ala Val
225                 230                 235                 240

Thr Gln Thr Asp Ala Glu Ala Gly Lys Ile Val Lys Lys Glu Ala Val
                245                 250                 255

Thr Gln Thr Lys Ala Lys Ala Trp Ala Leu Val Ala Lys Thr Glu Ala
            260                 265                 270
```

```
Lys Arg Glu Ala Met Thr Gln Thr Lys Ala Glu Thr His Ile Leu Ala
        275                 280                 285

Glu Lys Glu Thr Glu Ile Asn Arg Val Met Val Thr Gln Ser Glu Thr
    290                 295                 300

Leu Ala Val Pro Arg Glu Val Ala Lys Met Gly Ala Thr Asn Lys Thr
305                 310                 315                 320

Gly Ile Val Asp Glu Thr Lys Thr Arg Ala Leu Glu Glu Thr Val Leu
                325                 330                 335

Ile Pro Arg Ala Phe Pro Ser Lys Asn Ala Ser Cys
            340                 345


<210> 6409
<211> 360
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<220>
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<400> 6409
Met Ser Ala Ala Gly Leu Lys Ile Thr Gly Ser Lys Glu Thr Lys Arg
1               5                   10                  15

Arg Leu Leu Leu Ile Ser Ile Asp Trp Ser Arg Asp Leu Met Asn Leu
            20                  25                  30

Cys Ile Tyr Phe Arg Val Tyr Cys Gln Glu Lys Gln Glu Glu Arg Arg
        35                  40                  45
```

```
Glu Leu Pro Arg Ile Ile Thr Gly Pro Pro Pro Glu Ala Ala Val Val
    50                  55                  60

Ala Phe Glu Trp Leu Lys Thr Ser Thr Leu Thr Gly Leu His Pro Gln
65                  70                  75                  80

Leu Pro Leu Ser Leu Pro Gln Pro Glu Cys Ala Leu Pro Tyr Leu Val
                85                  90                  95

Arg Ala Phe Ser Arg Gly Asp Tyr Met Gly Arg Ile Gln Glu Val Gly
            100                 105                 110

Trp Val Thr Ala Gly Leu Val Ile Trp Ala Gly Thr Cys Tyr Tyr Ile
        115                 120                 125

Tyr Lys Phe Thr Lys Gly Arg Ala Gln Ser Val Arg Thr Leu Ala Arg
    130                 135                 140

Asn Gly Ser Thr Val Lys Met Glu Thr Val Val Gly Val Gln Ser Gln
145                 150                 155                 160

Thr Leu Ala Ile Asn Glu Ala Glu Ile Lys Thr Lys Pro Gln Val Glu
                165                 170                 175

Ile Gly Ala Glu Thr Gly Ala Arg Ser Gly Pro Arg Ala Glu Val Glu
            180                 185                 190

Thr Lys Ala Thr Ala Ile Ala Ile His Arg Ala Asn Ser Gln Ala Lys
        195                 200                 205

Ala Met Val Gly Ala Glu Pro Glu Thr Gln Ser Glu Ser Lys Val Val
    210                 215                 220

Ala Gly Thr Leu Val Met Thr Glu Ala Val Thr Leu Thr Glu Val Lys
225                 230                 235                 240

Ala Lys Ala Arg Glu Val Ala Met Lys Glu Ala Val Thr Gln Thr Asp
                245                 250                 255

Ala Glu Ala Gly Lys Ile Val Lys Lys Glu Ala Val Thr Gln Thr Lys
            260                 265                 270
```

```
Ala Lys Ala Trp Ala Leu Val Ala Lys Thr Glu Ala Lys Arg Glu Ala
        275                 280                 285

Met Thr Gln Thr Lys Ala Glu Thr His Ile Leu Ala Glu Lys Glu Thr
    290                 295                 300

Glu Ile Asn Arg Val Met Val Thr Gln Ser Glu Thr Leu Ala Val Pro
305                 310                 315                 320

Arg Glu Val Ala Lys Met Gly Ala Thr Asn Lys Thr Gly Ile Val Asp
                325                 330                 335

Glu Thr Lys Thr Arg Ala Leu Glu Glu Thr Val Leu Ile Pro Arg Ala
            340                 345                 350

Phe Pro Ser Lys Asn Ala Ser Cys
        355                 360


<210> 6410
<211> 360
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<213> Homo sapiens

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID:  Q5H9R4; "

<220>
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<223> /note="ENSP ID: ENSP00000425302"

<400> 6410
Met Ser Ala Ala Gly Leu Lys Ile Thr Gly Ser Lys Glu Thr Lys Arg
1               5                   10                  15

Arg Leu Leu Leu Ile Ser Ile Asp Trp Ser Arg Asp Leu Met Asn Leu
```

```
            20                  25                  30

Cys Ile Tyr Phe Arg Val Tyr Cys Gln Glu Lys Gln Glu Glu Arg Arg
        35                  40                  45

Glu Leu Pro Arg Ile Ile Thr Gly Pro Pro Pro Glu Ala Ala Val Val
    50                  55                  60

Ala Phe Glu Trp Leu Lys Thr Ser Thr Leu Thr Gly Leu His Pro Gln
65                  70                  75                  80

Leu Pro Leu Ser Leu Pro Gln Pro Glu Cys Ala Leu Pro Tyr Leu Val
                85                  90                  95

Arg Ala Phe Ser Arg Gly Asp Tyr Met Gly Arg Ile Gln Glu Val Gly
            100                 105                 110

Trp Val Thr Ala Gly Leu Val Ile Trp Ala Gly Thr Cys Tyr Tyr Ile
        115                 120                 125

Tyr Lys Phe Thr Lys Gly Arg Ala Gln Ser Val Arg Thr Leu Ala Arg
    130                 135                 140

Asn Gly Ser Thr Val Lys Met Glu Thr Val Val Gly Val Gln Ser Gln
145                 150                 155                 160

Thr Leu Ala Ile Asn Glu Ala Glu Ile Lys Thr Lys Pro Gln Val Glu
                165                 170                 175

Ile Gly Ala Glu Thr Gly Ala Arg Ser Gly Pro Arg Ala Glu Val Glu
            180                 185                 190

Thr Lys Ala Thr Ala Ile Ala Ile His Arg Ala Asn Ser Gln Ala Lys
        195                 200                 205

Ala Met Val Gly Ala Glu Pro Glu Thr Gln Ser Glu Ser Lys Val Val
    210                 215                 220

Ala Gly Thr Leu Val Met Thr Glu Ala Val Thr Leu Thr Glu Val Lys
225                 230                 235                 240

Ala Lys Ala Arg Glu Val Ala Met Lys Glu Ala Val Thr Gln Thr Asp
                245                 250                 255
```

```
Ala Glu Ala Gly Lys Ile Val Lys Lys Glu Ala Val Thr Gln Thr Lys
            260                 265                 270

Ala Lys Ala Trp Ala Leu Val Ala Lys Thr Glu Ala Lys Arg Glu Ala
        275                 280                 285

Met Thr Gln Thr Lys Ala Glu Thr His Ile Leu Ala Glu Lys Glu Thr
    290                 295                 300

Glu Ile Asn Arg Val Met Val Thr Gln Ser Glu Thr Leu Ala Val Pro
305                 310                 315                 320

Arg Glu Val Ala Lys Met Gly Ala Thr Asn Lys Thr Gly Ile Val Asp
                325                 330                 335

Glu Thr Lys Thr Arg Ala Leu Glu Glu Thr Val Leu Ile Pro Arg Ala
            340                 345                 350

Phe Pro Ser Lys Asn Ala Ser Cys
        355                 360
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<210> 6411
<211> 51
<212> PRT
<213> Homo sapiens

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<220>
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<220>
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000426585"

<400> 6411
```
Met Ser Ala Ala Gly Leu Lys Ile Thr Gly Ser Lys Glu Thr Lys Arg
1               5                   10                  15
```

```
Arg Leu Leu Leu Ile Ser Ile Asp Trp Val Tyr Cys Gln Glu Lys Gln
            20                  25                  30

Glu Glu Arg Arg Glu Leu Pro Arg Ile Ile Thr Gly Val Asp Pro Lys
        35                  40                  45

Ser Ile Pro
    50
```

<210> 6412
<211> 558
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1384; "

<220>
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<223> /note="Gene Symbol: ARMCX5; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID: Q6P1M9; "

<220>
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<223> /note="ENSP ID: ENSP00000246174"

<400> 6412

```
Met Val Asp Ser Gly Thr Glu Ala Arg Ala Arg Gly Lys Ala Glu Ala
1               5                   10                  15

Gly Leu Gln Asp Gly Ile Ser Gly Pro Ala Thr Ala Arg Val Asn Gly
            20                  25                  30

Lys Thr Gln Ala Glu Ala Val Ala Glu Ala Glu Leu Lys Thr Glu Ser
        35                  40                  45

Val Thr Gln Ala Lys Ala Gly Asp Gly Ala Met Thr Arg Thr His Thr
    50                  55                  60

Val Thr Tyr Arg Glu Ala Met Ala Val Thr Arg Glu Val Ile Lys Val
65                  70                  75                  80
```

```
Glu Asp Thr Thr Lys Thr Arg Val Met Val Glu Thr Lys Thr Lys Pro
                85                  90                  95

Leu Ala Glu Arg Ser Ile Val Pro Gln Thr Lys Ser Lys Ala Met Pro
            100                 105                 110

Met Ser Arg Val Ser Thr Val Thr Lys Ser Glu Val Lys Val Val Ala
        115                 120                 125

Val Ile Glu Ala Asn Ile Arg Ser Tyr Ala Lys Ser His Asp Lys Ala
    130                 135                 140

Asn Thr Gly Ser Arg Pro Asp Arg Arg Glu Glu Thr Ser Ile Gly Met
145                 150                 155                 160

Lys Ser Ser Asp Glu Asp Glu Glu Asn Ile Cys Ser Trp Phe Trp Thr
                165                 170                 175

Gly Glu Glu Pro Ser Val Gly Ser Trp Phe Trp Pro Glu Glu Glu Thr
            180                 185                 190

Ser Leu Gln Val Tyr Lys Pro Leu Pro Lys Ile Gln Glu Lys Pro Lys
        195                 200                 205

Pro Thr His Lys Pro Thr Leu Thr Ile Lys Gln Lys Val Ile Ala Trp
    210                 215                 220

Ser Arg Ala Arg Tyr Ile Val Leu Val Pro Val Glu Gly Gly Glu Gln
225                 230                 235                 240

Ser Leu Pro Pro Glu Gly Asn Trp Thr Leu Val Glu Thr Leu Ile Glu
                245                 250                 255

Thr Pro Leu Gly Ile Arg Pro Leu Thr Lys Ile Pro Pro Tyr His Gly
            260                 265                 270

Pro Tyr Tyr Gln Thr Leu Ala Glu Ile Lys Lys Gln Ile Arg Gln Arg
        275                 280                 285

Glu Lys Tyr Gly Pro Asn Pro Lys Ala Cys His Cys Lys Ser Arg Gly
    290                 295                 300
```

```
Phe Ser Leu Glu Pro Lys Glu Phe Asp Lys Leu Val Ala Leu Leu Lys
305                 310                 315                 320

Leu Thr Lys Asp Pro Phe Ile His Glu Ile Ala Thr Met Ile Met Gly
                325                 330                 335

Ile Ser Pro Ala Tyr Pro Phe Thr Gln Asp Ile Ile His Asp Val Gly
            340                 345                 350

Ile Thr Val Met Ile Glu Asn Leu Val Asn Asn Pro Asn Val Lys Glu
        355                 360                 365

His Pro Gly Ala Leu Ser Met Val Asp Asp Ser Ser Glu Ser Ser Glu
    370                 375                 380

Glu Pro Lys Ser Gly Glu Ser Tyr Ile His Gln Val Cys Lys Gly Ile
385                 390                 395                 400

Ile Ser Cys Pro Leu Asn Ser Pro Val Gln Leu Ala Gly Leu Lys Leu
                405                 410                 415

Leu Gly His Leu Ser Ile Lys Phe Glu Asp His Tyr Val Ile Thr Ser
            420                 425                 430

Tyr Ile Pro Asp Phe Leu Thr Leu Leu Asn Lys Gly Ser Val Lys Thr
        435                 440                 445

Lys Phe Tyr Val Leu Lys Val Phe Ser Cys Leu Ser Lys Asn His Ala
    450                 455                 460

Asn Thr Arg Glu Leu Ile Ser Ala Lys Val Leu Ser Ser Leu Val Ala
465                 470                 475                 480

Pro Phe Asn Lys Asn Glu Ser Lys Ala Asn Ile Leu Asn Ile Ile Glu
                485                 490                 495

Ile Phe Glu Asn Ile Asn Phe Gln Phe Lys Thr Lys Ala Lys Leu Phe
            500                 505                 510

Thr Lys Glu Lys Phe Thr Lys Ser Glu Leu Ile Ser Ile Phe Gln Glu
        515                 520                 525
```

```
Ala Lys Gln Phe Gly Gln Lys Leu Gln Asp Leu Ala Glu His Ser Asp
    530                 535                 540

Pro Glu Val Arg Asp Lys Val Ile Arg Leu Ile Leu Lys Leu
545                 550                 555


<210> 6413
<211> 558
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1384; "

<220>
<221> source
<223> /note="Gene Symbol: ARMCX5; "

<220>
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<223> /note="Gene Name:
      armadillo repeat containing, X-linked 5; "

<220>
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<223> /note="Uniprot ID:  Q6P1M9; "

<220>
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<223> /note="ENSP ID: ENSP00000361827"

<400> 6413
Met Val Asp Ser Gly Thr Glu Ala Arg Ala Arg Gly Lys Ala Glu Ala
1               5                   10                  15

Gly Leu Gln Asp Gly Ile Ser Gly Pro Ala Thr Ala Arg Val Asn Gly
            20                  25                  30

Lys Thr Gln Ala Glu Ala Val Ala Glu Ala Glu Leu Lys Thr Glu Ser
        35                  40                  45

Val Thr Gln Ala Lys Ala Gly Asp Gly Ala Met Thr Arg Thr His Thr
    50                  55                  60

Val Thr Tyr Arg Glu Ala Met Ala Val Thr Arg Glu Val Ile Lys Val
65                  70                  75                  80

Glu Asp Thr Thr Lys Thr Arg Val Met Val Glu Thr Lys Thr Lys Pro
                85                  90                  95
```

```
Leu Ala Glu Arg Ser Ile Val Pro Gln Thr Lys Ser Lys Ala Met Pro
            100                 105                 110

Met Ser Arg Val Ser Thr Val Thr Lys Ser Glu Val Lys Val Val Ala
        115                 120                 125

Val Ile Glu Ala Asn Ile Arg Ser Tyr Ala Lys Ser His Asp Lys Ala
    130                 135                 140

Asn Thr Gly Ser Arg Pro Asp Arg Arg Glu Glu Thr Ser Ile Gly Met
145                 150                 155                 160

Lys Ser Ser Asp Glu Asp Glu Glu Asn Ile Cys Ser Trp Phe Trp Thr
                165                 170                 175

Gly Glu Glu Pro Ser Val Gly Ser Trp Phe Trp Pro Glu Glu Glu Thr
            180                 185                 190

Ser Leu Gln Val Tyr Lys Pro Leu Pro Lys Ile Gln Glu Lys Pro Lys
        195                 200                 205

Pro Thr His Lys Pro Thr Leu Thr Ile Lys Gln Lys Val Ile Ala Trp
    210                 215                 220

Ser Arg Ala Arg Tyr Ile Val Leu Val Pro Val Glu Gly Gly Glu Gln
225                 230                 235                 240

Ser Leu Pro Pro Glu Gly Asn Trp Thr Leu Val Glu Thr Leu Ile Glu
                245                 250                 255

Thr Pro Leu Gly Ile Arg Pro Leu Thr Lys Ile Pro Pro Tyr His Gly
            260                 265                 270

Pro Tyr Tyr Gln Thr Leu Ala Glu Ile Lys Lys Gln Ile Arg Gln Arg
        275                 280                 285

Glu Lys Tyr Gly Pro Asn Pro Lys Ala Cys His Cys Lys Ser Arg Gly
    290                 295                 300

Phe Ser Leu Glu Pro Lys Glu Phe Asp Lys Leu Val Ala Leu Leu Lys
305                 310                 315                 320
```

```
Leu Thr Lys Asp Pro Phe Ile His Glu Ile Ala Thr Met Ile Met Gly
                325                 330                 335

Ile Ser Pro Ala Tyr Pro Phe Thr Gln Asp Ile Ile His Asp Val Gly
            340                 345                 350

Ile Thr Val Met Ile Glu Asn Leu Val Asn Asn Pro Asn Val Lys Glu
        355                 360                 365

His Pro Gly Ala Leu Ser Met Val Asp Asp Ser Ser Glu Ser Ser Glu
    370                 375                 380

Glu Pro Lys Ser Gly Glu Ser Tyr Ile His Gln Val Cys Lys Gly Ile
385                 390                 395                 400

Ile Ser Cys Pro Leu Asn Ser Pro Val Gln Leu Ala Gly Leu Lys Leu
                405                 410                 415

Leu Gly His Leu Ser Ile Lys Phe Glu Asp His Tyr Val Ile Thr Ser
            420                 425                 430

Tyr Ile Pro Asp Phe Leu Thr Leu Leu Asn Lys Gly Ser Val Lys Thr
        435                 440                 445

Lys Phe Tyr Val Leu Lys Val Phe Ser Cys Leu Ser Lys Asn His Ala
    450                 455                 460

Asn Thr Arg Glu Leu Ile Ser Ala Lys Val Leu Ser Ser Leu Val Ala
465                 470                 475                 480

Pro Phe Asn Lys Asn Glu Ser Lys Ala Asn Ile Leu Asn Ile Ile Glu
                485                 490                 495

Ile Phe Glu Asn Ile Asn Phe Gln Phe Lys Thr Lys Ala Lys Leu Phe
            500                 505                 510

Thr Lys Glu Lys Phe Thr Lys Ser Glu Leu Ile Ser Ile Phe Gln Glu
        515                 520                 525

Ala Lys Gln Phe Gly Gln Lys Leu Gln Asp Leu Ala Glu His Ser Asp
    530                 535                 540
```

```
Pro Glu Val Arg Asp Lys Val Ile Arg Leu Ile Leu Lys Leu
545                 550                 555


<210> 6414
<211> 7
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1384; "

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<223> /note="Gene Symbol: ARMCX5; "

<220>
<221> source
<223> /note="Gene Name:
      armadillo repeat containing, X-linked 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000473737"

<400> 6414
Met Val Asp Ser Gly Thr Glu
1               5


<210> 6415
<211> 68
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ARMCX5; "

<220>
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<223> /note="Gene Name:
      armadillo repeat containing, X-linked 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000474470"

<400> 6415
Met Val Asp Ser Gly Thr Glu Ala Arg Ala Arg Gly Lys Ala Glu Ala
1               5                   10                  15
```

```
Gly Leu Gln Asp Gly Ile Ser Gly Pro Ala Thr Ala Arg Val Asn Gly
            20                  25                  30

Lys Thr Gln Ala Glu Ala Val Ala Glu Ala Glu Leu Lys Thr Glu Ser
        35                  40                  45

Val Thr Gln Ala Lys Ala Gly Asp Gly Ala Met Thr Arg Thr His Thr
    50                  55                  60

Val Thr Tyr Arg
65


<210> 6416
<211> 71
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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      armadillo repeat containing, X-linked 5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000474484"

<400> 6416
Met Val Asp Ser Gly Thr Glu Ala Arg Ala Arg Gly Lys Ala Glu Ala
1               5                   10                  15

Gly Leu Gln Asp Gly Ile Ser Gly Pro Ala Thr Ala Arg Val Asn Gly
            20                  25                  30

Lys Thr Gln Ala Glu Ala Val Ala Glu Ala Glu Leu Lys Thr Glu Ser
        35                  40                  45

Val Thr Gln Ala Lys Ala Gly Asp Gly Ala Met Thr Arg Thr His Thr
    50                  55                  60

Val Thr Tyr Arg Glu Ala Met
```

65 70

<210> 6417
<211> 558
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1384; "

<220>
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<220>
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<223> /note="Uniprot ID: Q6P1M9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000474720"

<400> 6417
Met Val Asp Ser Gly Thr Glu Ala Arg Ala Arg Gly Lys Ala Glu Ala
1 5 10 15

Gly Leu Gln Asp Gly Ile Ser Gly Pro Ala Thr Ala Arg Val Asn Gly
20 25 30

Lys Thr Gln Ala Glu Ala Val Ala Glu Ala Glu Leu Lys Thr Glu Ser
35 40 45

Val Thr Gln Ala Lys Ala Gly Asp Gly Ala Met Thr Arg Thr His Thr
50 55 60

Val Thr Tyr Arg Glu Ala Met Ala Val Thr Arg Glu Val Ile Lys Val
65 70 75 80

Glu Asp Thr Thr Lys Thr Arg Val Met Val Glu Thr Lys Thr Lys Pro
85 90 95

Leu Ala Glu Arg Ser Ile Val Pro Gln Thr Lys Ser Lys Ala Met Pro
100 105 110

```
Met Ser Arg Val Ser Thr Val Thr Lys Ser Glu Val Lys Val Val Ala
        115                 120                 125

Val Ile Glu Ala Asn Ile Arg Ser Tyr Ala Lys Ser His Asp Lys Ala
    130                 135                 140

Asn Thr Gly Ser Arg Pro Asp Arg Arg Glu Glu Thr Ser Ile Gly Met
145                 150                 155                 160

Lys Ser Ser Asp Glu Asp Glu Glu Asn Ile Cys Ser Trp Phe Trp Thr
                165                 170                 175

Gly Glu Glu Pro Ser Val Gly Ser Trp Phe Trp Pro Glu Glu Glu Thr
            180                 185                 190

Ser Leu Gln Val Tyr Lys Pro Leu Pro Lys Ile Gln Glu Lys Pro Lys
        195                 200                 205

Pro Thr His Lys Pro Thr Leu Thr Ile Lys Gln Lys Val Ile Ala Trp
    210                 215                 220

Ser Arg Ala Arg Tyr Ile Val Leu Val Pro Val Glu Gly Gly Glu Gln
225                 230                 235                 240

Ser Leu Pro Pro Glu Gly Asn Trp Thr Leu Val Glu Thr Leu Ile Glu
                245                 250                 255

Thr Pro Leu Gly Ile Arg Pro Leu Thr Lys Ile Pro Pro Tyr His Gly
            260                 265                 270

Pro Tyr Tyr Gln Thr Leu Ala Glu Ile Lys Lys Gln Ile Arg Gln Arg
        275                 280                 285

Glu Lys Tyr Gly Pro Asn Pro Lys Ala Cys His Cys Lys Ser Arg Gly
    290                 295                 300

Phe Ser Leu Glu Pro Lys Glu Phe Asp Lys Leu Val Ala Leu Leu Lys
305                 310                 315                 320

Leu Thr Lys Asp Pro Phe Ile His Glu Ile Ala Thr Met Ile Met Gly
                325                 330                 335
```

Ile Ser Pro Ala Tyr Pro Phe Thr Gln Asp Ile Ile His Asp Val Gly
340 345 350

Ile Thr Val Met Ile Glu Asn Leu Val Asn Asn Pro Asn Val Lys Glu
355 360 365

His Pro Gly Ala Leu Ser Met Val Asp Asp Ser Ser Glu Ser Ser Glu
370 375 380

Glu Pro Lys Ser Gly Glu Ser Tyr Ile His Gln Val Cys Lys Gly Ile
385 390 395 400

Ile Ser Cys Pro Leu Asn Ser Pro Val Gln Leu Ala Gly Leu Lys Leu
405 410 415

Leu Gly His Leu Ser Ile Lys Phe Glu Asp His Tyr Val Ile Thr Ser
420 425 430

Tyr Ile Pro Asp Phe Leu Thr Leu Leu Asn Lys Gly Ser Val Lys Thr
435 440 445

Lys Phe Tyr Val Leu Lys Val Phe Ser Cys Leu Ser Lys Asn His Ala
450 455 460

Asn Thr Arg Glu Leu Ile Ser Ala Lys Val Leu Ser Ser Leu Val Ala
465 470 475 480

Pro Phe Asn Lys Asn Glu Ser Lys Ala Asn Ile Leu Asn Ile Ile Glu
485 490 495

Ile Phe Glu Asn Ile Asn Phe Gln Phe Lys Thr Lys Ala Lys Leu Phe
500 505 510

Thr Lys Glu Lys Phe Thr Lys Ser Glu Leu Ile Ser Ile Phe Gln Glu
515 520 525

Ala Lys Gln Phe Gly Gln Lys Leu Gln Asp Leu Ala Glu His Ser Asp
530 535 540

Pro Glu Val Arg Asp Lys Val Ile Arg Leu Ile Leu Lys Leu
545 550 555

<210> 6418

<211> 300
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1385; "

<220>
<221> source
<223> /note="Gene Symbol: ARMCX6; "

<220>
<221> source
<223> /note="Gene Name:
armadillo repeat containing, X-linked 6; "

<220>
<221> source
<223> /note="Uniprot ID: Q7L4S7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000354708"

<400> 6418

Met	Gly	Arg	Ala	Arg	Glu	Val	Gly	Trp	Met	Ala	Ala	Gly	Leu	Met	Ile
1				5				10						15	

Gly	Ala	Gly	Ala	Cys	Tyr	Cys	Val	Tyr	Lys	Leu	Thr	Ile	Gly	Arg	Asp
		20					25					30			

Asp	Ser	Glu	Lys	Leu	Glu	Glu	Glu	Gly	Glu	Glu	Glu	Trp	Asp	Asp	Asp
		35					40					45			

Gln	Glu	Leu	Asp	Glu	Glu	Glu	Pro	Asp	Ile	Trp	Phe	Asp	Phe	Glu	Thr
	50					55					60				

Met	Ala	Arg	Pro	Trp	Thr	Glu	Asp	Gly	Asp	Trp	Thr	Glu	Pro	Gly	Ala
65					70					75					80

Pro	Gly	Gly	Thr	Glu	Asp	Arg	Pro	Ser	Gly	Gly	Gly	Lys	Ala	Asn	Arg
				85					90					95	

Ala	His	Pro	Ile	Lys	Gln	Arg	Pro	Phe	Pro	Tyr	Glu	His	Lys	Asn	Thr
			100					105					110		

Trp	Ser	Ala	Gln	Asn	Cys	Lys	Asn	Gly	Ser	Cys	Val	Leu	Asp	Leu	Ser
		115					120					125			

```
Lys Cys Leu Phe Ile Gln Gly Lys Leu Leu Phe Ala Glu Pro Lys Asp
    130                 135                 140

Ala Gly Phe Pro Phe Ser Gln Asp Ile Asn Ser His Leu Ala Ser Leu
145                 150                 155                 160

Ser Met Ala Arg Asn Thr Ser Pro Thr Pro Asp Pro Thr Val Arg Glu
                165                 170                 175

Ala Leu Cys Ala Pro Asp Asn Leu Asn Ala Ser Ile Glu Ser Gln Gly
            180                 185                 190

Gln Ile Lys Met Tyr Ile Asn Glu Val Cys Arg Glu Thr Val Ser Arg
        195                 200                 205

Cys Cys Asn Ser Phe Leu Gln Gln Ala Gly Leu Asn Leu Leu Ile Ser
    210                 215                 220

Met Thr Val Ile Asn Asn Met Leu Ala Lys Ser Ala Ser Asp Leu Lys
225                 230                 235                 240

Phe Pro Leu Ile Ser Glu Gly Ser Gly Cys Ala Lys Val Gln Val Leu
                245                 250                 255

Lys Pro Leu Met Gly Leu Ser Glu Lys Pro Val Leu Ala Gly Glu Leu
            260                 265                 270

Val Gly Ala Gln Met Leu Phe Ser Phe Met Ser Leu Phe Ile Arg Asn
        275                 280                 285

Gly Asn Arg Glu Ile Leu Leu Glu Thr Pro Ala Pro
    290                 295                 300


<210> 6419
<211> 300
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ARMCX6; "
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<220>
<221> source
<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID: Q7L4S7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000440648"

<400> 6419

```
Met Gly Arg Ala Arg Glu Val Gly Trp Met Ala Ala Gly Leu Met Ile
1               5                  10                  15

Gly Ala Gly Ala Cys Tyr Cys Val Tyr Lys Leu Thr Ile Gly Arg Asp
            20                  25                  30

Asp Ser Glu Lys Leu Glu Glu Glu Gly Glu Glu Glu Trp Asp Asp Asp
        35                  40                  45

Gln Glu Leu Asp Glu Glu Glu Pro Asp Ile Trp Phe Asp Phe Glu Thr
    50                  55                  60

Met Ala Arg Pro Trp Thr Glu Asp Gly Asp Trp Thr Glu Pro Gly Ala
65                  70                  75                  80

Pro Gly Gly Thr Glu Asp Arg Pro Ser Gly Gly Gly Lys Ala Asn Arg
                85                  90                  95

Ala His Pro Ile Lys Gln Arg Pro Phe Pro Tyr Glu His Lys Asn Thr
            100                 105                 110

Trp Ser Ala Gln Asn Cys Lys Asn Gly Ser Cys Val Leu Asp Leu Ser
        115                 120                 125

Lys Cys Leu Phe Ile Gln Gly Lys Leu Leu Phe Ala Glu Pro Lys Asp
    130                 135                 140

Ala Gly Phe Pro Phe Ser Gln Asp Ile Asn Ser His Leu Ala Ser Leu
145                 150                 155                 160

Ser Met Ala Arg Asn Thr Ser Pro Thr Pro Asp Pro Thr Val Arg Glu
                165                 170                 175
```

```
Ala Leu Cys Ala Pro Asp Asn Leu Asn Ala Ser Ile Glu Ser Gln Gly
            180                 185                 190

Gln Ile Lys Met Tyr Ile Asn Glu Val Cys Arg Glu Thr Val Ser Arg
        195                 200                 205

Cys Cys Asn Ser Phe Leu Gln Gln Ala Gly Leu Asn Leu Leu Ile Ser
    210                 215                 220

Met Thr Val Ile Asn Asn Met Leu Ala Lys Ser Ala Ser Asp Leu Lys
225                 230                 235                 240

Phe Pro Leu Ile Ser Glu Gly Ser Gly Cys Ala Lys Val Gln Val Leu
                245                 250                 255

Lys Pro Leu Met Gly Leu Ser Glu Lys Pro Val Leu Ala Gly Glu Leu
            260                 265                 270

Val Gly Ala Gln Met Leu Phe Ser Phe Met Ser Leu Phe Ile Arg Asn
        275                 280                 285

Gly Asn Arg Glu Ile Leu Leu Glu Thr Pro Ala Pro
    290                 295                 300
```

<210> 6420
<211> 300
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
armadillo repeat containing, X-linked 6; "

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<400> 6420
Met Gly Arg Ala Arg Glu Val Gly Trp Met Ala Ala Gly Leu Met Ile
1 5 10 15

Gly Ala Gly Ala Cys Tyr Cys Val Tyr Lys Leu Thr Ile Gly Arg Asp
20 25 30

Asp Ser Glu Lys Leu Glu Glu Glu Gly Glu Glu Glu Trp Asp Asp Asp
35 40 45

Gln Glu Leu Asp Glu Glu Glu Pro Asp Ile Trp Phe Asp Phe Glu Thr
50 55 60

Met Ala Arg Pro Trp Thr Glu Asp Gly Asp Trp Thr Glu Pro Gly Ala
65 70 75 80

Pro Gly Gly Thr Glu Asp Arg Pro Ser Gly Gly Gly Lys Ala Asn Arg
85 90 95

Ala His Pro Ile Lys Gln Arg Pro Phe Pro Tyr Glu His Lys Asn Thr
100 105 110

Trp Ser Ala Gln Asn Cys Lys Asn Gly Ser Cys Val Leu Asp Leu Ser
115 120 125

Lys Cys Leu Phe Ile Gln Gly Lys Leu Leu Phe Ala Glu Pro Lys Asp
130 135 140

Ala Gly Phe Pro Phe Ser Gln Asp Ile Asn Ser His Leu Ala Ser Leu
145 150 155 160

Ser Met Ala Arg Asn Thr Ser Pro Thr Pro Asp Pro Thr Val Arg Glu
165 170 175

Ala Leu Cys Ala Pro Asp Asn Leu Asn Ala Ser Ile Glu Ser Gln Gly
180 185 190

Gln Ile Lys Met Tyr Ile Asn Glu Val Cys Arg Glu Thr Val Ser Arg
195 200 205

Cys Cys Asn Ser Phe Leu Gln Gln Ala Gly Leu Asn Leu Leu Ile Ser

```
    210                 215                 220

Met Thr Val Ile Asn Asn Met Leu Ala Lys Ser Ala Ser Asp Leu Lys
225                 230                 235                 240

Phe Pro Leu Ile Ser Glu Gly Ser Gly Cys Ala Lys Val Gln Val Leu
                245                 250                 255

Lys Pro Leu Met Gly Leu Ser Glu Lys Pro Val Leu Ala Gly Glu Leu
            260                 265                 270

Val Gly Ala Gln Met Leu Phe Ser Phe Met Ser Leu Phe Ile Arg Asn
        275                 280                 285

Gly Asn Arg Glu Ile Leu Leu Glu Thr Pro Ala Pro
    290                 295                 300


<210> 6421
<211> 962
<212> PRT
<213> Homo sapiens

<220>
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<221> source
<223> /note="Gene Symbol: ARVCF; "

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<223> /note="Gene Name:
      armadillo repeat gene deleted in velocardiofacial
      syndrome; "

<220>
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<223> /note="Uniprot ID:  O00192; "

<220>
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<400> 6421
Met Glu Asp Cys Asn Val His Ser Ala Ala Ser Ile Leu Ala Ser Val
1               5                   10                  15

Lys Glu Gln Glu Ala Arg Phe Glu Arg Leu Thr Arg Ala Leu Glu Gln
            20                  25                  30
```

```
Glu Arg Arg His Val Ala Leu Gln Leu Glu Arg Ala Gln Gln Pro Gly
        35                  40                  45

Met Val Ser Gly Gly Met Gly Ser Gly Gln Pro Leu Pro Met Ala Trp
    50                  55                  60

Gln Gln Leu Val Leu Gln Glu Gln Ser Pro Gly Ser Gln Ala Ser Leu
65                  70                  75                  80

Ala Thr Met Pro Glu Ala Pro Asp Val Leu Glu Glu Thr Val Thr Val
                85                  90                  95

Glu Glu Asp Pro Gly Thr Pro Thr Ser His Val Ser Ile Val Thr Ser
            100                 105                 110

Glu Asp Gly Thr Thr Arg Arg Thr Glu Thr Lys Val Thr Lys Thr Val
        115                 120                 125

Lys Thr Val Thr Thr Arg Thr Val Arg Gln Val Pro Val Gly Pro Asp
    130                 135                 140

Gly Leu Pro Leu Leu Asp Gly Gly Pro Pro Leu Gly Pro Phe Ala Asp
145                 150                 155                 160

Gly Ala Leu Asp Arg His Phe Leu Leu Arg Gly Gly Gly Pro Val Ala
                165                 170                 175

Thr Leu Ser Arg Ala Tyr Leu Ser Ser Gly Gly Gly Phe Pro Glu Gly
            180                 185                 190

Pro Glu Pro Arg Asp Ser Pro Ser Tyr Gly Ser Leu Ser Arg Gly Leu
        195                 200                 205

Gly Met Arg Pro Pro Arg Ala Gly Pro Leu Gly Pro Gly Pro Gly Asp
    210                 215                 220

Gly Cys Phe Thr Leu Pro Gly His Arg Glu Ala Phe Pro Val Gly Pro
225                 230                 235                 240

Glu Pro Gly Pro Pro Gly Gly Arg Ser Leu Pro Glu Arg Phe Gln Ala
                245                 250                 255
```

```
Glu Pro Tyr Gly Leu Glu Asp Asp Thr Arg Ser Leu Ala Ala Asp Asp
            260                 265                 270

Glu Gly Gly Pro Glu Leu Glu Pro Asp Tyr Gly Thr Ala Thr Arg Arg
        275                 280                 285

Arg Pro Glu Cys Gly Arg Gly Leu His Thr Arg Ala Tyr Glu Asp Thr
    290                 295                 300

Ala Asp Asp Gly Gly Glu Leu Ala Asp Glu Arg Pro Ala Phe Pro Met
305                 310                 315                 320

Val Thr Ala Pro Leu Ala Gln Pro Glu Arg Gly Ser Met Gly Ser Leu
                325                 330                 335

Asp Arg Leu Val Arg Arg Ser Pro Ser Val Asp Ser Ala Arg Lys Glu
            340                 345                 350

Pro Arg Trp Arg Asp Pro Glu Leu Pro Glu Val Leu Ala Met Leu Arg
        355                 360                 365

His Pro Val Asp Pro Val Lys Ala Asn Ala Ala Ala Tyr Leu Gln His
    370                 375                 380

Leu Cys Phe Glu Asn Glu Gly Val Lys Arg Arg Val Arg Gln Leu Arg
385                 390                 395                 400

Gly Leu Pro Leu Leu Val Ala Leu Leu Asp His Pro Arg Ala Glu Val
                405                 410                 415

Arg Arg Arg Ala Cys Gly Ala Leu Arg Asn Leu Ser Tyr Gly Arg Asp
            420                 425                 430

Thr Asp Asn Lys Ala Ala Ile Arg Asp Cys Gly Gly Val Pro Ala Leu
        435                 440                 445

Val Arg Leu Leu Arg Ala Ala Arg Asp Asn Glu Val Arg Glu Leu Val
    450                 455                 460

Thr Gly Thr Leu Trp Asn Leu Ser Ser Tyr Glu Pro Leu Lys Met Val
465                 470                 475                 480
```

```
Ile Ile Asp His Gly Leu Gln Thr Leu Thr His Glu Val Ile Val Pro
                485                 490                 495

His Ser Gly Trp Glu Arg Glu Pro Asn Glu Asp Ser Lys Pro Arg Asp
            500                 505                 510

Ala Glu Trp Thr Thr Val Phe Lys Asn Thr Ser Gly Cys Leu Arg Asn
        515                 520                 525

Val Ser Ser Asp Gly Ala Glu Ala Arg Arg Arg Leu Arg Glu Cys Glu
    530                 535                 540

Gly Leu Val Asp Ala Leu Leu His Ala Leu Gln Ser Ala Val Gly Arg
545                 550                 555                 560

Lys Asp Thr Asp Asn Lys Ser Val Glu Asn Cys Val Cys Ile Met Arg
                565                 570                 575

Asn Leu Ser Tyr His Val His Lys Glu Val Pro Gly Ala Asp Arg Tyr
            580                 585                 590

Gln Glu Ala Glu Pro Gly Pro Leu Gly Ser Ala Val Gly Ser Gln Arg
        595                 600                 605

Arg Arg Arg Asp Asp Ala Ser Cys Phe Gly Gly Lys Lys Ala Lys Glu
    610                 615                 620

Glu Trp Phe His Gln Gly Lys Lys Asp Gly Glu Met Asp Arg Asn Phe
625                 630                 635                 640

Asp Thr Leu Asp Leu Pro Lys Arg Thr Glu Ala Ala Lys Gly Phe Glu
                645                 650                 655

Leu Leu Tyr Gln Pro Glu Val Val Arg Leu Tyr Leu Ser Leu Leu Thr
            660                 665                 670

Glu Ser Arg Asn Phe Asn Thr Leu Glu Ala Ala Ala Gly Ala Leu Gln
        675                 680                 685

Asn Leu Ser Ala Gly Asn Trp Met Trp Ala Thr Tyr Ile Arg Ala Thr
    690                 695                 700

Val Arg Lys Glu Arg Gly Leu Pro Val Leu Val Glu Leu Leu Gln Ser
```

705 710 715 720

Glu Thr Asp Lys Val Val Arg Ala Val Ala Ile Ala Leu Arg Asn Leu
725 730 735

Ser Leu Asp Arg Arg Asn Lys Asp Leu Ile Gly Ser Tyr Ala Met Ala
740 745 750

Glu Leu Val Arg Asn Val Arg Asn Ala Gln Ala Pro Pro Arg Pro Gly
755 760 765

Ala Cys Leu Glu Glu Asp Thr Val Val Ala Val Leu Asn Thr Ile His
770 775 780

Glu Ile Val Ser Asp Ser Leu Asp Asn Ala Arg Ser Leu Leu Gln Ala
785 790 795 800

Arg Gly Val Pro Ala Leu Val Ala Leu Val Ala Ser Ser Gln Ser Val
805 810 815

Arg Glu Ala Lys Ala Ala Ser His Val Leu Gln Thr Val Trp Ser Tyr
820 825 830

Lys Glu Leu Arg Gly Thr Leu Gln Lys Asp Gly Trp Thr Lys Ala Arg
835 840 845

Phe Gln Ser Ala Ala Ala Thr Ala Lys Gly Pro Lys Gly Ala Leu Ser
850 855 860

Pro Gly Gly Phe Asp Asp Ser Thr Leu Pro Leu Val Asp Lys Ser Leu
865 870 875 880

Glu Gly Glu Lys Thr Gly Ser Arg Asp Val Ile Pro Met Asp Ala Leu
885 890 895

Gly Pro Asp Gly Tyr Ser Thr Val Asp Arg Arg Glu Arg Arg Pro Arg
900 905 910

Gly Ala Ser Ser Ala Gly Glu Ala Ser Glu Lys Glu Pro Leu Lys Leu
915 920 925

Asp Pro Ser Arg Lys Ala Pro Pro Pro Gly Pro Ser Arg Pro Ala Val
930 935 940

```
Arg Leu Val Asp Ala Val Gly Asp Ala Lys Pro Gln Pro Val Asp Ser
945                 950                 955                 960


Trp Val



<210> 6422
<211> 899
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1386; "

<220>
<221> source
<223> /note="Gene Symbol: ARVCF; "

<220>
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<223> /note="Gene Name:
      armadillo repeat gene deleted in velocardiofacial
      syndrome; "

<220>
<221> source
<223> /note="Uniprot ID:  O00192; "

<220>
<221> source
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<400> 6422
Met Pro Ala Glu Leu Arg Gln Glu Gln Ser Pro Gly Ser Gln Ala Ser
1               5                   10                  15


Leu Ala Thr Met Pro Glu Ala Pro Asp Val Leu Glu Glu Thr Val Thr
            20                  25                  30


Val Glu Glu Asp Pro Gly Thr Pro Thr Ser His Val Ser Ile Val Thr
        35                  40                  45


Ser Glu Asp Gly Thr Thr Arg Arg Thr Glu Thr Lys Val Thr Lys Thr
    50                  55                  60


Val Lys Thr Val Thr Thr Arg Thr Val Arg Gln Val Pro Val Gly Pro
65                  70                  75                  80
```

```
Asp Gly Leu Pro Leu Leu Asp Gly Gly Pro Pro Leu Gly Pro Phe Ala
                85                  90                  95

Asp Gly Ala Leu Asp Arg His Phe Leu Leu Arg Gly Gly Gly Pro Val
            100                 105                 110

Ala Thr Leu Ser Arg Ala Tyr Leu Ser Ser Gly Gly Gly Phe Pro Glu
        115                 120                 125

Gly Pro Glu Pro Arg Asp Ser Pro Ser Tyr Gly Ser Leu Ser Arg Gly
    130                 135                 140

Leu Gly Met Arg Pro Pro Arg Ala Gly Pro Leu Gly Pro Gly Pro Gly
145                 150                 155                 160

Asp Gly Cys Phe Thr Leu Pro Gly His Arg Glu Ala Phe Pro Val Gly
                165                 170                 175

Pro Glu Pro Gly Pro Pro Gly Gly Arg Ser Leu Pro Glu Arg Phe Gln
            180                 185                 190

Ala Glu Pro Tyr Gly Leu Glu Asp Asp Thr Arg Ser Leu Ala Ala Asp
        195                 200                 205

Asp Glu Gly Gly Pro Glu Leu Glu Pro Asp Tyr Gly Thr Ala Thr Arg
    210                 215                 220

Arg Arg Pro Glu Cys Gly Arg Gly Leu His Thr Arg Ala Tyr Glu Asp
225                 230                 235                 240

Thr Ala Asp Asp Gly Gly Glu Leu Ala Asp Glu Arg Pro Ala Phe Pro
                245                 250                 255

Met Val Thr Ala Pro Leu Ala Gln Pro Glu Arg Gly Ser Met Gly Ser
            260                 265                 270

Leu Asp Arg Leu Val Arg Arg Ser Pro Ser Val Asp Ser Ala Arg Lys
        275                 280                 285

Glu Pro Arg Trp Arg Asp Pro Glu Leu Pro Glu Val Leu Ala Met Leu
    290                 295                 300
```

```
Arg His Pro Val Asp Pro Val Lys Ala Asn Ala Ala Ala Tyr Leu Gln
305                 310                 315                 320

His Leu Cys Phe Glu Asn Glu Gly Val Lys Arg Arg Val Arg Gln Leu
                325                 330                 335

Arg Gly Leu Pro Leu Leu Val Ala Leu Leu Asp His Pro Arg Ala Glu
            340                 345                 350

Val Arg Arg Arg Ala Cys Gly Ala Leu Arg Asn Leu Ser Tyr Gly Arg
        355                 360                 365

Asp Thr Asp Asn Lys Ala Ala Ile Arg Asp Cys Gly Gly Val Pro Ala
    370                 375                 380

Leu Val Arg Leu Leu Arg Ala Ala Arg Asp Asn Glu Val Arg Glu Leu
385                 390                 395                 400

Val Thr Gly Thr Leu Trp Asn Leu Ser Ser Tyr Glu Pro Leu Lys Met
                405                 410                 415

Val Ile Ile Asp His Gly Leu Gln Thr Leu Thr His Glu Val Ile Val
            420                 425                 430

Pro His Ser Gly Trp Glu Arg Glu Pro Asn Glu Asp Ser Lys Pro Arg
        435                 440                 445

Asp Ala Glu Trp Thr Thr Val Phe Lys Asn Thr Ser Gly Cys Leu Arg
    450                 455                 460

Asn Val Ser Ser Asp Gly Ala Glu Ala Arg Arg Arg Leu Arg Glu Cys
465                 470                 475                 480

Glu Gly Leu Val Asp Ala Leu Leu His Ala Leu Gln Ser Ala Val Gly
                485                 490                 495

Arg Lys Asp Thr Asp Asn Lys Ser Val Glu Asn Cys Val Cys Ile Met
            500                 505                 510

Arg Asn Leu Ser Tyr His Val His Lys Glu Val Pro Gly Ala Asp Arg
        515                 520                 525

Tyr Gln Glu Ala Glu Pro Gly Pro Leu Gly Ser Ala Val Gly Ser Gln
```

```
    530                 535                 540

Arg Arg Arg Arg Asp Asp Ala Ser Cys Phe Gly Gly Lys Lys Ala Lys
545                 550                 555                 560

Glu Glu Trp Phe His Gln Gly Lys Lys Asp Gly Glu Met Asp Arg Asn
                565                 570                 575

Phe Asp Thr Leu Asp Leu Pro Lys Arg Thr Glu Ala Ala Lys Gly Phe
            580                 585                 590

Glu Leu Leu Tyr Gln Pro Glu Val Val Arg Leu Tyr Leu Ser Leu Leu
        595                 600                 605

Thr Glu Ser Arg Asn Phe Asn Thr Leu Glu Ala Ala Ala Gly Ala Leu
    610                 615                 620

Gln Asn Leu Ser Ala Gly Asn Trp Met Trp Ala Thr Tyr Ile Arg Ala
625                 630                 635                 640

Thr Val Arg Lys Glu Arg Gly Leu Pro Val Leu Val Glu Leu Leu Gln
                645                 650                 655

Ser Glu Thr Asp Lys Val Val Arg Ala Val Ala Ile Ala Leu Arg Asn
            660                 665                 670

Leu Ser Leu Asp Arg Arg Asn Lys Asp Leu Ile Gly Ser Tyr Ala Met
        675                 680                 685

Ala Glu Leu Val Arg Asn Val Arg Asn Ala Gln Ala Pro Pro Arg Pro
    690                 695                 700

Gly Ala Cys Leu Glu Glu Asp Thr Val Val Ala Val Leu Asn Thr Ile
705                 710                 715                 720

His Glu Ile Val Ser Asp Ser Leu Asp Asn Ala Arg Ser Leu Leu Gln
                725                 730                 735

Ala Arg Gly Val Pro Ala Leu Val Ala Leu Val Ala Ser Ser Gln Ser
            740                 745                 750

Val Arg Glu Ala Lys Ala Ala Ser His Val Leu Gln Thr Val Trp Ser
        755                 760                 765
```

```
Tyr Lys Glu Leu Arg Gly Thr Leu Gln Lys Asp Gly Trp Thr Lys Ala
    770                 775                 780

Arg Phe Gln Ser Ala Ala Ala Thr Ala Lys Gly Pro Lys Gly Ala Leu
785                 790                 795                 800

Ser Pro Gly Gly Phe Asp Asp Ser Thr Leu Pro Leu Val Asp Lys Ser
                805                 810                 815

Leu Glu Gly Glu Lys Thr Gly Ser Arg Asp Val Ile Pro Met Asp Ala
            820                 825                 830

Leu Gly Pro Asp Gly Tyr Ser Thr Val Asp Arg Arg Glu Arg Arg Pro
        835                 840                 845

Arg Gly Ala Ser Ser Ala Gly Glu Ala Ser Glu Lys Glu Pro Leu Lys
    850                 855                 860

Leu Asp Pro Ser Arg Lys Ala Pro Pro Pro Gly Pro Ser Arg Pro Ala
865                 870                 875                 880

Val Arg Leu Val Asp Ala Val Gly Asp Ala Lys Pro Gln Pro Val Asp
                885                 890                 895

Ser Trp Val
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<210> 6423
<211> 893
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1386; "

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<223> /note="Gene Name:
armadillo repeat gene deleted in velocardiofacial
syndrome; "

<220>
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<223> /note="ENSP ID: ENSP00000384732"

<400> 6423
Met Pro Ala Glu Leu Arg Gln Glu Gln Ser Pro Gly Ser Gln Ala Ser
1 5 10 15

Leu Ala Thr Met Pro Glu Ala Pro Asp Val Leu Glu Glu Thr Val Thr
20 25 30

Val Glu Glu Asp Pro Gly Thr Pro Thr Ser His Val Ser Ile Val Thr
35 40 45

Ser Glu Asp Gly Thr Thr Arg Arg Thr Glu Thr Lys Val Thr Lys Thr
50 55 60

Val Lys Thr Val Thr Thr Arg Thr Val Arg Gln Val Pro Val Gly Pro
65 70 75 80

Asp Gly Leu Pro Leu Leu Asp Gly Gly Pro Pro Leu Gly Pro Phe Ala
85 90 95

Asp Gly Ala Leu Asp Arg His Phe Leu Leu Arg Gly Gly Gly Pro Val
100 105 110

Ala Thr Leu Ser Arg Ala Tyr Leu Ser Ser Gly Gly Gly Phe Pro Glu
115 120 125

Gly Pro Glu Pro Arg Asp Ser Pro Ser Tyr Gly Ser Leu Ser Arg Gly
130 135 140

Leu Gly Met Arg Pro Pro Arg Ala Gly Pro Leu Gly Pro Gly Pro Gly
145 150 155 160

Asp Gly Cys Phe Thr Leu Pro Gly His Arg Glu Ala Phe Pro Val Gly
165 170 175

Pro Glu Pro Gly Pro Pro Gly Gly Arg Ser Leu Pro Glu Arg Phe Gln
180 185 190

Ala Glu Pro Tyr Gly Leu Glu Asp Asp Thr Arg Ser Leu Ala Ala Asp
195 200 205

```
Asp Glu Gly Gly Pro Glu Leu Glu Pro Asp Tyr Gly Thr Ala Thr Arg
    210                 215                 220

Arg Arg Pro Glu Cys Gly Arg Gly Leu His Thr Arg Ala Tyr Glu Asp
225                 230                 235                 240

Thr Ala Asp Asp Gly Gly Glu Leu Ala Asp Glu Arg Pro Ala Phe Pro
                245                 250                 255

Met Val Thr Ala Pro Leu Ala Gln Pro Glu Arg Gly Ser Met Gly Ser
            260                 265                 270

Leu Asp Arg Leu Val Arg Arg Ser Pro Ser Val Asp Ser Ala Arg Lys
        275                 280                 285

Glu Pro Arg Trp Arg Asp Pro Glu Leu Pro Glu Val Leu Ala Met Leu
    290                 295                 300

Arg His Pro Val Asp Pro Val Lys Ala Asn Ala Ala Ala Tyr Leu Gln
305                 310                 315                 320

His Leu Cys Phe Glu Asn Glu Gly Val Lys Arg Arg Val Arg Gln Leu
                325                 330                 335

Arg Gly Leu Pro Leu Leu Val Ala Leu Leu Asp His Pro Arg Ala Glu
            340                 345                 350

Val Arg Arg Arg Ala Cys Gly Ala Leu Arg Asn Leu Ser Tyr Gly Arg
        355                 360                 365

Asp Thr Asp Asn Lys Ala Ala Ile Arg Asp Cys Gly Gly Val Pro Ala
    370                 375                 380

Leu Val Arg Leu Leu Arg Ala Ala Arg Asp Asn Glu Val Arg Glu Leu
385                 390                 395                 400

Val Thr Gly Thr Leu Trp Asn Leu Ser Ser Tyr Glu Pro Leu Lys Met
                405                 410                 415

Val Ile Ile Asp His Gly Leu Gln Thr Leu Thr His Glu Val Ile Val
            420                 425                 430

Pro His Ser Gly Trp Glu Arg Glu Pro Asn Glu Asp Ser Lys Pro Arg
```

```
        435                 440                 445

Asp Ala Glu Trp Thr Thr Val Phe Lys Asn Thr Ser Gly Cys Leu Arg
    450                 455                 460

Asn Val Ser Ser Asp Gly Ala Glu Ala Arg Arg Arg Leu Arg Glu Cys
465                 470                 475                 480

Glu Gly Leu Val Asp Ala Leu Leu His Ala Leu Gln Ser Ala Val Gly
                485                 490                 495

Arg Lys Asp Thr Asp Asn Lys Ser Val Glu Asn Cys Val Cys Ile Met
            500                 505                 510

Arg Asn Leu Ser Tyr His Val His Lys Glu Val Pro Gly Ala Asp Arg
        515                 520                 525

Tyr Gln Glu Ala Glu Pro Gly Pro Leu Gly Ser Ala Val Gly Ser Gln
    530                 535                 540

Arg Arg Arg Arg Asp Asp Ala Ser Cys Phe Gly Gly Lys Lys Ala Lys
545                 550                 555                 560

Gly Lys Lys Asp Gly Glu Met Asp Arg Asn Phe Asp Thr Leu Asp Leu
                565                 570                 575

Pro Lys Arg Thr Glu Ala Ala Lys Gly Phe Glu Leu Leu Tyr Gln Pro
            580                 585                 590

Glu Val Val Arg Leu Tyr Leu Ser Leu Leu Thr Glu Ser Arg Asn Phe
        595                 600                 605

Asn Thr Leu Glu Ala Ala Ala Gly Ala Leu Gln Asn Leu Ser Ala Gly
    610                 615                 620

Asn Trp Met Trp Ala Thr Tyr Ile Arg Ala Thr Val Arg Lys Glu Arg
625                 630                 635                 640

Gly Leu Pro Val Leu Val Glu Leu Leu Gln Ser Glu Thr Asp Lys Val
                645                 650                 655

Val Arg Ala Val Ala Ile Ala Leu Arg Asn Leu Ser Leu Asp Arg Arg
            660                 665                 670
```

```
Asn Lys Asp Leu Ile Gly Ser Tyr Ala Met Ala Glu Leu Val Arg Asn
        675                 680                 685

Val Arg Asn Ala Gln Ala Pro Pro Arg Pro Gly Ala Cys Leu Glu Glu
    690                 695                 700

Asp Thr Val Val Ala Val Leu Asn Thr Ile His Glu Ile Val Ser Asp
705                 710                 715                 720

Ser Leu Asp Asn Ala Arg Ser Leu Leu Gln Ala Arg Gly Val Pro Ala
                725                 730                 735

Leu Val Ala Leu Val Ala Ser Ser Gln Ser Val Arg Glu Ala Lys Ala
            740                 745                 750

Ala Ser His Val Leu Gln Thr Val Trp Ser Tyr Lys Glu Leu Arg Gly
        755                 760                 765

Thr Leu Gln Lys Asp Gly Trp Thr Lys Ala Arg Phe Gln Ser Ala Ala
    770                 775                 780

Ala Thr Ala Lys Gly Pro Lys Gly Ala Leu Ser Pro Gly Gly Phe Asp
785                 790                 795                 800

Asp Ser Thr Leu Pro Leu Val Asp Lys Ser Leu Glu Gly Glu Lys Thr
                805                 810                 815

Gly Ser Arg Asp Val Ile Pro Met Asp Ala Leu Gly Pro Asp Gly Tyr
            820                 825                 830

Ser Thr Val Asp Arg Arg Glu Arg Arg Pro Arg Gly Ala Ser Ser Ala
        835                 840                 845

Gly Glu Ala Ser Glu Lys Glu Pro Leu Lys Leu Asp Pro Ser Arg Lys
    850                 855                 860

Ala Pro Pro Pro Gly Pro Ser Arg Pro Ala Val Arg Leu Val Asp Ala
865                 870                 875                 880

Val Gly Asp Ala Lys Pro Gln Pro Val Asp Ser Trp Val
                885                 890
```

<210> 6424
<211> 956
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ARVCF; "

<220>
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<223> /note="Gene Name:
armadillo repeat gene deleted in velocardiofacial
syndrome; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000385444"

<400> 6424
Met Glu Asp Cys Asn Val His Ser Ala Ala Ser Ile Leu Ala Ser Val
1 5 10 15

Lys Glu Gln Glu Ala Arg Phe Glu Arg Leu Thr Arg Ala Leu Glu Gln
20 25 30

Glu Arg Arg His Val Ala Leu Gln Leu Glu Arg Ala Gln Gln Pro Gly
35 40 45

Met Val Ser Gly Gly Met Gly Ser Gly Gln Pro Leu Pro Met Ala Trp
50 55 60

Gln Gln Leu Val Leu Gln Glu Gln Ser Pro Gly Ser Gln Ala Ser Leu
65 70 75 80

Ala Thr Met Pro Glu Ala Pro Asp Val Leu Glu Glu Thr Val Thr Val
85 90 95

Glu Glu Asp Pro Gly Thr Pro Thr Ser His Val Ser Ile Val Thr Ser
100 105 110

Glu Asp Gly Thr Thr Arg Arg Thr Glu Thr Lys Val Thr Lys Thr Val
115 120 125

```
Lys Thr Val Thr Thr Arg Thr Val Arg Gln Val Pro Val Gly Pro Asp
    130                 135                 140

Gly Leu Pro Leu Leu Asp Gly Gly Pro Pro Leu Gly Pro Phe Ala Asp
145                 150                 155                 160

Gly Ala Leu Asp Arg His Phe Leu Leu Arg Gly Gly Gly Pro Val Ala
                165                 170                 175

Thr Leu Ser Arg Ala Tyr Leu Ser Ser Gly Gly Gly Phe Pro Glu Gly
            180                 185                 190

Pro Glu Pro Arg Asp Ser Pro Ser Tyr Gly Ser Leu Ser Arg Gly Leu
        195                 200                 205

Gly Met Arg Pro Pro Arg Ala Gly Pro Leu Gly Pro Gly Pro Gly Asp
    210                 215                 220

Gly Cys Phe Thr Leu Pro Gly His Arg Glu Ala Phe Pro Val Gly Pro
225                 230                 235                 240

Glu Pro Gly Pro Pro Gly Gly Arg Ser Leu Pro Glu Arg Phe Gln Ala
                245                 250                 255

Glu Pro Tyr Gly Leu Glu Asp Asp Thr Arg Ser Leu Ala Ala Asp Asp
            260                 265                 270

Glu Gly Gly Pro Glu Leu Glu Pro Asp Tyr Gly Thr Ala Thr Arg Arg
        275                 280                 285

Arg Pro Glu Cys Gly Arg Gly Leu His Thr Arg Ala Tyr Glu Asp Thr
    290                 295                 300

Ala Asp Asp Gly Gly Glu Leu Ala Asp Glu Arg Pro Ala Phe Pro Met
305                 310                 315                 320

Val Thr Ala Pro Leu Ala Gln Pro Glu Arg Gly Ser Met Gly Ser Leu
                325                 330                 335

Asp Arg Leu Val Arg Arg Ser Pro Ser Val Asp Ser Ala Arg Lys Glu
            340                 345                 350

Pro Arg Trp Arg Asp Pro Glu Leu Pro Glu Val Leu Ala Met Leu Arg
```

```
        355                 360                 365

His Pro Val Asp Pro Val Lys Ala Asn Ala Ala Ala Tyr Leu Gln His
    370                 375                 380

Leu Cys Phe Glu Asn Glu Gly Val Lys Arg Arg Val Arg Gln Leu Arg
385                 390                 395                 400

Gly Leu Pro Leu Leu Val Ala Leu Leu Asp His Pro Arg Ala Glu Val
                405                 410                 415

Arg Arg Arg Ala Cys Gly Ala Leu Arg Asn Leu Ser Tyr Gly Arg Asp
            420                 425                 430

Thr Asp Asn Lys Ala Ala Ile Arg Asp Cys Gly Gly Val Pro Ala Leu
        435                 440                 445

Val Arg Leu Leu Arg Ala Ala Arg Asp Asn Glu Val Arg Glu Leu Val
    450                 455                 460

Thr Gly Thr Leu Trp Asn Leu Ser Ser Tyr Glu Pro Leu Lys Met Val
465                 470                 475                 480

Ile Ile Asp His Gly Leu Gln Thr Leu Thr His Glu Val Ile Val Pro
                485                 490                 495

His Ser Gly Trp Glu Arg Glu Pro Asn Glu Asp Ser Lys Pro Arg Asp
            500                 505                 510

Ala Glu Trp Thr Thr Val Phe Lys Asn Thr Ser Gly Cys Leu Arg Asn
        515                 520                 525

Val Ser Ser Asp Gly Ala Glu Ala Arg Arg Arg Leu Arg Glu Cys Glu
    530                 535                 540

Gly Leu Val Asp Ala Leu Leu His Ala Leu Gln Ser Ala Val Gly Arg
545                 550                 555                 560

Lys Asp Thr Asp Asn Lys Ser Val Glu Asn Cys Val Cys Ile Met Arg
                565                 570                 575

Asn Leu Ser Tyr His Val His Lys Glu Val Pro Gly Ala Asp Arg Tyr
            580                 585                 590
```

```
Gln Glu Ala Glu Pro Gly Pro Leu Gly Ser Ala Val Gly Ser Gln Arg
        595                 600                 605

Arg Arg Arg Asp Asp Ala Ser Cys Phe Gly Gly Lys Lys Ala Lys Gly
    610                 615                 620

Lys Lys Asp Gly Glu Met Asp Arg Asn Phe Asp Thr Leu Asp Leu Pro
625                 630                 635                 640

Lys Arg Thr Glu Ala Ala Lys Gly Phe Glu Leu Leu Tyr Gln Pro Glu
                645                 650                 655

Val Val Arg Leu Tyr Leu Ser Leu Leu Thr Glu Ser Arg Asn Phe Asn
            660                 665                 670

Thr Leu Glu Ala Ala Ala Gly Ala Leu Gln Asn Leu Ser Ala Gly Asn
        675                 680                 685

Trp Met Trp Ala Thr Tyr Ile Arg Ala Thr Val Arg Lys Glu Arg Gly
    690                 695                 700

Leu Pro Val Leu Val Glu Leu Leu Gln Ser Glu Thr Asp Lys Val Val
705                 710                 715                 720

Arg Ala Val Ala Ile Ala Leu Arg Asn Leu Ser Leu Asp Arg Arg Asn
                725                 730                 735

Lys Asp Leu Ile Gly Ser Tyr Ala Met Ala Glu Leu Val Arg Asn Val
            740                 745                 750

Arg Asn Ala Gln Ala Pro Pro Arg Pro Gly Ala Cys Leu Glu Glu Asp
        755                 760                 765

Thr Val Val Ala Val Leu Asn Thr Ile His Glu Ile Val Ser Asp Ser
    770                 775                 780

Leu Asp Asn Ala Arg Ser Leu Leu Gln Ala Arg Gly Val Pro Ala Leu
785                 790                 795                 800

Val Ala Leu Val Ala Ser Ser Gln Ser Val Arg Glu Ala Lys Ala Ala
                805                 810                 815
```

```
Ser His Val Leu Gln Thr Val Trp Ser Tyr Lys Glu Leu Arg Gly Thr
            820                 825                 830

Leu Gln Lys Asp Gly Trp Thr Lys Ala Arg Phe Gln Ser Ala Ala Ala
        835                 840                 845

Thr Ala Lys Gly Pro Lys Gly Ala Leu Ser Pro Gly Gly Phe Asp Asp
    850                 855                 860

Ser Thr Leu Pro Leu Val Asp Lys Ser Leu Glu Gly Glu Lys Thr Gly
865                 870                 875                 880

Ser Arg Asp Val Ile Pro Met Asp Ala Leu Gly Pro Asp Gly Tyr Ser
                885                 890                 895

Thr Val Asp Arg Arg Glu Arg Arg Pro Arg Gly Ala Ser Ser Ala Gly
            900                 905                 910

Glu Ala Ser Glu Lys Glu Pro Leu Lys Leu Asp Pro Ser Arg Lys Ala
        915                 920                 925

Pro Pro Pro Gly Pro Ser Arg Pro Ala Val Arg Leu Val Asp Ala Val
    930                 935                 940

Gly Asp Ala Lys Pro Gln Pro Val Asp Ser Trp Val
945                 950                 955


<210> 6425
<211> 376
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1387; "

<220>
<221> source
<223> /note="Gene Symbol: ACTR1A; "

<220>
<221> source
<223> /note="Gene Name:
      ARP1 actin-related prt 1 homolog A, centractin alpha
      (yeast); "

<220>
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<221> source
<223> /note="Uniprot ID: P61163; "

<220>
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<400> 6425
Met Glu Ser Tyr Asp Val Ile Ala Asn Gln Pro Val Val Ile Asp Asn
1   5   10   15

Gly Ser Gly Val Ile Lys Ala Gly Phe Ala Gly Asp Gln Ile Pro Lys
            20   25   30

Tyr Cys Phe Pro Asn Tyr Val Gly Arg Pro Lys His Val Arg Val Met
        35   40   45

Ala Gly Ala Leu Glu Gly Asp Ile Phe Ile Gly Pro Lys Ala Glu Glu
    50   55   60

His Arg Gly Leu Leu Ser Ile Arg Tyr Pro Met Glu His Gly Ile Val
65   70   75   80

Lys Asp Trp Asn Asp Met Glu Arg Ile Trp Gln Tyr Val Tyr Ser Lys
                85   90   95

Asp Gln Leu Gln Thr Phe Ser Glu Glu His Pro Val Leu Leu Thr Glu
            100   105   110

Ala Pro Leu Asn Pro Arg Lys Asn Arg Glu Arg Ala Ala Glu Val Phe
        115   120   125

Phe Glu Thr Phe Asn Val Pro Ala Leu Phe Ile Ser Met Gln Ala Val
    130   135   140

Leu Ser Leu Tyr Ala Thr Gly Arg Thr Thr Gly Val Val Leu Asp Ser
145   150   155   160

Gly Asp Gly Val Thr His Ala Val Pro Ile Tyr Glu Gly Phe Ala Met
                165   170   175

Pro His Ser Ile Met Arg Ile Asp Ile Ala Gly Arg Asp Val Ser Arg
            180   185   190

Phe Leu Arg Leu Tyr Leu Arg Lys Glu Gly Tyr Asp Phe His Ser Ser

```
        195                 200                 205

Ser Glu Phe Glu Ile Val Lys Ala Ile Lys Glu Arg Ala Cys Tyr Leu
    210                 215                 220

Ser Ile Asn Pro Gln Lys Asp Glu Thr Leu Glu Thr Glu Lys Ala Gln
225                 230                 235                 240

Tyr Tyr Leu Pro Asp Gly Ser Thr Ile Glu Ile Gly Pro Ser Arg Phe
                245                 250                 255

Arg Ala Pro Glu Leu Leu Phe Arg Pro Asp Leu Ile Gly Glu Glu Ser
            260                 265                 270

Glu Gly Ile His Glu Val Leu Val Phe Ala Ile Gln Lys Ser Asp Met
        275                 280                 285

Asp Leu Arg Arg Thr Leu Phe Ser Asn Ile Val Leu Ser Gly Gly Ser
    290                 295                 300

Thr Leu Phe Lys Gly Phe Gly Asp Arg Leu Leu Ser Glu Val Lys Lys
305                 310                 315                 320

Leu Ala Pro Lys Asp Val Lys Ile Arg Ile Ser Ala Pro Gln Glu Arg
                325                 330                 335

Leu Tyr Ser Thr Trp Ile Gly Gly Ser Ile Leu Ala Ser Leu Asp Thr
            340                 345                 350

Phe Lys Lys Met Trp Val Ser Lys Lys Glu Tyr Glu Glu Asp Gly Ala
        355                 360                 365

Arg Ser Ile His Arg Lys Thr Phe
    370                 375


<210> 6426
<211> 332
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1387; "

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<221> source
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<220>
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<223> /note="Gene Name:
ARP1 actin-related prt 1 homolog A, centractin alpha
(yeast); "

<220>
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<223> /note="ENSP ID: ENSP00000473334"

<400> 6426

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Met Glu Ser Tyr Asp Val Ile Ala Asn Gln Pro Val Val Ile Asp Asn
1               5                  10                  15

Gly Ser Gly Val Ile Lys Ala Gly Phe Ala Gly Asp Gln Ile Pro Lys
            20                  25                  30

Tyr Cys Phe Pro Asn Tyr Val Gly Arg Pro Lys His Val Arg Val Met
        35                  40                  45

Ala Gly Ala Leu Glu Gly Asp Ile Phe Ile Gly Pro Lys Ala Glu Glu
    50                  55                  60

His Arg Gly Leu Leu Ser Ile Arg Tyr Pro Met Glu His Gly Ile Val
65                  70                  75                  80

Lys Asp Trp Asn Asp Met Glu Arg Ile Trp Gln Tyr Val Tyr Ser Lys
                85                  90                  95

Asp Gln Leu Gln Thr Phe Ser Glu Glu His Pro Val Leu Leu Thr Glu
            100                 105                 110

Ala Pro Leu Asn Pro Arg Lys Asn Arg Glu Arg Ala Ala Glu Val Phe
        115                 120                 125

Phe Glu Thr Phe Asn Val Pro Ala Leu Phe Ile Ser Met Gln Ala Val
    130                 135                 140

Leu Ser Leu Tyr Ala Thr Gly Arg Thr Thr Gly Val Val Leu Asp Ser
145                 150                 155                 160

Gly Asp Gly Val Thr His Ala Val Pro Ile Tyr Glu Gly Phe Ala Met
                165                 170                 175
```

```
Pro His Ser Ile Met Arg Ile Asp Ile Ala Gly Arg Asp Val Ser Arg
            180                 185                 190

Phe Leu Arg Leu Tyr Leu Arg Lys Glu Gly Tyr Asp Phe His Ser Ser
        195                 200                 205

Ser Glu Phe Glu Ile Val Lys Ala Ile Lys Glu Arg Ala Cys Tyr Leu
    210                 215                 220

Ser Ile Asn Pro Gln Lys Asp Glu Thr Leu Glu Thr Glu Lys Ala Gln
225                 230                 235                 240

Tyr Tyr Leu Pro Asp Gly Ser Thr Ile Glu Ile Gly Pro Ser Arg Phe
                245                 250                 255

Arg Ala Pro Glu Leu Leu Phe Arg Pro Asp Leu Ile Gly Glu Glu Ser
            260                 265                 270

Glu Gly Ile His Glu Val Leu Val Phe Ala Ile Gln Lys Ser Asp Met
        275                 280                 285

Asp Leu Arg Arg Thr Leu Phe Ser Asn Ile Val Leu Ser Gly Gly Ser
    290                 295                 300

Thr Leu Phe Lys Asp Ile Cys Thr Ser Gly Glu Thr Val Phe His Val
305                 310                 315                 320

Asp Trp Gly Leu His Pro Cys Leu Pro Gly His Leu
                325                 330


<210> 6427
<211> 376
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1388; "

<220>
<221> source
<223> /note="Gene Symbol: ACTR1B; "

<220>
<221> source
<223> /note="Gene Name:
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ARP1 actin-related prt 1 homolog B, centractin beta (yeast); "

<220>
<221> source
<223> /note="Uniprot ID: P42025; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000289228"

<400> 6427

```
Met Glu Ser Tyr Asp Ile Ile Ala Asn Gln Pro Val Val Ile Asp Asn
1               5                  10                  15

Gly Ser Gly Val Ile Lys Ala Gly Phe Ala Gly Asp Gln Ile Pro Lys
            20                  25                  30

Tyr Cys Phe Pro Asn Tyr Val Gly Arg Pro Lys His Met Arg Val Met
        35                  40                  45

Ala Gly Ala Leu Glu Gly Asp Leu Phe Ile Gly Pro Lys Ala Glu Glu
    50                  55                  60

His Arg Gly Leu Leu Thr Ile Arg Tyr Pro Met Glu His Gly Val Val
65                  70                  75                  80

Arg Asp Trp Asn Asp Met Glu Arg Ile Trp Gln Tyr Val Tyr Ser Lys
                85                  90                  95

Asp Gln Leu Gln Thr Phe Ser Glu Glu His Pro Val Leu Leu Thr Glu
            100                 105                 110

Ala Pro Leu Asn Pro Ser Lys Asn Arg Glu Lys Ala Ala Glu Val Phe
        115                 120                 125

Phe Glu Thr Phe Asn Val Pro Ala Leu Phe Ile Ser Met Gln Ala Val
    130                 135                 140

Leu Ser Leu Tyr Ala Thr Gly Arg Thr Thr Gly Val Val Leu Asp Ser
145                 150                 155                 160

Gly Asp Gly Val Thr His Ala Val Pro Ile Tyr Glu Gly Phe Ala Met
                165                 170                 175

Pro His Ser Ile Met Arg Val Asp Ile Ala Gly Arg Asp Val Ser Arg
```

```
            180                 185                 190

Tyr Leu Arg Leu Leu Leu Arg Lys Glu Gly Val Asp Phe His Thr Ser
        195                 200                 205

Ala Glu Phe Glu Val Val Arg Thr Ile Lys Glu Arg Ala Cys Tyr Leu
    210                 215                 220

Ser Ile Asn Pro Gln Lys Asp Glu Ala Leu Glu Thr Glu Lys Val Gln
225                 230                 235                 240

Tyr Thr Leu Pro Asp Gly Ser Thr Leu Asp Val Gly Pro Ala Arg Phe
                245                 250                 255

Arg Ala Pro Glu Leu Leu Phe Gln Pro Asp Leu Val Gly Asp Glu Ser
            260                 265                 270

Glu Gly Leu His Glu Val Val Ala Phe Ala Ile His Lys Ser Asp Met
        275                 280                 285

Asp Leu Arg Arg Thr Leu Phe Ala Asn Ile Val Leu Ser Gly Gly Ser
    290                 295                 300

Thr Leu Phe Lys Gly Phe Gly Asp Arg Leu Leu Ser Glu Val Lys Lys
305                 310                 315                 320

Leu Ala Pro Lys Asp Ile Lys Ile Lys Ile Ser Ala Pro Gln Glu Arg
                325                 330                 335

Leu Tyr Ser Thr Trp Ile Gly Gly Ser Ile Leu Ala Ser Leu Asp Thr
            340                 345                 350

Phe Lys Lys Met Trp Val Ser Lys Lys Glu Tyr Glu Glu Asp Gly Ser
        355                 360                 365

Arg Ala Ile His Arg Lys Thr Phe
    370                 375
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<210> 6428
<211> 394
<212> PRT
<213> Homo sapiens

<220>

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<223> /note="Payload ID: 1389; "

<220>
<221> source
<223> /note="Gene Symbol: ACTR2; "

<220>
<221> source
<223> /note="Gene Name:
ARP2 actin-related prt 2 homolog
(yeast); "

<220>
<221> source
<223> /note="Uniprot ID: P61160; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000260641"

<400> 6428

```
Met Asp Ser Gln Gly Arg Lys Val Val Val Cys Asp Asn Gly Thr Gly
1               5                   10                  15


Phe Val Lys Cys Gly Tyr Ala Gly Ser Asn Phe Pro Glu His Ile Phe
            20                  25                  30


Pro Ala Leu Val Gly Arg Pro Ile Ile Arg Ser Thr Thr Lys Val Gly
        35                  40                  45


Asn Ile Glu Ile Lys Asp Leu Met Val Gly Asp Glu Ala Ser Glu Leu
    50                  55                  60


Arg Ser Met Leu Glu Val Asn Tyr Pro Met Glu Asn Gly Ile Val Arg
65                  70                  75                  80


Asn Trp Asp Asp Met Lys His Leu Trp Asp Tyr Thr Phe Gly Pro Glu
                85                  90                  95


Lys Leu Asn Ile Asp Thr Arg Asn Cys Lys Ile Leu Leu Thr Glu Pro
            100                 105                 110


Pro Met Asn Pro Thr Lys Asn Arg Glu Lys Ile Val Glu Val Met Phe
        115                 120                 125


Glu Thr Tyr Gln Phe Ser Gly Val Tyr Val Ala Ile Gln Ala Val Leu
    130                 135                 140
```

```
Thr Leu Tyr Ala Gln Gly Leu Leu Thr Gly Val Val Val Asp Ser Gly
145                 150                 155                 160

Asp Gly Val Thr His Ile Cys Pro Val Tyr Glu Gly Phe Ser Leu Pro
                165                 170                 175

His Leu Thr Arg Arg Leu Asp Ile Ala Gly Arg Asp Ile Thr Arg Tyr
            180                 185                 190

Leu Ile Lys Leu Leu Leu Leu Arg Gly Tyr Ala Phe Asn His Ser Ala
        195                 200                 205

Asp Phe Glu Thr Val Arg Met Ile Lys Glu Lys Leu Cys Tyr Val Gly
    210                 215                 220

Tyr Asn Ile Glu Gln Glu Gln Lys Leu Ala Leu Glu Thr Thr Val Leu
225                 230                 235                 240

Val Glu Ser Tyr Thr Leu Pro Asp Gly Arg Ile Ile Lys Val Gly Gly
                245                 250                 255

Glu Arg Phe Glu Ala Pro Glu Ala Leu Phe Gln Pro His Leu Ile Asn
            260                 265                 270

Val Glu Gly Val Gly Val Ala Glu Leu Leu Phe Asn Thr Ile Gln Ala
        275                 280                 285

Ala Asp Ile Asp Thr Arg Ser Glu Phe Tyr Lys His Ile Val Leu Ser
    290                 295                 300

Gly Gly Ser Thr Met Tyr Pro Gly Leu Pro Ser Arg Leu Glu Arg Glu
305                 310                 315                 320

Leu Lys Gln Leu Tyr Leu Glu Arg Val Leu Lys Gly Asp Val Glu Lys
                325                 330                 335

Leu Ser Lys Phe Lys Ile Arg Ile Glu Asp Pro Pro Arg Arg Lys His
            340                 345                 350

Met Val Phe Leu Gly Gly Ala Val Leu Ala Asp Ile Met Lys Asp Lys
        355                 360                 365
```

Asp Asn Phe Trp Met Thr Arg Gln Glu Tyr Gln Glu Lys Gly Val Arg
    370   375   380

Val Leu Glu Lys Leu Gly Val Thr Val Arg
385   390

<210> 6429
<211> 399
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1389; "

<220>
<221> source
<223> /note="Gene Symbol: ACTR2; "

<220>
<221> source
<223> /note="Gene Name:
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      (yeast); "

<220>
<221> source
<223> /note="Uniprot ID: P61160; "

<220>
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<223> /note="ENSP ID: ENSP00000367220"

<400> 6429
Met Asp Ser Gln Gly Arg Lys Val Val Val Cys Asp Asn Gly Thr Gly
1   5   10   15

Phe Val Lys Cys Gly Tyr Ala Gly Ser Asn Phe Pro Glu His Ile Phe
            20   25   30

Pro Ala Leu Val Gly Arg Pro Ile Ile Arg Ser Thr Thr Lys Val Gly
        35   40   45

Asn Ile Glu Ile Lys Asn Asn Lys Lys Met Asp Leu Met Val Gly Asp
    50   55   60

Glu Ala Ser Glu Leu Arg Ser Met Leu Glu Val Asn Tyr Pro Met Glu
65   70   75   80

Asn Gly Ile Val Arg Asn Trp Asp Asp Met Lys His Leu Trp Asp Tyr

```
                85                  90                  95

Thr Phe Gly Pro Glu Lys Leu Asn Ile Asp Thr Arg Asn Cys Lys Ile
            100                 105                 110

Leu Leu Thr Glu Pro Pro Met Asn Pro Thr Lys Asn Arg Glu Lys Ile
        115                 120                 125

Val Glu Val Met Phe Glu Thr Tyr Gln Phe Ser Gly Val Tyr Val Ala
    130                 135                 140

Ile Gln Ala Val Leu Thr Leu Tyr Ala Gln Gly Leu Leu Thr Gly Val
145                 150                 155                 160

Val Val Asp Ser Gly Asp Gly Val Thr His Ile Cys Pro Val Tyr Glu
                165                 170                 175

Gly Phe Ser Leu Pro His Leu Thr Arg Arg Leu Asp Ile Ala Gly Arg
            180                 185                 190

Asp Ile Thr Arg Tyr Leu Ile Lys Leu Leu Leu Leu Arg Gly Tyr Ala
        195                 200                 205

Phe Asn His Ser Ala Asp Phe Glu Thr Val Arg Met Ile Lys Glu Lys
    210                 215                 220

Leu Cys Tyr Val Gly Tyr Asn Ile Glu Gln Glu Gln Lys Leu Ala Leu
225                 230                 235                 240

Glu Thr Thr Val Leu Val Glu Ser Tyr Thr Leu Pro Asp Gly Arg Ile
                245                 250                 255

Ile Lys Val Gly Gly Glu Arg Phe Glu Ala Pro Glu Ala Leu Phe Gln
            260                 265                 270

Pro His Leu Ile Asn Val Glu Gly Val Gly Val Ala Glu Leu Leu Phe
        275                 280                 285

Asn Thr Ile Gln Ala Ala Asp Ile Asp Thr Arg Ser Glu Phe Tyr Lys
    290                 295                 300

His Ile Val Leu Ser Gly Gly Ser Thr Met Tyr Pro Gly Leu Pro Ser
305                 310                 315                 320
```

```
Arg Leu Glu Arg Glu Leu Lys Gln Leu Tyr Leu Glu Arg Val Leu Lys
                325                 330                 335

Gly Asp Val Glu Lys Leu Ser Lys Phe Lys Ile Arg Ile Glu Asp Pro
            340                 345                 350

Pro Arg Arg Lys His Met Val Phe Leu Gly Gly Ala Val Leu Ala Asp
        355                 360                 365

Ile Met Lys Asp Lys Asp Asn Phe Trp Met Thr Arg Gln Glu Tyr Gln
    370                 375                 380

Glu Lys Gly Val Arg Val Leu Glu Lys Leu Gly Val Thr Val Arg
385                 390                 395


<210> 6430
<211> 339
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1389; "

<220>
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<223> /note="Gene Symbol: ACTR2; "

<220>
<221> source
<223> /note="Gene Name:
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      (yeast); "

<220>
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<223> /note="ENSP ID: ENSP00000437383"

<400> 6430
Met Val Gly Asp Glu Ala Ser Glu Leu Arg Ser Met Leu Glu Val Asn
1               5                   10                  15

Tyr Pro Met Glu Asn Gly Ile Val Arg Asn Trp Asp Asp Met Lys His
            20                  25                  30

Leu Trp Asp Tyr Thr Phe Gly Pro Glu Lys Leu Asn Ile Asp Thr Arg
        35                  40                  45
```

```
Asn Cys Lys Ile Leu Leu Thr Glu Pro Pro Met Asn Pro Thr Lys Asn
    50                  55                  60

Arg Glu Lys Ile Val Glu Val Met Phe Glu Thr Tyr Gln Phe Ser Gly
65                  70                  75                  80

Val Tyr Val Ala Ile Gln Ala Val Leu Thr Leu Tyr Ala Gln Gly Leu
                85                  90                  95

Leu Thr Gly Val Val Val Asp Ser Gly Asp Gly Val Thr His Ile Cys
            100                 105                 110

Pro Val Tyr Glu Gly Phe Ser Leu Pro His Leu Thr Arg Arg Leu Asp
        115                 120                 125

Ile Ala Gly Arg Asp Ile Thr Arg Tyr Leu Ile Lys Leu Leu Leu Leu
    130                 135                 140

Arg Gly Tyr Ala Phe Asn His Ser Ala Asp Phe Glu Thr Val Arg Met
145                 150                 155                 160

Ile Lys Glu Lys Leu Cys Tyr Val Gly Tyr Asn Ile Glu Gln Glu Gln
                165                 170                 175

Lys Leu Ala Leu Glu Thr Thr Val Leu Val Glu Ser Tyr Thr Leu Pro
            180                 185                 190

Asp Gly Arg Ile Ile Lys Val Gly Gly Glu Arg Phe Glu Ala Pro Glu
        195                 200                 205

Ala Leu Phe Gln Pro His Leu Ile Asn Val Glu Gly Val Gly Val Ala
    210                 215                 220

Glu Leu Leu Phe Asn Thr Ile Gln Ala Ala Asp Ile Asp Thr Arg Ser
225                 230                 235                 240

Glu Phe Tyr Lys His Ile Val Leu Ser Gly Gly Ser Thr Met Tyr Pro
                245                 250                 255

Gly Leu Pro Ser Arg Leu Glu Arg Glu Leu Lys Gln Leu Tyr Leu Glu
            260                 265                 270
```

```
Arg Val Leu Lys Gly Asp Val Glu Lys Leu Ser Lys Phe Lys Ile Arg
        275                 280                 285

Ile Glu Asp Pro Pro Arg Arg Lys His Met Val Phe Leu Gly Gly Ala
    290                 295                 300

Val Leu Ala Asp Ile Met Lys Asp Lys Asp Asn Phe Trp Met Thr Arg
305                 310                 315                 320

Gln Glu Tyr Gln Glu Lys Gly Val Arg Val Leu Glu Lys Leu Gly Val
                325                 330                 335

Thr Val Arg
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<210> 6431
<211> 418
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1390; "

<220>
<221> source
<223> /note="Gene Symbol: ACTR3; "

<220>
<221> source
<223> /note="Gene Name:
ARP3 actin-related prt 3 homolog
(yeast); "

<220>
<221> source
<223> /note="Uniprot ID: P61158; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000263238"

<400> 6431

```
Met Ala Gly Arg Leu Pro Ala Cys Val Val Asp Cys Gly Thr Gly Tyr
1               5                   10                  15

Thr Lys Leu Gly Tyr Ala Gly Asn Thr Glu Pro Gln Phe Ile Ile Pro
            20                  25                  30

Ser Cys Ile Ala Ile Lys Glu Ser Ala Lys Val Gly Asp Gln Ala Gln
```

```
        35                  40                  45

Arg Arg Val Met Lys Gly Val Asp Asp Leu Asp Phe Phe Ile Gly Asp
    50                  55                  60

Glu Ala Ile Glu Lys Pro Thr Tyr Ala Thr Lys Trp Pro Ile Arg His
65                  70                  75                  80

Gly Ile Val Glu Asp Trp Asp Leu Met Glu Arg Phe Met Glu Gln Val
                85                  90                  95

Ile Phe Lys Tyr Leu Arg Ala Glu Pro Glu Asp His Tyr Phe Leu Leu
            100                 105                 110

Thr Glu Pro Pro Leu Asn Thr Pro Glu Asn Arg Glu Tyr Thr Ala Glu
        115                 120                 125

Ile Met Phe Glu Ser Phe Asn Val Pro Gly Leu Tyr Ile Ala Val Gln
    130                 135                 140

Ala Val Leu Ala Leu Ala Ala Ser Trp Thr Ser Arg Gln Val Gly Glu
145                 150                 155                 160

Arg Thr Leu Thr Gly Thr Val Ile Asp Ser Gly Asp Gly Val Thr His
                165                 170                 175

Val Ile Pro Val Ala Glu Gly Tyr Val Ile Gly Ser Cys Ile Lys His
            180                 185                 190

Ile Pro Ile Ala Gly Arg Asp Ile Thr Tyr Phe Ile Gln Gln Leu Leu
        195                 200                 205

Arg Asp Arg Glu Val Gly Ile Pro Pro Glu Gln Ser Leu Glu Thr Ala
    210                 215                 220

Lys Ala Val Lys Glu Arg Tyr Ser Tyr Val Cys Pro Asp Leu Val Lys
225                 230                 235                 240

Glu Phe Asn Lys Tyr Asp Thr Asp Gly Ser Lys Trp Ile Lys Gln Tyr
                245                 250                 255

Thr Gly Ile Asn Ala Ile Ser Lys Lys Glu Phe Ser Ile Asp Val Gly
            260                 265                 270
```

```
Tyr Glu Arg Phe Leu Gly Pro Glu Ile Phe Phe His Pro Glu Phe Ala
        275                 280                 285

Asn Pro Asp Phe Thr Gln Pro Ile Ser Glu Val Val Asp Glu Val Ile
    290                 295                 300

Gln Asn Cys Pro Ile Asp Val Arg Arg Pro Leu Tyr Lys Asn Ile Val
305                 310                 315                 320

Leu Ser Gly Gly Ser Thr Met Phe Arg Asp Phe Gly Arg Arg Leu Gln
                325                 330                 335

Arg Asp Leu Lys Arg Thr Val Asp Ala Arg Leu Lys Leu Ser Glu Glu
            340                 345                 350

Leu Ser Gly Gly Arg Leu Lys Pro Lys Pro Ile Asp Val Gln Val Ile
        355                 360                 365

Thr His His Met Gln Arg Tyr Ala Val Trp Phe Gly Gly Ser Met Leu
    370                 375                 380

Ala Ser Thr Pro Glu Phe Tyr Gln Val Cys His Thr Lys Lys Asp Tyr
385                 390                 395                 400

Glu Glu Ile Gly Pro Ser Ile Cys Arg His Asn Pro Val Phe Gly Val
                405                 410                 415

Met Ser
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<210> 6432
<211> 41
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1390; "

<220>
<221> source
<223> /note="Gene Symbol: ACTR3; "

<220>
<221> source

<223> /note="Gene Name:
ARP3 actin-related prt 3 homolog
(yeast); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000394213"

<400> 6432
Met Ala Gly Arg Leu Pro Ala Cys Val Val Asp Cys Gly Thr Gly Tyr
1 5 10 15

Thr Lys Leu Gly Tyr Ala Gly Asn Thr Glu Pro Gln Phe Ile Ile Pro
20 25 30

Ser Leu Ala Asn Pro Pro Trp Tyr Ser
35 40

<210> 6433
<211> 84
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1390; "

<220>
<221> source
<223> /note="Gene Symbol: ACTR3; "

<220>
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<223> /note="Gene Name:
ARP3 actin-related prt 3 homolog
(yeast); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000403125"

<400> 6433
Met Lys Gly Val Asp Asp Leu Asp Phe Phe Ile Gly Asp Glu Ala Ile
1 5 10 15

Glu Lys Pro Thr Tyr Ala Thr Lys Trp Pro Ile Arg His Gly Ile Val
20 25 30

Glu Asp Trp Asp Leu Met Glu Arg Phe Met Glu Gln Val Ile Phe Lys
35 40 45

```
Tyr Leu Arg Ala Glu Pro Glu Asp His Tyr Phe Leu Leu Thr Glu Pro
    50                  55                  60

Pro Leu Asn Thr Pro Glu Asn Arg Glu Tyr Thr Ala Glu Ile Met Phe
65                  70                  75                  80

Glu Ser Phe Asn
```

<210> 6434
<211> 34
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
ARP3 actin-related prt 3 homolog
(yeast); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000407912"

<400> 6434

```
Met Ala Gly Arg Leu Pro Ala Cys Val Val Asp Cys Gly Thr Gly Tyr
1               5                   10                  15

Thr Lys Leu Gly Tyr Ala Gly Asn Thr Glu Pro Gln Phe Ile Ile Pro
            20                  25                  30

Ser Tyr
```

<210> 6435
<211> 367
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1390; "

<220>
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<223> /note="Gene Symbol: ACTR3; "

<220>
<221> source
<223> /note="Gene Name:
ARP3 actin-related prt 3 homolog
(yeast); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000444987"

<400> 6435
Met Lys Gly Val Asp Asp Leu Asp Phe Phe Ile Gly Asp Glu Ala Ile
1 5 10 15

Glu Lys Pro Thr Tyr Ala Thr Lys Trp Pro Ile Arg His Gly Ile Val
20 25 30

Glu Asp Trp Asp Leu Met Glu Arg Phe Met Glu Gln Val Ile Phe Lys
35 40 45

Tyr Leu Arg Ala Glu Pro Glu Asp His Tyr Phe Leu Leu Thr Glu Pro
50 55 60

Pro Leu Asn Thr Pro Glu Asn Arg Glu Tyr Thr Ala Glu Ile Met Phe
65 70 75 80

Glu Ser Phe Asn Val Pro Gly Leu Tyr Ile Ala Val Gln Ala Val Leu
85 90 95

Ala Leu Ala Ala Ser Trp Thr Ser Arg Gln Val Gly Glu Arg Thr Leu
100 105 110

Thr Gly Thr Val Ile Asp Ser Gly Asp Gly Val Thr His Val Ile Pro
115 120 125

Val Ala Glu Gly Tyr Val Ile Gly Ser Cys Ile Lys His Ile Pro Ile
130 135 140

Ala Gly Arg Asp Ile Thr Tyr Phe Ile Gln Gln Leu Leu Arg Asp Arg
145 150 155 160

Glu Val Gly Ile Pro Pro Glu Gln Ser Leu Glu Thr Ala Lys Ala Val
165 170 175

```
Lys Glu Arg Tyr Ser Tyr Val Cys Pro Asp Leu Val Lys Glu Phe Asn
            180                 185                 190

Lys Tyr Asp Thr Asp Gly Ser Lys Trp Ile Lys Gln Tyr Thr Gly Ile
        195                 200                 205

Asn Ala Ile Ser Lys Lys Glu Phe Ser Ile Asp Val Gly Tyr Glu Arg
    210                 215                 220

Phe Leu Gly Pro Glu Ile Phe Phe His Pro Glu Phe Ala Asn Pro Asp
225                 230                 235                 240

Phe Thr Gln Pro Ile Ser Glu Val Val Asp Glu Val Ile Gln Asn Cys
                245                 250                 255

Pro Ile Asp Val Arg Arg Pro Leu Tyr Lys Asn Ile Val Leu Ser Gly
            260                 265                 270

Gly Ser Thr Met Phe Arg Asp Phe Gly Arg Arg Leu Gln Arg Asp Leu
        275                 280                 285

Lys Arg Thr Val Asp Ala Arg Leu Lys Leu Ser Glu Glu Leu Ser Gly
    290                 295                 300

Gly Arg Leu Lys Pro Lys Pro Ile Asp Val Gln Val Ile Thr His His
305                 310                 315                 320

Met Gln Arg Tyr Ala Val Trp Phe Gly Gly Ser Met Leu Ala Ser Thr
                325                 330                 335

Pro Glu Phe Tyr Gln Val Cys His Thr Lys Lys Asp Tyr Glu Glu Ile
            340                 345                 350

Gly Pro Ser Ile Cys Arg His Asn Pro Val Phe Gly Val Met Ser
        355                 360                 365
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<210> 6436
<211> 418
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1391; "

<220>
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<220>
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<223> /note="Gene Name:
ARP3 actin-related prt 3 homolog B
(yeast); "

<220>
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<223> /note="Uniprot ID: Q9P1U1; "

<220>
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<400> 6436

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Met Ala Gly Ser Leu Pro Pro Cys Val Val Asp Cys Gly Thr Gly Tyr
1               5                  10                  15

Thr Lys Leu Gly Tyr Ala Gly Asn Thr Glu Pro Gln Phe Ile Ile Pro
            20                  25                  30

Ser Cys Ile Ala Ile Arg Glu Ser Ala Lys Val Val Asp Gln Ala Gln
        35                  40                  45

Arg Arg Val Leu Arg Gly Val Asp Asp Leu Asp Phe Phe Ile Gly Asp
    50                  55                  60

Glu Ala Ile Asp Lys Pro Thr Tyr Ala Thr Lys Trp Pro Ile Arg His
65                  70                  75                  80

Gly Ile Ile Glu Asp Trp Asp Leu Met Glu Arg Phe Met Glu Gln Val
                85                  90                  95

Val Phe Lys Tyr Leu Arg Ala Glu Pro Glu Asp His Tyr Phe Leu Met
            100                 105                 110

Thr Glu Pro Pro Leu Asn Thr Pro Glu Asn Arg Glu Tyr Leu Ala Glu
        115                 120                 125

Ile Met Phe Glu Ser Phe Asn Val Pro Gly Leu Tyr Ile Ala Val Gln
    130                 135                 140
```

```
Ala Val Leu Ala Leu Ala Ala Ser Trp Thr Ser Arg Gln Val Gly Glu
145                 150                 155                 160

Arg Thr Leu Thr Gly Ile Val Ile Asp Ser Gly Asp Gly Val Thr His
                165                 170                 175

Val Ile Pro Val Ala Glu Gly Tyr Val Ile Gly Ser Cys Ile Lys His
            180                 185                 190

Ile Pro Ile Ala Gly Arg Asp Ile Thr Tyr Phe Ile Gln Gln Leu Leu
        195                 200                 205

Arg Glu Arg Glu Val Gly Ile Pro Pro Glu Gln Ser Leu Glu Thr Ala
    210                 215                 220

Lys Ala Ile Lys Glu Lys Tyr Cys Tyr Ile Cys Pro Asp Ile Val Lys
225                 230                 235                 240

Glu Phe Ala Lys Tyr Asp Val Asp Pro Arg Lys Trp Ile Lys Gln Tyr
                245                 250                 255

Thr Gly Ile Asn Ala Ile Asn Gln Lys Lys Phe Val Ile Asp Val Gly
            260                 265                 270

Tyr Glu Arg Phe Leu Gly Pro Glu Ile Phe Phe His Pro Glu Phe Ala
        275                 280                 285

Asn Pro Asp Phe Met Glu Ser Ile Ser Asp Val Val Asp Glu Val Ile
    290                 295                 300

Gln Asn Cys Pro Ile Asp Val Arg Arg Pro Leu Tyr Lys Asn Val Val
305                 310                 315                 320

Leu Ser Gly Gly Ser Thr Met Phe Arg Asp Phe Gly Arg Arg Leu Gln
                325                 330                 335

Arg Asp Leu Lys Arg Val Val Asp Ala Arg Leu Arg Leu Ser Glu Glu
            340                 345                 350

Leu Ser Gly Gly Arg Ile Lys Pro Lys Pro Val Glu Val Gln Val Val
        355                 360                 365

Thr His His Met Gln Arg Tyr Ala Val Trp Phe Gly Gly Ser Met Leu
```

```
    370                 375                 380

Ala Ser Thr Pro Glu Phe Phe Gln Val Cys His Thr Lys Lys Asp Tyr
385                 390                 395                 400

Glu Glu Tyr Gly Pro Ser Ile Cys Arg His Asn Pro Val Phe Gly Val
                405                 410                 415

Met Ser



<210> 6437
<211> 348
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<220>
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<223> /note="Uniprot ID:  Q9P1U1; "

<220>
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<400> 6437
Met Ala Gly Ser Leu Pro Pro Cys Val Val Asp Cys Gly Thr Gly Tyr
1               5                   10                  15

Thr Lys Leu Gly Tyr Ala Gly Asn Thr Glu Pro Gln Phe Ile Ile Pro
            20                  25                  30

Ser Cys Ile Ala Ile Arg Glu Ser Ala Lys Val Val Asp Gln Ala Gln
        35                  40                  45

Arg Arg Val Leu Arg Gly Val Asp Asp Leu Asp Phe Phe Ile Gly Asp
    50                  55                  60
```

```
Glu Ala Ile Asp Lys Pro Thr Tyr Ala Thr Lys Trp Pro Ile Arg His
65                  70                  75                  80

Gly Ile Ile Glu Asp Trp Asp Leu Met Glu Arg Phe Met Glu Gln Val
                85                  90                  95

Val Phe Lys Tyr Leu Arg Ala Glu Pro Glu Asp His Tyr Phe Leu Met
            100                 105                 110

Thr Glu Pro Pro Leu Asn Thr Pro Glu Asn Arg Glu Tyr Leu Ala Glu
        115                 120                 125

Ile Met Phe Glu Ser Phe Asn Val Pro Gly Leu Tyr Ile Ala Val Gln
    130                 135                 140

Ala Val Leu Ala Leu Ala Ala Ser Trp Thr Ser Arg Gln Val Gly Glu
145                 150                 155                 160

Arg Thr Leu Thr Gly Ile Val Ile Asp Ser Gly Asp Gly Val Thr His
                165                 170                 175

Val Ile Pro Val Ala Glu Gly Tyr Val Ile Gly Ser Cys Ile Lys His
            180                 185                 190

Ile Pro Ile Ala Gly Arg Asp Ile Thr Tyr Phe Ile Gln Gln Leu Leu
        195                 200                 205

Arg Glu Arg Glu Val Gly Ile Pro Pro Glu Gln Ser Leu Glu Thr Ala
    210                 215                 220

Lys Ala Ile Lys Glu Lys Tyr Cys Tyr Ile Cys Pro Asp Ile Val Lys
225                 230                 235                 240

Glu Phe Ala Lys Tyr Asp Val Asp Pro Arg Lys Trp Ile Lys Gln Tyr
                245                 250                 255

Thr Gly Ile Asn Ala Ile Asn Gln Lys Lys Phe Val Ile Asp Val Gly
            260                 265                 270

Tyr Glu Arg Phe Leu Gly Pro Glu Ile Phe Phe His Pro Glu Phe Ala
        275                 280                 285
```

```
Asn Pro Asp Phe Met Glu Ser Ile Ser Asp Val Val Asp Glu Val Ile
    290                 295                 300

Gln Asn Cys Pro Ile Asp Val Arg Arg Pro Leu Tyr Lys Pro Glu Phe
305                 310                 315                 320

Phe Gln Val Cys His Thr Lys Lys Asp Tyr Glu Glu Tyr Gly Pro Ser
                325                 330                 335

Ile Cys Arg His Asn Pro Val Phe Gly Val Met Ser
            340                 345


<210> 6438
<211> 330
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1391; "

<220>
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<220>
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<223> /note="Gene Name:
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      (yeast); "

<220>
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<223> /note="Uniprot ID:  Q9P1U1; "

<220>
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<223> /note="ENSP ID: ENSP00000380452"

<400> 6438
Met Glu Arg Phe Met Glu Gln Val Val Phe Lys Tyr Leu Arg Ala Glu
1               5                   10                  15

Pro Glu Asp His Tyr Phe Leu Met Thr Glu Pro Pro Leu Asn Thr Pro
            20                  25                  30

Glu Asn Arg Glu Tyr Leu Ala Glu Ile Met Phe Glu Ser Phe Asn Val
        35                  40                  45
```

```
Pro Gly Leu Tyr Ile Ala Val Gln Ala Val Leu Ala Leu Ala Ala Ser
    50                  55                  60

Trp Thr Ser Arg Gln Val Gly Glu Arg Thr Leu Thr Gly Ile Val Ile
65                  70                  75                  80

Asp Ser Gly Asp Gly Val Thr His Val Ile Pro Val Ala Glu Gly Tyr
                85                  90                  95

Val Ile Gly Ser Cys Ile Lys His Ile Pro Ile Ala Gly Arg Asp Ile
            100                 105                 110

Thr Tyr Phe Ile Gln Gln Leu Leu Arg Glu Arg Glu Val Gly Ile Pro
        115                 120                 125

Pro Glu Gln Ser Leu Glu Thr Ala Lys Ala Ile Lys Glu Lys Tyr Cys
    130                 135                 140

Tyr Ile Cys Pro Asp Ile Val Lys Glu Phe Ala Lys Tyr Asp Val Asp
145                 150                 155                 160

Pro Arg Lys Trp Ile Lys Gln Tyr Thr Gly Ile Asn Ala Ile Asn Gln
                165                 170                 175

Lys Lys Phe Val Ile Asp Val Gly Tyr Glu Arg Phe Leu Gly Pro Glu
            180                 185                 190

Ile Phe Phe His Pro Glu Phe Ala Asn Pro Asp Phe Met Glu Ser Ile
        195                 200                 205

Ser Asp Val Val Asp Glu Val Ile Gln Asn Cys Pro Ile Asp Val Arg
    210                 215                 220

Arg Pro Leu Tyr Lys Asn Val Val Leu Ser Gly Gly Ser Thr Met Phe
225                 230                 235                 240

Arg Asp Phe Gly Arg Arg Leu Gln Arg Asp Leu Lys Arg Val Val Asp
                245                 250                 255

Ala Arg Leu Arg Leu Ser Glu Glu Leu Ser Gly Gly Arg Ile Lys Pro
            260                 265                 270

Lys Pro Val Glu Val Gln Val Val Thr His His Met Gln Arg Tyr Ala
```

275 280 285

Val Trp Phe Gly Gly Ser Met Leu Ala Ser Thr Pro Glu Phe Phe Gln
290 295 300

Val Cys His Thr Lys Lys Asp Tyr Glu Glu Tyr Gly Pro Ser Ile Cys
305 310 315 320

Arg His Asn Pro Val Phe Gly Val Met Ser
325 330

<210> 6439
<211> 210
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1392; "

<220>
<221> source
<223> /note="Gene Symbol: ACTR3C; "

<220>
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<223> /note="Gene Name:
ARP3 actin-related prt 3 homolog C
(yeast); "

<220>
<221> source
<223> /note="Uniprot ID: Q9C0K3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000252071"

<400> 6439
Met Phe Glu Ser Phe Asn Val Pro Gly Leu Tyr Ile Ala Val Gln Ala
1 5 10 15

Val Leu Ala Leu Ala Ala Ser Trp Thr Ser Arg Gln Val Gly Glu Arg
20 25 30

Thr Leu Thr Gly Ile Val Ile Asp Ser Gly Asp Gly Val Thr His Val
35 40 45

Ile Pro Val Ala Glu Gly Tyr Val Ile Gly Ser Cys Ile Lys His Ile
50 55 60

```
Pro Ile Ala Gly Arg Asp Ile Thr Tyr Phe Ile Gln Gln Leu Leu Arg
65                  70                  75                  80

Glu Arg Glu Val Gly Ile Pro Pro Glu Gln Ser Leu Glu Thr Ala Lys
                85                  90                  95

Ala Ile Lys Glu Lys Tyr Cys Tyr Ile Cys Pro Asp Ile Val Lys Glu
            100                 105                 110

Phe Ala Lys Tyr Asp Val Asp Pro Gln Lys Trp Ile Lys Gln Tyr Thr
        115                 120                 125

Gly Ile Asn Ala Ile Asn Gln Lys Lys Phe Val Ile Asp Val Gly Tyr
    130                 135                 140

Glu Arg Phe Leu Gly Pro Glu Ile Phe Phe His Pro Glu Phe Ala Asn
145                 150                 155                 160

Pro Asp Ser Met Glu Ser Ile Ser Asp Val Val Asp Glu Val Ile Gln
                165                 170                 175

Asn Cys Pro Ile Asp Val Arg Arg Pro Leu Tyr Lys Met Glu Gln Ile
            180                 185                 190

Pro Leu Ser Tyr Pro Gln Gly His Gly Phe His Pro Leu Ser Pro Pro
        195                 200                 205

Phe His
    210


<210> 6440
<211> 208
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1392; "

<220>
<221> source
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<220>
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<223> /note="Gene Name:
ARP3 actin-related prt 3 homolog C
(yeast); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000417426"

<400> 6440

```
Ser Pro Arg Leu Pro Glu Gly Trp Ser Arg Gln Pro Ala Glu Pro Leu
1               5                  10                  15

Ala Lys Leu Gly Ser Pro Ala Gln Leu Arg Thr Ala Glu Pro Ala Pro
            20                  25                  30

Pro Arg Gln Thr Glu Pro Pro Leu Asn Thr Pro Glu Asn Arg Glu Tyr
        35                  40                  45

Leu Ala Glu Gly Tyr Val Ile Gly Ser Cys Ile Lys His Ile Pro Ile
    50                  55                  60

Ala Gly Arg Asp Ile Thr Tyr Phe Ile Gln Gln Leu Leu Arg Glu Arg
65                  70                  75                  80

Glu Val Gly Ile Pro Pro Glu Gln Ser Leu Glu Thr Ala Lys Ala Ile
                85                  90                  95

Lys Glu Lys Tyr Cys Tyr Ile Cys Pro Asp Ile Val Lys Glu Phe Ala
            100                 105                 110

Lys Tyr Asp Val Asp Pro Gln Lys Trp Ile Lys Gln Tyr Thr Gly Ile
        115                 120                 125

Asn Ala Ile Asn Gln Lys Lys Phe Val Ile Asp Val Gly Tyr Glu Arg
    130                 135                 140

Phe Leu Gly Pro Glu Ile Phe Phe His Pro Glu Phe Ala Asn Pro Asp
145                 150                 155                 160

Ser Met Glu Ser Ile Ser Asp Val Val Asp Glu Val Ile Gln Asn Cys
                165                 170                 175

Pro Ile Asp Val Arg Arg Pro Leu Tyr Lys Met Glu Gln Ile Pro Leu
            180                 185                 190
```

```
Ser Tyr Pro Gln Gly His Gly Phe His Pro Leu Ser Pro Pro Phe His
        195                 200                 205


<210> 6441
<211> 51
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1392; "

<220>
<221> source
<223> /note="Gene Symbol: ACTR3C; "

<220>
<221> source
<223> /note="Gene Name:
      ARP3 actin-related prt 3 homolog C
      (yeast); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000417997"

<400> 6441
Met Phe Glu Ser Phe Asn Val Pro Gly Leu Tyr Ile Ala Val Gln Ala
1               5                  10                  15


Val Leu Ala Leu Ala Ala Ser Trp Thr Ser Arg Gln Val Gly Glu Arg
            20                  25                  30


Thr Leu Thr Gly Ile Val Ile Asp Ser Gly Asp Gly Val Thr His Val
        35                  40                  45


Ile Pro Val
    50


<210> 6442
<211> 222
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1392; "

<220>
<221> source
<223> /note="Gene Symbol: ACTR3C; "
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<220>
<221> source
<223> /note="Gene Name:
ARP3 actin-related prt 3 homolog C
(yeast); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000418635"

<400> 6442

```
Met Gly Lys Gly Trp Leu Phe Arg Lys Ile Leu Ala Ser Pro Ser Val
1               5                  10                  15

Phe Arg Arg Glu Gly Thr Ala Gly Pro Ala Gly Gly Pro Pro Gly Pro
            20                  25                  30

Ala Arg Ala Pro Thr Ala Ala Pro Phe Pro Glu Pro Arg Arg Pro Ser
        35                  40                  45

Pro Arg Leu Pro Glu Gly Trp Ser Arg Gln Pro Ala Glu Pro Leu Ala
    50                  55                  60

Lys Leu Gly Ser Pro Ala Gln Leu Arg Thr Ala Glu Pro Ala Pro Pro
65                  70                  75                  80

Arg Gln Thr Glu Pro Pro Leu Asn Thr Pro Glu Asn Arg Glu Tyr Leu
                85                  90                  95

Ala Glu Ile Met Phe Glu Ser Phe Asn Val Pro Gly Leu Tyr Ile Ala
            100                 105                 110

Val Gln Ala Val Leu Ala Leu Ala Ala Ser Trp Thr Ser Arg Gln Val
        115                 120                 125

Gly Glu Arg Thr Leu Thr Gly Ile Val Ile Asp Ser Gly Asp Gly Val
    130                 135                 140

Thr His Val Ile Pro Val Ala Glu Gly Tyr Val Ile Gly Ser Cys Ile
145                 150                 155                 160

Lys His Ile Pro Ile Ala Gly Arg Asp Ile Thr Tyr Phe Ile Gln Gln
                165                 170                 175

Leu Leu Arg Glu Arg Glu Val Gly Ile Pro Pro Glu Gln Ser Leu Glu
            180                 185                 190
```

```
Thr Ala Lys Ala Ile Lys Glu Lys Tyr Cys Tyr Ile Cys Pro Asp Ile
        195                 200                 205

Val Lys Glu Phe Ala Lys Tyr Asp Val Asp Pro Gln Lys Trp
    210                 215                 220
```

<210> 6443
<211> 189
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ACTR3C; "

<220>
<221> source
<223> /note="Gene Name:
ARP3 actin-related prt 3 homolog C
(yeast); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000440990"

<400> 6443

```
Met Phe Glu Ser Phe Asn Val Pro Gly Leu Tyr Ile Ala Val Gln Ala
1               5                   10                  15

Val Leu Ala Leu Ala Ala Ser Trp Thr Ser Arg Gln Val Gly Glu Arg
            20                  25                  30

Thr Leu Thr Gly Ile Val Ile Asp Ser Gly Asp Gly Val Thr His Val
        35                  40                  45

Ile Pro Val Ala Glu Gly Tyr Val Ile Gly Ser Cys Ile Lys His Ile
    50                  55                  60

Pro Ile Ala Gly Arg Asp Ile Thr Tyr Phe Ile Gln Gln Leu Leu Arg
65                  70                  75                  80

Glu Arg Glu Val Gly Ile Pro Pro Glu Gln Ser Leu Glu Thr Ala Lys
                85                  90                  95
```

```
Ala Ile Lys Glu Lys Tyr Cys Tyr Ile Cys Pro Asp Ile Val Lys Glu
            100                 105                 110

Phe Ala Lys Tyr Asp Val Asp Pro Gln Lys Trp Ile Lys Gln Tyr Thr
        115                 120                 125

Gly Ile Asn Ala Ile Asn Gln Lys Lys Phe Val Ile Asp Val Gly Tyr
    130                 135                 140

Glu Arg Phe Leu Gly Pro Glu Ile Phe Phe His Pro Glu Phe Ala Asn
145                 150                 155                 160

Pro Asp Ser Met Glu Ser Ile Ser Asp Val Val Asp Glu Val Ile Gln
                165                 170                 175

Asn Cys Pro Ile Asp Val Arg Arg Pro Leu Tyr Lys Val
            180                 185


<210> 6444
<211> 24
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<223> /note="Gene Symbol: ACTR3C; "

<220>
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<223> /note="Gene Name:
      ARP3 actin-related prt 3 homolog C
      (yeast); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000481447"

<400> 6444
Phe Gln Met Glu Gln Ile Pro Leu Ser Tyr Pro Gln Gly His Gly Phe
1               5                   10                  15

His Pro Leu Ser Pro Pro Phe His
            20
```

<210> 6445
<211> 607
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1393; "

<220>
<221> source
<223> /note="Gene Symbol: ACTR5; "

<220>
<221> source
<223> /note="Gene Name:
ARP5 actin-related prt 5 homolog
(yeast); "

<220>
<221> source
<223> /note="Uniprot ID: Q9H9F9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000243903"

<400> 6445
Met Ala Ala Asn Val Phe Pro Phe Arg Asp Ala Arg Ala Ala Pro Asp
1   5   10   15

Pro Val Leu Glu Ala Gly Pro Val Ala His Gly Pro Leu Pro Val Pro
            20   25   30

Leu Val Leu Asp Asn Gly Ser Phe Gln Val Arg Ala Gly Trp Ala Cys
        35   40   45

Pro Gly Gln Asp Pro Gly Pro Glu Pro Arg Leu Gln Phe Arg Ala Val
    50   55   60

Cys Ala Arg Gly Arg Gly Gly Ala Arg Gly Ala Ser Gly Pro Gln Val
65   70   75   80

Gly Asn Ala Leu Gly Ser Leu Glu Pro Leu Arg Trp Met Leu Arg Ser
                85   90   95

Pro Phe Asp Arg Asn Val Pro Val Asn Leu Glu Leu Gln Glu Leu Leu
            100   105   110

Leu Asp Tyr Ser Phe Gln His Leu Gly Val Ser Ser Gln Gly Cys Val

```
        115                 120                 125

Asp His Pro Ile Val Leu Thr Glu Ala Val Cys Asn Pro Leu Tyr Ser
    130                 135                 140

Arg Gln Met Met Ser Glu Leu Leu Phe Glu Cys Tyr Gly Ile Pro Lys
145                 150                 155                 160

Val Ala Tyr Gly Ile Asp Ser Leu Phe Ser Phe Tyr His Asn Lys Pro
                165                 170                 175

Lys Asn Ser Met Cys Ser Gly Leu Ile Ile Ser Ser Gly Tyr Gln Cys
            180                 185                 190

Thr His Val Leu Pro Ile Leu Glu Gly Arg Leu Asp Ala Lys Asn Cys
        195                 200                 205

Lys Arg Ile Asn Leu Gly Gly Ser Gln Ala Ala Gly Tyr Leu Gln Arg
    210                 215                 220

Leu Leu Gln Leu Lys Tyr Pro Gly His Leu Ala Ala Ile Thr Leu Ser
225                 230                 235                 240

Arg Met Glu Glu Ile Leu His Glu His Ser Tyr Ile Ala Glu Asp Tyr
                245                 250                 255

Val Glu Glu Leu His Lys Trp Arg Cys Pro Asp Tyr Tyr Glu Asn Asn
            260                 265                 270

Val His Lys Met Gln Leu Pro Phe Ser Ser Lys Leu Leu Gly Ser Thr
        275                 280                 285

Leu Thr Ser Glu Glu Lys Gln Glu Arg Arg Gln Gln Gln Leu Arg Arg
    290                 295                 300

Leu Gln Glu Leu Asn Ala Arg Arg Arg Glu Glu Lys Leu Gln Leu Asp
305                 310                 315                 320

Gln Glu Arg Leu Asp Arg Leu Leu Tyr Val Gln Glu Leu Leu Glu Asp
                325                 330                 335

Gly Gln Met Asp Gln Phe His Lys Ala Leu Ile Glu Leu Asn Met Asp
            340                 345                 350
```

```
Ser Pro Glu Glu Leu Gln Ser Tyr Ile Gln Lys Leu Ser Ile Ala Val
        355                 360                 365

Glu Gln Ala Lys Gln Lys Ile Leu Gln Ala Glu Val Asn Leu Glu Val
    370                 375                 380

Asp Val Val Asp Ser Lys Pro Glu Thr Pro Asp Leu Glu Gln Leu Glu
385                 390                 395                 400

Pro Ser Leu Glu Asp Val Glu Ser Met Asn Asp Phe Asp Pro Leu Phe
                405                 410                 415

Ser Glu Glu Thr Pro Gly Val Glu Lys Pro Val Thr Thr Val Gln Pro
            420                 425                 430

Val Phe Asn Leu Ala Ala Tyr His Gln Leu Phe Val Gly Thr Glu Arg
        435                 440                 445

Ile Arg Ala Pro Glu Ile Ile Phe Gln Pro Ser Leu Ile Gly Glu Glu
    450                 455                 460

Gln Ala Gly Ile Ala Glu Thr Leu Gln Tyr Ile Leu Asp Arg Tyr Pro
465                 470                 475                 480

Lys Asp Ile Gln Glu Met Leu Val Gln Asn Val Phe Leu Thr Gly Gly
                485                 490                 495

Asn Thr Met Tyr Pro Gly Met Lys Ala Arg Met Glu Lys Glu Leu Leu
            500                 505                 510

Glu Met Arg Pro Phe Arg Ser Ser Phe Gln Val Gln Leu Ala Ser Asn
        515                 520                 525

Pro Val Leu Asp Ala Trp Tyr Gly Ala Arg Asp Trp Ala Leu Asn His
    530                 535                 540

Leu Asp Asp Asn Glu Val Trp Ile Thr Arg Lys Glu Tyr Glu Glu Lys
545                 550                 555                 560

Gly Gly Glu Tyr Leu Lys Glu His Cys Ala Ser Asn Ile Tyr Val Pro
                565                 570                 575
```

```
Ile Arg Leu Pro Lys Gln Ala Ser Arg Ser Ser Asp Ala Gln Ala Ser
            580                 585                 590

Ser Lys Gly Ser Ala Ala Gly Gly Gly Gly Ala Gly Glu Gln Ala
        595                 600                 605


<210> 6446
<211> 396
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1394; "

<220>
<221> source
<223> /note="Gene Symbol: ACTR6; "

<220>
<221> source
<223> /note="Gene Name:
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      (yeast); "

<220>
<221> source
<223> /note="Uniprot ID:  Q9GZN1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000188312"

<400> 6446
Met Thr Thr Leu Val Leu Asp Asn Gly Ala Tyr Asn Ala Lys Ile Gly
1               5                  10                  15

Tyr Ser His Glu Asn Val Ser Val Ile Pro Asn Cys Gln Phe Arg Ser
            20                  25                  30

Lys Thr Ala Arg Leu Lys Thr Phe Thr Ala Asn Gln Ile Asp Glu Ile
        35                  40                  45

Lys Asp Pro Ser Gly Leu Phe Tyr Ile Leu Pro Phe Gln Lys Gly Tyr
    50                  55                  60

Leu Val Asn Trp Asp Val Gln Arg Gln Val Trp Asp Tyr Leu Phe Gly
65                  70                  75                  80
```

```
Lys Glu Met Tyr Gln Val Asp Phe Leu Asp Thr Asn Ile Ile Ile Thr
                85                  90                  95

Glu Pro Tyr Phe Asn Phe Thr Ser Ile Gln Glu Ser Met Asn Glu Ile
            100                 105                 110

Leu Phe Glu Glu Tyr Gln Phe Gln Ala Val Leu Arg Val Asn Ala Gly
        115                 120                 125

Ala Leu Ser Ala His Arg Tyr Phe Arg Asp Asn Pro Ser Glu Leu Cys
    130                 135                 140

Cys Ile Ile Val Asp Ser Gly Tyr Ser Phe Thr His Ile Val Pro Tyr
145                 150                 155                 160

Cys Arg Ser Lys Lys Lys Lys Glu Ala Ile Ile Arg Ile Asn Val Gly
                165                 170                 175

Gly Lys Leu Leu Thr Asn His Leu Lys Glu Ile Ile Ser Tyr Arg Gln
            180                 185                 190

Leu His Val Met Asp Glu Thr His Val Ile Asn Gln Val Lys Glu Asp
        195                 200                 205

Val Cys Tyr Val Ser Gln Asp Phe Tyr Arg Asp Met Asp Ile Ala Lys
    210                 215                 220

Leu Lys Gly Glu Glu Asn Thr Val Met Ile Asp Tyr Val Leu Pro Asp
225                 230                 235                 240

Phe Ser Thr Ile Lys Lys Gly Phe Cys Lys Pro Arg Glu Glu Met Val
                245                 250                 255

Leu Ser Gly Lys Tyr Lys Ser Gly Glu Gln Ile Leu Arg Leu Ala Asn
            260                 265                 270

Glu Arg Phe Ala Val Pro Glu Ile Leu Phe Asn Pro Ser Asp Ile Gly
        275                 280                 285

Ile Gln Glu Met Gly Ile Pro Glu Ala Ile Val Tyr Ser Ile Gln Asn
    290                 295                 300

Leu Pro Glu Glu Met Gln Pro His Phe Phe Lys Asn Ile Val Leu Thr
```

```
305                 310                 315                 320

Gly Gly Asn Ser Leu Phe Pro Gly Phe Arg Asp Arg Val Tyr Ser Glu
                325                 330                 335

Val Arg Cys Leu Thr Pro Thr Asp Tyr Asp Val Ser Val Val Leu Pro
            340                 345                 350

Glu Asn Pro Ile Thr Tyr Ala Trp Glu Gly Gly Lys Leu Ile Ser Glu
        355                 360                 365

Asn Asp Asp Phe Glu Asp Met Val Val Thr Arg Glu Asp Tyr Glu Glu
    370                 375                 380

Asn Gly His Ser Val Cys Glu Glu Lys Phe Asp Ile
385                 390                 395


<210> 6447
<211> 376
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1394; "

<220>
<221> source
<223> /note="Gene Symbol: ACTR6; "

<220>
<221> source
<223> /note="Gene Name:
      ARP6 actin-related prt 6 homolog
      (yeast); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000447237"

<400> 6447
Met Thr Thr Leu Val Leu Asp Asn Gly Ala Tyr Asn Ala Lys Ile Gly
1               5                   10                  15

Tyr Ser His Glu Asn Val Ser Val Ile Pro Asn Cys Gln Phe Arg Ser
            20                  25                  30

Lys Thr Ala Arg Leu Lys Thr Phe Thr Ala Asn Gln Ile Asp Glu Ile
        35                  40                  45
```

```
Lys Asp Pro Ser Gly Leu Phe Tyr Ile Leu Pro Phe Gln Lys Gly Tyr
    50                  55                  60

Leu Val Asn Trp Asp Val Gln Arg Gln Val Trp Asp Tyr Leu Phe Gly
65                  70                  75                  80

Lys Glu Met Tyr Gln Val Asp Phe Leu Asp Thr Asn Ile Ile Ile Thr
                85                  90                  95

Glu Pro Tyr Phe Asn Phe Thr Ser Ile Gln Glu Ser Met Asn Glu Ile
            100                 105                 110

Leu Phe Glu Glu Tyr Gln Phe Gln Ala Val Leu Arg Val Asn Ala Gly
        115                 120                 125

Ala Leu Ser Ala His Arg Tyr Phe Arg Asp Asn Pro Ser Glu Leu Cys
    130                 135                 140

Cys Ile Ile Val Asp Ser Gly Tyr Ser Phe Thr His Ile Val Pro Tyr
145                 150                 155                 160

Cys Arg Ser Lys Lys Lys Lys Glu Ala Ile Ile Arg Ile Asn Val Gly
                165                 170                 175

Gly Lys Leu Leu Thr Asn His Leu Lys Glu Ile Ile Ser Tyr Arg Gln
            180                 185                 190

Leu His Val Met Asp Glu Thr His Val Ile Asn Gln Val Lys Glu Asp
        195                 200                 205

Val Cys Tyr Val Ser Gln Asp Phe Tyr Arg Asp Met Asp Ile Ala Lys
    210                 215                 220

Leu Lys Gly Glu Glu Asn Thr Val Met Ile Asp Tyr Val Leu Pro Asp
225                 230                 235                 240

Phe Ser Thr Ile Lys Lys Gly Phe Cys Lys Pro Arg Glu Glu Met Val
                245                 250                 255

Leu Ser Gly Lys Tyr Lys Ser Gly Glu Gln Ile Leu Arg Leu Ala Asn
            260                 265                 270
```

```
Glu Arg Phe Ala Val Pro Glu Ile Leu Phe Asn Pro Ser Asp Ile Gly
        275                 280                 285

Ile Gln Glu Met Gly Ile Pro Glu Ala Ile Val Tyr Ser Ile Gln Asn
    290                 295                 300

Leu Pro Glu Gly Phe Arg Asp Arg Val Tyr Ser Glu Val Arg Cys Leu
305                 310                 315                 320

Thr Pro Thr Asp Tyr Asp Val Ser Val Val Leu Pro Glu Asn Pro Ile
                325                 330                 335

Thr Tyr Ala Trp Glu Gly Gly Lys Leu Ile Ser Glu Asn Asp Asp Phe
            340                 345                 350

Glu Asp Met Val Val Thr Arg Glu Asp Tyr Glu Glu Asn Gly His Ser
        355                 360                 365

Val Cys Glu Glu Lys Phe Asp Ile
    370                 375


<210> 6448
<211> 144
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1394; "

<220>
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<220>
<221> source
<223> /note="Gene Name:
      ARP6 actin-related prt 6 homolog
      (yeast); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000447565"

<400> 6448
Met Thr Thr Leu Val Leu Asp Asn Gly Ala Tyr Asn Ala Lys Ile Gly
1               5                   10                  15
```

```
Tyr Ser His Glu Asn Val Ser Val Ile Pro Asn Cys Gln Phe Arg Ser
            20                  25                  30

Lys Thr Ala Arg Leu Lys Thr Phe Thr Ala Asn Gln Ile Asp Glu Ile
        35                  40                  45

Lys Asp Pro Ser Gly Leu Phe Tyr Ile Leu Pro Phe Gln Lys Gly Tyr
    50                  55                  60

Leu Val Asn Trp Asp Val Gln Arg Gln Val Trp Asp Tyr Leu Phe Gly
65                  70                  75                  80

Lys Glu Met Tyr Gln Val Asp Phe Leu Asp Thr Asn Ile Ile Ile Thr
                85                  90                  95

Glu Pro Tyr Phe Asn Phe Thr Ser Ile Gln Glu Ser Met Asn Glu Ile
            100                 105                 110

Leu Phe Glu Glu Tyr Gln Phe Gln Ala Val Leu Arg Val Asn Gly Ser
        115                 120                 125

Cys Ser Val Ala Gln Ala Arg Val Trp Trp His Lys His Gly Ser Leu
    130                 135                 140


<210> 6449
<211> 127
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1394; "

<220>
<221> source
<223> /note="Gene Symbol: ACTR6; "

<220>
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<223> /note="Gene Name:
      ARP6 actin-related prt 6 homolog
      (yeast); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000447641"

<400> 6449
Met Thr Thr Leu Val Leu Asp Asn Gly Ala Tyr Asn Ala Lys Ile Gly
```

```
1               5                   10                  15

Tyr Ser His Glu Asn Val Ser Val Ile Pro Asn Cys Gln Phe Arg Ser
            20                  25                  30

Lys Thr Ala Arg Leu Lys Thr Phe Thr Ala Asn Gln Ile Asp Glu Ile
        35                  40                  45

Lys Asp Pro Ser Gly Leu Phe Tyr Ile Leu Pro Phe Gln Lys Gly Tyr
    50                  55                  60

Leu Val Asn Trp Asp Val Gln Arg Gln Val Trp Asp Tyr Leu Phe Gly
65                  70                  75                  80

Lys Glu Met Tyr Gln Val Asp Phe Leu Asp Thr Asn Ile Ile Ile Thr
                85                  90                  95

Glu Pro Tyr Phe Asn Phe Thr Ser Ile Gln Glu Ser Met Asn Glu Ile
            100                 105                 110

Leu Phe Glu Glu Tyr Gln Phe Gln Ala Val Leu Arg Val Asn Gly
        115                 120                 125


<210> 6450
<211> 294
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ACTR6; "

<220>
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<223> /note="Gene Name:
      ARP6 actin-related prt 6 homolog
      (yeast); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000448356"

<400> 6450
Met Tyr Gln Val Asp Phe Leu Asp Thr Asn Ile Ile Ile Thr Glu Pro
1               5                   10                  15
```

```
Tyr Phe Asn Phe Thr Ser Ile Gln Glu Ser Met Asn Glu Ile Leu Phe
            20                  25                  30

Glu Glu Tyr Gln Phe Gln Ala Val Leu Arg Val Asn Ala Gly Ala Leu
        35                  40                  45

Ser Ala His Arg Tyr Phe Arg Asp Asn Pro Ser Glu Leu Cys Cys Ile
    50                  55                  60

Ile Val Asp Ser Gly Tyr Ser Phe Thr His Ile Val Pro Tyr Cys Arg
65                  70                  75                  80

Ser Lys Lys Lys Lys Glu Ala Ile Ile Arg Ile Asn Val Gly Gly Lys
                85                  90                  95

Leu Leu Thr Asn His Leu Lys Glu Ile Ile Ser Tyr Arg Gln Leu His
            100                 105                 110

Val Met Asp Glu Thr His Val Ile Asn Gln Val Lys Glu Asp Val Cys
        115                 120                 125

Tyr Val Ser Gln Asp Phe Tyr Arg Asp Met Asp Ile Ala Lys Leu Lys
    130                 135                 140

Gly Glu Glu Asn Thr Val Met Ile Asp Tyr Val Leu Pro Asp Phe Ser
145                 150                 155                 160

Thr Ile Lys Lys Gly Phe Cys Lys Pro Arg Glu Glu Met Val Leu Ser
                165                 170                 175

Gly Lys Tyr Lys Ser Gly Glu Gln Ile Leu Arg Leu Ala Asn Glu Arg
            180                 185                 190

Phe Ala Val Pro Glu Ile Leu Phe Asn Pro Ser Asp Ile Gly Ile Gln
        195                 200                 205

Glu Met Gly Ile Pro Glu Ala Ile Val Tyr Ser Ile Gln Asn Leu Pro
    210                 215                 220

Glu Gly Phe Arg Asp Arg Val Tyr Ser Glu Val Arg Cys Leu Thr Pro
225                 230                 235                 240
```

```
Thr Asp Tyr Asp Val Ser Val Val Leu Pro Glu Asn Pro Ile Thr Tyr
                245                 250                 255


Ala Trp Glu Gly Gly Lys Leu Ile Ser Glu Asn Asp Asp Phe Glu Asp
            260                 265                 270


Met Val Val Thr Arg Glu Asp Tyr Glu Glu Asn Gly His Ser Val Cys
        275                 280                 285


Glu Glu Lys Phe Asp Ile
    290


<210> 6451
<211> 88
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1394; "

<220>
<221> source
<223> /note="Gene Symbol: ACTR6; "

<220>
<221> source
<223> /note="Gene Name:
      ARP6 actin-related prt 6 homolog
      (yeast); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000448447"

<400> 6451
Met Thr Thr Leu Val Leu Asp Asn Gly Ala Tyr Asn Ala Lys Ile Gly
1               5                   10                  15


Tyr Ser His Glu Asn Val Ser Val Ile Pro Asn Cys Gln Phe Arg Ser
            20                  25                  30


Lys Thr Ala Arg Leu Lys Thr Phe Thr Ala Asn Gln Ile Asp Glu Ile
        35                  40                  45


Lys Asp Pro Ser Gly Leu Phe Tyr Ile Leu Pro Phe Gln Lys Gly Tyr
    50                  55                  60
```

```
Leu Val Asn Trp Asp Val Gln Arg Gln Val Trp Asp Tyr Leu Phe Gly
65                  70                  75                  80


Lys Glu Met Tyr Gln Val Thr Asn
                85


<210> 6452
<211> 192
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1394; "

<220>
<221> source
<223> /note="Gene Symbol: ACTR6; "

<220>
<221> source
<223> /note="Gene Name:
      ARP6 actin-related prt 6 homolog
      (yeast); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000448508"

<400> 6452
Met Tyr Gln Gly Pro Ser Arg Val Leu Lys Glu Ala Pro Gly Ala Glu
1               5                   10                  15


Ala Tyr Gly Tyr Glu Cys Leu Gly Gly Leu His Arg Thr Ser Thr Gly
            20                  25                  30


Cys Trp Gly Val Ile Pro Asn Cys Gln Phe Arg Ser Lys Thr Ala Arg
        35                  40                  45


Leu Lys Thr Phe Thr Ala Asn Gln Ile Asp Glu Ile Lys Asp Pro Ser
    50                  55                  60


Gly Leu Phe Tyr Ile Leu Pro Phe Gln Lys Gly Tyr Leu Val Asn Trp
65                  70                  75                  80


Asp Val Gln Arg Gln Val Trp Asp Tyr Leu Phe Gly Lys Glu Met Tyr
                85                  90                  95


Gln Val Asp Phe Leu Asp Thr Asn Ile Ile Ile Thr Glu Pro Tyr Phe
```

```
            100                 105                 110

Asn Phe Thr Ser Ile Gln Glu Ser Met Asn Glu Ile Leu Phe Glu Glu
        115                 120                 125

Tyr Gln Phe Gln Ala Val Leu Arg Val Asn Ala Gly Ala Leu Ser Ala
    130                 135                 140

His Arg Tyr Phe Arg Asp Asn Pro Ser Glu Leu Cys Cys Ile Ile Val
145                 150                 155                 160

Asp Ser Gly Tyr Ser Phe Thr His Ile Val Pro Tyr Cys Arg Ser Lys
                165                 170                 175

Lys Lys Lys Glu Ala Ile Ile Arg Ile Asn Val Gly Gly Lys Leu Leu
            180                 185                 190


<210> 6453
<211> 314
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1394; "

<220>
<221> source
<223> /note="Gene Symbol: ACTR6; "

<220>
<221> source
<223> /note="Gene Name:
      ARP6 actin-related prt 6 homolog
      (yeast); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000448669"

<400> 6453
Met Tyr Gln Val Asp Phe Leu Asp Thr Asn Ile Ile Ile Thr Glu Pro
1               5                   10                  15

Tyr Phe Asn Phe Thr Ser Ile Gln Glu Ser Met Asn Glu Ile Leu Phe
            20                  25                  30

Glu Glu Tyr Gln Phe Gln Ala Val Leu Arg Val Asn Ala Gly Ala Leu
        35                  40                  45
```

```
Ser Ala His Arg Tyr Phe Arg Asp Asn Pro Ser Glu Leu Cys Cys Ile
    50                  55                  60

Ile Val Asp Ser Gly Tyr Ser Phe Thr His Ile Val Pro Tyr Cys Arg
65                  70                  75                  80

Ser Lys Lys Lys Lys Glu Ala Ile Ile Arg Ile Asn Val Gly Gly Lys
                85                  90                  95

Leu Leu Thr Asn His Leu Lys Glu Ile Ile Ser Tyr Arg Gln Leu His
            100                 105                 110

Val Met Asp Glu Thr His Val Ile Asn Gln Val Lys Glu Asp Val Cys
        115                 120                 125

Tyr Val Ser Gln Asp Phe Tyr Arg Asp Met Asp Ile Ala Lys Leu Lys
    130                 135                 140

Gly Glu Glu Asn Thr Val Met Ile Asp Tyr Val Leu Pro Asp Phe Ser
145                 150                 155                 160

Thr Ile Lys Lys Gly Phe Cys Lys Pro Arg Glu Glu Met Val Leu Ser
                165                 170                 175

Gly Lys Tyr Lys Ser Gly Glu Gln Ile Leu Arg Leu Ala Asn Glu Arg
            180                 185                 190

Phe Ala Val Pro Glu Ile Leu Phe Asn Pro Ser Asp Ile Gly Ile Gln
        195                 200                 205

Glu Met Gly Ile Pro Glu Ala Ile Val Tyr Ser Ile Gln Asn Leu Pro
    210                 215                 220

Glu Glu Met Gln Pro His Phe Phe Lys Asn Ile Val Leu Thr Gly Gly
225                 230                 235                 240

Asn Ser Leu Phe Pro Gly Phe Arg Asp Arg Val Tyr Ser Glu Val Arg
                245                 250                 255

Cys Leu Thr Pro Thr Asp Tyr Asp Val Ser Val Val Leu Pro Glu Asn
            260                 265                 270
```

```
Pro Ile Thr Tyr Ala Trp Glu Gly Gly Lys Leu Ile Ser Glu Asn Asp
        275                 280                 285

Asp Phe Glu Asp Met Val Val Thr Arg Glu Asp Tyr Glu Glu Asn Gly
    290                 295                 300

His Ser Val Cys Glu Glu Lys Phe Asp Ile
305                 310


<210> 6454
<211> 88
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1394; "

<220>
<221> source
<223> /note="Gene Symbol: ACTR6; "

<220>
<221> source
<223> /note="Gene Name:
      ARP6 actin-related prt 6 homolog
      (yeast); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000450330"

<400> 6454
Met Thr Thr Leu Val Leu Asp Asn Gly Ala Tyr Asn Ala Lys Ile Gly
1               5                   10                  15

Tyr Ser His Glu Asn Val Ser Val Ile Pro Asn Cys Gln Phe Arg Ser
            20                  25                  30

Lys Thr Ala Arg Leu Lys Thr Phe Thr Ala Asn Gln Ile Asp Glu Ile
        35                  40                  45

Lys Asp Pro Ser Gly Leu Phe Tyr Ile Leu Pro Phe Gln Lys Gly Tyr
    50                  55                  60

Leu Val Asn Trp Asp Val Gln Arg Gln Val Trp Asp Tyr Leu Phe Gly
65                  70                  75                  80
```

Lys Glu Met Tyr Gln Val Thr Asn
85

<210> 6455
<211> 624
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1395; "

<220>
<221> source
<223> /note="Gene Symbol: ACTR8; "

<220>
<221> source
<223> /note="Gene Name:
ARP8 actin-related prt 8 homolog
(yeast); "

<220>
<221> source
<223> /note="Uniprot ID: Q9H981; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000336842"

<400> 6455
Met Thr Gln Ala Glu Lys Gly Asp Thr Glu Asn Gly Lys Glu Lys Gly
1 5 10 15

Gly Glu Lys Glu Lys Glu Gln Arg Gly Val Lys Arg Pro Ile Val Pro
20 25 30

Ala Leu Val Pro Glu Ser Leu Gln Glu Gln Ile Gln Ser Asn Phe Ile
35 40 45

Ile Val Ile His Pro Gly Ser Thr Thr Leu Arg Ile Gly Arg Ala Thr
50 55 60

Asp Thr Leu Pro Ala Ser Ile Pro His Val Ile Ala Arg Arg His Lys
65 70 75 80

Gln Gln Gly Gln Pro Leu Tyr Lys Asp Ser Trp Leu Leu Arg Glu Gly
85 90 95

Leu Asn Lys Pro Glu Ser Asn Glu Gln Arg Gln Asn Gly Leu Lys Met

```
            100                 105                 110

Val Asp Gln Ala Ile Trp Ser Lys Lys Met Ser Asn Gly Thr Arg Arg
        115                 120                 125

Ile Pro Val Ser Pro Glu Gln Ala Arg Ser Tyr Asn Lys Gln Met Arg
    130                 135                 140

Pro Ala Ile Leu Asp His Cys Ser Gly Asn Lys Trp Thr Asn Thr Ser
145                 150                 155                 160

His His Pro Glu Tyr Leu Val Gly Glu Glu Ala Leu Tyr Val Asn Pro
                165                 170                 175

Leu Asp Cys Tyr Asn Ile His Trp Pro Ile Arg Arg Gly Gln Leu Asn
            180                 185                 190

Ile His Pro Gly Pro Gly Gly Ser Leu Thr Ala Val Leu Ala Asp Ile
        195                 200                 205

Glu Val Ile Trp Ser His Ala Ile Gln Lys Tyr Leu Glu Ile Pro Leu
    210                 215                 220

Lys Asp Leu Lys Tyr Tyr Arg Cys Ile Leu Leu Ile Pro Asp Ile Tyr
225                 230                 235                 240

Asn Lys Gln His Val Lys Glu Leu Val Asn Met Ile Leu Met Lys Met
                245                 250                 255

Gly Phe Ser Gly Ile Val Val His Gln Glu Ser Val Cys Ala Thr Tyr
            260                 265                 270

Gly Ser Gly Leu Ser Ser Thr Cys Ile Val Asp Val Gly Asp Gln Lys
        275                 280                 285

Thr Ser Val Cys Cys Val Glu Asp Gly Val Ser His Arg Asn Thr Arg
    290                 295                 300

Leu Cys Leu Ala Tyr Gly Gly Ser Asp Val Ser Arg Cys Phe Tyr Trp
305                 310                 315                 320

Leu Met Gln Arg Ala Gly Phe Pro Tyr Arg Glu Cys Gln Leu Thr Asn
                325                 330                 335
```

```
Lys Met Asp Cys Leu Leu Leu Gln His Leu Lys Glu Thr Phe Cys His
            340                 345                 350

Leu Asp Gln Asp Ile Ser Gly Leu Gln Asp His Glu Phe Gln Ile Arg
        355                 360                 365

His Pro Asp Ser Pro Ala Leu Leu Tyr Gln Phe Arg Leu Gly Asp Glu
    370                 375                 380

Lys Leu Gln Ala Pro Met Ala Leu Phe Tyr Pro Ala Thr Phe Gly Ile
385                 390                 395                 400

Val Gly Gln Lys Met Thr Thr Leu Gln His Arg Ser Gln Gly Asp Pro
                405                 410                 415

Glu Asp Pro His Asp Glu His Tyr Leu Leu Ala Thr Gln Ser Lys Gln
            420                 425                 430

Glu Gln Ser Ala Lys Ala Thr Ala Asp Arg Lys Ser Ala Ser Lys Pro
        435                 440                 445

Ile Gly Phe Glu Gly Asp Leu Arg Gly Gln Ser Ser Asp Leu Pro Glu
    450                 455                 460

Arg Leu His Ser Gln Glu Val Asp Leu Gly Ser Ala Gln Gly Asp Gly
465                 470                 475                 480

Leu Met Ala Gly Asn Asp Ser Glu Glu Ala Leu Thr Ala Leu Met Ser
                485                 490                 495

Arg Lys Thr Ala Ile Ser Leu Phe Glu Gly Lys Ala Leu Gly Leu Asp
            500                 505                 510

Lys Ala Ile Leu His Ser Ile Asp Cys Cys Ser Ser Asp Asp Thr Lys
        515                 520                 525

Lys Lys Met Tyr Ser Ser Ile Leu Val Val Gly Gly Gly Leu Met Phe
    530                 535                 540

His Lys Ala Gln Glu Phe Leu Gln His Arg Ile Leu Asn Lys Met Pro
545                 550                 555                 560
```

```
Pro Ser Phe Arg Arg Ile Ile Glu Asn Val Asp Val Ile Thr Arg Pro
                565                 570                 575


Lys Asp Met Asp Pro Arg Leu Ile Ala Trp Lys Gly Gly Ala Val Leu
            580                 585                 590


Ala Cys Leu Asp Thr Thr Gln Glu Leu Trp Ile Tyr Gln Arg Glu Trp
        595                 600                 605


Gln Arg Phe Gly Val Arg Met Leu Arg Glu Arg Ala Ala Phe Val Trp
    610                 615                 620


<210> 6456
<211> 378
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1395; "

<220>
<221> source
<223> /note="Gene Symbol: ACTR8; "

<220>
<221> source
<223> /note="Gene Name:
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      (yeast); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000417230"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6456
Xaa Ala Val Leu Ala Asp Ile Glu Val Ile Trp Ser His Ala Ile Gln
1               5                   10                  15


Lys Tyr Leu Glu Ile Pro Leu Lys Asp Leu Lys Tyr Tyr Arg Cys Ile
            20                  25                  30


Leu Leu Ile Pro Asp Ile Tyr Asn Lys Gln His Val Lys Glu Leu Val
        35                  40                  45
```

```
Asn Met Ile Leu Met Lys Met Gly Phe Ser Gly Ile Val Val His Gln
    50                  55                  60

Glu Ser Val Cys Ala Thr Tyr Gly Ser Gly Leu Ser Ser Thr Cys Ile
65                  70                  75                  80

Val Asp Val Gly Asp Gln Lys Thr Ser Val Cys Cys Val Glu Asp Gly
                85                  90                  95

Val Ser His Arg Asn Thr Arg Ile Phe Ser Trp Asn Gln Asp Ile Ser
            100                 105                 110

Gly Leu Gln Asp His Glu Phe Gln Ile Arg His Pro Asp Ser Pro Ala
        115                 120                 125

Leu Leu Tyr Gln Phe Arg Leu Gly Asp Glu Lys Leu Gln Ala Pro Met
    130                 135                 140

Ala Leu Phe Tyr Pro Ala Thr Phe Gly Ile Val Gly Gln Lys Met Thr
145                 150                 155                 160

Thr Leu Gln His Arg Ser Gln Gly Asp Pro Glu Asp Pro His Asp Glu
                165                 170                 175

His Tyr Leu Leu Ala Thr Gln Ser Lys Gln Glu Gln Ser Ala Lys Ala
            180                 185                 190

Thr Ala Asp Arg Lys Ser Ala Ser Lys Pro Ile Gly Phe Glu Gly Asp
        195                 200                 205

Leu Arg Gly Gln Ser Ser Asp Leu Pro Glu Arg Leu His Ser Gln Glu
    210                 215                 220

Val Asp Leu Gly Ser Ala Gln Gly Asp Gly Leu Met Ala Gly Asn Asp
225                 230                 235                 240

Ser Glu Glu Ala Leu Thr Ala Leu Met Ser Arg Lys Thr Ala Ile Ser
                245                 250                 255

Leu Phe Glu Gly Lys Ala Leu Gly Leu Asp Lys Ala Ile Leu His Ser
            260                 265                 270
```

```
Ile Asp Cys Cys Ser Ser Asp Asp Thr Lys Lys Lys Met Tyr Ser Ser
        275                 280                 285

Ile Leu Val Val Gly Gly Gly Leu Met Phe His Lys Ala Gln Glu Phe
    290                 295                 300

Leu Gln His Arg Ile Leu Asn Lys Met Pro Pro Ser Phe Arg Arg Ile
305                 310                 315                 320

Ile Glu Asn Val Asp Val Ile Thr Arg Pro Lys Asp Met Asp Pro Arg
                325                 330                 335

Leu Ile Ala Trp Lys Gly Gly Ala Val Leu Ala Cys Leu Asp Thr Thr
            340                 345                 350

Gln Glu Leu Trp Ile Tyr Gln Arg Glu Trp Gln Arg Phe Gly Val Arg
        355                 360                 365

Met Leu Arg Glu Arg Ala Ala Phe Val Trp
    370                 375


<210> 6457
<211> 102
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1395; "

<220>
<221> source
<223> /note="Gene Symbol: ACTR8; "

<220>
<221> source
<223> /note="Gene Name:
      ARP8 actin-related prt 8 homolog
      (yeast); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000417781"

<400> 6457
Met Val Asp Gln Ala Ile Trp Ser Lys Lys Met Ser Asn Gly Thr Arg
1               5                   10                  15
```

```
Arg Ile Pro Val Ser Pro Glu Gln Ala Arg Ser Tyr Asn Lys Gln Met
            20                  25                  30

Arg Pro Ala Ile Leu Asp His Cys Ser Gly Asn Lys Trp Thr Asn Thr
        35                  40                  45

Ser His His Pro Glu Tyr Leu Val Gly Glu Glu Ala Leu Tyr Val Asn
    50                  55                  60

Pro Leu Asp Cys Tyr Asn Ile His Trp Pro Ile Arg Arg Gly Gln Leu
65                  70                  75                  80

Asn Ile His Pro Gly Pro Gly Gly Ser Leu Thr Ala Val Leu Ala Asp
                85                  90                  95

Ile Glu Val Ile Trp Ser
            100


<210> 6458
<211> 513
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1395; "

<220>
<221> source
<223> /note="Gene Symbol: ACTR8; "

<220>
<221> source
<223> /note="Gene Name:
      ARP8 actin-related prt 8 homolog
      (yeast); "

<220>
<221> source
<223> /note="Uniprot ID:  Q9H981; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419429"

<400> 6458
Met Val Asp Gln Ala Ile Trp Ser Lys Lys Met Ser Asn Gly Thr Arg
1               5                   10                  15

Arg Ile Pro Val Ser Pro Glu Gln Ala Arg Ser Tyr Asn Lys Gln Met
```

20 25 30

Arg Pro Ala Ile Leu Asp His Cys Ser Gly Asn Lys Trp Thr Asn Thr
35 40 45

Ser His His Pro Glu Tyr Leu Val Gly Glu Glu Ala Leu Tyr Val Asn
50 55 60

Pro Leu Asp Cys Tyr Asn Ile His Trp Pro Ile Arg Arg Gly Gln Leu
65 70 75 80

Asn Ile His Pro Gly Pro Gly Gly Ser Leu Thr Ala Val Leu Ala Asp
85 90 95

Ile Glu Val Ile Trp Ser His Ala Ile Gln Lys Tyr Leu Glu Ile Pro
100 105 110

Leu Lys Asp Leu Lys Tyr Tyr Arg Cys Ile Leu Leu Ile Pro Asp Ile
115 120 125

Tyr Asn Lys Gln His Val Lys Glu Leu Val Asn Met Ile Leu Met Lys
130 135 140

Met Gly Phe Ser Gly Ile Val Val His Gln Glu Ser Val Cys Ala Thr
145 150 155 160

Tyr Gly Ser Gly Leu Ser Ser Thr Cys Ile Val Asp Val Gly Asp Gln
165 170 175

Lys Thr Ser Val Cys Cys Val Glu Asp Gly Val Ser His Arg Asn Thr
180 185 190

Arg Leu Cys Leu Ala Tyr Gly Gly Ser Asp Val Ser Arg Cys Phe Tyr
195 200 205

Trp Leu Met Gln Arg Ala Gly Phe Pro Tyr Arg Glu Cys Gln Leu Thr
210 215 220

Asn Lys Met Asp Cys Leu Leu Leu Gln His Leu Lys Glu Thr Phe Cys
225 230 235 240

His Leu Asp Gln Asp Ile Ser Gly Leu Gln Asp His Glu Phe Gln Ile
245 250 255

```
Arg His Pro Asp Ser Pro Ala Leu Leu Tyr Gln Phe Arg Leu Gly Asp
            260                 265                 270

Glu Lys Leu Gln Ala Pro Met Ala Leu Phe Tyr Pro Ala Thr Phe Gly
        275                 280                 285

Ile Val Gly Gln Lys Met Thr Thr Leu Gln His Arg Ser Gln Gly Asp
    290                 295                 300

Pro Glu Asp Pro His Asp Glu His Tyr Leu Leu Ala Thr Gln Ser Lys
305                 310                 315                 320

Gln Glu Gln Ser Ala Lys Ala Thr Ala Asp Arg Lys Ser Ala Ser Lys
                325                 330                 335

Pro Ile Gly Phe Glu Gly Asp Leu Arg Gly Gln Ser Ser Asp Leu Pro
            340                 345                 350

Glu Arg Leu His Ser Gln Glu Val Asp Leu Gly Ser Ala Gln Gly Asp
        355                 360                 365

Gly Leu Met Ala Gly Asn Asp Ser Glu Glu Ala Leu Thr Ala Leu Met
    370                 375                 380

Ser Arg Lys Thr Ala Ile Ser Leu Phe Glu Gly Lys Ala Leu Gly Leu
385                 390                 395                 400

Asp Lys Ala Ile Leu His Ser Ile Asp Cys Cys Ser Ser Asp Asp Thr
                405                 410                 415

Lys Lys Lys Met Tyr Ser Ser Ile Leu Val Val Gly Gly Gly Leu Met
            420                 425                 430

Phe His Lys Ala Gln Glu Phe Leu Gln His Arg Ile Leu Asn Lys Met
        435                 440                 445

Pro Pro Ser Phe Arg Arg Ile Ile Glu Asn Val Asp Val Ile Thr Arg
    450                 455                 460

Pro Lys Asp Met Asp Pro Arg Leu Ile Ala Trp Lys Gly Gly Ala Val
465                 470                 475                 480
```

```
Leu Ala Cys Leu Asp Thr Thr Gln Glu Leu Trp Ile Tyr Gln Arg Glu
                485                 490                 495

Trp Gln Arg Phe Gly Val Arg Met Leu Arg Glu Arg Ala Ala Phe Val
            500                 505                 510

Trp
```

<210> 6459
<211> 625
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1396; "

<220>
<221> source
<223> /note="Gene Symbol: ARPC4-TTLL3; "

<220>
<221> source
<223> /note="Gene Name:
ARPC4-TTLL3 readthrough; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000380427"

<400> 6459

```
Met Thr Ala Thr Leu Arg Pro Tyr Leu Ser Ala Val Arg Ala Thr Leu
1               5                   10                  15

Gln Ala Ala Leu Cys Leu Glu Asn Phe Ser Ser Gln Val Val Glu Arg
            20                  25                  30

His Asn Lys Pro Glu Val Glu Val Arg Ser Ser Lys Glu Leu Leu Leu
        35                  40                  45

Gln Pro Val Thr Ile Ser Arg Asn Glu Lys Glu Lys Val Leu Ile Glu
    50                  55                  60

Gly Ser Ile Asn Ser Val Arg Val Ser Ile Ala Val Lys Gln Ala Asp
65                  70                  75                  80

Glu Ile Glu Lys Ile Leu Cys His Lys Phe Met Arg Phe Met Met Met
```

```
                85                  90                  95

Arg Ala Glu Asn Phe Phe Ile Leu Arg Arg Lys Pro Val Glu Gln Lys
            100                 105                 110

Lys Ile Phe Thr Ile Gln Gly Cys Tyr Pro Val Ile Arg Cys Leu Leu
        115                 120                 125

Arg Arg Arg Gly Trp Val Glu Lys Lys Met Val His Arg Ser Gly Pro
    130                 135                 140

Thr Leu Leu Pro Pro Gln Lys Asp Leu Asp Ser Ser Ala Met Gly Asp
145                 150                 155                 160

Ser Asp Thr Thr Glu Asp Glu Asp Glu Asp Glu Asp Glu Glu Phe Gln
                165                 170                 175

Pro Ser Gln Leu Phe Asp Phe Asp Asp Leu Leu Lys Phe Asp Asp Leu
            180                 185                 190

Asp Gly Thr His Ala Leu Met Val Gly Leu Cys Leu Asn Leu Arg Asn
        195                 200                 205

Leu Pro Trp Phe Asp Glu Val Asp Ala Asn Ser Phe Phe Pro Arg Cys
    210                 215                 220

Tyr Cys Leu Gly Ala Glu Asp Asp Lys Lys Ala Phe Ile Gly Asp Lys
225                 230                 235                 240

Gln Pro Lys Lys Gln Glu Lys Asn Pro Val Leu Val Ser Pro Glu Phe
                245                 250                 255

Val Asp Glu Ala Leu Cys Ala Cys Glu Glu Tyr Leu Ser Asn Leu Ala
            260                 265                 270

His Met Asp Ile Asp Lys Asp Leu Glu Ala Pro Leu Tyr Leu Thr Pro
        275                 280                 285

Glu Gly Trp Ser Leu Phe Leu Gln Arg Tyr Tyr Gln Val Val His Glu
    290                 295                 300

Gly Ala Glu Leu Arg His Leu Asp Thr Gln Val Gln Arg Cys Glu Asp
305                 310                 315                 320
```

```
Ile Leu Gln Gln Leu Gln Ala Val Val Pro Gln Ile Asp Met Glu Gly
                325                 330                 335

Asp Arg Asn Ile Trp Ile Val Lys Pro Gly Ala Lys Ser Arg Gly Arg
            340                 345                 350

Gly Ile Met Cys Met Asp His Leu Glu Glu Met Leu Lys Leu Val Asn
        355                 360                 365

Gly Asn Pro Val Val Met Lys Asp Gly Lys Trp Val Val Gln Lys Tyr
    370                 375                 380

Ile Glu Arg Pro Leu Leu Ile Phe Gly Thr Lys Phe Asp Leu Arg Gln
385                 390                 395                 400

Trp Phe Leu Val Thr Asp Trp Asn Pro Leu Thr Val Trp Phe Tyr Arg
                405                 410                 415

Asp Ser Tyr Ile Arg Phe Ser Thr Gln Pro Phe Ser Leu Lys Asn Leu
            420                 425                 430

Asp Asn Ser Val His Leu Cys Asn Asn Ser Ile Gln Lys His Leu Glu
        435                 440                 445

Asn Ser Cys His Arg His Pro Leu Leu Pro Pro Asp Asn Met Trp Ser
    450                 455                 460

Ser Gln Arg Phe Gln Ala His Leu Gln Glu Met Gly Ala Pro Asn Ala
465                 470                 475                 480

Trp Ser Thr Ile Ile Val Pro Gly Met Lys Asp Ala Val Ile His Ala
                485                 490                 495

Leu Gln Thr Ser Gln Asp Thr Val Gln Cys Arg Lys Ala Ser Phe Glu
            500                 505                 510

Leu Tyr Gly Ala Asp Phe Val Phe Gly Glu Asp Phe Gln Pro Trp Leu
        515                 520                 525

Ile Glu Ile Asn Ala Ser Pro Thr Met Ala Pro Ser Thr Ala Val Thr
    530                 535                 540
```

```
Ala Arg Leu Cys Ala Gly Val Gln Ala Asp Thr Leu Arg Val Val Ile
545                 550                 555                 560


Asp Arg Met Leu Asp Arg Asn Cys Asp Thr Gly Ala Phe Glu Leu Ile
                565                 570                 575


Tyr Lys Gln Pro Val Thr Thr Ser Pro Ala Ser Thr Pro Arg Pro Ser
            580                 585                 590


Cys Leu Leu Pro Met Tyr Ser Asp Thr Arg Ala Arg Ser Ser Asp Asp
        595                 600                 605


Ser Thr Ala Ser Trp Trp Ala Leu Arg Pro Cys Arg Pro Gln Ala Arg
    610                 615                 620


Pro
625


<210> 6460
<211> 167
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1396; "

<220>
<221> source
<223> /note="Gene Symbol: ARPC4-TTLL3; "

<220>
<221> source
<223> /note="Gene Name:
      ARPC4-TTLL3 readthrough; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000393764"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6460
Xaa Thr Ala Thr Leu Arg Pro Tyr Leu Ser Ala Val Arg Ala Thr Leu
1               5                   10                  15
```

```
Gln Ala Ala Leu Cys Leu Glu Asn Phe Ser Ser Gln Val Val Glu Arg
            20                  25                  30

His Asn Lys Pro Glu Val Glu Val Arg Ser Ser Lys Glu Leu Leu Leu
        35                  40                  45

Gln Pro Val Thr Ile Ser Arg Asn Glu Lys Glu Lys Val Leu Ile Glu
    50                  55                  60

Gly Ser Ile Asn Ser Val Arg Val Ser Ile Ala Val Lys Gln Gly Tyr
65                  70                  75                  80

Asp Ile Ser Phe Leu Ile Thr Asn Phe His Thr Glu Gln Met Tyr Lys
                85                  90                  95

His Lys Leu Val Asp Phe Val Ile His Phe Met Glu Glu Ile Asp Lys
            100                 105                 110

Glu Ile Ser Glu Met Lys Leu Ser Val Asn Ala Arg Ala Arg Ile Val
        115                 120                 125

Ala Glu Glu Phe Leu Lys Asn Gln Lys Lys Ile Phe Thr Ile Gln Gly
    130                 135                 140

Cys Tyr Pro Val Ile Arg Cys Leu Leu Arg Arg Arg Gly Trp Val Glu
145                 150                 155                 160

Lys Lys Met Val His Arg Ser
                165
```

<210> 6461
<211> 47
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1396; "

<220>
<221> source
<223> /note="Gene Symbol: ARPC4-TTLL3; "

<220>
<221> source
<223> /note="Gene Name:

ARPC4-TTLL3 readthrough; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000402163"

<400> 6461
Met Thr Ala Thr Leu Arg Pro Tyr Leu Ser Ala Val Arg Ala Thr Leu
1 5 10 15

Gln Ala Ala Leu Cys Leu Glu Asn Phe Ser Ser Gln Val Val Glu Arg
20 25 30

His Asn Lys Pro Glu Val Glu Val Arg Gly Met Ile Ser Ala Phe
35 40 45

<210> 6462
<211> 181
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1396; "

<220>
<221> source
<223> /note="Gene Symbol: ARPC4-TTLL3; "

<220>
<221> source
<223> /note="Gene Name:
ARPC4-TTLL3 readthrough; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000412284"

<400> 6462
Met Thr Ala Thr Leu Arg Pro Tyr Leu Ser Ala Val Arg Ala Thr Leu
1 5 10 15

Gln Ala Ala Leu Cys Leu Glu Asn Phe Ser Ser Gln Val Val Glu Arg
20 25 30

His Asn Lys Pro Glu Val Glu Val Arg Ser Ser Lys Glu Leu Leu Leu
35 40 45

Gln Pro Val Thr Ile Ser Arg Asn Glu Lys Glu Lys Val Leu Ile Glu
50 55 60

```
Gly Ser Ile Asn Ser Val Arg Val Ser Ile Ala Val Lys Gln Ala Asp
65                  70                  75                  80

Glu Ile Glu Lys Ile Leu Cys His Lys Phe Met Arg Phe Met Met Met
                85                  90                  95

Arg Ala Glu Asn Phe Phe Ile Leu Arg Arg Lys Pro Val Glu Gly Tyr
            100                 105                 110

Asp Ile Ser Phe Leu Ile Thr Asn Phe His Thr Glu Gln Met Tyr Lys
        115                 120                 125

His Lys Leu Val Asp Phe Val Ile His Phe Met Glu Glu Ile Asp Lys
    130                 135                 140

Glu Ile Ser Glu Met Lys Leu Ser Val Asn Ala Arg Ala Arg Ile Val
145                 150                 155                 160

Ala Glu Glu Phe Leu Lys Asn Val Ser Arg Ser Ser Gly Glu Asp Pro
                165                 170                 175

Pro Arg Arg Leu Thr
            180


<210> 6463
<211> 388
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1397; "

<220>
<221> source
<223> /note="Gene Symbol: ARR3; "

<220>
<221> source
<223> /note="Gene Name:
      arrestin 3, retinal (X-arrestin); "

<220>
<221> source
<223> /note="Uniprot ID:  P36575; "

<220>
<221> source
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<223> /note="ENSP ID: ENSP00000311538"

<400> 6463

```
Met Ser Lys Val Phe Lys Lys Thr Ser Ser Asn Gly Lys Leu Ser Ile
1               5                  10                  15

Tyr Leu Gly Lys Arg Asp Phe Val Asp His Val Asp Thr Val Glu Pro
            20                  25                  30

Ile Asp Gly Val Val Leu Val Asp Pro Glu Tyr Leu Lys Cys Arg Lys
        35                  40                  45

Leu Phe Val Met Leu Thr Cys Ala Phe Arg Tyr Gly Arg Asp Asp Leu
    50                  55                  60

Glu Val Ile Gly Leu Thr Phe Arg Lys Asp Leu Tyr Val Gln Thr Leu
65                  70                  75                  80

Gln Val Val Pro Ala Glu Ser Ser Ser Pro Gln Gly Pro Leu Thr Val
                85                  90                  95

Leu Gln Glu Arg Leu Leu His Lys Leu Gly Asp Asn Ala Tyr Pro Phe
            100                 105                 110

Thr Leu Gln Met Val Thr Asn Leu Pro Cys Ser Val Thr Leu Gln Pro
        115                 120                 125

Gly Pro Glu Asp Ala Gly Lys Pro Cys Gly Ile Asp Phe Glu Val Lys
    130                 135                 140

Ser Phe Cys Ala Glu Asn Pro Glu Glu Thr Val Ser Lys Arg Asp Tyr
145                 150                 155                 160

Val Arg Leu Val Val Arg Lys Val Gln Phe Ala Pro Pro Glu Ala Gly
                165                 170                 175

Pro Gly Pro Ser Ala Gln Thr Ile Arg Arg Phe Leu Leu Ser Ala Gln
            180                 185                 190

Pro Leu Gln Leu Gln Ala Trp Met Asp Arg Glu Val His Tyr His Gly
        195                 200                 205

Glu Pro Ile Ser Val Asn Val Ser Ile Asn Asn Cys Thr Asn Lys Val
    210                 215                 220
```

```
Ile Lys Lys Ile Lys Ile Ser Val Asp Gln Ile Thr Asp Val Val Leu
225                 230                 235                 240

Tyr Ser Leu Asp Lys Tyr Thr Lys Thr Val Phe Ile Gln Glu Phe Thr
                245                 250                 255

Glu Thr Val Ala Ala Asn Ser Ser Phe Ser Gln Ser Phe Ala Val Thr
            260                 265                 270

Pro Ile Leu Ala Ala Ser Cys Gln Lys Arg Gly Leu Ala Leu Asp Gly
        275                 280                 285

Lys Leu Lys His Glu Asp Thr Asn Leu Ala Ser Ser Thr Ile Ile Arg
    290                 295                 300

Pro Gly Met Asp Lys Glu Leu Leu Gly Ile Leu Val Ser Tyr Lys Val
305                 310                 315                 320

Arg Val Asn Leu Met Val Ser Cys Gly Gly Ile Leu Gly Asp Leu Thr
                325                 330                 335

Ala Ser Asp Val Gly Val Glu Leu Pro Leu Val Leu Ile His Pro Lys
            340                 345                 350

Pro Ser His Glu Ala Ala Ser Ser Glu Asp Ile Val Ile Glu Glu Phe
        355                 360                 365

Thr Arg Lys Gly Glu Glu Glu Ser Gln Lys Ala Val Glu Ala Glu Gly
    370                 375                 380

Asp Glu Gly Ser
385
```

<210> 6464
<211> 359
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1397; "

<220>
<221> source

<223> /note="Gene Symbol: ARR3; "

<220>
<221> source
<223> /note="Gene Name:
arrestin 3, retinal (X-arrestin); "

<220>
<221> source
<223> /note="Uniprot ID: P36575; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000363619"

<400> 6464

```
Met Ser Lys Val Phe Lys Lys Thr Ser Ser Asn Gly Lys Leu Ser Ile
1               5                   10                  15

Tyr Leu Gly Lys Arg Asp Phe Val Asp His Val Asp Thr Val Glu Pro
            20                  25                  30

Ile Asp Gly Val Val Leu Val Asp Pro Glu Tyr Leu Lys Cys Arg Lys
        35                  40                  45

Leu Phe Val Met Leu Thr Cys Ala Phe Arg Tyr Gly Arg Asp Asp Leu
    50                  55                  60

Glu Val Ile Gly Leu Thr Phe Arg Lys Asp Leu Tyr Val Gln Thr Leu
65                  70                  75                  80

Gln Val Val Pro Ala Glu Ser Ser Ser Pro Gln Gly Pro Leu Thr Val
                85                  90                  95

Leu Gln Glu Arg Leu Leu His Lys Leu Gly Asp Asn Ala Tyr Pro Phe
            100                 105                 110

Thr Leu Gln Met Val Thr Asn Leu Pro Cys Ser Val Thr Leu Gln Pro
        115                 120                 125

Gly Pro Glu Asp Ala Gly Lys Pro Cys Gly Ile Asp Phe Glu Val Lys
    130                 135                 140

Ser Phe Cys Ala Glu Asn Pro Glu Glu Thr Val Ser Lys Arg Asp Tyr
145                 150                 155                 160

Val Arg Leu Val Val Arg Lys Val Gln Phe Ala Pro Pro Glu Ala Gly
```

```
                165                 170                 175

Pro Gly Pro Ser Ala Gln Thr Ile Arg Arg Phe Leu Leu Ser Ala Gln
            180                 185                 190

Pro Leu Gln Leu Gln Ala Trp Met Asp Arg Glu Val His Tyr His Gly
        195                 200                 205

Glu Pro Ile Ser Val Asn Val Ser Ile Asn Asn Cys Thr Asn Lys Val
    210                 215                 220

Ile Lys Lys Ile Lys Ile Ser Val Asp Gln Ile Thr Asp Val Val Leu
225                 230                 235                 240

Tyr Ser Leu Asp Lys Tyr Thr Lys Thr Val Phe Ile Gln Glu Phe Thr
                245                 250                 255

Glu Thr Val Ala Ala Asn Ser Ser Phe Ser Gln Ser Phe Ala Val Thr
            260                 265                 270

Pro Ile Leu Ala Ala Ser Cys Gln Lys Arg Gly Leu Ala Leu Asp Gly
        275                 280                 285

Lys Leu Lys His Glu Asp Thr Asn Leu Ala Ser Ser Thr Ile Ile Arg
    290                 295                 300

Pro Gly Met Asp Lys Glu Leu Leu Gly Ile Leu Val Ser Tyr Lys Val
305                 310                 315                 320

Arg Val Asn Leu Met Val Ser Cys Gly Gly Ile Leu Gly Asp Leu Thr
                325                 330                 335

Ala Ser Asp Val Gly Val Glu Leu Pro Leu Val Leu Ile His Pro Lys
            340                 345                 350

Pro Ser His Glu Ala Ala Arg
        355
```

<210> 6465
<211> 97
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1397; "

<220>
<221> source
<223> /note="Gene Symbol: ARR3; "

<220>
<221> source
<223> /note="Gene Name:
arrestin 3, retinal (X-arrestin); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000425505"

<400> 6465
Met Leu Thr Cys Ala Phe Arg Tyr Gly Arg Asp Asp Leu Glu Val Ile
1 5 10 15

Gly Leu Thr Phe Arg Lys Asp Leu Tyr Val Gln Thr Leu Gln Val Val
20 25 30

Pro Ala Glu Ser Ser Ser Pro Gln Gly Pro Leu Thr Val Leu Gln Glu
35 40 45

Arg Leu Leu His Lys Leu Gly Asp Asn Ala Tyr Pro Phe Thr Leu Gln
50 55 60

Met Val Thr Asn Leu Pro Cys Ser Val Thr Leu Gln Pro Gly Pro Glu
65 70 75 80

Asp Ala Gly Lys Pro Cys Gly Ile Asp Phe Glu Val Lys Ser Phe Cys
85 90 95

Ala

<210> 6466
<211> 388
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1397; "

<220>
<221> source
<223> /note="Gene Symbol: ARR3; "

<220>
<221> source
<223> /note="Gene Name:
arrestin 3, retinal (X-arrestin); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000480426"

<400> 6466
Met Ser Lys Val Phe Lys Lys Thr Ser Ser Asn Gly Lys Leu Ser Ile
1 5 10 15

Tyr Leu Gly Lys Arg Asp Phe Val Asp His Val Asp Thr Val Glu Pro
20 25 30

Ile Asp Gly Val Val Leu Val Asp Pro Glu Tyr Leu Lys Cys Arg Lys
35 40 45

Leu Phe Val Met Leu Thr Cys Ala Phe Arg Tyr Gly Arg Asp Asp Leu
50 55 60

Glu Val Ile Gly Leu Thr Phe Arg Lys Asp Leu Tyr Val Gln Thr Leu
65 70 75 80

Gln Val Val Pro Ala Glu Ser Ser Ser Pro Gln Gly Pro Leu Thr Val
85 90 95

Leu Gln Glu Arg Leu Leu His Lys Leu Gly Asp Asn Ala Tyr Pro Phe
100 105 110

Thr Leu Gln Met Val Thr Asn Leu Pro Cys Ser Val Thr Leu Gln Pro
115 120 125

Gly Pro Glu Asp Ala Gly Lys Pro Cys Gly Ile Asp Phe Glu Val Lys
130 135 140

Ser Phe Cys Ala Glu Asn Pro Glu Glu Thr Val Ser Lys Arg Asp Tyr
145 150 155 160

Val Arg Leu Val Val Arg Lys Val Gln Phe Ala Pro Pro Glu Ala Gly
165 170 175

Pro Gly Pro Ser Ala Gln Thr Ile Arg Arg Phe Leu Leu Ser Ala Gln
180 185 190

```
Pro Leu Gln Leu Gln Ala Trp Met Asp Arg Glu Val His Tyr His Gly
        195                 200                 205

Glu Pro Ile Ser Val Asn Val Ser Ile Asn Asn Cys Thr Asn Lys Val
    210                 215                 220

Ile Lys Lys Ile Lys Ile Ser Val Asp Gln Ile Thr Asp Val Val Leu
225                 230                 235                 240

Tyr Ser Leu Asp Lys Tyr Thr Lys Thr Val Phe Ile Gln Glu Phe Thr
                245                 250                 255

Glu Thr Val Ala Ala Asn Ser Ser Phe Ser Gln Ser Phe Ala Val Thr
            260                 265                 270

Pro Ile Leu Ala Ala Ser Cys Gln Lys Arg Gly Leu Ala Leu Asp Gly
        275                 280                 285

Lys Leu Lys His Glu Asp Thr Asn Leu Ala Ser Ser Thr Ile Ile Arg
    290                 295                 300

Pro Gly Met Asp Lys Glu Leu Leu Gly Ile Leu Val Ser Tyr Lys Val
305                 310                 315                 320

Arg Val Asn Leu Met Val Ser Cys Gly Gly Ile Leu Gly Asp Leu Thr
                325                 330                 335

Ala Ser Asp Val Gly Val Glu Leu Pro Leu Val Leu Ile His Pro Lys
            340                 345                 350

Pro Ser His Ala Ser Ala Ser Ser Glu Asp Ile Val Ile Glu Glu Phe
        355                 360                 365

Thr Arg Lys Gly Glu Glu Glu Ser Gln Lys Ala Val Glu Ala Glu Gly
    370                 375                 380

Asp Glu Gly Ser
385
```

<210> 6467
<211> 433
<212> PRT

<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1398; "

<220>
<221> source
<223> /note="Gene Symbol: ARRDC1; "

<220>
<221> source
<223> /note="Gene Name:
arrestin
domain containing 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q8N5I2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000360475"

<400> 6467

```
Met Gly Arg Val Gln Leu Phe Glu Ile Ser Leu Ser His Gly Arg Val
1               5                  10                  15

Val Tyr Ser Pro Gly Glu Pro Leu Ala Gly Thr Val Arg Val Arg Leu
            20                  25                  30

Gly Ala Pro Leu Pro Phe Arg Ala Ile Arg Val Thr Cys Ile Gly Ser
        35                  40                  45

Cys Gly Val Ser Asn Lys Ala Asn Asp Thr Ala Trp Val Val Glu Glu
    50                  55                  60

Gly Tyr Phe Asn Ser Ser Leu Ser Leu Ala Asp Lys Gly Ser Leu Pro
65                  70                  75                  80

Ala Gly Glu His Ser Phe Pro Phe Gln Phe Leu Leu Pro Ala Thr Ala
                85                  90                  95

Pro Thr Ser Phe Glu Gly Pro Phe Gly Lys Ile Val His Gln Val Arg
            100                 105                 110

Ala Ala Ile His Thr Pro Arg Phe Ser Lys Asp His Lys Cys Ser Leu
        115                 120                 125
```

```
Val Phe Tyr Ile Leu Ser Pro Leu Asn Leu Asn Ser Ile Pro Asp Ile
    130                 135                 140

Glu Gln Pro Asn Val Ala Ser Ala Thr Lys Lys Phe Ser Tyr Lys Leu
145                 150                 155                 160

Val Lys Thr Gly Ser Val Val Leu Thr Ala Ser Thr Asp Leu Arg Gly
                165                 170                 175

Tyr Val Val Gly Gln Ala Leu Gln Leu His Ala Asp Val Glu Asn Gln
            180                 185                 190

Ser Gly Lys Asp Thr Ser Pro Val Val Ala Ser Leu Leu Gln Lys Val
        195                 200                 205

Ser Tyr Lys Ala Lys Arg Trp Ile His Asp Val Arg Thr Ile Ala Glu
    210                 215                 220

Val Glu Gly Ala Gly Val Lys Ala Trp Arg Arg Ala Gln Trp His Glu
225                 230                 235                 240

Gln Ile Leu Val Pro Ala Leu Pro Gln Ser Ala Leu Pro Gly Cys Ser
                245                 250                 255

Leu Ile His Ile Asp Tyr Tyr Leu Gln Val Ser Leu Lys Ala Pro Glu
            260                 265                 270

Ala Thr Val Thr Leu Pro Val Phe Ile Gly Asn Ile Ala Val Asn His
        275                 280                 285

Ala Pro Val Ser Pro Arg Pro Gly Leu Gly Leu Pro Pro Gly Ala Pro
    290                 295                 300

Pro Leu Val Val Pro Ser Ala Pro Pro Gln Glu Glu Ala Glu Ala Glu
305                 310                 315                 320

Ala Ala Ala Gly Gly Pro His Phe Leu Asp Pro Val Phe Leu Ser Thr
                325                 330                 335

Lys Ser His Ser Gln Arg Gln Pro Leu Leu Ala Thr Leu Ser Ser Val
            340                 345                 350

Pro Gly Ala Pro Glu Pro Cys Pro Gln Asp Gly Ser Pro Ala Ser His
```

355 360 365

Pro Leu His Pro Pro Leu Cys Ile Ser Thr Gly Ala Thr Val Pro Tyr
370 375 380

Phe Ala Glu Gly Ser Gly Gly Pro Val Pro Thr Thr Ser Thr Leu Ile
385 390 395 400

Leu Pro Pro Glu Tyr Ser Ser Trp Gly Tyr Pro Tyr Glu Ala Pro Pro
405 410 415

Ser Tyr Glu Gln Ser Cys Gly Gly Val Glu Pro Ser Leu Thr Pro Glu
420 425 430

Ser

<210> 6468
<211> 177
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1398; "

<220>
<221> source
<223> /note="Gene Symbol: ARRDC1; "

<220>
<221> source
<223> /note="Gene Name:
arrestin
domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406247"

<400> 6468
Met Gly Arg Val Gln Leu Phe Glu Ile Ser Leu Ser His Gly Arg Val
1 5 10 15

Val Tyr Ser Pro Gly Glu Pro Leu Ala Gly Thr Val Arg Val Arg Leu
20 25 30

Gly Ala Pro Leu Pro Phe Arg Ala Ile Arg Val Thr Cys Ile Gly Ser
35 40 45

```
Cys Gly Val Ser Asn Lys Ala Asn Asp Thr Ala Trp Val Val Glu Glu
    50                  55                  60

Gly Tyr Phe Asn Ser Ser Leu Ser Leu Ala Asp Lys Gly Ser Leu Pro
65                  70                  75                  80

Ala Gly Glu His Ser Phe Pro Phe Gln Phe Leu Leu Pro Ala Thr Ala
                85                  90                  95

Pro Thr Ser Phe Glu Gly Pro Phe Gly Lys Ile Val His Gln Val Arg
            100                 105                 110

Ala Ala Ile His Thr Pro Arg Phe Ser Lys Asp His Lys Cys Ser Leu
        115                 120                 125

Val Phe Tyr Ile Leu Ser Pro Leu Asn Leu Asn Ser Ile Pro Asp Ile
    130                 135                 140

Glu Gly Ser Ser Leu Arg Thr Pro Ala Lys Pro Leu Pro Gly Pro Pro
145                 150                 155                 160

Pro Lys Gln Pro Asn Val Ala Ser Ala Thr Lys Lys Phe Ser Tyr Lys
                165                 170                 175

Leu
```

<210> 6469
<211> 271
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1398; "

<220>
<221> source
<223> /note="Gene Symbol: ARRDC1; "

<220>
<221> source
<223> /note="Gene Name:
arrestin
domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406833"

<400> 6469
Met Gly Arg Val Gln Leu Phe Glu Ile Ser Leu Ser His Gly Arg Val
1 5 10 15

Val Tyr Ser Pro Gly Glu Pro Leu Ala Gly Thr Val Arg Val Arg Leu
20 25 30

Gly Ala Pro Leu Pro Phe Arg Ala Ile Arg Val Thr Cys Ile Gly Ser
35 40 45

Cys Gly Val Ser Asn Lys Ala Asn Asp Thr Ala Trp Val Val Glu Glu
50 55 60

Gly Tyr Phe Asn Ser Ser Leu Ser Leu Ala Asp Lys Gly Ser Leu Pro
65 70 75 80

Ala Gly Glu His Ser Phe Pro Phe Gln Phe Leu Leu Pro Ala Thr Ala
85 90 95

Pro Thr Ser Phe Glu Gly Pro Phe Gly Lys Ile Val His Gln Val Arg
100 105 110

Ala Ala Ile His Thr Pro Arg Phe Ser Lys Asp His Lys Cys Ser Leu
115 120 125

Val Phe Tyr Ile Leu Ser Pro Leu Asn Leu Asn Ser Ile Pro Asp Ile
130 135 140

Glu Ala Leu Gln Leu His Ala Asp Val Glu Asn Gln Ser Gly Lys Asp
145 150 155 160

Thr Ser Pro Val Val Ala Ser Leu Leu Gln Lys Val Ser Tyr Lys Ala
165 170 175

Lys Arg Trp Ile His Asp Val Arg Thr Ile Ala Glu Val Glu Gly Ala
180 185 190

Gly Val Lys Ala Trp Arg Arg Ala Gln Trp His Glu Gln Ile Leu Val
195 200 205

```
Pro Ala Leu Pro Gln Ser Ala Leu Pro Gly Cys Ser Leu Ile His Ile
    210                 215                 220

Asp Tyr Tyr Leu Gln Val Ser Leu Lys Ala Pro Glu Ala Thr Val Thr
225                 230                 235                 240

Leu Pro Val Phe Ile Gly Asn Ile Ala Val Asn His Ala Pro Val Ser
                245                 250                 255

Pro Arg Pro Gly Leu Gly Leu Pro Pro Gly Ala Pro Pro Leu Val
            260                 265                 270


<210> 6470
<211> 123
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1398; "

<220>
<221> source
<223> /note="Gene Symbol: ARRDC1; "

<220>
<221> source
<223> /note="Gene Name:
      arrestin
      domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000435996"

<400> 6470
Met Gly Arg Val Gln Leu Phe Glu Ile Ser Leu Ser His Gly Arg Val
1               5                   10                  15

Val Tyr Ser Pro Gly Glu Pro Leu Ala Gly Thr Val Arg Val Arg Leu
            20                  25                  30

Gly Ala Pro Leu Pro Phe Arg Ala Ile Arg Val Thr Cys Ile Gly Ser
        35                  40                  45

Cys Gly Val Ser Asn Lys Ala Asn Asp Thr Ala Trp Val Val Glu Glu
    50                  55                  60

Gly Tyr Phe Asn Ser Ser Leu Ser Leu Ala Asp Lys Gly Lys Phe Gly
```

65 70 75 80

Ser Gln Phe Pro Ser Gly Asp Pro Trp Gly Gln Pro Leu Glu Trp Gly
85 90 95

Leu Ser Val Leu Ser Ser Pro Phe Pro Arg Ser Ala Ser Trp Ile Trp
100 105 110

His Trp Pro Ile Leu Ser Gln Gly Cys Gly Pro
115 120

<210> 6471
<211> 407
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1399; "

<220>
<221> source
<223> /note="Gene Symbol: ARRDC2; "

<220>
<221> source
<223> /note="Gene Name:
arrestin
domain containing 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q8TBH0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000222250"

<400> 6471
Met Leu Phe Asp Lys Val Lys Ala Phe Ser Val Gln Leu Asp Gly Ala
1 5 10 15

Thr Ala Gly Val Glu Pro Val Phe Ser Gly Gly Gln Ala Val Ala Gly
20 25 30

Arg Val Leu Leu Glu Leu Ser Ser Ala Ala Arg Val Gly Ala Leu Arg
35 40 45

Leu Arg Ala Arg Gly Arg Ala His Val His Trp Thr Glu Ser Arg Ser
50 55 60

```
Ala Gly Ser Ser Thr Ala Tyr Thr Gln Ser Tyr Ser Glu Arg Val Glu
65                  70                  75                  80

Val Val Ser His Arg Ala Thr Leu Leu Ala Pro Asp Thr Gly Glu Thr
                85                  90                  95

Thr Thr Leu Pro Pro Gly Arg His Glu Phe Leu Phe Ser Phe Gln Leu
            100                 105                 110

Pro Pro Thr Leu Val Thr Ser Phe Glu Gly Lys His Gly Ser Val Arg
        115                 120                 125

Tyr Cys Ile Lys Ala Thr Leu His Arg Pro Trp Val Pro Ala Arg Arg
    130                 135                 140

Ala Arg Lys Val Phe Thr Val Ile Glu Pro Val Asp Ile Asn Thr Pro
145                 150                 155                 160

Ala Leu Leu Ala Pro Gln Ala Gly Ala Arg Glu Lys Val Ala Arg Ser
                165                 170                 175

Trp Tyr Cys Asn Arg Gly Leu Val Ser Leu Ser Ala Lys Ile Asp Arg
            180                 185                 190

Lys Gly Tyr Thr Pro Gly Glu Val Ile Pro Val Phe Ala Glu Ile Asp
        195                 200                 205

Asn Gly Ser Thr Arg Pro Val Leu Pro Arg Ala Ala Val Val Gln Thr
    210                 215                 220

Gln Thr Phe Met Ala Arg Gly Ala Arg Lys Gln Lys Arg Ala Val Val
225                 230                 235                 240

Ala Ser Leu Ala Gly Glu Pro Val Gly Pro Gly Gln Arg Ala Leu Trp
                245                 250                 255

Gln Gly Arg Ala Leu Arg Ile Pro Pro Val Gly Pro Ser Ile Leu His
            260                 265                 270

Cys Arg Val Leu His Val Asp Tyr Ala Leu Lys Val Cys Val Asp Ile
        275                 280                 285
```

```
Pro Gly Thr Ser Lys Leu Leu Leu Glu Leu Pro Leu Val Ile Gly Thr
    290                 295                 300

Ile Pro Leu His Pro Phe Gly Ser Arg Ser Ser Ser Val Gly Ser His
305                 310                 315                 320

Ala Ser Phe Leu Leu Asp Trp Arg Leu Gly Ala Leu Pro Glu Arg Pro
                325                 330                 335

Glu Ala Pro Pro Glu Tyr Ser Glu Val Val Ala Asp Thr Glu Glu Ala
            340                 345                 350

Ala Leu Gly Gln Ser Pro Phe Pro Leu Pro Gln Asp Pro Asp Met Ser
        355                 360                 365

Leu Glu Gly Pro Phe Phe Ala Tyr Ile Gln Glu Phe Arg Tyr Arg Pro
    370                 375                 380

Pro Pro Leu Tyr Ser Glu Glu Asp Pro Asn Pro Leu Leu Gly Asp Met
385                 390                 395                 400

Arg Pro Arg Cys Met Thr Cys
                405


<210> 6472
<211> 402
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1399; "

<220>
<221> source
<223> /note="Gene Symbol: ARRDC2; "

<220>
<221> source
<223> /note="Gene Name:
      arrestin
      domain containing 2; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8TBH0; "

<220>
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<221> source
<223> /note="ENSP ID: ENSP00000368977"

<400> 6472
Met Arg Ser Gly Gly Val Arg Ser Phe Ala Leu Glu Leu Ala Arg Gly
1 5 10 15

Pro Gly Gly Ala Tyr Arg Gly Gly Glu Arg Leu Cys Gly Arg Val Leu
20 25 30

Leu Glu Ala Ala Ala Pro Leu Arg Val Arg Ala Leu Glu Val Lys Ala
35 40 45

Arg Gly Gly Ala Ala Thr His Trp Leu Glu Gly Arg Ser Val Gly Val
50 55 60

Asn Ala Val Ser Ser Asp Tyr Ala Ala Ala Glu Thr Tyr Leu Arg Arg
65 70 75 80

Arg Gln Leu Leu Leu Arg Asp Thr Gly Glu Thr Thr Thr Leu Pro Pro
85 90 95

Gly Arg His Glu Phe Leu Phe Ser Phe Gln Leu Pro Pro Thr Leu Val
100 105 110

Thr Ser Phe Glu Gly Lys His Gly Ser Val Arg Tyr Cys Ile Lys Ala
115 120 125

Thr Leu His Arg Pro Trp Val Pro Ala Arg Arg Ala Arg Lys Val Phe
130 135 140

Thr Val Ile Glu Pro Val Asp Ile Asn Thr Pro Ala Leu Leu Ala Pro
145 150 155 160

Gln Ala Gly Ala Arg Glu Lys Val Ala Arg Ser Trp Tyr Cys Asn Arg
165 170 175

Gly Leu Val Ser Leu Ser Ala Lys Ile Asp Arg Lys Gly Tyr Thr Pro
180 185 190

Gly Glu Val Ile Pro Val Phe Ala Glu Ile Asp Asn Gly Ser Thr Arg
195 200 205

Pro Val Leu Pro Arg Ala Ala Val Val Gln Thr Gln Thr Phe Met Ala

```
    210                 215                 220

Arg Gly Ala Arg Lys Gln Lys Arg Ala Val Val Ala Ser Leu Ala Gly
225                 230                 235                 240

Glu Pro Val Gly Pro Gly Gln Arg Ala Leu Trp Gln Gly Arg Ala Leu
                245                 250                 255

Arg Ile Pro Pro Val Gly Pro Ser Ile Leu His Cys Arg Val Leu His
            260                 265                 270

Val Asp Tyr Ala Leu Lys Val Cys Val Asp Ile Pro Gly Thr Ser Lys
        275                 280                 285

Leu Leu Leu Glu Leu Pro Leu Val Ile Gly Thr Ile Pro Leu His Pro
    290                 295                 300

Phe Gly Ser Arg Ser Ser Ser Val Gly Ser His Ala Ser Phe Leu Leu
305                 310                 315                 320

Asp Trp Arg Leu Gly Ala Leu Pro Glu Arg Pro Glu Ala Pro Pro Glu
                325                 330                 335

Tyr Ser Glu Val Val Ala Asp Thr Glu Glu Ala Ala Leu Gly Gln Ser
            340                 345                 350

Pro Phe Pro Leu Pro Gln Asp Pro Asp Met Ser Leu Glu Gly Pro Phe
        355                 360                 365

Phe Ala Tyr Ile Gln Glu Phe Arg Tyr Arg Pro Pro Pro Leu Tyr Ser
    370                 375                 380

Glu Glu Asp Pro Asn Pro Leu Leu Gly Asp Met Arg Pro Arg Cys Met
385                 390                 395                 400

Thr Cys
```

<210> 6473
<211> 6
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1399; "

<220>
<221> source
<223> /note="Gene Symbol: ARRDC2; "

<220>
<221> source
<223> /note="Gene Name:
arrestin
domain containing 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000476804"

<400> 6473
Met Ala Arg Gly Ala Arg
1 5

<210> 6474
<211> 322
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1399; "

<220>
<221> source
<223> /note="Gene Symbol: ARRDC2; "

<220>
<221> source
<223> /note="Gene Name:
arrestin
domain containing 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000477100"

<400> 6474
Met Leu Phe Asp Lys Val Lys Ala Phe Ser Val Gln Leu Asp Gly Ala
1 5 10 15

Thr Ala Gly Val Glu Pro Val Phe Ser Gly Gly Gln Ala Val Ala Gly
20 25 30

Arg Val Leu Leu Glu Leu Ser Ser Ala Ala Arg Val Gly Ala Leu Arg
35 40 45

```
Leu Arg Ala Arg Gly Arg Ala His Val His Trp Thr Glu Ser Arg Ser
    50                  55                  60

Ala Gly Ser Ser Thr Ala Tyr Thr Gln Ser Tyr Ser Glu Arg Val Glu
65                  70                  75                  80

Val Val Ser His Arg Ala Thr Leu Leu Ala Pro Gly Thr Asp Gly Gly
                85                  90                  95

Pro Leu Leu Gln His Gln Leu Cys Ala Ser His His Leu Asp Gly Gly
            100                 105                 110

Thr Ser Val Ser Pro Gly Thr Pro Ala Gln Pro Leu Ser Arg Leu Leu
        115                 120                 125

Phe Leu Leu Pro Ala Asp Thr Gly Glu Thr Thr Thr Leu Pro Pro Gly
    130                 135                 140

Arg His Glu Phe Leu Phe Ser Phe Gln Leu Pro Pro Thr Leu Val Thr
145                 150                 155                 160

Ser Phe Glu Gly Lys His Gly Ser Val Arg Tyr Cys Ile Lys Ala Thr
                165                 170                 175

Leu His Arg Pro Trp Val Pro Ala Arg Arg Ala Arg Lys Val Phe Thr
            180                 185                 190

Val Ile Glu Pro Val Asp Ile Asn Thr Pro Ala Leu Leu Ala Pro Gln
        195                 200                 205

Ala Gly Ala Arg Glu Lys Val Ala Arg Ser Trp Tyr Cys Asn Arg Gly
    210                 215                 220

Leu Val Ser Leu Ser Ala Lys Ile Asp Arg Lys Gly Tyr Thr Pro Gly
225                 230                 235                 240

Glu Val Ile Pro Val Phe Ala Glu Ile Asp Asn Gly Ser Thr Arg Pro
                245                 250                 255

Val Leu Pro Arg Ala Ala Val Val Gln Thr Gln Thr Phe Met Ala Arg
            260                 265                 270
```

```
Gly Ala Arg Lys Gln Lys Arg Ala Val Val Ala Ser Leu Ala Gly Glu
        275                 280                 285

Pro Val Gly Pro Gly Gln Arg Ala Leu Trp Gln Gly Arg Ala Leu Arg
    290                 295                 300

Ile Pro Pro Val Gly Pro Ser Ile Leu His Cys Arg Val Leu His Val
305                 310                 315                 320

Asp Tyr
```

<210> 6475
<211> 414
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1400; "

<220>
<221> source
<223> /note="Gene Symbol: ARRDC3; "

<220>
<221> source
<223> /note="Gene Name:
arrestin
domain containing 3; "

<220>
<221> source
<223> /note="Uniprot ID: Q96B67; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000265138"

<400> 6475

```
Met Val Leu Gly Lys Val Lys Ser Leu Thr Ile Ser Phe Asp Cys Leu
1               5                   10                  15

Asn Asp Ser Asn Val Pro Val Tyr Ser Ser Gly Asp Thr Val Ser Gly
            20                  25                  30

Arg Val Asn Leu Glu Val Thr Gly Glu Ile Arg Val Lys Ser Leu Lys
        35                  40                  45

Ile His Ala Arg Gly His Ala Lys Val Arg Trp Thr Glu Ser Arg Asn
```

```
    50                  55                  60

Ala Gly Ser Asn Thr Ala Tyr Thr Gln Asn Tyr Thr Glu Glu Val Glu
65                  70                  75                  80

Tyr Phe Asn His Lys Asp Ile Leu Ile Gly His Glu Arg Asp Asp Asp
                85                  90                  95

Asn Ser Glu Glu Gly Phe His Thr Ile His Ser Gly Arg His Glu Tyr
            100                 105                 110

Ala Phe Ser Phe Glu Leu Pro Gln Thr Pro Leu Ala Thr Ser Phe Glu
        115                 120                 125

Gly Arg His Gly Ser Val Arg Tyr Trp Val Lys Ala Glu Leu His Arg
    130                 135                 140

Pro Trp Leu Leu Pro Val Lys Leu Lys Lys Glu Phe Thr Val Phe Glu
145                 150                 155                 160

His Ile Asp Ile Asn Thr Pro Ser Leu Leu Ser Pro Gln Ala Gly Thr
                165                 170                 175

Lys Glu Lys Thr Leu Cys Cys Trp Phe Cys Thr Ser Gly Pro Ile Ser
            180                 185                 190

Leu Ser Ala Lys Ile Glu Arg Lys Gly Tyr Thr Pro Gly Glu Ser Ile
        195                 200                 205

Gln Ile Phe Ala Glu Ile Glu Asn Cys Ser Ser Arg Met Val Val Pro
    210                 215                 220

Lys Ala Ala Ile Tyr Gln Thr Gln Ala Phe Tyr Ala Lys Gly Lys Met
225                 230                 235                 240

Lys Glu Val Lys Gln Leu Val Ala Asn Leu Arg Gly Glu Ser Leu Ser
                245                 250                 255

Ser Gly Lys Thr Glu Thr Trp Asn Gly Lys Leu Leu Lys Ile Pro Pro
            260                 265                 270

Val Ser Pro Ser Ile Leu Asp Cys Ser Ile Ile Arg Val Glu Tyr Ser
        275                 280                 285
```

```
Leu Met Val Tyr Val Asp Ile Pro Gly Ala Met Asp Leu Phe Leu Asn
    290                 295                 300

Leu Pro Leu Val Ile Gly Thr Ile Pro Leu His Pro Phe Gly Ser Arg
305                 310                 315                 320

Thr Ser Ser Val Ser Ser Gln Cys Ser Met Asn Met Asn Trp Leu Ser
                325                 330                 335

Leu Ser Leu Pro Glu Arg Pro Glu Ala Pro Pro Ser Tyr Ala Glu Val
            340                 345                 350

Val Thr Glu Glu Gln Arg Arg Asn Asn Leu Ala Pro Val Ser Ala Cys
        355                 360                 365

Asp Asp Phe Glu Arg Ala Leu Gln Gly Pro Leu Phe Ala Tyr Ile Gln
    370                 375                 380

Glu Phe Arg Phe Leu Pro Pro Pro Leu Tyr Ser Glu Ile Asp Pro Asn
385                 390                 395                 400

Pro Asp Gln Ser Ala Asp Asp Arg Pro Ser Cys Pro Ser Arg
                405                 410


<210> 6476
<211> 418
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1401; "

<220>
<221> source
<223> /note="Gene Symbol: ARRDC4; "

<220>
<221> source
<223> /note="Gene Name:
      arrestin
      domain containing 4; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8NCT1; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000268042"

<400> 6476
Met Gly Gly Glu Ala Gly Cys Ala Ala Ala Val Gly Ala Glu Gly Arg
1   5   10   15

Val Lys Ser Leu Gly Leu Val Phe Glu Asp Glu Arg Lys Gly Cys Tyr
            20   25   30

Ser Ser Gly Glu Thr Val Ala Gly His Val Leu Leu Glu Ala Ser Glu
        35   40   45

Pro Val Ala Leu Arg Ala Leu Arg Leu Glu Ala Gln Gly Arg Ala Thr
    50   55   60

Ala Ala Trp Gly Pro Ser Thr Cys Pro Arg Ala Ser Ala Ser Thr Ala
65   70   75   80

Ala Leu Ala Val Phe Ser Glu Val Glu Tyr Leu Asn Val Arg Leu Ser
                85   90   95

Leu Arg Glu Pro Pro Ala Gly Glu Gly Ile Ile Leu Leu Gln Pro Gly
            100   105   110

Lys His Glu Phe Pro Phe Arg Phe Gln Leu Pro Ser Glu Pro Leu Val
        115   120   125

Thr Ser Phe Thr Gly Lys Tyr Gly Ser Ile Gln Tyr Cys Val Arg Ala
    130   135   140

Val Leu Glu Arg Pro Lys Val Pro Asp Gln Ser Val Lys Arg Glu Leu
145   150   155   160

Gln Val Val Ser His Val Asp Val Asn Thr Pro Ala Leu Leu Thr Pro
                165   170   175

Val Leu Lys Thr Gln Glu Lys Met Val Gly Cys Trp Phe Phe Thr Ser
            180   185   190

Gly Pro Val Ser Leu Ser Ala Lys Ile Glu Arg Lys Gly Tyr Cys Asn
        195   200   205

```
Gly Glu Ala Ile Pro Ile Tyr Ala Glu Ile Glu Asn Cys Ser Ser Arg
    210                 215                 220

Leu Ile Val Pro Lys Ala Ala Ile Phe Gln Thr Gln Thr Tyr Leu Ala
225                 230                 235                 240

Ser Gly Lys Thr Lys Thr Ile Arg His Met Val Ala Asn Val Arg Gly
                245                 250                 255

Asn His Ile Ala Ser Gly Ser Thr Asp Thr Trp Asn Gly Lys Thr Leu
            260                 265                 270

Lys Ile Pro Pro Val Thr Pro Ser Ile Leu Asp Cys Cys Ile Ile Arg
        275                 280                 285

Val Asp Tyr Ser Leu Ala Val Tyr Ile His Ile Pro Gly Ala Lys Lys
    290                 295                 300

Leu Met Leu Glu Leu Pro Leu Val Ile Gly Thr Ile Pro Tyr Asn Gly
305                 310                 315                 320

Phe Gly Ser Arg Asn Ser Ser Ile Ala Ser Gln Phe Ser Met Asp Met
                325                 330                 335

Ser Trp Leu Thr Leu Thr Leu Pro Glu Gln Pro Glu Ala Pro Pro Asn
            340                 345                 350

Tyr Ala Asp Val Val Ser Glu Glu Glu Phe Ser Arg His Ile Pro Pro
        355                 360                 365

Tyr Pro Gln Pro Pro Asn Cys Glu Gly Glu Val Cys Cys Pro Val Phe
    370                 375                 380

Ala Cys Ile Gln Glu Phe Arg Phe Gln Pro Pro Pro Leu Tyr Ser Glu
385                 390                 395                 400

Val Asp Pro His Pro Ser Asp Val Glu Glu Ser Gln Pro Val Ser Phe
                405                 410                 415

Ile Leu
```

<210> 6477

<211> 342
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1402; "

<220>
<221> source
<223> /note="Gene Symbol: ARRDC5; "

<220>
<221> source
<223> /note="Gene Name:
arrestin
domain containing 5; "

<220>
<221> source
<223> /note="Uniprot ID: A6NEK1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000371200"

<400> 6477

```
Met Gly Asp Arg Glu Glu Cys Leu Ser Thr Pro Gln Pro Pro Met Ser
1               5                  10                  15

Val Val Lys Ser Ile Glu Leu Val Leu Pro Glu Asp Arg Ile Tyr Leu
            20                  25                  30

Ala Gly Ser Ser Ile Lys Gly Gln Val Ile Leu Thr Leu Asn Ser Thr
        35                  40                  45

Leu Val Asp Pro Ile Val Lys Val Glu Leu Val Gly Arg Gly Tyr Val
    50                  55                  60

Glu Trp Ser Glu Glu Ala Gly Ala Ser Cys Asp Tyr Ser Arg Asn Val
65                  70                  75                  80

Ile Cys Asn Asn Lys Ala Asp Tyr Val His Lys Thr Lys Thr Phe Pro
                85                  90                  95

Val Glu Asp Asn Trp Leu Ser Ala Gly Ser His Thr Phe Asp Phe His
            100                 105                 110

Phe Asn Leu Pro Pro Arg Leu Pro Ser Thr Phe Thr Ser Lys Phe Gly
        115                 120                 125
```

```
His Val Phe Tyr Phe Val Gln Ala Ser Cys Met Gly Arg Glu His Ile
    130                 135                 140

Leu Ala Lys Lys Arg Met Tyr Leu Leu Val Gln Gly Thr Ser Thr Phe
145                 150                 155                 160

His Lys Glu Thr Pro Phe Gln Asn Pro Leu Phe Val Glu Ala Glu Glu
                165                 170                 175

Lys Val Ser Tyr Asn Cys Cys Arg Gln Gly Thr Val Cys Leu Gln Ile
            180                 185                 190

Gln Met Glu Arg Asn Thr Phe Thr Pro Gly Glu Lys Val Val Phe Thr
        195                 200                 205

Thr Glu Ile Asn Asn Gln Thr Ser Lys Cys Ile Lys Thr Val Val Phe
    210                 215                 220

Ala Leu Tyr Ala His Ile Gln Tyr Glu Gly Phe Thr Pro Ser Ala Glu
225                 230                 235                 240

Arg Arg Ser Arg Leu Asp Ser Ser Glu Leu Leu Arg Gln Glu Ala Asn
                245                 250                 255

Thr Pro Val Thr Arg Phe Asn Thr Thr Lys Val Val Ser Thr Phe Asn
            260                 265                 270

Leu Pro Leu Leu Leu Ser Val Ser Ser Ser Thr Gln Asp Gly Glu Ile
        275                 280                 285

Met His Thr Arg Tyr Glu Leu Val Thr Thr Val His Leu Pro Trp Ser
    290                 295                 300

Leu Thr Ser Leu Lys Ala Lys Val Pro Ile Ile Ile Thr Ser Ala Ser
305                 310                 315                 320

Val Asp Ser Ala Ile Cys Gln Leu Ser Glu Asp Gly Val Leu Pro Val
                325                 330                 335

Asn Pro Asp His Gln Asn
            340
```

<210> 6478
<211> 410
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1403; "

<220>
<221> source
<223> /note="Gene Symbol: ARRB1; "

<220>
<221> source
<223> /note="Gene Name:
arrestin, beta 1; "

<220>
<221> source
<223> /note="Uniprot ID: P49407; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000353124"

<400> 6478
Met Gly Asp Lys Gly Thr Arg Val Phe Lys Lys Ala Ser Pro Asn Gly
1   5   10   15

Lys Leu Thr Val Tyr Leu Gly Lys Arg Asp Phe Val Asp His Ile Asp
            20   25   30

Leu Val Asp Pro Val Asp Gly Val Val Leu Val Asp Pro Glu Tyr Leu
        35   40   45

Lys Glu Arg Arg Val Tyr Val Thr Leu Thr Cys Ala Phe Arg Tyr Gly
    50   55   60

Arg Glu Asp Leu Asp Val Leu Gly Leu Thr Phe Arg Lys Asp Leu Phe
65   70   75   80

Val Ala Asn Val Gln Ser Phe Pro Pro Ala Pro Glu Asp Lys Lys Pro
                85   90   95

Leu Thr Arg Leu Gln Glu Arg Leu Ile Lys Lys Leu Gly Glu His Ala
            100   105   110

Tyr Pro Phe Thr Phe Glu Ile Pro Pro Asn Leu Pro Cys Ser Val Thr

```
        115                 120                 125

Leu Gln Pro Gly Pro Glu Asp Thr Gly Lys Ala Cys Gly Val Asp Tyr
    130                 135                 140

Glu Val Lys Ala Phe Cys Ala Glu Asn Leu Glu Glu Lys Ile His Lys
145                 150                 155                 160

Arg Asn Ser Val Arg Leu Val Ile Arg Lys Val Gln Tyr Ala Pro Glu
                165                 170                 175

Arg Pro Gly Pro Gln Pro Thr Ala Glu Thr Thr Arg Gln Phe Leu Met
            180                 185                 190

Ser Asp Lys Pro Leu His Leu Glu Ala Ser Leu Asp Lys Glu Ile Tyr
        195                 200                 205

Tyr His Gly Glu Pro Ile Ser Val Asn Val His Val Thr Asn Asn Thr
    210                 215                 220

Asn Lys Thr Val Lys Lys Ile Lys Ile Ser Val Arg Gln Tyr Ala Asp
225                 230                 235                 240

Ile Cys Leu Phe Asn Thr Ala Gln Tyr Lys Cys Pro Val Ala Met Glu
                245                 250                 255

Glu Ala Asp Asp Thr Val Ala Pro Ser Ser Thr Phe Cys Lys Val Tyr
            260                 265                 270

Thr Leu Thr Pro Phe Leu Ala Asn Asn Arg Glu Lys Arg Gly Leu Ala
        275                 280                 285

Leu Asp Gly Lys Leu Lys His Glu Asp Thr Asn Leu Ala Ser Ser Thr
    290                 295                 300

Leu Leu Arg Glu Gly Ala Asn Arg Glu Ile Leu Gly Ile Ile Val Ser
305                 310                 315                 320

Tyr Lys Val Lys Val Lys Leu Val Val Ser Arg Gly Gly Asp Val Ala
                325                 330                 335

Val Glu Leu Pro Phe Thr Leu Met His Pro Lys Pro Lys Glu Glu Pro
            340                 345                 350
```

```
Pro His Arg Glu Val Pro Glu Asn Glu Thr Pro Val Asp Thr Asn Leu
        355                 360                 365

Ile Glu Leu Asp Thr Asn Asp Asp Asp Ile Val Phe Glu Asp Phe Ala
    370                 375                 380

Arg Gln Arg Leu Lys Gly Met Lys Asp Asp Lys Glu Glu Glu Glu Asp
385                 390                 395                 400

Gly Thr Gly Ser Pro Gln Leu Asn Asn Arg
                405                 410


<210> 6479
<211> 418
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1403; "

<220>
<221> source
<223> /note="Gene Symbol: ARRB1; "

<220>
<221> source
<223> /note="Gene Name:
      arrestin, beta 1; "

<220>
<221> source
<223> /note="Uniprot ID:  P49407; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000409581"

<400> 6479
Met Gly Asp Lys Gly Thr Arg Val Phe Lys Lys Ala Ser Pro Asn Gly
1               5                   10                  15

Lys Leu Thr Val Tyr Leu Gly Lys Arg Asp Phe Val Asp His Ile Asp
            20                  25                  30

Leu Val Asp Pro Val Asp Gly Val Val Leu Val Asp Pro Glu Tyr Leu
        35                  40                  45
```

```
Lys Glu Arg Arg Val Tyr Val Thr Leu Thr Cys Ala Phe Arg Tyr Gly
    50                  55                  60

Arg Glu Asp Leu Asp Val Leu Gly Leu Thr Phe Arg Lys Asp Leu Phe
65                  70                  75                  80

Val Ala Asn Val Gln Ser Phe Pro Pro Ala Pro Glu Asp Lys Lys Pro
                85                  90                  95

Leu Thr Arg Leu Gln Glu Arg Leu Ile Lys Lys Leu Gly Glu His Ala
            100                 105                 110

Tyr Pro Phe Thr Phe Glu Ile Pro Pro Asn Leu Pro Cys Ser Val Thr
        115                 120                 125

Leu Gln Pro Gly Pro Glu Asp Thr Gly Lys Ala Cys Gly Val Asp Tyr
    130                 135                 140

Glu Val Lys Ala Phe Cys Ala Glu Asn Leu Glu Glu Lys Ile His Lys
145                 150                 155                 160

Arg Asn Ser Val Arg Leu Val Ile Arg Lys Val Gln Tyr Ala Pro Glu
                165                 170                 175

Arg Pro Gly Pro Gln Pro Thr Ala Glu Thr Thr Arg Gln Phe Leu Met
            180                 185                 190

Ser Asp Lys Pro Leu His Leu Glu Ala Ser Leu Asp Lys Glu Ile Tyr
        195                 200                 205

Tyr His Gly Glu Pro Ile Ser Val Asn Val His Val Thr Asn Asn Thr
    210                 215                 220

Asn Lys Thr Val Lys Lys Ile Lys Ile Ser Val Arg Gln Tyr Ala Asp
225                 230                 235                 240

Ile Cys Leu Phe Asn Thr Ala Gln Tyr Lys Cys Pro Val Ala Met Glu
                245                 250                 255

Glu Ala Asp Asp Thr Val Ala Pro Ser Ser Thr Phe Cys Lys Val Tyr
            260                 265                 270

Thr Leu Thr Pro Phe Leu Ala Asn Asn Arg Glu Lys Arg Gly Leu Ala
```

```
        275                 280                 285

Leu Asp Gly Lys Leu Lys His Glu Asp Thr Asn Leu Ala Ser Ser Thr
    290                 295                 300

Leu Leu Arg Glu Gly Ala Asn Arg Glu Ile Leu Gly Ile Ile Val Ser
305                 310                 315                 320

Tyr Lys Val Lys Val Lys Leu Val Val Ser Arg Gly Gly Leu Leu Gly
                325                 330                 335

Asp Leu Ala Ser Ser Asp Val Ala Val Glu Leu Pro Phe Thr Leu Met
            340                 345                 350

His Pro Lys Pro Lys Glu Glu Pro Pro His Arg Glu Val Pro Glu Asn
        355                 360                 365

Glu Thr Pro Val Asp Thr Asn Leu Ile Glu Leu Asp Thr Asn Asp Asp
    370                 375                 380

Asp Ile Val Phe Glu Asp Phe Ala Arg Gln Arg Leu Lys Gly Met Lys
385                 390                 395                 400

Asp Asp Lys Glu Glu Glu Glu Asp Gly Thr Gly Ser Pro Gln Leu Asn
                405                 410                 415

Asn Arg
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<210> 6480
<211> 72
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1403; "

<220>
<221> source
<223> /note="Gene Symbol: ARRB1; "

<220>
<221> source
<223> /note="Gene Name:
arrestin, beta 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000433137"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6480
Xaa Val Cys Leu Pro Leu Pro Cys Arg Cys Ser Gly Glu Thr Thr Pro
1 5 10 15

Thr Pro Gly Pro Val Pro Ser Ala Glu Cys Ser Arg Arg Pro Val Gln
            20 25 30

Met Glu Ser Ser Pro Ser Thr Trp Glu Ser Gly Thr Leu Trp Thr Thr
        35 40 45

Ser Thr Ser Trp Thr Leu Trp Met Val Trp Ser Trp Trp Ile Leu Ser
    50 55 60

Ile Ser Lys Ser Gly Glu Ser Met
65 70

<210> 6481
<211> 257
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1403; "

<220>
<221> source
<223> /note="Gene Symbol: ARRB1; "

<220>
<221> source
<223> /note="Gene Name:
      arrestin, beta 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000433171"

<400> 6481
Met Gly Val Phe Lys Lys Ala Ser Pro Asn Gly Lys Leu Thr Val Tyr
1 5 10 15

```
Leu Gly Lys Arg Asp Phe Val Asp His Ile Asp Leu Val Asp Pro Val
            20                  25                  30

Asp Gly Val Val Leu Val Asp Pro Glu Tyr Leu Lys Glu Arg Arg Val
        35                  40                  45

Tyr Val Thr Leu Thr Cys Ala Phe Arg Tyr Gly Arg Glu Asp Leu Asp
    50                  55                  60

Val Leu Gly Leu Thr Phe Arg Lys Asp Leu Phe Val Ala Asn Val Gln
65                  70                  75                  80

Ser Phe Pro Pro Ala Pro Glu Asp Lys Lys Pro Leu Thr Arg Leu Gln
                85                  90                  95

Glu Arg Leu Ile Lys Lys Leu Gly Glu His Ala Tyr Pro Phe Thr Phe
            100                 105                 110

Glu Ile Pro Pro Asn Leu Pro Cys Ser Val Thr Leu Gln Pro Gly Pro
        115                 120                 125

Glu Asp Thr Gly Lys Ala Cys Gly Val Asp Tyr Glu Val Lys Ala Phe
    130                 135                 140

Cys Ala Glu Asn Leu Glu Glu Lys Ile His Lys Arg Asn Ser Val Arg
145                 150                 155                 160

Leu Val Ile Arg Lys Val Gln Tyr Ala Pro Glu Arg Pro Gly Pro Gln
                165                 170                 175

Pro Thr Ala Glu Thr Thr Arg Gln Phe Leu Met Ser Asp Lys Pro Leu
            180                 185                 190

His Leu Glu Ala Ser Leu Asp Lys Glu Ile Tyr Tyr His Gly Glu Pro
        195                 200                 205

Ile Ser Val Asn Val His Val Thr Asn Asn Thr Asn Lys Thr Val Lys
    210                 215                 220

Lys Ile Lys Ile Ser Val Arg Gln Tyr Ala Asp Ile Cys Leu Phe Asn
225                 230                 235                 240
```

Thr Ala Gln Tyr Lys Cys Pro Val Ala Met Glu Glu Ala Asp Asp Thr
245 250 255

Val

<210> 6482
<211> 69
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1403; "

<220>
<221> source
<223> /note="Gene Symbol: ARRB1; "

<220>
<221> source
<223> /note="Gene Name:
arrestin, beta 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000434196"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6482
Xaa Gly Gly Arg Arg Arg Glu Arg Pro Ala Ala Ala Thr Ala Arg Asp
1 5 10 15

Gly Arg Gly Glu Ala Met Glu Gly Asp Leu Gln Arg Glu Arg Leu Ser
20 25 30

Ser Pro Ser Thr Trp Glu Ser Gly Thr Leu Trp Thr Thr Ser Thr Ser
35 40 45

Trp Thr Leu Trp Met Val Trp Ser Trp Trp Ile Leu Ser Ile Ser Lys
50 55 60

Ser Gly Glu Ser Met
65

<210> 6483
<211> 59
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1403; "

<220>
<221> source
<223> /note="Gene Symbol: ARRB1; "

<220>
<221> source
<223> /note="Gene Name:
arrestin, beta 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436352"

<400> 6483
Ser His Cys Lys Arg Trp Glu Arg Arg Gly His Gly Arg Arg Leu Ala
1 5 10 15

Ala Gly Glu Ala Glu Ser Val Gln Glu Gly Gln Ser Lys Trp Lys Ala
20 25 30

His Arg Leu Pro Gly Lys Ala Gly Leu Cys Gly Pro His Arg Pro Arg
35 40 45

Gly Pro Cys Gly Trp Cys Gly Pro Gly Gly Ser
50 55

<210> 6484
<211> 195
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1403; "

<220>
<221> source
<223> /note="Gene Symbol: ARRB1; "

<220>
<221> source
<223> /note="Gene Name:
arrestin, beta 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436530"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6484
Xaa Arg Pro Gly Pro Gln Pro Thr Ala Glu Thr Thr Arg Gln Phe Leu
1 5 10 15

Met Ser Asp Lys Pro Leu His Leu Glu Ala Ser Leu Asp Lys Glu Ile
20 25 30

Tyr Tyr His Gly Glu Pro Ile Ser Val Asn Val His Val Thr Asn Asn
35 40 45

Thr Asn Lys Thr Val Lys Lys Ile Lys Ile Ser Val Arg Gln Tyr Ala
50 55 60

Asp Ile Cys Leu Phe Asn Thr Ala Gln Tyr Lys Cys Pro Val Ala Met
65 70 75 80

Glu Glu Ala Asp Asp Thr Val Ala Pro Ser Ser Thr Phe Cys Lys Val
85 90 95

Tyr Thr Leu Thr Pro Phe Leu Ala Asn Asn Arg Glu Lys Arg Gly Leu
100 105 110

Ala Leu Asp Gly Lys Leu Lys His Glu Asp Thr Asn Leu Ala Ser Ser
115 120 125

Thr Leu Leu Arg Glu Gly Ala Asn Arg Glu Ile Leu Gly Ile Ile Val
130 135 140

Ser Tyr Lys Val Lys Val Lys Leu Val Val Ser Arg Gly Gly Asp Val
145 150 155 160

Ala Val Glu Leu Pro Phe Thr Leu Met His Pro Lys Pro Lys Glu Glu
165 170 175

Pro Pro His Arg Glu Val Met Thr Thr Leu Tyr Leu Arg Thr Leu Leu
180 185 190

Ala Arg Asp
195

<210> 6485
<211> 409
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1404; "

<220>
<221> source
<223> /note="Gene Symbol: ARRB2; "

<220>
<221> source
<223> /note="Gene Name:
arrestin, beta 2; "

<220>
<221> source
<223> /note="Uniprot ID: P32121; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000269260"

<400> 6485
Met Gly Glu Lys Pro Gly Thr Arg Val Phe Lys Lys Ser Ser Pro Asn
1 5 10 15

Cys Lys Leu Thr Val Tyr Leu Gly Lys Arg Asp Phe Val Asp His Leu
20 25 30

Asp Lys Val Asp Pro Val Asp Gly Val Val Leu Val Asp Pro Asp Tyr
35 40 45

Leu Lys Asp Arg Lys Val Phe Val Thr Leu Thr Cys Ala Phe Arg Tyr
50 55 60

Gly Arg Glu Asp Leu Asp Val Leu Gly Leu Ser Phe Arg Lys Asp Leu
65 70 75 80

Phe Ile Ala Thr Tyr Gln Ala Phe Pro Pro Val Pro Asn Pro Pro Arg
85 90 95

```
Pro Pro Thr Arg Leu Gln Asp Arg Leu Leu Arg Lys Leu Gly Gln His
            100                 105                 110

Ala His Pro Phe Phe Phe Thr Ile Pro Gln Asn Leu Pro Cys Ser Val
        115                 120                 125

Thr Leu Gln Pro Gly Pro Glu Asp Thr Gly Lys Ala Cys Gly Val Asp
    130                 135                 140

Phe Glu Ile Arg Ala Phe Cys Ala Lys Ser Leu Glu Glu Lys Ser His
145                 150                 155                 160

Lys Arg Asn Ser Val Arg Leu Val Ile Arg Lys Val Gln Phe Ala Pro
                165                 170                 175

Glu Lys Pro Gly Pro Gln Pro Ser Ala Glu Thr Thr Arg His Phe Leu
            180                 185                 190

Met Ser Asp Arg Ser Leu His Leu Glu Ala Ser Leu Asp Lys Glu Leu
        195                 200                 205

Tyr Tyr His Gly Glu Pro Leu Asn Val Asn Val His Val Thr Asn Asn
    210                 215                 220

Ser Thr Lys Thr Val Lys Lys Ile Lys Val Ser Val Arg Gln Tyr Ala
225                 230                 235                 240

Asp Ile Cys Leu Phe Ser Thr Ala Gln Tyr Lys Cys Pro Val Ala Gln
                245                 250                 255

Leu Glu Gln Asp Asp Gln Val Ser Pro Ser Ser Thr Phe Cys Lys Val
            260                 265                 270

Tyr Thr Ile Thr Pro Leu Leu Ser Asp Asn Arg Glu Lys Arg Gly Leu
        275                 280                 285

Ala Leu Asp Gly Lys Leu Lys His Glu Asp Thr Asn Leu Ala Ser Ser
    290                 295                 300

Thr Ile Val Lys Glu Gly Ala Asn Lys Glu Val Leu Gly Ile Leu Val
305                 310                 315                 320

Ser Tyr Arg Val Lys Val Lys Leu Val Val Ser Arg Gly Gly Asp Val
```

```
                325                 330                 335

Ser Val Glu Leu Pro Phe Val Leu Met His Pro Lys Pro His Asp His
            340                 345                 350

Ile Pro Leu Pro Arg Pro Gln Ser Ala Ala Pro Glu Thr Asp Val Pro
        355                 360                 365

Val Asp Thr Asn Leu Ile Glu Phe Asp Thr Asn Tyr Ala Thr Asp Asp
    370                 375                 380

Asp Ile Val Phe Glu Asp Phe Ala Arg Leu Arg Leu Lys Gly Met Lys
385                 390                 395                 400

Asp Asp Asp Tyr Asp Asp Gln Leu Cys
                405
```

<210> 6486
<211> 406
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1404; "

<220>
<221> source
<223> /note="Gene Symbol: ARRB2; "

<220>
<221> source
<223> /note="Gene Name:
arrestin, beta 2; "

<220>
<221> source
<223> /note="Uniprot ID: P32121; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000341895"

<400> 6486

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Met Gly Glu Lys Pro Gly Thr Arg Val Phe Lys Lys Ser Ser Pro Asn
1               5                   10                  15

Cys Lys Leu Thr Val Tyr Leu Gly Lys Arg Asp Phe Val Asp His Leu
            20                  25                  30
```

```
Asp Lys Val Asp Pro Val Val Phe Val Thr Leu Thr Cys Ala Phe Arg
        35                  40                  45

Tyr Gly Arg Glu Asp Leu Asp Val Leu Gly Leu Ser Phe Arg Lys Asp
    50                  55                  60

Leu Phe Ile Ala Thr Tyr Gln Ala Phe Pro Pro Val Pro Asn Pro Pro
65                  70                  75                  80

Arg Pro Pro Thr Arg Leu Gln Asp Arg Leu Leu Arg Lys Leu Gly Gln
                85                  90                  95

His Ala His Pro Phe Phe Phe Thr Ile Pro Gln Asn Leu Pro Cys Ser
            100                 105                 110

Val Thr Leu Gln Pro Gly Pro Glu Asp Thr Gly Lys Ala Cys Gly Val
        115                 120                 125

Asp Phe Glu Ile Arg Ala Phe Cys Ala Lys Ser Leu Glu Glu Lys Ser
    130                 135                 140

His Lys Arg Asn Ser Val Arg Leu Val Ile Arg Lys Val Gln Phe Ala
145                 150                 155                 160

Pro Glu Lys Pro Gly Pro Gln Pro Ser Ala Glu Thr Thr Arg His Phe
                165                 170                 175

Leu Met Ser Asp Arg Ser Leu His Leu Glu Ala Ser Leu Asp Lys Glu
            180                 185                 190

Leu Tyr Tyr His Gly Glu Pro Leu Asn Val Asn Val His Val Thr Asn
        195                 200                 205

Asn Ser Thr Lys Thr Val Lys Lys Ile Lys Val Ser Val Arg Gln Tyr
    210                 215                 220

Ala Asp Ile Cys Leu Phe Ser Thr Ala Gln Tyr Lys Cys Pro Val Ala
225                 230                 235                 240

Gln Leu Glu Gln Asp Asp Gln Val Ser Pro Ser Ser Thr Phe Cys Lys
                245                 250                 255
```

```
Val Tyr Thr Ile Thr Pro Leu Leu Ser Asp Asn Arg Glu Lys Arg Gly
            260                 265                 270

Leu Ala Leu Asp Gly Lys Leu Lys His Glu Asp Thr Asn Leu Ala Ser
        275                 280                 285

Ser Thr Ile Val Lys Glu Gly Ala Asn Lys Glu Val Leu Gly Ile Leu
    290                 295                 300

Val Ser Tyr Arg Val Lys Val Lys Leu Val Val Ser Arg Gly Gly Asp
305                 310                 315                 320

Val Ser Val Glu Leu Pro Phe Val Leu Met His Pro Lys Pro His Asp
                325                 330                 335

His Ile Pro Leu Pro Arg Pro Gln Ser Ala Pro Thr Pro Thr Pro Pro
            340                 345                 350

Leu Pro Val Pro Pro Ala Ala Pro Glu Thr Asp Val Pro Val Asp Thr
        355                 360                 365

Asn Leu Ile Glu Phe Asp Thr Asn Tyr Ala Thr Asp Asp Asp Ile Val
    370                 375                 380

Phe Glu Asp Phe Ala Arg Leu Arg Leu Lys Gly Met Lys Asp Asp Asp
385                 390                 395                 400

Tyr Asp Asp Gln Leu Cys
                405
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<210> 6487
<211> 394
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1404; "

<220>
<221> source
<223> /note="Gene Symbol: ARRB2; "

<220>
<221> source
<223> /note="Gene Name:
arrestin, beta 2; "

<220>
<221> source
<223> /note="Uniprot ID: P32121; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000370898"

<400> 6487
Met Gly Glu Lys Pro Gly Thr Arg Val Phe Lys Lys Ser Ser Pro Asn
1   5   10   15

Cys Lys Leu Thr Val Tyr Leu Gly Lys Arg Asp Phe Val Asp His Leu
            20   25   30

Asp Lys Val Asp Pro Val Val Phe Val Thr Leu Thr Cys Ala Phe Arg
        35   40   45

Tyr Gly Arg Glu Asp Leu Asp Val Leu Gly Leu Ser Phe Arg Lys Asp
    50   55   60

Leu Phe Ile Ala Thr Tyr Gln Ala Phe Pro Pro Val Pro Asn Pro Pro
65   70   75   80

Arg Pro Pro Thr Arg Leu Gln Asp Arg Leu Leu Arg Lys Leu Gly Gln
                85   90   95

His Ala His Pro Phe Phe Phe Thr Ile Pro Gln Asn Leu Pro Cys Ser
            100   105   110

Val Thr Leu Gln Pro Gly Pro Glu Asp Thr Gly Lys Ala Cys Gly Val
        115   120   125

Asp Phe Glu Ile Arg Ala Phe Cys Ala Lys Ser Leu Glu Glu Lys Ser
    130   135   140

His Lys Arg Asn Ser Val Arg Leu Val Ile Arg Lys Val Gln Phe Ala
145   150   155   160

Pro Glu Lys Pro Gly Pro Gln Pro Ser Ala Glu Thr Thr Arg His Phe
                165   170   175

Leu Met Ser Asp Arg Ser Leu His Leu Glu Ala Ser Leu Asp Lys Glu
            180   185   190

```
Leu Tyr Tyr His Gly Glu Pro Leu Asn Val Asn Val His Val Thr Asn
        195                 200                 205

Asn Ser Thr Lys Thr Val Lys Lys Ile Lys Val Ser Val Arg Gln Tyr
    210                 215                 220

Ala Asp Ile Cys Leu Phe Ser Thr Ala Gln Tyr Lys Cys Pro Val Ala
225                 230                 235                 240

Gln Leu Glu Gln Asp Asp Gln Val Ser Pro Ser Ser Thr Phe Cys Lys
                245                 250                 255

Val Tyr Thr Ile Thr Pro Leu Leu Ser Asp Asn Arg Glu Lys Arg Gly
            260                 265                 270

Leu Ala Leu Asp Gly Lys Leu Lys His Glu Asp Thr Asn Leu Ala Ser
        275                 280                 285

Ser Thr Ile Val Lys Glu Gly Ala Asn Lys Glu Val Leu Gly Ile Leu
    290                 295                 300

Val Ser Tyr Arg Val Lys Val Lys Leu Val Val Ser Arg Gly Gly Asp
305                 310                 315                 320

Val Ser Val Glu Leu Pro Phe Val Leu Met His Pro Lys Pro His Asp
                325                 330                 335

His Ile Pro Leu Pro Arg Pro Gln Ser Ala Ala Pro Glu Thr Asp Val
            340                 345                 350

Pro Val Asp Thr Asn Leu Ile Glu Phe Asp Thr Asn Tyr Ala Thr Asp
        355                 360                 365

Asp Asp Ile Val Phe Glu Asp Phe Ala Arg Leu Arg Leu Lys Gly Met
    370                 375                 380

Lys Asp Asp Asp Tyr Asp Asp Gln Leu Cys
385                 390
```

<210> 6488
<211> 430
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1404; "

<220>
<221> source
<223> /note="Gene Symbol: ARRB2; "

<220>
<221> source
<223> /note="Gene Name:
arrestin, beta 2; "

<220>
<221> source
<223> /note="Uniprot ID: P32121; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000403701"

<400> 6488

```
Met Gly Glu Lys Pro Gly Thr Arg Val Phe Lys Lys Ser Ser Pro Asn
1               5                  10                  15

Cys Lys Leu Thr Val Tyr Leu Gly Lys Arg Asp Phe Val Asp His Leu
            20                  25                  30

Asp Lys Val Asp Pro Val Asp Gly Val Val Leu Val Asp Pro Asp Tyr
        35                  40                  45

Leu Lys Asp Arg Lys Val Phe Val Thr Leu Thr Cys Ala Phe Arg Tyr
    50                  55                  60

Gly Arg Glu Asp Leu Asp Val Leu Gly Leu Ser Phe Arg Lys Asp Leu
65                  70                  75                  80

Phe Ile Ala Thr Tyr Gln Ala Phe Pro Pro Val Pro Asn Pro Pro Arg
                85                  90                  95

Pro Pro Thr Arg Leu Gln Asp Arg Leu Leu Arg Lys Leu Gly Gln His
            100                 105                 110

Ala His Pro Phe Phe Phe Thr Val Arg Met Pro Leu Pro Ser Glu Gly
        115                 120                 125

Gln Gly Ala Gly Ala Gly Thr Val Ser Gly Val Gly Ile Pro Gln Asn
    130                 135                 140
```

```
Leu Pro Cys Ser Val Thr Leu Gln Pro Gly Pro Glu Asp Thr Gly Lys
145                 150                 155                 160

Ala Cys Gly Val Asp Phe Glu Ile Arg Ala Phe Cys Ala Lys Ser Leu
                165                 170                 175

Glu Glu Lys Ser His Lys Arg Asn Ser Val Arg Leu Val Ile Arg Lys
            180                 185                 190

Val Gln Phe Ala Pro Glu Lys Pro Gly Pro Gln Pro Ser Ala Glu Thr
        195                 200                 205

Thr Arg His Phe Leu Met Ser Asp Arg Ser Leu His Leu Glu Ala Ser
    210                 215                 220

Leu Asp Lys Glu Leu Tyr Tyr His Gly Glu Pro Leu Asn Val Asn Val
225                 230                 235                 240

His Val Thr Asn Asn Ser Thr Lys Thr Val Lys Lys Ile Lys Val Ser
                245                 250                 255

Val Arg Gln Tyr Ala Asp Ile Cys Leu Phe Ser Thr Ala Gln Tyr Lys
            260                 265                 270

Cys Pro Val Ala Gln Leu Glu Gln Asp Asp Gln Val Ser Pro Ser Ser
        275                 280                 285

Thr Phe Cys Lys Val Tyr Thr Ile Thr Pro Leu Leu Ser Asp Asn Arg
    290                 295                 300

Glu Lys Arg Gly Leu Ala Leu Asp Gly Lys Leu Lys His Glu Asp Thr
305                 310                 315                 320

Asn Leu Ala Ser Ser Thr Ile Val Lys Glu Gly Ala Asn Lys Glu Val
                325                 330                 335

Leu Gly Ile Leu Val Ser Tyr Arg Val Lys Val Lys Leu Val Val Ser
            340                 345                 350

Arg Gly Gly Asp Val Ser Val Glu Leu Pro Phe Val Leu Met His Pro
        355                 360                 365
```

```
Lys Pro His Asp His Ile Pro Leu Pro Arg Pro Gln Ser Ala Ala Pro
    370                 375                 380

Glu Thr Asp Val Pro Val Asp Thr Asn Leu Ile Glu Phe Asp Thr Asn
385                 390                 395                 400

Tyr Ala Thr Asp Asp Asp Ile Val Phe Glu Asp Phe Ala Arg Leu Arg
                405                 410                 415

Leu Lys Gly Met Lys Asp Asp Asp Tyr Asp Asp Gln Leu Cys
            420                 425                 430


<210> 6489
<211> 64
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1404; "

<220>
<221> source
<223> /note="Gene Symbol: ARRB2; "

<220>
<221> source
<223> /note="Gene Name:
      arrestin, beta 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000458371"

<400> 6489
Met Gly Glu Lys Pro Gly Thr Arg Val Phe Lys Lys Ser Ser Pro Asn
1               5                   10                  15

Cys Lys Leu Thr Val Tyr Leu Gly Lys Arg Asp Phe Val Asp His Leu
            20                  25                  30

Asp Lys Val Asp Pro Val Asp Thr Pro Glu Ser Ser Met Leu Arg His
        35                  40                  45

Thr Ala Ala Arg Pro Arg Gly Tyr Arg Lys Gly Leu Arg Arg Arg Leu
    50                  55                  60


<210> 6490
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<211> 74
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1404; "

<220>
<221> source
<223> /note="Gene Symbol: ARRB2; "

<220>
<221> source
<223> /note="Gene Name:
arrestin, beta 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000458946"

<400> 6490
Met Gly Glu Lys Pro Gly Thr Arg Val Phe Lys Lys Ser Ser Pro Asn
1 5 10 15

Cys Lys Pro Leu Ala Ala Glu Ala Ala Gln Pro Glu Pro Ala Thr Gly
20 25 30

Leu Gly Gly Ala Gly Leu Gly Pro Gln Ala Arg Pro Gln Arg Arg Arg
35 40 45

Pro Lys Ala Ser His Val Pro Val Ala Leu Leu Gly Ala Asn Pro Ser
50 55 60

Ser Pro Cys Thr Trp Ala Ser Gly Thr Ser
65 70

<210> 6491
<211> 217
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1404; "

<220>
<221> source
<223> /note="Gene Symbol: ARRB2; "

<220>
<221> source

<223> /note="Gene Name:
arrestin, beta 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000460607"

<400> 6491

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Met Ser Asp Arg Ser Leu His Leu Glu Ala Ser Leu Asp Lys Glu Leu
1               5                  10                  15

Tyr Tyr His Gly Glu Pro Leu Asn Val Asn Val His Val Thr Asn Asn
            20                  25                  30

Ser Thr Lys Thr Val Lys Lys Ile Lys Val Ser Val Arg Gln Tyr Ala
        35                  40                  45

Asp Ile Cys Leu Phe Ser Thr Ala Gln Tyr Lys Cys Pro Val Ala Gln
    50                  55                  60

Leu Glu Gln Asp Asp Gln Val Ser Pro Ser Ser Thr Phe Cys Lys Val
65                  70                  75                  80

Tyr Thr Ile Thr Pro Leu Leu Ser Asp Asn Arg Glu Lys Arg Gly Leu
                85                  90                  95

Ala Leu Asp Gly Lys Leu Lys His Glu Asp Thr Asn Leu Ala Ser Ser
            100                 105                 110

Thr Ile Val Lys Glu Gly Ala Asn Lys Glu Val Leu Gly Ile Leu Val
        115                 120                 125

Ser Tyr Arg Val Lys Val Lys Leu Val Val Ser Arg Gly Gly Asp Val
    130                 135                 140

Ser Val Glu Leu Pro Phe Val Leu Met His Pro Lys Pro His Asp His
145                 150                 155                 160

Ile Pro Leu Pro Arg Pro Gln Ser Ala Ala Pro Glu Thr Asp Val Pro
                165                 170                 175

Val Asp Thr Asn Leu Ile Glu Phe Asp Thr Asn Tyr Ala Thr Asp Asp
            180                 185                 190

Asp Ile Val Phe Glu Asp Phe Ala Arg Leu Arg Leu Lys Gly Met Lys
```

195 200 205

Asp Asp Asp Tyr Asp Asp Gln Leu Cys
210 215

<210> 6492
<211> 196
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1404; "

<220>
<221> source
<223> /note="Gene Symbol: ARRB2; "

<220>
<221> source
<223> /note="Gene Name:
arrestin, beta 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000460879"

<400> 6492
Gly Gly Glu Thr Arg Asp Gln Leu Thr Val Tyr Leu Gly Lys Arg Asp
1 5 10 15

Phe Val Asp His Leu Asp Lys Val Asp Pro Val Asp Gly Val Val Leu
20 25 30

Val Asp Pro Asp Tyr Leu Lys Asp Arg Lys Val Phe Val Thr Leu Thr
35 40 45

Cys Ala Phe Arg Tyr Gly Arg Glu Asp Leu Asp Val Leu Gly Leu Ser
50 55 60

Phe Arg Lys Asp Leu Phe Ile Ala Thr Tyr Gln Ala Phe Pro Pro Val
65 70 75 80

Pro Asn Pro Pro Arg Pro Pro Thr Arg Leu Gln Asp Arg Leu Leu Arg
85 90 95

Lys Leu Gly Gln His Ala His Pro Phe Phe Phe Thr Ile Pro Gln Asn
100 105 110

```
Leu Pro Cys Ser Val Thr Leu Gln Pro Gly Pro Glu Asp Thr Gly Lys
        115                 120                 125

Ala Cys Gly Val Asp Phe Glu Ile Arg Ala Phe Cys Ala Lys Ser Leu
    130                 135                 140

Glu Glu Lys Ser His Lys Arg Asn Ser Val Arg Leu Val Ile Arg Lys
145                 150                 155                 160

Val Gln Phe Ala Pro Glu Lys Pro Gly Pro Gln Pro Ser Ala Glu Thr
                165                 170                 175

Thr Arg His Phe Leu Met Ser Asp Arg Ser Leu His Leu Glu Ala Ser
            180                 185                 190

Leu Asp Lys Glu
        195


<210> 6493
<211> 217
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1404; "

<220>
<221> source
<223> /note="Gene Symbol: ARRB2; "

<220>
<221> source
<223> /note="Gene Name:
      arrestin, beta 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000465296"

<400> 6493
Met Ser Asp Arg Ser Leu His Leu Glu Ala Ser Leu Asp Lys Glu Leu
1               5                   10                  15

Tyr Tyr His Gly Glu Pro Leu Asn Val Asn Val His Val Thr Asn Asn
            20                  25                  30

Ser Thr Lys Thr Val Lys Lys Ile Lys Val Ser Val Arg Gln Tyr Ala
```

```
        35                  40                  45

Asp Ile Cys Leu Phe Ser Thr Ala Gln Tyr Lys Cys Pro Val Ala Gln
    50                  55                  60

Leu Glu Gln Asp Asp Gln Val Ser Pro Ser Ser Thr Phe Cys Lys Val
65                  70                  75                  80

Tyr Thr Ile Thr Pro Leu Leu Ser Asp Asn Arg Glu Lys Arg Gly Leu
                85                  90                  95

Ala Leu Asp Gly Lys Leu Lys His Glu Asp Thr Asn Leu Ala Ser Ser
            100                 105                 110

Thr Ile Val Lys Glu Gly Ala Asn Lys Glu Val Leu Gly Ile Leu Val
        115                 120                 125

Ser Tyr Arg Val Lys Val Lys Leu Val Val Ser Arg Gly Gly Asp Val
    130                 135                 140

Ser Val Glu Leu Pro Phe Val Leu Met His Pro Lys Pro His Asp His
145                 150                 155                 160

Ile Pro Leu Pro Arg Pro Gln Ser Ala Ala Pro Glu Thr Asp Val Pro
                165                 170                 175

Val Asp Thr Asn Leu Ile Glu Phe Asp Thr Asn Tyr Ala Thr Asp Asp
            180                 185                 190

Asp Ile Val Phe Glu Asp Phe Ala Arg Leu Arg Leu Lys Gly Met Lys
        195                 200                 205

Asp Asp Asp Tyr Asp Asp Gln Leu Cys
    210                 215


<210> 6494
<211> 113
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1404; "

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<221> source
<223> /note="Gene Symbol: ARRB2; "

<220>
<221> source
<223> /note="Gene Name:
arrestin, beta 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000465877"

<400> 6494
Met Ser Asp Arg Ser Leu His Leu Glu Ala Ser Leu Asp Lys Glu Leu
1 5 10 15

Tyr Tyr His Gly Glu Pro Leu Asn Val Asn Val His Val Thr Asn Asn
20 25 30

Ser Thr Lys Thr Val Lys Lys Ile Lys Val Ser Val Arg Gln Tyr Ala
35 40 45

Asp Ile Cys Leu Phe Ser Thr Ala Gln Tyr Lys Cys Pro Val Ala Gln
50 55 60

Leu Glu Gln Asp Asp Gln Val Ser Pro Ser Ser Thr Phe Cys Lys Val
65 70 75 80

Tyr Thr Ile Thr Pro Leu Leu Ser Asp Asn Arg Glu Lys Arg Gly Leu
85 90 95

Ala Leu Asp Gly Lys Leu Lys His Glu Asp Thr Asn Leu Ala Ser Ser
100 105 110

Thr

<210> 6495
<211> 217
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ARRB2; "

<220>
<221> source
<223> /note="Gene Name:
arrestin, beta 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466344"

<400> 6495
Met Ser Asp Arg Ser Leu His Leu Glu Ala Ser Leu Asp Lys Glu Leu
1 5 10 15

Tyr Tyr His Gly Glu Pro Leu Asn Val Asn Val His Val Thr Asn Asn
20 25 30

Ser Thr Lys Thr Val Lys Lys Ile Lys Val Ser Val Arg Gln Tyr Ala
35 40 45

Asp Ile Cys Leu Phe Ser Thr Ala Gln Tyr Lys Cys Pro Val Ala Gln
50 55 60

Leu Glu Gln Asp Asp Gln Val Ser Pro Ser Ser Thr Phe Cys Lys Val
65 70 75 80

Tyr Thr Ile Thr Pro Leu Leu Ser Asp Asn Arg Glu Lys Arg Gly Leu
85 90 95

Ala Leu Asp Gly Lys Leu Lys His Glu Asp Thr Asn Leu Ala Ser Ser
100 105 110

Thr Ile Val Lys Glu Gly Ala Asn Lys Glu Val Leu Gly Ile Leu Val
115 120 125

Ser Tyr Arg Val Lys Val Lys Leu Val Val Ser Arg Gly Gly Asp Val
130 135 140

Ser Val Glu Leu Pro Phe Val Leu Met His Pro Lys Pro His Asp His
145 150 155 160

Ile Pro Leu Pro Arg Pro Gln Ser Ala Ala Pro Glu Thr Asp Val Pro
165 170 175

Val Asp Thr Asn Leu Ile Glu Phe Asp Thr Asn Tyr Ala Thr Asp Asp
180 185 190

Asp Ile Val Phe Glu Asp Phe Ala Arg Leu Arg Leu Lys Gly Met Lys
195 200 205

Asp Asp Asp Tyr Asp Asp Gln Leu Cys
210 215

<210> 6496
<211> 330
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1404; "

<220>
<221> source
<223> /note="Gene Symbol: ARRB2; "

<220>
<221> source
<223> /note="Gene Name:
arrestin, beta 2; "

<220>
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<223> /note="ENSP ID: ENSP00000466857"

<400> 6496
Met Gly Glu Lys Pro Gly Thr Arg Val Phe Lys Lys Ser Ser Pro Asn
1 5 10 15

Cys Lys Leu Thr Val Tyr Leu Gly Lys Arg Asp Phe Val Asp His Leu
20 25 30

Asp Lys Val Asp Pro Val Asp Gly Val Val Leu Val Asp Pro Asp Tyr
35 40 45

Leu Lys Asp Arg Lys Val Phe Val Thr Leu Thr Cys Ala Phe Arg Tyr
50 55 60

Gly Arg Glu Asp Leu Asp Val Leu Gly Leu Ser Phe Arg Lys Asp Leu
65 70 75 80

Phe Ile Ala Thr Tyr Gln Ala Phe Pro Pro Val Pro Asn Pro Pro Arg
85 90 95

```
Pro Pro Thr Arg Leu Gln Asp Arg Leu Leu Arg Lys Leu Gly Gln His
            100                 105                 110

Ala His Pro Phe Phe Phe Thr Ile Pro Gln Asn Leu Pro Cys Ser Val
        115                 120                 125

Thr Leu Gln Pro Gly Pro Glu Asp Thr Gly Lys Ala Cys Gly Val Asp
    130                 135                 140

Phe Glu Ile Arg Ala Phe Cys Ala Lys Ser Leu Glu Glu Lys Ser His
145                 150                 155                 160

Lys Arg Asn Ser Val Arg Leu Val Ile Arg Lys Val Gln Phe Ala Pro
                165                 170                 175

Glu Lys Pro Gly Pro Gln Pro Ser Ala Glu Thr Thr Arg His Phe Leu
            180                 185                 190

Met Ser Asp Arg Ser Leu His Leu Glu Ala Ser Leu Asp Lys Glu Leu
        195                 200                 205

Tyr Tyr His Gly Glu Pro Leu Asn Val Asn Val His Val Thr Asn Asn
    210                 215                 220

Ser Thr Lys Thr Val Lys Lys Ile Lys Val Ser Val Arg Gln Tyr Ala
225                 230                 235                 240

Asp Ile Cys Leu Phe Ser Thr Ala Gln Tyr Lys Cys Pro Val Ala Gln
                245                 250                 255

Leu Glu Gln Asp Asp Gln Arg Glu Gly Gly Cys Gln Gln Gly Gly Ala
            260                 265                 270

Gly Asn Pro Gly Val Leu Gln Gly Gln Gly Glu Ala Gly Gly Val Ser
        275                 280                 285

Arg Arg Gly Cys Leu Cys Gly Ala Ala Phe Cys Ser Tyr Ala Pro Gln
    290                 295                 300

Ala Pro Arg Pro His Pro Pro Pro Gln Thr Pro Val Ser Arg Ser Gly
305                 310                 315                 320

Asp Arg Cys Pro Cys Gly His Gln Pro His
```

325 330

<210> 6497
<211> 348
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1405; "

<220>
<221> source
<223> /note="Gene Symbol: ASNA1; "

<220>
<221> source
<223> /note="Gene Name:
arsA arsenite transporter, ATP-binding,
homolog 1
(bacterial); "

<220>
<221> source
<223> /note="Uniprot ID: O43681; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000349887"

<400> 6497
Met Ala Ala Gly Val Ala Gly Trp Gly Val Glu Ala Glu Glu Phe Glu
1 5 10 15

Asp Ala Pro Asp Val Glu Pro Leu Glu Pro Thr Leu Ser Asn Ile Ile
20 25 30

Glu Gln Arg Ser Leu Lys Trp Ile Phe Val Gly Gly Lys Gly Gly Val
35 40 45

Gly Lys Thr Thr Cys Ser Cys Ser Leu Ala Val Gln Leu Ser Lys Gly
50 55 60

Arg Glu Ser Val Leu Ile Ile Ser Thr Asp Pro Ala His Asn Ile Ser
65 70 75 80

Asp Ala Phe Asp Gln Lys Phe Ser Lys Val Pro Thr Lys Val Lys Gly
85 90 95

Tyr Asp Asn Leu Phe Ala Met Glu Ile Asp Pro Ser Leu Gly Val Ala

100 105 110

Glu Leu Pro Asp Glu Phe Phe Glu Glu Asp Asn Met Leu Ser Met Gly
115 120 125

Lys Lys Met Met Gln Glu Ala Met Ser Ala Phe Pro Gly Ile Asp Glu
130 135 140

Ala Met Ser Tyr Ala Glu Val Met Arg Leu Val Lys Gly Met Asn Phe
145 150 155 160

Ser Val Val Val Phe Asp Thr Ala Pro Thr Gly His Thr Leu Arg Leu
165 170 175

Leu Asn Phe Pro Thr Ile Val Glu Arg Gly Leu Gly Arg Leu Met Gln
180 185 190

Ile Lys Asn Gln Ile Ser Pro Phe Ile Ser Gln Met Cys Asn Met Leu
195 200 205

Gly Leu Gly Asp Met Asn Ala Asp Gln Leu Ala Ser Lys Leu Glu Glu
210 215 220

Thr Leu Pro Val Ile Arg Ser Val Ser Glu Gln Phe Lys Asp Pro Glu
225 230 235 240

Gln Thr Thr Phe Ile Cys Val Cys Ile Ala Glu Phe Leu Ser Leu Tyr
245 250 255

Glu Thr Glu Arg Leu Ile Gln Glu Leu Ala Lys Cys Lys Ile Asp Thr
260 265 270

His Asn Ile Ile Val Asn Gln Leu Val Phe Pro Asp Pro Glu Lys Pro
275 280 285

Cys Lys Met Cys Glu Ala Arg His Lys Ile Gln Ala Lys Tyr Leu Asp
290 295 300

Gln Met Glu Asp Leu Tyr Glu Asp Phe His Ile Val Lys Leu Pro Leu
305 310 315 320

Leu Pro His Glu Val Arg Gly Ala Asp Lys Val Asn Thr Phe Ser Ala
325 330 335

```
Leu Leu Leu Glu Pro Tyr Lys Pro Pro Ser Ala Gln
            340                 345


<210> 6498
<211> 348
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1405; "

<220>
<221> source
<223> /note="Gene Symbol: ASNA1; "

<220>
<221> source
<223> /note="Gene Name:
      arsA arsenite transporter, ATP-binding,
      homolog 1
      (bacterial); "

<220>
<221> source
<223> /note="Uniprot ID:  O43681; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466379"

<400> 6498
Met Ala Ala Gly Val Ala Gly Trp Gly Val Glu Ala Glu Glu Phe Glu
1               5                   10                  15


Asp Ala Pro Asp Val Glu Pro Leu Glu Pro Thr Leu Ser Asn Ile Ile
            20                  25                  30


Glu Gln Arg Ser Leu Lys Trp Ile Phe Val Gly Gly Lys Gly Gly Val
        35                  40                  45


Gly Lys Thr Thr Cys Ser Cys Ser Leu Ala Val Gln Leu Ser Lys Gly
    50                  55                  60


Arg Glu Ser Val Leu Ile Ile Ser Thr Asp Pro Ala His Asn Ile Ser
65                  70                  75                  80


Asp Ala Phe Asp Gln Lys Phe Ser Lys Val Pro Thr Lys Val Lys Gly
                85                  90                  95
```

```
Tyr Asp Asn Leu Phe Ala Met Glu Ile Asp Pro Ser Leu Gly Val Ala
            100                 105                 110

Glu Leu Pro Asp Glu Phe Phe Glu Glu Asp Asn Met Leu Ser Met Gly
        115                 120                 125

Lys Lys Met Met Gln Glu Ala Met Ser Ala Phe Pro Gly Ile Asp Glu
    130                 135                 140

Ala Met Ser Tyr Ala Glu Val Met Arg Leu Val Lys Gly Met Asn Phe
145                 150                 155                 160

Ser Val Val Val Phe Asp Thr Ala Pro Thr Gly His Thr Leu Arg Leu
                165                 170                 175

Leu Asn Phe Pro Thr Ile Val Glu Arg Gly Leu Gly Arg Leu Met Gln
            180                 185                 190

Ile Lys Asn Gln Ile Ser Pro Phe Ile Ser Gln Met Cys Asn Met Leu
        195                 200                 205

Gly Leu Gly Asp Met Asn Ala Asp Gln Leu Ala Ser Lys Leu Glu Glu
    210                 215                 220

Thr Leu Pro Val Ile Arg Ser Val Ser Glu Gln Phe Lys Asp Pro Glu
225                 230                 235                 240

Gln Thr Thr Phe Ile Cys Val Cys Ile Ala Glu Phe Leu Ser Leu Tyr
                245                 250                 255

Glu Thr Glu Arg Leu Ile Gln Glu Leu Ala Lys Cys Lys Ile Asp Thr
            260                 265                 270

His Asn Ile Ile Val Asn Gln Leu Val Phe Pro Asp Pro Glu Lys Pro
        275                 280                 285

Cys Lys Met Cys Glu Ala Arg His Lys Ile Gln Ala Lys Tyr Leu Asp
    290                 295                 300

Gln Met Glu Asp Leu Tyr Glu Asp Phe His Ile Val Lys Leu Pro Leu
305                 310                 315                 320
```

```
Leu Pro His Glu Val Arg Gly Ala Asp Lys Val Asn Thr Phe Ser Ala
                325                 330                 335


Leu Leu Leu Glu Pro Tyr Lys Pro Pro Ser Ala Gln
            340                 345


<210> 6499
<211> 200
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1405; "

<220>
<221> source
<223> /note="Gene Symbol: ASNA1; "

<220>
<221> source
<223> /note="Gene Name:
      arsA arsenite transporter, ATP-binding,
      homolog 1
      (bacterial); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000468450"

<400> 6499
Met Ala Ala Gly Val Ala Gly Trp Gly Val Glu Ala Glu Glu Phe Glu
1               5                   10                  15


Asp Ala Pro Asp Val Glu Pro Leu Glu Pro Thr Leu Ser Asn Ile Ile
            20                  25                  30


Glu Gln Arg Ser Leu Lys Trp Ile Phe Val Gly Gly Lys Gly Gly Val
        35                  40                  45


Gly Lys Thr Thr Cys Ser Cys Ser Leu Ala Val Gln Leu Ser Lys Gly
    50                  55                  60


Arg Glu Ser Val Leu Ile Ile Ser Thr Asp Pro Ala His Asn Ile Ser
65                  70                  75                  80


Asp Ala Phe Asp Gln Lys Phe Ser Lys Val Pro Thr Lys Val Lys Gly
                85                  90                  95
```

```
Tyr Asp Asn Leu Phe Ala Met Glu Ile Asp Pro Ser Leu Gly Val Ala
            100                 105                 110

Glu Leu Pro Asp Glu Phe Phe Glu Glu Asp Asn Met Leu Ser Met Gly
        115                 120                 125

Lys Lys Met Met Gln Glu Ala Met Ser Ala Phe Pro Gly Ile Asp Glu
    130                 135                 140

Ala Met Ser Tyr Ala Glu Val Met Arg Leu Val Lys Gly Met Asn Phe
145                 150                 155                 160

Ser Val Val Val Phe Asp Thr Ala Pro Thr Gly His Thr Leu Arg Leu
                165                 170                 175

Leu Asn Phe Pro Thr Ile Val Glu Arg Gly Leu Gly Arg Leu Met Gln
            180                 185                 190

Ile Lys Asn Gln Ile Ser Pro Phe
        195                 200


<210> 6500
<211> 331
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1405; "

<220>
<221> source
<223> /note="Gene Symbol: ASNA1; "

<220>
<221> source
<223> /note="Gene Name:
      arsA arsenite transporter, ATP-binding,
      homolog 1
      (bacterial); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000481254"

<400> 6500
Met Leu Asp Val Glu Pro Leu Glu Pro Thr Leu Ser Asn Ile Ile Glu
1               5                   10                  15
```

```
Gln Arg Ser Leu Lys Trp Ile Phe Val Gly Gly Lys Gly Gly Val Gly
            20                  25                  30

Lys Thr Thr Cys Ser Cys Ser Leu Ala Val Gln Leu Ser Lys Gly Arg
        35                  40                  45

Glu Ser Val Leu Ile Ile Ser Thr Asp Pro Ala His Asn Ile Ser Asp
    50                  55                  60

Ala Phe Asp Gln Lys Phe Ser Lys Val Pro Thr Lys Val Lys Gly Tyr
65                  70                  75                  80

Asp Asn Leu Phe Ala Met Glu Ile Asp Pro Ser Leu Gly Val Ala Glu
                85                  90                  95

Leu Pro Asp Glu Phe Phe Glu Glu Asp Asn Met Leu Ser Met Gly Lys
            100                 105                 110

Lys Met Met Gln Glu Ala Met Ser Ala Phe Pro Gly Ile Asp Glu Ala
        115                 120                 125

Met Ser Tyr Ala Glu Val Met Arg Leu Val Lys Gly Met Asn Phe Ser
    130                 135                 140

Val Val Val Phe Asp Thr Ala Pro Thr Gly His Thr Leu Arg Leu Leu
145                 150                 155                 160

Asn Phe Pro Thr Ile Val Glu Arg Gly Leu Gly Arg Leu Met Gln Ile
                165                 170                 175

Lys Asn Gln Ile Ser Pro Phe Ile Ser Gln Met Cys Asn Met Leu Gly
            180                 185                 190

Leu Gly Asp Met Asn Ala Asp Gln Leu Ala Ser Lys Leu Glu Glu Thr
        195                 200                 205

Leu Pro Val Ile Arg Ser Val Ser Glu Gln Phe Lys Asp Pro Glu Gln
    210                 215                 220

Thr Thr Phe Ile Cys Val Cys Ile Ala Glu Phe Leu Ser Leu Tyr Glu
225                 230                 235                 240
```

```
Thr Glu Arg Leu Ile Gln Glu Leu Ala Lys Cys Lys Ile Asp Thr His
                245                 250                 255

Asn Ile Ile Val Asn Gln Leu Val Phe Pro Asp Pro Glu Lys Pro Cys
            260                 265                 270

Lys Met Cys Glu Ala Arg His Lys Ile Gln Ala Lys Tyr Leu Asp Gln
        275                 280                 285

Met Glu Asp Leu Tyr Glu Asp Phe His Ile Val Lys Leu Pro Leu Leu
    290                 295                 300

Pro His Glu Val Arg Gly Ala Asp Lys Val Asn Thr Phe Ser Ala Leu
305                 310                 315                 320

Leu Leu Glu Pro Tyr Lys Pro Pro Ser Ala Gln
                325                 330


<210> 6501
<211> 375
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1406; "

<220>
<221> source
<223> /note="Gene Symbol: AS3MT; "

<220>
<221> source
<223> /note="Gene Name:
      arsenite
      methyltransferase; "

<220>
<221> source
<223> /note="Uniprot ID:  Q9HBK9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000358896"

<400> 6501
Met Ala Ala Leu Arg Asp Ala Glu Ile Gln Lys Asp Val Gln Thr Tyr
1               5                   10                  15

Tyr Gly Gln Val Leu Lys Arg Ser Ala Asp Leu Gln Thr Asn Gly Cys
```

```
            20                  25                  30

Val Thr Thr Ala Arg Pro Val Pro Lys His Ile Arg Glu Ala Leu Gln
        35                  40                  45

Asn Val His Glu Glu Val Ala Leu Arg Tyr Tyr Gly Cys Gly Leu Val
    50                  55                  60

Ile Pro Glu His Leu Glu Asn Cys Trp Ile Leu Asp Leu Gly Ser Gly
65                  70                  75                  80

Ser Gly Arg Asp Cys Tyr Val Leu Ser Gln Leu Val Gly Glu Lys Gly
                85                  90                  95

His Val Thr Gly Ile Asp Met Thr Lys Gly Gln Val Glu Val Ala Glu
            100                 105                 110

Lys Tyr Leu Asp Tyr His Met Glu Lys Tyr Gly Phe Gln Ala Ser Asn
        115                 120                 125

Val Thr Phe Ile His Gly Tyr Ile Glu Lys Leu Gly Glu Ala Gly Ile
    130                 135                 140

Lys Asn Glu Ser His Asp Ile Val Val Ser Asn Cys Val Ile Asn Leu
145                 150                 155                 160

Val Pro Asp Lys Gln Gln Val Leu Gln Glu Ala Tyr Arg Val Leu Lys
                165                 170                 175

His Gly Gly Glu Leu Tyr Phe Ser Asp Val Tyr Thr Ser Leu Glu Leu
            180                 185                 190

Pro Glu Glu Ile Arg Thr His Lys Val Leu Trp Gly Glu Cys Leu Gly
        195                 200                 205

Gly Ala Leu Tyr Trp Lys Glu Leu Ala Val Leu Ala Gln Lys Ile Gly
    210                 215                 220

Phe Cys Pro Pro Arg Leu Val Thr Ala Asn Leu Ile Thr Ile Gln Asn
225                 230                 235                 240

Lys Glu Leu Glu Arg Val Ile Gly Asp Cys Arg Phe Val Ser Ala Thr
                245                 250                 255
```

```
Phe Arg Leu Phe Lys His Ser Lys Thr Gly Pro Thr Lys Arg Cys Gln
            260                 265                 270

Val Ile Tyr Asn Gly Gly Ile Thr Gly His Glu Lys Glu Leu Met Phe
        275                 280                 285

Asp Ala Asn Phe Thr Phe Lys Glu Gly Glu Ile Val Glu Val Asp Glu
    290                 295                 300

Glu Thr Ala Ala Ile Leu Lys Asn Ser Arg Phe Ala Gln Asp Phe Leu
305                 310                 315                 320

Ile Arg Pro Ile Gly Glu Lys Leu Pro Thr Ser Gly Gly Cys Ser Ala
                325                 330                 335

Leu Glu Leu Lys Asp Ile Ile Thr Asp Pro Phe Lys Leu Ala Glu Glu
            340                 345                 350

Ser Asp Ser Met Lys Ser Arg Cys Val Pro Asp Ala Ala Gly Gly Cys
        355                 360                 365

Cys Gly Thr Lys Lys Ser Cys
    370                 375


<210> 6502
<211> 338
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1406; "

<220>
<221> source
<223> /note="Gene Symbol: AS3MT; "

<220>
<221> source
<223> /note="Gene Name:
      arsenite
      methyltransferase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000479361"
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<400> 6502
Met Ala Ala Leu Arg Asp Ala Glu Ile Gln Lys Asp Val Gln Thr Tyr
1 5 10 15

Tyr Gly Gln Val Leu Lys Arg Ser Ala Asp Leu Gln Thr Asn Gly Cys
20 25 30

Val Thr Thr Ala Arg Pro Val Pro Lys His Ile Arg Glu Ala Leu Gln
35 40 45

Asn Val His Glu Glu Val Ala Leu Arg Tyr Tyr Gly Cys Gly Leu Val
50 55 60

Ile Pro Glu His Leu Glu Asn Cys Trp Ile Leu Asp Leu Gly Ser Gly
65 70 75 80

Ser Gly Arg Asp Cys Tyr Val Leu Ser Gln Leu Val Gly Glu Lys Gly
85 90 95

His Val Thr Gly Ile Asp Met Thr Lys Gly Gln Val Glu Val Ala Glu
100 105 110

Lys Tyr Leu Asp Tyr His Met Glu Lys Tyr Gly Phe Gln Ala Ser Asn
115 120 125

Val Thr Phe Ile His Gly Tyr Ile Glu Lys Leu Gly Glu Ala Gly Ile
130 135 140

Lys Asn Glu Ser His Asp Ile Val Val Ser Asn Cys Val Ile Asn Leu
145 150 155 160

Val Pro Asp Lys Gln Gln Val Leu Gln Glu Ala Tyr Arg Val Leu Lys
165 170 175

His Gly Gly Glu Leu Tyr Phe Ser Asp Val Tyr Thr Ser Leu Glu Leu
180 185 190

Pro Glu Glu Ile Arg Thr His Lys Val Leu Trp Gly Glu Cys Leu Gly
195 200 205

Gly Ala Leu Tyr Trp Lys Glu Leu Ala Val Leu Ala Gln Lys Ile Gly
210 215 220

```
Phe Cys Pro Pro Arg Leu Val Thr Ala Asn Leu Ile Thr Ile Gln Asn
225                 230                 235                 240

Lys Glu Leu Glu Arg Val Ile Gly Asp Cys Arg Phe Val Ser Ala Thr
                245                 250                 255

Phe Arg Leu Phe Lys His Ser Lys Thr Gly Pro Thr Lys Arg Cys Gln
            260                 265                 270

Val Ile Tyr Asn Gly Gly Ile Thr Gly His Glu Lys Glu Leu Met Phe
        275                 280                 285

Asp Ala Asn Phe Thr Phe Lys Glu Gly Glu Ile Val Glu Val Asp Glu
    290                 295                 300

Glu Thr Ala Ala Ile Leu Lys Asn Ser Arg Phe Ala Gln Asp Phe Leu
305                 310                 315                 320

Ile Arg Pro Ile Gly Glu Lys Leu Pro Thr Ser Gly Ala Val Leu Leu
                325                 330                 335

Trp Ser
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<210> 6503
<211> 220
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1407; "

<220>
<221> source
<223> /note="Gene Symbol: ARTN; "

<220>
<221> source
<223> /note="Gene Name:
artemin; "

<220>
<221> source
<223> /note="Uniprot ID: Q5T4W7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000361429"

<400> 6503
Met Glu Leu Gly Leu Gly Gly Leu Ser Thr Leu Ser His Cys Pro Trp
1 5 10 15

Pro Arg Gln Gln Pro Ala Leu Trp Pro Thr Leu Ala Ala Leu Ala Leu
20 25 30

Leu Ser Ser Val Ala Glu Ala Ser Leu Gly Ser Ala Pro Arg Ser Pro
35 40 45

Ala Pro Arg Glu Gly Pro Pro Pro Val Leu Ala Ser Pro Ala Gly His
50 55 60

Leu Pro Gly Gly Arg Thr Ala Arg Trp Cys Ser Gly Arg Ala Arg Arg
65 70 75 80

Pro Pro Pro Gln Pro Ser Arg Pro Ala Pro Pro Pro Pro Ala Pro Pro
85 90 95

Ser Ala Leu Pro Arg Gly Gly Arg Ala Ala Arg Ala Gly Gly Pro Gly
100 105 110

Ser Arg Ala Arg Ala Ala Gly Ala Arg Gly Cys Arg Leu Arg Ser Gln
115 120 125

Leu Val Pro Val Arg Ala Leu Gly Leu Gly His Arg Ser Asp Glu Leu
130 135 140

Val Arg Phe Arg Phe Cys Ser Gly Ser Cys Arg Arg Ala Arg Ser Pro
145 150 155 160

His Asp Leu Ser Leu Ala Ser Leu Leu Gly Ala Gly Ala Leu Arg Pro
165 170 175

Pro Pro Gly Ser Arg Pro Val Ser Gln Pro Cys Cys Arg Pro Thr Arg
180 185 190

Tyr Glu Ala Val Ser Phe Met Asp Val Asn Ser Thr Trp Arg Thr Val
195 200 205

Asp Arg Leu Ser Ala Thr Ala Cys Gly Cys Leu Gly
210 215 220

<210> 6504
<211> 220
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1407; "

<220>
<221> source
<223> /note="Gene Symbol: ARTN; "

<220>
<221> source
<223> /note="Gene Name:
artemin; "

<220>
<221> source
<223> /note="Uniprot ID: Q5T4W7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000361434"

<400> 6504
Met Glu Leu Gly Leu Gly Gly Leu Ser Thr Leu Ser His Cys Pro Trp
1   5   10   15

Pro Arg Gln Gln Pro Ala Leu Trp Pro Thr Leu Ala Ala Leu Ala Leu
            20   25   30

Leu Ser Ser Val Ala Glu Ala Ser Leu Gly Ser Ala Pro Arg Ser Pro
        35   40   45

Ala Pro Arg Glu Gly Pro Pro Pro Val Leu Ala Ser Pro Ala Gly His
    50   55   60

Leu Pro Gly Gly Arg Thr Ala Arg Trp Cys Ser Gly Arg Ala Arg Arg
65   70   75   80

Pro Pro Pro Gln Pro Ser Arg Pro Ala Pro Pro Pro Pro Ala Pro Pro
                85   90   95

Ser Ala Leu Pro Arg Gly Gly Arg Ala Ala Arg Ala Gly Gly Pro Gly
            100   105   110

Ser Arg Ala Arg Ala Ala Gly Ala Arg Gly Cys Arg Leu Arg Ser Gln

```
        115                 120                 125

Leu Val Pro Val Arg Ala Leu Gly Leu Gly His Arg Ser Asp Glu Leu
    130                 135                 140

Val Arg Phe Arg Phe Cys Ser Gly Ser Cys Arg Arg Ala Arg Ser Pro
145                 150                 155                 160

His Asp Leu Ser Leu Ala Ser Leu Leu Gly Ala Gly Ala Leu Arg Pro
                165                 170                 175

Pro Pro Gly Ser Arg Pro Val Ser Gln Pro Cys Cys Arg Pro Thr Arg
            180                 185                 190

Tyr Glu Ala Val Ser Phe Met Asp Val Asn Ser Thr Trp Arg Thr Val
        195                 200                 205

Asp Arg Leu Ser Ala Thr Ala Cys Gly Cys Leu Gly
    210                 215                 220


<210> 6505
<211> 228
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1407; "

<220>
<221> source
<223> /note="Gene Symbol: ARTN; "

<220>
<221> source
<223> /note="Gene Name:
      artemin; "

<220>
<221> source
<223> /note="Uniprot ID:  Q5T4W7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000387435"

<400> 6505
Met Glu Leu Gly Leu Gly Gly Leu Ser Thr Leu Ser His Cys Pro Trp
1               5                   10                  15
```

```
Pro Arg Gln Gln Ala Pro Leu Gly Leu Ser Ala Gln Pro Ala Leu Trp
            20                  25                  30

Pro Thr Leu Ala Ala Leu Ala Leu Leu Ser Ser Val Ala Glu Ala Ser
        35                  40                  45

Leu Gly Ser Ala Pro Arg Ser Pro Ala Pro Arg Glu Gly Pro Pro Pro
    50                  55                  60

Val Leu Ala Ser Pro Ala Gly His Leu Pro Gly Gly Arg Thr Ala Arg
65                  70                  75                  80

Trp Cys Ser Gly Arg Ala Arg Arg Pro Pro Pro Gln Pro Ser Arg Pro
                85                  90                  95

Ala Pro Pro Pro Pro Ala Pro Pro Ser Ala Leu Pro Arg Gly Gly Arg
            100                 105                 110

Ala Ala Arg Ala Gly Gly Pro Gly Ser Arg Ala Arg Ala Ala Gly Ala
        115                 120                 125

Arg Gly Cys Arg Leu Arg Ser Gln Leu Val Pro Val Arg Ala Leu Gly
    130                 135                 140

Leu Gly His Arg Ser Asp Glu Leu Val Arg Phe Arg Phe Cys Ser Gly
145                 150                 155                 160

Ser Cys Arg Arg Ala Arg Ser Pro His Asp Leu Ser Leu Ala Ser Leu
                165                 170                 175

Leu Gly Ala Gly Ala Leu Arg Pro Pro Pro Gly Ser Arg Pro Val Ser
            180                 185                 190

Gln Pro Cys Cys Arg Pro Thr Arg Tyr Glu Ala Val Ser Phe Met Asp
        195                 200                 205

Val Asn Ser Thr Trp Arg Thr Val Asp Arg Leu Ser Ala Thr Ala Cys
    210                 215                 220

Gly Cys Leu Gly
225
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<210> 6506
<211> 237
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1407; "

<220>
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<223> /note="Gene Symbol: ARTN; "

<220>
<221> source
<223> /note="Gene Name:
artemin; "

<220>
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<223> /note="Uniprot ID: Q5T4W7; "

<220>
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<223> /note="ENSP ID: ENSP00000391998"

<400> 6506
Met Pro Gly Leu Ile Ser Ala Arg Gly Gln Pro Leu Leu Glu Val Leu
1   5   10   15

Pro Pro Gln Ala His Leu Gly Ala Leu Phe Leu Pro Glu Ala Pro Leu
            20   25   30

Gly Leu Ser Ala Gln Pro Ala Leu Trp Pro Thr Leu Ala Ala Leu Ala
        35   40   45

Leu Leu Ser Ser Val Ala Glu Ala Ser Leu Gly Ser Ala Pro Arg Ser
    50   55   60

Pro Ala Pro Arg Glu Gly Pro Pro Pro Val Leu Ala Ser Pro Ala Gly
65   70   75   80

His Leu Pro Gly Gly Arg Thr Ala Arg Trp Cys Ser Gly Arg Ala Arg
                85   90   95

Arg Pro Pro Pro Gln Pro Ser Arg Pro Ala Pro Pro Pro Pro Ala Pro
            100   105   110

Pro Ser Ala Leu Pro Arg Gly Gly Arg Ala Ala Arg Ala Gly Gly Pro
        115   120   125

```
Gly Ser Arg Ala Arg Ala Ala Gly Ala Arg Gly Cys Arg Leu Arg Ser
    130                 135                 140

Gln Leu Val Pro Val Arg Ala Leu Gly Leu Gly His Arg Ser Asp Glu
145                 150                 155                 160

Leu Val Arg Phe Arg Phe Cys Ser Gly Ser Cys Arg Arg Ala Arg Ser
                165                 170                 175

Pro His Asp Leu Ser Leu Ala Ser Leu Leu Gly Ala Gly Ala Leu Arg
            180                 185                 190

Pro Pro Pro Gly Ser Arg Pro Val Ser Gln Pro Cys Cys Arg Pro Thr
        195                 200                 205

Arg Tyr Glu Ala Val Ser Phe Met Asp Val Asn Ser Thr Trp Arg Thr
    210                 215                 220

Val Asp Arg Leu Ser Ala Thr Ala Cys Gly Cys Leu Gly
225                 230                 235


<210> 6507
<211> 76
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1407; "

<220>
<221> source
<223> /note="Gene Symbol: ARTN; "

<220>
<221> source
<223> /note="Gene Name:
      artemin; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000434071"

<400> 6507
Met Glu Leu Gly Leu Gly Gly Leu Ser Thr Leu Ser His Cys Pro Trp
1               5                   10                  15
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Pro Arg Gln Gln Ala Pro Leu Gly Leu Ser Ala Gln Pro Ala Leu Trp
            20   25   30

Pro Thr Leu Ala Ala Leu Ala Leu Leu Ser Ser Val Ala Glu Ala Ser
        35   40   45

Leu Gly Ser Ala Pro Arg Ser Pro Ala Pro Arg Glu Gly Pro Pro Pro
    50   55   60

Val Leu Ala Ser Pro Ala Gly His Leu Pro Gly Arg
65   70   75

<210> 6508
<211> 66
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ARTN; "

<220>
<221> source
<223> /note="Gene Name:
      artemin; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000434784"

<400> 6508
Met Glu Leu Gly Leu Gly Gly Leu Ser Thr Leu Ser His Cys Pro Trp
1   5   10   15

Pro Arg Gln Gln Pro Ala Leu Trp Pro Thr Leu Ala Ala Leu Ala Leu
            20   25   30

Leu Ser Ser Val Ala Glu Ala Ser Leu Gly Ser Ala Pro Arg Ser Pro
        35   40   45

Ala Pro Arg Glu Gly Pro Pro Pro Val Leu Ala Ser Pro Ala Gly His
    50   55   60

Leu Pro
65

<210> 6509
<211> 89
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ARTN; "

<220>
<221> source
<223> /note="Gene Name:
artemin; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000434856"

<400> 6509
Met Glu Leu Gly Leu Gly Gly Leu Ser Thr Leu Ser His Cys Pro Trp
1 5 10 15

Pro Arg Gln Gln Ala Pro Leu Gly Leu Ser Ala Gln Pro Ala Leu Trp
20 25 30

Pro Thr Leu Ala Ala Leu Ala Leu Leu Ser Ser Val Ala Glu Ala Ser
35 40 45

Leu Gly Ser Ala Pro Arg Ser Pro Ala Pro Arg Glu Gly Pro Pro Pro
50 55 60

Val Leu Ala Ser Pro Ala Gly His Leu Pro Gly Gly Arg Thr Ala Arg
65 70 75 80

Trp Cys Ser Gly Arg Ala Arg Arg Pro
85

<210> 6510
<211> 76
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1407; "

<220>
<221> source
<223> /note="Gene Symbol: ARTN; "

<220>
<221> source
<223> /note="Gene Name:
artemin; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000435140"

<400> 6510
Met Glu Leu Gly Leu Gly Gly Leu Ser Thr Leu Ser His Cys Pro Trp
1 5 10 15

Pro Arg Gln Gln Ala Pro Leu Gly Leu Ser Ala Gln Pro Ala Leu Trp
20 25 30

Pro Thr Leu Ala Ala Leu Ala Leu Leu Ser Ser Val Ala Glu Ala Ser
35 40 45

Leu Gly Ser Ala Pro Arg Ser Pro Ala Pro Arg Glu Gly Pro Pro Pro
50 55 60

Val Leu Ala Ser Pro Ala Gly His Leu Pro Gly Arg
65 70 75

<210> 6511
<211> 66
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1407; "

<220>
<221> source
<223> /note="Gene Symbol: ARTN; "

<220>
<221> source
<223> /note="Gene Name:
artemin; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000435804"

<400> 6511
Met Glu Leu Gly Leu Gly Gly Leu Ser Thr Leu Ser His Cys Pro Trp
1   5   10   15

Pro Arg Gln Gln Pro Ala Leu Trp Pro Thr Leu Ala Ala Leu Ala Leu
            20   25   30

Leu Ser Ser Val Ala Glu Ala Ser Leu Gly Ser Ala Pro Arg Ser Pro
        35   40   45

Ala Pro Arg Glu Gly Pro Pro Pro Val Leu Ala Ser Pro Ala Gly His
    50   55   60

Leu Pro
65

<210> 6512
<211> 89
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1407; "

<220>
<221> source
<223> /note="Gene Symbol: ARTN; "

<220>
<221> source
<223> /note="Gene Name:
artemin; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436149"

<400> 6512
Met Glu Leu Gly Leu Gly Gly Leu Ser Thr Leu Ser His Cys Pro Trp
1   5   10   15

Pro Arg Gln Gln Ala Pro Leu Gly Leu Ser Ala Gln Pro Ala Leu Trp
            20   25   30

Pro Thr Leu Ala Ala Leu Ala Leu Leu Ser Ser Val Ala Glu Ala Ser
        35   40   45

Leu Gly Ser Ala Pro Arg Ser Pro Ala Pro Arg Glu Gly Pro Pro Pro

```
    50                  55                  60

Val Leu Ala Ser Pro Ala Gly His Leu Pro Gly Gly Arg Thr Ala Arg
65                  70                  75                  80

Trp Cys Ser Gly Arg Ala Arg Arg Pro
                85


<210> 6513
<211> 228
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1407; "

<220>
<221> source
<223> /note="Gene Symbol: ARTN; "

<220>
<221> source
<223> /note="Gene Name:
      artemin; "

<220>
<221> source
<223> /note="Uniprot ID:  Q5T4W7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436727"

<400> 6513
Met Glu Leu Gly Leu Gly Gly Leu Ser Thr Leu Ser His Cys Pro Trp
1               5                  10                  15

Pro Arg Gln Gln Ala Pro Leu Gly Leu Ser Ala Gln Pro Ala Leu Trp
            20                  25                  30

Pro Thr Leu Ala Ala Leu Ala Leu Leu Ser Ser Val Ala Glu Ala Ser
        35                  40                  45

Leu Gly Ser Ala Pro Arg Ser Pro Ala Pro Arg Glu Gly Pro Pro Pro
    50                  55                  60

Val Leu Ala Ser Pro Ala Gly His Leu Pro Gly Gly Arg Thr Ala Arg
65                  70                  75                  80
```

```
Trp Cys Ser Gly Arg Ala Arg Arg Pro Pro Pro Gln Pro Ser Arg Pro
                85                  90                  95

Ala Pro Pro Pro Pro Ala Pro Pro Ser Ala Leu Pro Arg Gly Gly Arg
            100                 105                 110

Ala Ala Arg Ala Gly Gly Pro Gly Ser Arg Ala Arg Ala Ala Gly Ala
        115                 120                 125

Arg Gly Cys Arg Leu Arg Ser Gln Leu Val Pro Val Arg Ala Leu Gly
    130                 135                 140

Leu Gly His Arg Ser Asp Glu Leu Val Arg Phe Arg Phe Cys Ser Gly
145                 150                 155                 160

Ser Cys Arg Arg Ala Arg Ser Pro His Asp Leu Ser Leu Ala Ser Leu
                165                 170                 175

Leu Gly Ala Gly Ala Leu Arg Pro Pro Pro Gly Ser Arg Pro Val Ser
            180                 185                 190

Gln Pro Cys Cys Arg Pro Thr Arg Tyr Glu Ala Val Ser Phe Met Asp
        195                 200                 205

Val Asn Ser Thr Trp Arg Thr Val Asp Arg Leu Ser Ala Thr Ala Cys
    210                 215                 220

Gly Cys Leu Gly
225


<210> 6514
<211> 271
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1408; "

<220>
<221> source
<223> /note="Gene Symbol: ARV1; "

<220>
<221> source
<223> /note="Gene Name:
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ARV1 homolog, fatty acid homeostasis modulator; "

<220>
<221> source
<223> /note="Uniprot ID: Q9H2C2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000312458"

<400> 6514

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Met Gly Asn Gly Gly Arg Ser Gly Leu Gln Gln Gly Lys Gly Asn Val
1               5                  10                  15

Asp Gly Val Ala Ala Thr Pro Thr Ala Ala Ser Ala Ser Cys Gln Tyr
            20                  25                  30

Arg Cys Ile Glu Cys Asn Gln Glu Ala Lys Glu Leu Tyr Arg Asp Tyr
        35                  40                  45

Asn His Gly Val Leu Lys Ile Thr Ile Cys Lys Ser Cys Gln Lys Pro
    50                  55                  60

Val Asp Lys Tyr Ile Glu Tyr Asp Pro Val Ile Ile Leu Ile Asn Ala
65                  70                  75                  80

Ile Leu Cys Lys Ala Gln Ala Tyr Arg His Ile Leu Phe Asn Thr Gln
                85                  90                  95

Ile Asn Ile His Gly Lys Leu Cys Ile Phe Cys Leu Leu Cys Glu Ala
            100                 105                 110

Tyr Leu Arg Trp Trp Gln Leu Gln Asp Ser Asn Gln Asn Thr Ala Pro
        115                 120                 125

Asp Asp Leu Ile Arg Tyr Ala Lys Glu Trp Asp Phe Tyr Arg Met Phe
    130                 135                 140

Ala Ile Ala Ala Leu Glu Gln Thr Ala Tyr Phe Ile Gly Ile Phe Thr
145                 150                 155                 160

Phe Leu Trp Val Glu Arg Pro Met Thr Ala Lys Lys Lys Pro Asn Phe
                165                 170                 175

Ile Leu Leu Leu Lys Ala Leu Leu Leu Ser Ser Tyr Gly Lys Leu Leu
            180                 185                 190
```

```
Leu Ile Pro Ala Val Ile Trp Glu His Asp Tyr Thr Ser Val Cys Leu
        195                 200                 205

Lys Leu Ile Lys Val Phe Val Leu Thr Ser Asn Phe Gln Ala Ile Arg
    210                 215                 220

Val Thr Leu Asn Ile Asn Arg Lys Leu Ser Phe Leu Ala Val Leu Ser
225                 230                 235                 240

Gly Leu Leu Leu Glu Ser Ile Met Val Tyr Phe Phe Gln Ser Met Glu
                245                 250                 255

Trp Asp Val Gly Ser Asp Tyr Ala Ile Phe Lys Ser Gln Asp Phe
            260                 265                 270
```

<210> 6515
<211> 231
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1408; "

<220>
<221> source
<223> /note="Gene Symbol: ARV1; "

<220>
<221> source
<223> /note="Gene Name:
ARV1 homolog, fatty acid homeostasis modulator; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000355618"

<400> 6515

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Met Gly Asn Gly Gly Arg Ser Gly Leu Gln Gln Gly Lys Gly Asn Val
1               5                   10                  15

Asp Gly Val Ala Ala Thr Pro Thr Ala Ala Ser Ala Ser Cys Gln Tyr
            20                  25                  30

Arg Cys Ile Glu Cys Asn Gln Glu Ala Lys Glu Leu Tyr Arg Asp Tyr
        35                  40                  45
```

```
Asn His Gly Val Leu Lys Ile Thr Ile Cys Ile His Gly Lys Leu Cys
    50                  55                  60

Ile Phe Cys Leu Leu Cys Glu Ala Tyr Leu Arg Trp Trp Gln Leu Gln
65                  70                  75                  80

Asp Ser Asn Gln Asn Thr Ala Pro Asp Asp Leu Ile Arg Tyr Ala Lys
                85                  90                  95

Glu Trp Asp Phe Tyr Arg Met Phe Ala Ile Ala Ala Leu Glu Gln Thr
            100                 105                 110

Ala Tyr Phe Ile Gly Ile Phe Thr Phe Leu Trp Val Glu Arg Pro Met
        115                 120                 125

Thr Ala Lys Lys Lys Pro Asn Phe Ile Leu Leu Leu Lys Ala Leu Leu
    130                 135                 140

Leu Ser Ser Tyr Gly Lys Leu Leu Leu Ile Pro Ala Val Ile Trp Glu
145                 150                 155                 160

His Asp Tyr Thr Ser Val Cys Leu Lys Leu Ile Lys Val Phe Val Leu
                165                 170                 175

Thr Ser Asn Phe Gln Ala Ile Arg Val Thr Leu Asn Ile Asn Arg Lys
            180                 185                 190

Leu Ser Phe Leu Ala Val Leu Ser Gly Leu Leu Leu Glu Ser Ile Met
        195                 200                 205

Val Tyr Phe Phe Gln Ser Met Glu Trp Asp Val Gly Ser Asp Tyr Ala
    210                 215                 220

Ile Phe Lys Ser Gln Asp Phe
225                 230


<210> 6516
<211> 291
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1408; "
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<220>
<221> source
<223> /note="Gene Symbol: ARV1; "

<220>
<221> source
<223> /note="Gene Name:
ARV1 homolog, fatty acid homeostasis modulator; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000394547"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6516
Xaa Asn Val Asp Gly Val Ala Ala Thr Pro Thr Ala Ala Ser Ala Ser
1 5 10 15

Cys Gln Tyr Arg Cys Ile Glu Cys Asn Gln Glu Ala Lys Glu Leu Tyr
20 25 30

Arg Asp Tyr Asn His Gly Val Leu Lys Ile Thr Ile Cys Lys Ser Cys
35 40 45

Gln Lys Pro Val Asp Lys Tyr Ile Glu Tyr Asp Pro Val Ile Ile Leu
50 55 60

Ile Asn Ala Ile Leu Cys Lys Ala Gln Ala Tyr Arg His Ile Leu Phe
65 70 75 80

Asn Thr Gln Ile Asn Ile His Gly Lys Leu Cys Ile Phe Cys Leu Leu
85 90 95

Cys Glu Ala Tyr Leu Arg Trp Trp Gln Leu Gln Asp Ser Asn Gln Asn
100 105 110

Thr Ala Pro Asp Asp Leu Ile Arg Tyr Ala Lys Glu Trp Asp Phe Tyr
115 120 125

Arg Met Phe Ala Ile Ala Ala Leu Gly Trp Ser Ala Val Ala Gln Ser
130 135 140

Gln Leu Thr Ala Ala Leu Asn Ser Trp Ala Gln Ala Ile Leu Leu Pro

```
145                 150                 155                 160

Arg Pro Pro Gln Val Ala Gly Thr Thr Glu Gln Thr Ala Tyr Phe Ile
                165                 170                 175

Gly Ile Phe Thr Phe Leu Trp Val Glu Arg Pro Met Thr Ala Lys Lys
            180                 185                 190

Lys Pro Asn Phe Ile Leu Leu Leu Lys Ala Leu Leu Leu Ser Ser Tyr
        195                 200                 205

Gly Lys Leu Leu Leu Ile Pro Ala Val Ile Trp Glu His Asp Tyr Thr
    210                 215                 220

Ser Val Cys Leu Lys Leu Ile Lys Val Phe Val Leu Thr Ser Asn Phe
225                 230                 235                 240

Gln Ala Ile Arg Val Thr Leu Asn Ile Asn Arg Lys Leu Ser Phe Leu
                245                 250                 255

Ala Val Leu Ser Gly Leu Leu Leu Glu Ser Ile Met Val Tyr Phe Phe
            260                 265                 270

Gln Ser Met Glu Trp Asp Val Gly Ser Asp Tyr Ala Ile Phe Lys Ser
        275                 280                 285

Gln Asp Phe
    290


<210> 6517
<211> 268
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1408; "

<220>
<221> source
<223> /note="Gene Symbol: ARV1; "

<220>
<221> source
<223> /note="Gene Name:
      ARV1 homolog, fatty acid homeostasis modulator; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000416039"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6517
Xaa Gly Arg Ser Gly Leu Gln Gln Gly Lys Gly Asn Val Asp Gly Val
1 5 10 15

Ala Ala Thr Pro Thr Ala Ala Ser Ala Ser Cys Gln Tyr Arg Cys Ile
20 25 30

Glu Cys Asn Gln Glu Ala Lys Glu Leu Tyr Arg Asp Tyr Asn His Gly
35 40 45

Val Leu Lys Ile Thr Ile Cys Lys Ser Cys Gln Lys Pro Val Asp Lys
50 55 60

Tyr Ile Glu Tyr Asp Pro Val Ile Ile Leu Ile Asn Ala Ile Leu Cys
65 70 75 80

Lys Ala Gln Ala Tyr Arg His Ile Leu Phe Asn Thr Gln Ile Asn Ile
85 90 95

His Gly Lys Leu Cys Ile Phe Cys Leu Leu Cys Glu Ala Tyr Leu Arg
100 105 110

Trp Trp Gln Leu Gln Asp Ser Asn Gln Asn Thr Ala Pro Asp Asp Leu
115 120 125

Ile Arg Tyr Ala Lys Glu Trp Asp Phe Tyr Arg Met Phe Ala Ile Ala
130 135 140

Ala Leu Glu Gln Thr Ala Tyr Phe Ile Gly Ile Phe Thr Phe Leu Trp
145 150 155 160

Val Glu Arg Pro Met Thr Ala Lys Lys Lys Pro Asn Phe Ile Leu Leu
165 170 175

Leu Lys Ala Leu Leu Leu Ser Ser Tyr Gly Lys Leu Leu Leu Ile Pro
180 185 190

```
Ala Val Ile Trp Glu His Asp Tyr Thr Ser Val Cys Leu Lys Leu Ile
        195                 200                 205

Lys Val Phe Val Leu Thr Ser Asn Phe Gln Ala Ile Arg Val Thr Leu
    210                 215                 220

Asn Ile Asn Arg Lys Leu Ser Phe Leu Ala Val Leu Ser Gly Leu Leu
225                 230                 235                 240

Leu Glu Ser Ile Met Val Tyr Phe Phe Gln Ser Met Glu Trp Asp Val
                245                 250                 255

Gly Ser Asp Tyr Ala Ile Phe Lys Ser Gln Asp Phe
            260                 265


<210> 6518
<211> 122
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1408; "

<220>
<221> source
<223> /note="Gene Symbol: ARV1; "

<220>
<221> source
<223> /note="Gene Name:
      ARV1 homolog, fatty acid homeostasis modulator; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000435420"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6518
Xaa Gln Thr Ala Tyr Phe Ile Gly Ile Phe Thr Phe Leu Trp Val Glu
1               5                   10                  15

Arg Pro Met Thr Ala Lys Lys Lys Pro Asn Phe Ile Leu Leu Leu Lys
            20                  25                  30
```

```
Ala Leu Leu Leu Ser Ser Tyr Gly Lys Leu Leu Leu Ile Pro Ala Val
        35                  40                  45

Ile Trp Glu His Asp Tyr Thr Ser Val Cys Leu Lys Leu Ile Lys Val
    50                  55                  60

Phe Val Leu Thr Ser Asn Phe Gln Ala Ile Arg Val Thr Leu Asn Ile
65                  70                  75                  80

Asn Arg Lys Leu Ser Phe Leu Ala Val Leu Ser Gly Leu Leu Leu Glu
                85                  90                  95

Ser Ile Met Val Tyr Phe Phe Gln Ser Met Glu Trp Asp Val Gly Ser
            100                 105                 110

Asp Tyr Ala Ile Phe Lys Ser Gln Asp Phe
        115                 120


<210> 6519
<211> 247
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1408; "

<220>
<221> source
<223> /note="Gene Symbol: ARV1; "

<220>
<221> source
<223> /note="Gene Name:
      ARV1 homolog, fatty acid homeostasis modulator; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436763"

<400> 6519
Met Gly Trp Gln Arg Leu Leu Leu Leu Pro Arg Pro Pro Ala Ser Thr
1               5                   10                  15

Gly Ala Ser Asn Ala Thr Arg Arg Pro Lys Ser Cys Thr Glu Thr Ile
            20                  25                  30
```

```
Thr Thr Lys Ser Cys Gln Lys Pro Val Asp Lys Tyr Ile Glu Tyr Asp
        35                  40                  45

Pro Val Ile Ile Leu Ile Asn Ala Ile Leu Cys Lys Ala Gln Ala Tyr
    50                  55                  60

Arg His Ile Leu Phe Asn Thr Gln Ile Asn Ile His Gly Lys Leu Cys
65                  70                  75                  80

Ile Phe Cys Leu Leu Cys Glu Ala Tyr Leu Arg Trp Trp Gln Leu Gln
                85                  90                  95

Asp Ser Asn Gln Asn Thr Ala Pro Asp Asp Leu Ile Arg Tyr Ala Lys
            100                 105                 110

Glu Trp Asp Phe Tyr Arg Met Phe Ala Ile Ala Ala Leu Glu Gln Thr
        115                 120                 125

Ala Tyr Phe Ile Gly Ile Phe Thr Phe Leu Trp Val Glu Arg Pro Met
    130                 135                 140

Thr Ala Lys Lys Lys Pro Asn Phe Ile Leu Leu Leu Lys Ala Leu Leu
145                 150                 155                 160

Leu Ser Ser Tyr Gly Lys Leu Leu Leu Ile Pro Ala Val Ile Trp Glu
                165                 170                 175

His Asp Tyr Thr Ser Val Cys Leu Lys Leu Ile Lys Val Phe Val Leu
            180                 185                 190

Thr Ser Asn Phe Gln Ala Ile Arg Val Thr Leu Asn Ile Asn Arg Lys
        195                 200                 205

Leu Ser Phe Leu Ala Val Leu Ser Gly Leu Leu Leu Glu Ser Ile Met
    210                 215                 220

Val Tyr Phe Phe Gln Ser Met Glu Trp Asp Val Gly Ser Asp Tyr Ala
225                 230                 235                 240

Ile Phe Lys Ser Gln Asp Phe
                245
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<210> 6520

<211> 848
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1409; "

<220>
<221> source
<223> /note="Gene Symbol: AHR; "

<220>
<221> source
<223> /note="Gene Name:
aryl hydrocarbon receptor; "

<220>
<221> source
<223> /note="Uniprot ID: P35869; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000242057"

<400> 6520
Met Asn Ser Ser Ser Ala Asn Ile Thr Tyr Ala Ser Arg Lys Arg Arg
1   5   10   15

Lys Pro Val Gln Lys Thr Val Lys Pro Ile Pro Ala Glu Gly Ile Lys
            20   25   30

Ser Asn Pro Ser Lys Arg His Arg Asp Arg Leu Asn Thr Glu Leu Asp
        35   40   45

Arg Leu Ala Ser Leu Leu Pro Phe Pro Gln Asp Val Ile Asn Lys Leu
    50   55   60

Asp Lys Leu Ser Val Leu Arg Leu Ser Val Ser Tyr Leu Arg Ala Lys
65   70   75   80

Ser Phe Phe Asp Val Ala Leu Lys Ser Ser Pro Thr Glu Arg Asn Gly
                85   90   95

Gly Gln Asp Asn Cys Arg Ala Ala Asn Phe Arg Glu Gly Leu Asn Leu
            100   105   110

Gln Glu Gly Glu Phe Leu Leu Gln Ala Leu Asn Gly Phe Val Leu Val
        115   120   125

```
Val Thr Thr Asp Ala Leu Val Phe Tyr Ala Ser Ser Thr Ile Gln Asp
    130                 135                 140

Tyr Leu Gly Phe Gln Gln Ser Asp Val Ile His Gln Ser Val Tyr Glu
145                 150                 155                 160

Leu Ile His Thr Glu Asp Arg Ala Glu Phe Gln Arg Gln Leu His Trp
                165                 170                 175

Ala Leu Asn Pro Ser Gln Cys Thr Glu Ser Gly Gln Gly Ile Glu Glu
            180                 185                 190

Ala Thr Gly Leu Pro Gln Thr Val Val Cys Tyr Asn Pro Asp Gln Ile
        195                 200                 205

Pro Pro Glu Asn Ser Pro Leu Met Glu Arg Cys Phe Ile Cys Arg Leu
    210                 215                 220

Arg Cys Leu Leu Asp Asn Ser Ser Gly Phe Leu Ala Met Asn Phe Gln
225                 230                 235                 240

Gly Lys Leu Lys Tyr Leu His Gly Gln Lys Lys Lys Gly Lys Asp Gly
                245                 250                 255

Ser Ile Leu Pro Pro Gln Leu Ala Leu Phe Ala Ile Ala Thr Pro Leu
            260                 265                 270

Gln Pro Pro Ser Ile Leu Glu Ile Arg Thr Lys Asn Phe Ile Phe Arg
        275                 280                 285

Thr Lys His Lys Leu Asp Phe Thr Pro Ile Gly Cys Asp Ala Lys Gly
    290                 295                 300

Arg Ile Val Leu Gly Tyr Thr Glu Ala Glu Leu Cys Thr Arg Gly Ser
305                 310                 315                 320

Gly Tyr Gln Phe Ile His Ala Ala Asp Met Leu Tyr Cys Ala Glu Ser
                325                 330                 335

His Ile Arg Met Ile Lys Thr Gly Glu Ser Gly Met Ile Val Phe Arg
            340                 345                 350
```

```
Leu Leu Thr Lys Asn Asn Arg Trp Thr Trp Val Gln Ser Asn Ala Arg
        355                 360                 365

Leu Leu Tyr Lys Asn Gly Arg Pro Asp Tyr Ile Ile Val Thr Gln Arg
    370                 375                 380

Pro Leu Thr Asp Glu Glu Gly Thr Glu His Leu Arg Lys Arg Asn Thr
385                 390                 395                 400

Lys Leu Pro Phe Met Phe Thr Thr Gly Glu Ala Val Leu Tyr Glu Ala
                405                 410                 415

Thr Asn Pro Phe Pro Ala Ile Met Asp Pro Leu Pro Leu Arg Thr Lys
            420                 425                 430

Asn Gly Thr Ser Gly Lys Asp Ser Ala Thr Thr Ser Thr Leu Ser Lys
        435                 440                 445

Asp Ser Leu Asn Pro Ser Ser Leu Leu Ala Ala Met Met Gln Gln Asp
    450                 455                 460

Glu Ser Ile Tyr Leu Tyr Pro Ala Ser Ser Thr Ser Ser Thr Ala Pro
465                 470                 475                 480

Phe Glu Asn Asn Phe Phe Asn Glu Ser Met Asn Glu Cys Arg Asn Trp
                485                 490                 495

Gln Asp Asn Thr Ala Pro Met Gly Asn Asp Thr Ile Leu Lys His Glu
            500                 505                 510

Gln Ile Asp Gln Pro Gln Asp Val Asn Ser Phe Ala Gly Gly His Pro
        515                 520                 525

Gly Leu Phe Gln Asp Ser Lys Asn Ser Asp Leu Tyr Ser Ile Met Lys
    530                 535                 540

Asn Leu Gly Ile Asp Phe Glu Asp Ile Arg His Met Gln Asn Glu Lys
545                 550                 555                 560

Phe Phe Arg Asn Asp Phe Ser Gly Glu Val Asp Phe Arg Asp Ile Asp
                565                 570                 575

Leu Thr Asp Glu Ile Leu Thr Tyr Val Gln Asp Ser Leu Ser Lys Ser
```

580 585 590

Pro Phe Ile Pro Ser Asp Tyr Gln Gln Gln Gln Ser Leu Ala Leu Asn
595 600 605

Ser Ser Cys Met Val Gln Glu His Leu His Leu Glu Gln Gln Gln Gln
610 615 620

His His Gln Lys Gln Val Val Val Glu Pro Gln Gln Gln Leu Cys Gln
625 630 635 640

Lys Met Lys His Met Gln Val Asn Gly Met Phe Glu Asn Trp Asn Ser
645 650 655

Asn Gln Phe Val Pro Phe Asn Cys Pro Gln Gln Asp Pro Gln Gln Tyr
660 665 670

Asn Val Phe Thr Asp Leu His Gly Ile Ser Gln Glu Phe Pro Tyr Lys
675 680 685

Ser Glu Met Asp Ser Met Pro Tyr Thr Gln Asn Phe Ile Ser Cys Asn
690 695 700

Gln Pro Val Leu Pro Gln His Ser Lys Cys Thr Glu Leu Asp Tyr Pro
705 710 715 720

Met Gly Ser Phe Glu Pro Ser Pro Tyr Pro Thr Thr Ser Ser Leu Glu
725 730 735

Asp Phe Val Thr Cys Leu Gln Leu Pro Glu Asn Gln Lys His Gly Leu
740 745 750

Asn Pro Gln Ser Ala Ile Ile Thr Pro Gln Thr Cys Tyr Ala Gly Ala
755 760 765

Val Ser Met Tyr Gln Cys Gln Pro Glu Pro Gln His Thr His Val Gly
770 775 780

Gln Met Gln Tyr Asn Pro Val Leu Pro Gly Gln Gln Ala Phe Leu Asn
785 790 795 800

Lys Phe Gln Asn Gly Val Leu Asn Glu Thr Tyr Pro Ala Glu Leu Asn
805 810 815

```
Asn Ile Asn Asn Thr Gln Thr Thr Thr His Leu Gln Pro Leu His His
            820                 825                 830

Pro Ser Glu Ala Arg Pro Phe Pro Asp Leu Thr Ser Ser Gly Phe Leu
        835                 840                 845


<210> 6521
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<213> Homo sapiens

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<223> /note="Gene Name:
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<220>
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Met Asn Ser Ser Ser Ala Asn Ile Thr Tyr Ala Ser Arg Lys Arg Arg
1               5                   10                  15

Lys Pro Val Gln Lys Thr Val Lys Pro Ile Pro Ala Glu Gly Ile Lys
            20                  25                  30

Ser Asn Pro Ser Lys Arg His Arg Asp Arg Leu Asn Thr Glu Leu Asp
        35                  40                  45

Arg Leu Ala Ser Leu Leu Pro Phe Pro Gln Asp Val Ile Asn Lys Leu
    50                  55                  60

Asp Lys Leu Ser Val Leu Arg Leu Ser Val Ser Tyr Leu Arg Ala Lys
65                  70                  75                  80
```

```
Ser Phe Phe Asp Val Ala Leu Lys Ser Ser Pro Thr Glu Arg Asn Gly
                85                  90                  95

Gly Gln Asp Asn Cys Arg Ala Ala Asn Phe Arg Glu Gly Leu Asn Leu
            100                 105                 110

Gln Glu Gly Glu Phe Leu Leu Gln Ala Leu Asn Gly Phe Val Leu Val
        115                 120                 125

Val Thr Thr Asp Ala Leu Val Phe Tyr Ala Ser Ser Thr Ile Gln Asp
    130                 135                 140

Tyr Leu Gly Phe Gln Gln Ser Asp Val Ile His Gln Ser Val Tyr Glu
145                 150                 155                 160

Leu Ile His Thr Glu Asp Arg Ala Glu Phe Gln Arg Gln Leu His Trp
                165                 170                 175

Ala Leu Asn Pro Ser Gln Cys Thr Glu Ser Gly Gln Gly Ile Glu Glu
            180                 185                 190

Ala Thr Gly Leu Pro Gln Thr Val Val Cys Tyr Asn Pro Asp Gln Ile
        195                 200                 205

Pro Pro Glu Asn Ser Pro Leu Met Glu Arg Cys Phe Ile Cys Arg Leu
    210                 215                 220

Arg Cys Leu Leu Asp Asn Ser Ser Gly Phe Leu Ala Met Asn Phe Gln
225                 230                 235                 240

Gly Lys Leu Lys Tyr Leu His Gly Gln Lys Lys Lys Gly Lys Asp Gly
                245                 250                 255

Ser Ile Leu Pro Pro Gln Leu Ala Leu Phe Ala Ile Ala Thr Pro Leu
            260                 265                 270

Gln Pro Pro Ser Ile Leu Glu Ile Arg Thr Lys Asn Phe Ile Phe Arg
        275                 280                 285

Thr Lys His Lys Leu Asp Phe Thr Pro Ile Gly Cys Asp Ala Lys Gly
    290                 295                 300

Arg Ile Val Leu Gly Tyr Thr Glu Ala Glu Leu Cys Thr Arg Gly Ser
```

305 310 315 320

Gly Tyr Gln Phe Ile His Ala Ala Asp Met Leu Tyr Cys Ala Glu Ser
325 330 335

His Ile Arg Met Ile Lys Thr Gly Glu Ser Gly Met Ile Val Phe Arg
340 345 350

Leu Leu Thr Lys Asn Asn Arg Trp Thr Trp Val Gln Ser Asn Ala Arg
355 360 365

Leu Leu Tyr Lys Asn Gly Arg Pro Asp Tyr Ile Ile Val Thr Gln Arg
370 375 380

Pro Leu Thr Asp Glu Glu Gly Thr Glu His Leu Arg Lys Arg Asn Thr
385 390 395 400

Lys Leu Pro Phe Met Phe Thr Thr Gly Glu Ala Val Leu Tyr Glu Ala
405 410 415

Thr Asn Pro Phe Pro Ala Ile Met Asp Pro Leu Pro Leu Arg Thr Lys
420 425 430

Asn Gly Thr Ser Gly Lys Asp Ser Ala Thr Thr Ser Thr Leu Ser Lys
435 440 445

Asp Ser Leu Asn Pro Ser Ser Leu Leu Ala Ala Met Met Gln Gln Asp
450 455 460

Glu Ser Ile Tyr Leu Tyr Pro Ala Ser Ser Thr Ser Ser Thr Ala Pro
465 470 475 480

Phe Glu Asn Asn Phe Phe Asn Glu Ser Met Asn Glu Cys Arg Asn Trp
485 490 495

Gln Asp Asn Thr Ala Pro Met Gly Asn Asp Thr Ile Leu Lys His Glu
500 505 510

Gln Ile Asp Gln Pro Gln Asp Val Asn Ser Phe Ala Gly Gly His Pro
515 520 525

Gly Leu Phe Gln Asp Ser Lys Asn Ser Asp Leu Tyr Ser Ile Met Lys
530 535 540

```
Asn Leu Gly Ile Asp Phe Glu Asp Ile Arg His Met Gln Asn Glu Lys
545                 550                 555                 560

Phe Phe Arg Asn Asp Phe Ser Gly Glu Val Asp Phe Arg Asp Ile Asp
                565                 570                 575

Leu Thr Asp Glu Ile Leu Thr Tyr Val Gln Asp Ser Leu Ser Lys Ser
            580                 585                 590

Pro Phe Ile Pro Ser Asp Tyr Gln Gln Gln Gln Ser Leu Ala Leu Asn
        595                 600                 605

Ser Ser Cys Met Val Gln Glu His Leu His Leu Glu Gln Gln Gln Gln
    610                 615                 620

His His Gln Lys Gln Val Val Val Glu Pro Gln Gln Gln Leu Cys Gln
625                 630                 635                 640

Lys Met Lys His Met Gln Val Asn Gly Met Phe Glu Asn Trp Asn Ser
                645                 650                 655

Asn Gln Phe Val Pro Phe Asn Cys Pro Gln Gln Asp Pro Gln Gln Tyr
            660                 665                 670

Asn Val Phe Thr Asp Leu His Gly Ile Ser Gln Glu Phe Pro Tyr Lys
        675                 680                 685

Ser Glu Met Asp Ser Met Pro Tyr Thr Gln Asn Phe Ile Ser Cys Asn
    690                 695                 700

Gln Pro Val Leu Pro Gln His Ser Lys Cys Thr Glu Leu Asp Tyr Pro
705                 710                 715                 720

Met Gly Ser Phe Glu Pro Ser Pro Tyr Pro Thr Thr Ser Ser Leu Glu
                725                 730                 735

Asp Phe Val Thr Cys Leu Gln Leu Pro Glu Asn Gln Lys His Gly Leu
            740                 745                 750

Asn Pro Gln Ser Ala Ile Ile Thr Pro Gln Thr Cys Tyr Ala Gly Ala
        755                 760                 765
```

```
Val Ser Met Tyr Gln Cys Gln Pro Glu Pro Gln His Thr His Val Gly
    770                 775                 780

Gln Met Gln Tyr Asn Pro Val Leu Pro Gly Gln Gln Ala Phe Leu Asn
785                 790                 795                 800

Lys Phe Gln Asn Gly Val Leu Asn Glu Thr Tyr Pro Ala Glu Leu Asn
                805                 810                 815

Asn Ile Asn Asn Thr Gln Thr Thr Thr His Leu Gln Pro Leu His His
            820                 825                 830

Pro Ser Glu Ala Arg Pro Phe Pro Asp Leu Thr Ser Ser Gly Phe Leu
        835                 840                 845


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<223> /note="Gene Symbol: AIP; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID:  O00170; "

<220>
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Met Ala Asp Ile Ile Ala Arg Leu Arg Glu Asp Gly Ile Gln Lys Arg
1               5                   10                  15

Val Ile Gln Glu Gly Arg Gly Glu Leu Pro Asp Phe Gln Asp Gly Thr
            20                  25                  30

Lys Ala Thr Phe His Tyr Arg Thr Leu His Ser Asp Asp Glu Gly Thr
```

```
        35                  40                  45

Val Leu Asp Asp Ser Arg Ala Arg Gly Lys Pro Met Glu Leu Ile Ile
    50                  55                  60

Gly Lys Lys Phe Lys Leu Pro Val Trp Glu Thr Ile Val Cys Thr Met
65                  70                  75                  80

Arg Glu Gly Glu Ile Ala Gln Phe Leu Cys Asp Ile Lys His Val Val
                85                  90                  95

Leu Tyr Pro Leu Val Ala Lys Ser Leu Arg Asn Ile Ala Val Gly Lys
            100                 105                 110

Asp Pro Leu Glu Gly Gln Arg His Cys Cys Gly Val Ala Gln Met Arg
        115                 120                 125

Glu His Ser Ser Leu Gly His Ala Asp Leu Asp Ala Leu Gln Gln Asn
    130                 135                 140

Pro Gln Pro Leu Ile Phe His Met Glu Met Leu Lys Val Glu Ser Pro
145                 150                 155                 160

Gly Thr Tyr Gln Gln Asp Pro Trp Ala Met Thr Asp Glu Glu Lys Ala
                165                 170                 175

Lys Ala Val Pro Leu Ile His Gln Glu Gly Asn Arg Leu Tyr Arg Glu
            180                 185                 190

Gly His Val Lys Glu Ala Ala Ala Lys Tyr Tyr Asp Ala Ile Ala Cys
        195                 200                 205

Leu Lys Asn Leu Gln Met Lys Glu Gln Pro Gly Ser Pro Glu Trp Ile
    210                 215                 220

Gln Leu Asp Gln Gln Ile Thr Pro Leu Leu Leu Asn Tyr Cys Gln Cys
225                 230                 235                 240

Lys Leu Val Val Glu Glu Tyr Tyr Glu Val Leu Asp His Cys Ser Ser
                245                 250                 255

Ile Leu Asn Lys Tyr Asp Asp Asn Val Lys Ala Tyr Phe Lys Arg Gly
            260                 265                 270
```

```
Lys Ala His Ala Ala Val Trp Asn Ala Gln Glu Ala Gln Ala Asp Phe
        275                 280                 285

Ala Lys Val Leu Glu Leu Asp Pro Ala Leu Ala Pro Val Val Ser Arg
    290                 295                 300

Glu Leu Arg Ala Leu Glu Ala Arg Ile Arg Gln Lys Asp Glu Glu Asp
305                 310                 315                 320

Lys Ala Arg Phe Arg Gly Ile Phe Ser His
                325                 330


<210> 6523
<211> 232
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<213> Homo sapiens

<220>
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<223> /note="Gene Name:
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<223> /note="ENSP ID: ENSP00000434982"

<400> 6523
Met Ala Asp Ile Ile Ala Arg Leu Arg Glu Asp Gly Ile Gln Lys Arg
1               5                   10                  15

Val Ile Gln Glu Gly Arg Gly Glu Leu Pro Asp Phe Gln Asp Gly Thr
            20                  25                  30

Lys Ala Thr Phe His Tyr Arg Thr Leu His Ser Asp Asp Glu Gly Thr
        35                  40                  45

Val Leu Asp Asp Ser Arg Ala Arg Gly Lys Pro Met Glu Leu Ile Ile
    50                  55                  60
```

```
Gly Lys Lys Phe Lys Leu Pro Val Trp Glu Thr Ile Val Cys Thr Met
65                  70                  75                  80

Arg Glu Gly Glu Ile Ala Gln Phe Leu Cys Asp Ile Lys Val Glu Ser
                85                  90                  95

Pro Gly Thr Tyr Gln Gln Asp Pro Trp Ala Met Thr Asp Glu Glu Lys
            100                 105                 110

Ala Lys Ala Val Pro Leu Ile His Gln Glu Gly Asn Arg Leu Tyr Arg
        115                 120                 125

Glu Gly His Val Lys Glu Ala Ala Ala Lys Tyr Tyr Asp Ala Ile Ala
    130                 135                 140

Cys Leu Lys Asn Leu Gln Met Lys Glu Gln Pro Gly Ser Pro Glu Trp
145                 150                 155                 160

Ile Gln Leu Asp Gln Gln Ile Thr Pro Leu Leu Leu Asn Tyr Cys Gln
                165                 170                 175

Cys Lys Leu Val Val Glu Glu Tyr Tyr Glu Val Leu Asp His Cys Ser
            180                 185                 190

Ser Ile Leu Asn Lys Tyr Asp Asp Asn Val Lys Ala Tyr Phe Lys Arg
        195                 200                 205

Gly Lys Ala His Ala Ala Val Trp Asn Ala Gln Glu Ala Gln Ala Asp
    210                 215                 220

Phe Ala Lys Val Leu Glu Leu Asp
225                 230


<210> 6524
<211> 188
<212> PRT
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<400> 6524
Gly Gln Arg His Cys Cys Gly Val Ala Gln Met Arg Glu His Ser Ser
1 5 10 15

Leu Gly His Ala Asp Leu Asp Ala Leu Gln Gln Asn Pro Gln Pro Leu
20 25 30

Ile Phe His Met Glu Met Leu Lys Val Glu Ser Pro Gly Thr Tyr Gln
35 40 45

Gln Asp Pro Trp Ala Met Thr Asp Glu Glu Lys Ala Lys Ala Val Pro
50 55 60

Leu Ile His Gln Glu Gly Asn Arg Leu Tyr Arg Glu Gly His Val Lys
65 70 75 80

Glu Ala Ala Ala Lys Tyr Tyr Asp Ala Ile Ala Cys Leu Lys Asn Leu
85 90 95

Gln Met Lys Glu Gln Pro Gly Ser Pro Glu Trp Ile Gln Leu Asp Gln
100 105 110

Gln Ile Thr Pro Leu Leu Leu Asn Tyr Cys Gln Cys Lys Leu Val Val
115 120 125

Glu Glu Tyr Tyr Glu Val Leu Asp His Cys Ser Ser Ile Leu Asn Lys
130 135 140

Tyr Asp Gly Glu His Arg Ala Leu Gly Cys Arg Gly Leu Arg Val Val
145 150 155 160

Arg Glu Trp Pro Phe Ser Cys His Cys Trp Gly Gln Asp Leu Ala Phe
165 170 175

His Asn Pro His Ser Glu Leu Pro Arg Gly Pro Asp
180 185

<210> 6525
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<220>
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interacting
prt-like 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NZN9; "

<220>
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<223> /note="ENSP ID: ENSP00000250087"

<400> 6525
Met Asp Ala Ala Leu Leu Leu Asn Val Glu Gly Val Lys Lys Thr Ile
1   5   10   15

Leu His Gly Gly Thr Gly Glu Leu Pro Asn Phe Ile Thr Gly Ser Arg
            20   25   30

Val Ile Phe His Phe Arg Thr Met Lys Cys Asp Glu Glu Arg Thr Val
        35   40   45

Ile Asp Asp Ser Arg Gln Val Gly Gln Pro Met His Ile Ile Ile Gly
    50   55   60

Asn Met Phe Lys Leu Glu Val Trp Glu Ile Leu Leu Thr Ser Met Arg
65   70   75   80

Val His Glu Val Ala Glu Phe Trp Cys Asp Thr Ile Val Asp Ala Pro
                85   90   95

Ser Asp Tyr Gln Arg Glu Thr Trp Asn Leu Ser Asn His Glu Lys Met
            100   105   110

Lys Ala Val Pro Val Leu His Gly Glu Gly Asn Arg Leu Phe Lys Leu
115 120 125

Gly Arg Tyr Glu Glu Ala Ser Ser Lys Tyr Gln Glu Ala Ile Ile Cys
130 135 140

Leu Arg Asn Leu Gln Thr Lys Glu Lys Pro Trp Glu Val Gln Trp Leu
145 150 155 160

Lys Leu Glu Lys Met Ile Asn Thr Leu Ile Leu Asn Tyr Cys Gln Cys
165 170 175

Leu Leu Lys Lys Glu Glu Tyr Tyr Glu Val Leu Glu His Thr Ser Asp
180 185 190

Ile Leu Arg His His Pro Gly Ile Val Lys Ala Tyr Tyr Val Arg Ala
195 200 205

Arg Ala His Ala Glu Val Trp Asn Glu Ala Glu Ala Lys Ala Asp Leu
210 215 220

Gln Lys Val Leu Glu Leu Glu Pro Ser Met Gln Lys Ala Val Arg Arg
225 230 235 240

Glu Leu Arg Leu Leu Glu Asn Arg Met Ala Glu Lys Gln Glu Glu Glu
245 250 255

Arg Leu Arg Cys Arg Asn Met Leu Ser Gln Gly Ala Thr Gln Pro Pro
260 265 270

Ala Glu Pro Pro Thr Glu Pro Pro Ala Gln Ser Ser Thr Glu Pro Pro
275 280 285

Ala Glu Pro Pro Thr Ala Pro Ser Ala Glu Leu Ser Ala Gly Pro Pro
290 295 300

Ala Glu Pro Ala Thr Glu Pro Pro Pro Ser Pro Gly His Ser Leu Gln
305 310 315 320

His

<210> 6526
<211> 61
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
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interacting
prt-like 1; "

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<223> /note="ENSP ID: ENSP00000370520"

<400> 6526
Met Asp Ala Ala Leu Leu Leu Asn Val Glu Gly Val Lys Lys Thr Ile
1 5 10 15

Leu His Gly Gly Thr Gly Glu Leu Pro Asn Phe Ile Thr Gly Ser Arg
20 25 30

Val Ser Gly Ala Pro Pro Glu Gln Thr Gly Ser Pro Thr Ala Ala Phe
35 40 45

Asn Ile Pro Gly Asp Leu Ser Phe Pro His His Glu Met
50 55 60

<210> 6527
<211> 384
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<213> Homo sapiens

<220>
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<223> /note="Uniprot ID: Q9NZN9; "

<220>
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<400> 6527
Met Asp Ala Ala Leu Leu Leu Asn Val Glu Gly Val Lys Lys Thr Ile
1   5   10   15

Leu His Gly Gly Thr Gly Glu Leu Pro Asn Phe Ile Thr Gly Ser Arg
            20   25   30

Val Ile Phe His Phe Arg Thr Met Lys Cys Asp Glu Glu Arg Thr Val
        35   40   45

Ile Asp Asp Ser Arg Gln Val Gly Gln Pro Met His Ile Ile Ile Gly
    50   55   60

Asn Met Phe Lys Leu Glu Val Trp Glu Ile Leu Leu Thr Ser Met Arg
65   70   75   80

Val His Glu Val Ala Glu Phe Trp Cys Asp Thr Ile His Thr Gly Val
                85   90   95

Tyr Pro Ile Leu Ser Arg Ser Leu Arg Gln Met Ala Gln Gly Lys Asp
            100   105   110

Pro Thr Glu Trp His Val His Thr Cys Gly Leu Ala Asn Met Phe Ala
        115   120   125

Tyr His Thr Leu Gly Tyr Glu Asp Leu Asp Glu Leu Gln Lys Glu Pro
    130   135   140

Gln Pro Leu Val Phe Val Ile Glu Leu Leu Gln Val Asp Ala Pro Ser
145   150   155   160

Asp Tyr Gln Arg Glu Thr Trp Asn Leu Ser Asn His Glu Lys Met Lys
                165   170   175

```
Ala Val Pro Val Leu His Gly Glu Gly Asn Arg Leu Phe Lys Leu Gly
            180                 185                 190

Arg Tyr Glu Glu Ala Ser Ser Lys Tyr Gln Glu Ala Ile Ile Cys Leu
        195                 200                 205

Arg Asn Leu Gln Thr Lys Glu Lys Pro Trp Glu Val Gln Trp Leu Lys
    210                 215                 220

Leu Glu Lys Met Ile Asn Thr Leu Ile Leu Asn Tyr Cys Gln Cys Leu
225                 230                 235                 240

Leu Lys Lys Glu Glu Tyr Tyr Glu Val Leu Glu His Thr Ser Asp Ile
                245                 250                 255

Leu Arg His His Pro Gly Ile Val Lys Ala Tyr Tyr Val Arg Ala Arg
            260                 265                 270

Ala His Ala Glu Val Trp Asn Glu Ala Glu Ala Lys Ala Asp Leu Gln
        275                 280                 285

Lys Val Leu Glu Leu Glu Pro Ser Met Gln Lys Ala Val Arg Arg Glu
    290                 295                 300

Leu Arg Leu Leu Glu Asn Arg Met Ala Glu Lys Gln Glu Glu Glu Arg
305                 310                 315                 320

Leu Arg Cys Arg Asn Met Leu Ser Gln Gly Ala Thr Gln Pro Pro Ala
                325                 330                 335

Glu Pro Pro Thr Glu Pro Pro Ala Gln Ser Ser Thr Glu Pro Pro Ala
            340                 345                 350

Glu Pro Pro Thr Ala Pro Ser Ala Glu Leu Ser Ala Gly Pro Pro Ala
        355                 360                 365

Glu Pro Ala Thr Glu Pro Pro Pro Ser Pro Gly His Ser Leu Gln His
    370                 375                 380
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<210> 6528
<211> 372
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<213> Homo sapiens

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<220>
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interacting
prt-like 1; "

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<221> source
<223> /note="ENSP ID: ENSP00000458456"

<400> 6528
Met Asp Ala Ala Leu Leu Leu Asn Val Glu Gly Val Lys Lys Thr Ile
1 5 10 15

Leu His Gly Gly Thr Gly Glu Leu Pro Asn Phe Ile Thr Gly Ser Arg
20 25 30

Glu Arg Thr Val Ile Asp Asp Ser Arg Gln Val Gly Gln Pro Met His
35 40 45

Ile Ile Ile Gly Asn Met Phe Lys Leu Glu Val Trp Glu Ile Leu Leu
50 55 60

Thr Ser Met Arg Val His Glu Val Ala Glu Phe Trp Cys Asp Thr Ile
65 70 75 80

His Thr Gly Val Tyr Pro Ile Leu Ser Arg Ser Leu Arg Gln Met Ala
85 90 95

Gln Gly Lys Asp Pro Thr Glu Trp His Val His Thr Cys Gly Leu Ala
100 105 110

Asn Met Phe Ala Tyr His Thr Leu Gly Tyr Glu Asp Leu Asp Glu Leu
115 120 125

Gln Lys Glu Pro Gln Pro Leu Val Phe Val Ile Glu Leu Leu Gln Val
130 135 140

Asp Ala Pro Ser Asp Tyr Gln Arg Glu Thr Trp Asn Leu Ser Asn His

145 150 155 160

Glu Lys Met Lys Ala Val Pro Val Leu His Gly Glu Gly Asn Arg Leu
165 170 175

Phe Lys Leu Gly Arg Tyr Glu Glu Ala Ser Ser Lys Tyr Gln Glu Ala
180 185 190

Ile Ile Cys Leu Arg Asn Leu Gln Thr Lys Glu Lys Pro Trp Glu Val
195 200 205

Gln Trp Leu Lys Leu Glu Lys Met Ile Asn Thr Leu Ile Leu Asn Tyr
210 215 220

Cys Gln Cys Leu Leu Lys Lys Glu Glu Tyr Tyr Glu Val Leu Glu His
225 230 235 240

Thr Ser Asp Ile Leu Arg His His Pro Gly Ile Val Lys Ala Tyr Tyr
245 250 255

Val Arg Ala Arg Ala His Ala Glu Val Trp Asn Glu Ala Glu Ala Lys
260 265 270

Ala Asp Leu Gln Lys Val Leu Glu Leu Glu Pro Ser Met Gln Lys Ala
275 280 285

Val Arg Arg Glu Leu Arg Leu Leu Glu Asn Arg Met Ala Glu Lys Gln
290 295 300

Glu Glu Glu Arg Leu Arg Cys Arg Asn Met Leu Ser Gln Gly Ala Thr
305 310 315 320

Gln Pro Pro Ala Glu Pro Pro Thr Glu Pro Pro Ala Gln Ser Ser Thr
325 330 335

Glu Pro Pro Ala Glu Pro Pro Thr Ala Pro Ser Ala Glu Leu Ser Ala
340 345 350

Gly Pro Pro Ala Glu Pro Ala Thr Glu Pro Pro Pro Ser Pro Gly His
355 360 365

Ser Leu Gln His
370

<210> 6529
<211> 324
<212> PRT
<213> Homo sapiens

<220>
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<400> 6529

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Met Asp Ala Ala Leu Leu Leu Asn Val Glu Gly Val Lys Lys Thr Ile
1               5                  10                  15


Leu His Gly Gly Thr Gly Glu Leu Pro Asn Phe Ile Thr Gly Ser Arg
            20                  25                  30


His Thr Gly Val Tyr Pro Ile Leu Ser Arg Ser Leu Arg Gln Met Ala
        35                  40                  45


Gln Gly Lys Asp Pro Thr Glu Trp His Val His Thr Cys Gly Leu Ala
    50                  55                  60


Asn Met Phe Ala Tyr His Thr Leu Gly Tyr Glu Asp Leu Asp Glu Leu
65                  70                  75                  80


Gln Lys Glu Pro Gln Pro Leu Val Phe Val Ile Glu Leu Leu Gln Val
                85                  90                  95


Asp Ala Pro Ser Asp Tyr Gln Arg Glu Thr Trp Asn Leu Ser Asn His
            100                 105                 110
```

```
Glu Lys Met Lys Ala Val Pro Val Leu His Gly Glu Gly Asn Arg Leu
        115                 120                 125

Phe Lys Leu Gly Arg Tyr Glu Glu Ala Ser Ser Lys Tyr Gln Glu Ala
    130                 135                 140

Ile Ile Cys Leu Arg Asn Leu Gln Thr Lys Glu Lys Pro Trp Glu Val
145                 150                 155                 160

Gln Trp Leu Lys Leu Glu Lys Met Ile Asn Thr Leu Ile Leu Asn Tyr
                165                 170                 175

Cys Gln Cys Leu Leu Lys Lys Glu Glu Tyr Tyr Glu Val Leu Glu His
            180                 185                 190

Thr Ser Asp Ile Leu Arg His His Pro Gly Ile Val Lys Ala Tyr Tyr
        195                 200                 205

Val Arg Ala Arg Ala His Ala Glu Val Trp Asn Glu Ala Glu Ala Lys
    210                 215                 220

Ala Asp Leu Gln Lys Val Leu Glu Leu Glu Pro Ser Met Gln Lys Ala
225                 230                 235                 240

Val Arg Arg Glu Leu Arg Leu Leu Glu Asn Arg Met Ala Glu Lys Gln
                245                 250                 255

Glu Glu Glu Arg Leu Arg Cys Arg Asn Met Leu Ser Gln Gly Ala Thr
            260                 265                 270

Gln Pro Pro Ala Glu Pro Pro Thr Glu Pro Pro Ala Gln Ser Ser Thr
        275                 280                 285

Glu Pro Pro Ala Glu Pro Pro Thr Ala Pro Ser Ala Glu Leu Ser Ala
    290                 295                 300

Gly Pro Pro Ala Glu Pro Ala Thr Glu Pro Pro Pro Ser Pro Gly His
305                 310                 315                 320

Ser Leu Gln His
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<210> 6530
<211> 270
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: AIPL1; "

<220>
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<223> /note="Gene Name:
aryl hydrocarbon receptor
interacting
prt-like 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000459673"

<400> 6530
Met Asp Ala Ala Leu Leu Leu Asn Val Glu Gly Val Lys Lys Thr Ile
1 5 10 15

Leu His Gly Gly Thr Gly Glu Leu Pro Asn Phe Ile Thr Gly Ser Arg
20 25 30

Val Ile Phe His Phe Arg Thr Met Lys Cys Asp Glu Glu Arg Thr Val
35 40 45

Ile Asp Asp Ser Arg Gln Val Gly Gln Pro Met His Ile Ile Ile Gly
50 55 60

Asn Met Phe Lys Leu Glu Val Trp Glu Ile Leu Leu Thr Ser Met Arg
65 70 75 80

Val His Glu Val Ala Glu Phe Trp Cys Asp Thr Ile His Thr Gly Val
85 90 95

Tyr Pro Ile Leu Ser Arg Ser Leu Arg Gln Met Ala Gln Gly Lys Asp
100 105 110

Pro Thr Glu Trp His Val His Thr Cys Gly Leu Ala Asn Met Phe Ala
115 120 125

```
Tyr His Thr Leu Gly Tyr Glu Asp Leu Asp Glu Leu Gln Lys Glu Pro
    130                 135                 140

Gln Pro Leu Val Phe Val Ile Glu Leu Leu Gln Val Asp Ala Pro Ser
145                 150                 155                 160

Asp Tyr Gln Arg Glu Thr Trp Asn Leu Ser Asn His Glu Lys Met Lys
                165                 170                 175

Ala Val Pro Val Leu His Gly Glu Gly Asn Arg Leu Phe Lys Leu Gly
            180                 185                 190

Arg Tyr Glu Glu Ala Ser Ser Lys Tyr Gln Glu Ala Ile Ile Cys Leu
        195                 200                 205

Arg Asn Leu Gln Thr Lys Glu Lys Pro Trp Glu Val Gln Trp Leu Lys
    210                 215                 220

Leu Glu Lys Met Ile Asn Thr Leu Ile Leu Asn Tyr Cys Gln Cys Leu
225                 230                 235                 240

Leu Lys Lys Glu Glu Tyr Tyr Glu Val Leu Glu His Thr Ser Asp Ile
                245                 250                 255

Leu Arg His His Pro Gly Ala Arg Gly Cys Arg Gly Gly Gln
            260                 265                 270


<210> 6531
<211> 262
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1411; "

<220>
<221> source
<223> /note="Gene Symbol: AIPL1; "

<220>
<221> source
<223> /note="Gene Name:
      aryl hydrocarbon receptor
      interacting
      prt-like 1; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000460134"

<400> 6531
Met Asp Ala Ala Leu Leu Leu Asn Val Glu Gly Val Lys Lys Thr Ile
1   5   10   15

Leu His Gly Gly Thr Gly Glu Leu Pro Asn Phe Ile Thr Gly Ser Arg
            20   25   30

Val Ile Phe His Phe Arg Thr Met Lys Cys Asp Glu Glu Arg Thr Val
        35   40   45

Ile Asp Asp Ser Arg Gln Val Gly Gln Pro Met His Ile Ile Ile Gly
    50   55   60

Asn Met Phe Lys Leu Glu Val Trp Glu Ile Leu Leu Thr Ser Met Arg
65   70   75   80

Val His Glu Val Ala Glu Phe Trp Cys Asp Thr Ile His Thr Gly Val
                85   90   95

Tyr Pro Ile Leu Ser Arg Ser Leu Arg Gln Met Ala Gln Gly Lys Asp
            100   105   110

Pro Thr Glu Trp His Val His Thr Cys Gly Leu Ala Asn Met Phe Ala
        115   120   125

Tyr His Thr Leu Gly Tyr Glu Asp Leu Asp Glu Leu Gln Lys Glu Pro
    130   135   140

Gln Pro Leu Val Phe Val Ile Glu Leu Leu Gln Arg Glu Thr Trp Asn
145   150   155   160

Leu Ser Asn His Glu Lys Met Lys Ala Val Pro Val Leu His Gly Glu
                165   170   175

Gly Asn Arg Leu Phe Lys Leu Gly Arg Tyr Glu Glu Ala Ser Ser Lys
            180   185   190

Tyr Gln Glu Ala Ile Ile Cys Leu Arg Asn Leu Gln Thr Lys Glu Lys
        195   200   205

```
Pro Trp Glu Val Gln Trp Leu Lys Leu Glu Lys Met Ile Asn Thr Leu
    210                 215                 220

Ile Leu Asn Tyr Cys Gln Cys Leu Leu Lys Lys Glu Glu Tyr Tyr Glu
225                 230                 235                 240

Val Leu Glu His Thr Ser Asp Ile Leu Arg His His Pro Gly Ala Arg
                245                 250                 255

Gly Cys Arg Gly Gly Gln
            260
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<210> 6532
<211> 216
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: AIPL1; "

<220>
<221> source
<223> /note="Gene Name:
aryl hydrocarbon receptor
interacting
prt-like 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000460672"

<400> 6532

```
Met Asp Ala Ala Leu Leu Leu Asn Val Glu Gly Val Lys Lys Thr Ile
1               5                   10                  15

Leu His Gly Gly Thr Gly Glu Leu Pro Asn Phe Ile Thr Gly Ser Arg
            20                  25                  30

Val Ile Phe His Phe Arg Thr Met Lys Cys Asp Glu Glu Arg Thr Val
        35                  40                  45

Ile Asp Asp Ser Arg Gln Val Gly Gln Pro Met His Ile Ile Ile Gly
    50                  55                  60
```

```
Asn Met Phe Lys Leu Glu Val Trp Glu Ile Leu Leu Thr Ser Met Arg
65                  70                  75                  80

Val His Glu Val Ala Glu Phe Trp Cys Asp Thr Ile His Thr Gly Val
                85                  90                  95

Tyr Pro Ile Leu Ser Arg Ser Leu Arg Gln Met Ala Gln Gly Lys Asp
            100                 105                 110

Pro Thr Glu Trp His Val His Thr Cys Gly Leu Ala Asn Met Phe Ala
        115                 120                 125

Tyr His Thr Leu Gly Tyr Glu Asp Leu Asp Glu Leu Gln Lys Glu Pro
    130                 135                 140

Gln Pro Leu Val Phe Val Ile Glu Leu Leu Gln Leu Trp Gly Gln Val
145                 150                 155                 160

Asp Ala Pro Ser Asp Tyr Gln Arg Glu Thr Trp Asn Leu Ser Asn His
                165                 170                 175

Glu Lys Met Lys Ala Val Pro Val Leu His Gly Glu Gly Asn Arg Leu
            180                 185                 190

Phe Lys Leu Gly Arg Tyr Glu Glu Ala Ser Ser Lys Tyr Gln Glu Ala
        195                 200                 205

Ile Ile Cys Leu Arg Asn Leu Gln
    210                 215


<210> 6533
<211> 360
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1411; "

<220>
<221> source
<223> /note="Gene Symbol: AIPL1; "

<220>
<221> source
<223> /note="Gene Name:
      aryl hydrocarbon receptor
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interacting
prt-like 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NZN9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000460827"

<400> 6533
Met Asp Ala Ala Leu Leu Leu Asn Val Glu Gly Val Lys Lys Thr Ile
1   5   10   15

Leu His Gly Gly Thr Gly Glu Leu Pro Asn Phe Ile Thr Gly Ser Arg
            20   25   30

Val Ile Phe His Phe Arg Thr Met Lys Cys Asp Glu Glu Arg Thr Val
        35   40   45

Ile Asp Asp Ser Arg Gln Val Gly Gln Pro Met His Ile Ile Ile Gly
    50   55   60

Asn Met Phe Lys Leu Glu Val Trp Glu Ile Leu Leu Thr Ser Met Arg
65   70   75   80

Val His Glu Val Ala Glu Phe Trp Cys Asp Thr Ile His Thr Gly Val
                85   90   95

Tyr Pro Ile Leu Ser Arg Ser Leu Arg Gln Met Ala Gln Gly Lys Asp
            100   105   110

Pro Thr Glu Trp His Val His Thr Cys Gly Leu Ala Asn Met Phe Ala
        115   120   125

Tyr His Thr Leu Gly Tyr Glu Asp Leu Asp Glu Leu Gln Lys Glu Pro
    130   135   140

Gln Pro Leu Val Phe Val Ile Glu Leu Leu Gln Val Asp Ala Pro Ser
145   150   155   160

Asp Tyr Gln Arg Glu Thr Trp Asn Leu Ser Asn His Glu Lys Met Lys
                165   170   175

Ala Val Pro Val Leu His Gly Glu Gly Asn Arg Leu Phe Lys Leu Gly

```
            180                 185                 190

Arg Tyr Glu Glu Ala Ser Ser Lys Tyr Gln Glu Ala Ile Ile Cys Leu
        195                 200                 205

Arg Asn Leu Gln Thr Lys Cys Leu Leu Lys Lys Glu Glu Tyr Tyr Glu
    210                 215                 220

Val Leu Glu His Thr Ser Asp Ile Leu Arg His His Pro Gly Ile Val
225                 230                 235                 240

Lys Ala Tyr Tyr Val Arg Ala Arg Ala His Ala Glu Val Trp Asn Glu
                245                 250                 255

Ala Glu Ala Lys Ala Asp Leu Gln Lys Val Leu Glu Leu Glu Pro Ser
            260                 265                 270

Met Gln Lys Ala Val Arg Arg Glu Leu Arg Leu Leu Glu Asn Arg Met
        275                 280                 285

Ala Glu Lys Gln Glu Glu Glu Arg Leu Arg Cys Arg Asn Met Leu Ser
    290                 295                 300

Gln Gly Ala Thr Gln Pro Pro Ala Glu Pro Pro Thr Glu Pro Pro Ala
305                 310                 315                 320

Gln Ser Ser Thr Glu Pro Pro Ala Glu Pro Pro Thr Ala Pro Ser Ala
                325                 330                 335

Glu Leu Ser Ala Gly Pro Pro Ala Glu Pro Ala Thr Glu Pro Pro Pro
            340                 345                 350

Ser Pro Gly His Ser Leu Gln His
        355                 360


<210> 6534
<211> 362
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1411; "

<220>
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<221> source
<223> /note="Gene Symbol: AIPL1; "

<220>
<221> source
<223> /note="Gene Name:
aryl hydrocarbon receptor
interacting
prt-like 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NZN9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000461287"

<400> 6534

```
Met Asp Ala Ala Leu Leu Leu Asn Val Glu Gly Val Lys Lys Thr Ile
1               5                  10                  15

Leu His Gly Gly Thr Gly Glu Leu Pro Asn Phe Ile Thr Gly Ser Arg
            20                  25                  30

Val Gly Gln Pro Met His Ile Ile Ile Gly Asn Met Phe Lys Leu Glu
        35                  40                  45

Val Trp Glu Ile Leu Leu Thr Ser Met Arg Val His Glu Val Ala Glu
    50                  55                  60

Phe Trp Cys Asp Thr Ile His Thr Gly Val Tyr Pro Ile Leu Ser Arg
65                  70                  75                  80

Ser Leu Arg Gln Met Ala Gln Gly Lys Asp Pro Thr Glu Trp His Val
                85                  90                  95

His Thr Cys Gly Leu Ala Asn Met Phe Ala Tyr His Thr Leu Gly Tyr
            100                 105                 110

Glu Asp Leu Asp Glu Leu Gln Lys Glu Pro Gln Pro Leu Val Phe Val
        115                 120                 125

Ile Glu Leu Leu Gln Val Asp Ala Pro Ser Asp Tyr Gln Arg Glu Thr
    130                 135                 140

Trp Asn Leu Ser Asn His Glu Lys Met Lys Ala Val Pro Val Leu His
145                 150                 155                 160
```

```
Gly Glu Gly Asn Arg Leu Phe Lys Leu Gly Arg Tyr Glu Glu Ala Ser
                165                 170                 175

Ser Lys Tyr Gln Glu Ala Ile Ile Cys Leu Arg Asn Leu Gln Thr Lys
            180                 185                 190

Glu Lys Pro Trp Glu Val Gln Trp Leu Lys Leu Glu Lys Met Ile Asn
        195                 200                 205

Thr Leu Ile Leu Asn Tyr Cys Gln Cys Leu Leu Lys Lys Glu Glu Tyr
    210                 215                 220

Tyr Glu Val Leu Glu His Thr Ser Asp Ile Leu Arg His His Pro Gly
225                 230                 235                 240

Ile Val Lys Ala Tyr Tyr Val Arg Ala Arg Ala His Ala Glu Val Trp
                245                 250                 255

Asn Glu Ala Glu Ala Lys Ala Asp Leu Gln Lys Val Leu Glu Leu Glu
            260                 265                 270

Pro Ser Met Gln Lys Ala Val Arg Arg Glu Leu Arg Leu Leu Glu Asn
        275                 280                 285

Arg Met Ala Glu Lys Gln Glu Glu Glu Arg Leu Arg Cys Arg Asn Met
    290                 295                 300

Leu Ser Gln Gly Ala Thr Gln Pro Pro Ala Glu Pro Pro Thr Glu Pro
305                 310                 315                 320

Pro Ala Gln Ser Ser Thr Glu Pro Pro Ala Glu Pro Pro Thr Ala Pro
                325                 330                 335

Ser Ala Glu Leu Ser Ala Gly Pro Pro Ala Glu Pro Ala Thr Glu Pro
            340                 345                 350

Pro Pro Ser Pro Gly His Ser Leu Gln His
        355                 360
```

<210> 6535
<211> 136
<212> PRT

<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1411; "

<220>
<221> source
<223> /note="Gene Symbol: AIPL1; "

<220>
<221> source
<223> /note="Gene Name:
aryl hydrocarbon receptor
interacting
prt-like 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467360"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6535
Xaa Glu Gly Val Lys Lys Thr Ile Leu His Gly Gly Thr Gly Glu Leu
1 5 10 15

Pro Asn Phe Ile Thr Gly Ser Arg Val Ile Phe His Phe Arg Thr Met
20 25 30

Lys Cys Asp Glu Glu Arg Thr Val Ile Asp Asp Ser Arg Gln Val Gly
35 40 45

Gln Pro Met His Ile Ile Ile Gly Asn Met Phe Lys Leu Glu Val Trp
50 55 60

Glu Ile Leu Leu Thr Ser Met Arg Val His Glu Val Ala Glu Phe Trp
65 70 75 80

Cys Asp Thr Ile Pro Glu Pro Thr Pro Ser Trp Phe Ser Pro Leu Asn
85 90 95

Ala Lys Thr Ala Pro Leu Leu Ser Pro His Val Gln Pro Ala Gly Met
100 105 110

Ser Ser Pro Ser Leu Glu Val Phe Lys Glu Gln Pro Asp Ala Phe Leu

115 120 125

Cys Phe Met Leu Trp Val Gly Gly
130 135

<210> 6536
<211> 326
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1411; "

<220>
<221> source
<223> /note="Gene Symbol: AIPL1; "

<220>
<221> source
<223> /note="Gene Name:
aryl hydrocarbon receptor
interacting
prt-like 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000481337"

<400> 6536
Met Asp Ala Ala Leu Leu Leu Asn Val Glu Gly Val Lys Lys Thr Ile
1 5 10 15

Leu His Gly Gly Thr Gly Glu Leu Pro Asn Phe Ile Thr Gly Ser Arg
20 25 30

Val Ile Phe His Phe Arg Thr Met Lys Cys Asp Glu Glu Arg Thr Val
35 40 45

Ile Asp Asp Ser Arg Gln Val Gly Gln Pro Met His Ile Ile Ile Gly
50 55 60

Asn Met Phe Lys Leu Glu Val Trp Glu Ile Leu Leu Thr Ser Met Arg
65 70 75 80

Val His Glu Val Ala Glu Phe Trp Cys Asp Thr Ile His Thr Gly Val
85 90 95

Tyr Pro Ile Leu Ser Arg Ser Leu Arg Gln Met Ala Gln Gly Lys Asp

```
            100                 105                 110

Pro Thr Glu Trp His Val His Thr Cys Gly Leu Ala Asn Met Phe Ala
        115                 120                 125

Tyr His Thr Leu Gly Tyr Glu Asp Leu Asp Glu Leu Gln Lys Glu Pro
    130                 135                 140

Gln Pro Leu Val Phe Val Ile Glu Leu Leu Gln Val Asp Ala Pro Ser
145                 150                 155                 160

Asp Tyr Gln Arg Glu Thr Trp Asn Leu Ser Asn His Glu Lys Met Lys
                165                 170                 175

Ala Val Pro Val Leu His Gly Glu Gly Asn Arg Leu Phe Lys Leu Gly
            180                 185                 190

Arg Tyr Glu Glu Ala Ser Ser Lys Tyr Gln Glu Ala Ile Ile Cys Leu
        195                 200                 205

Arg Asn Leu Gln Thr Lys Glu Lys Pro Trp Glu Val Gln Trp Leu Lys
    210                 215                 220

Leu Glu Lys Met Ile Asn Thr Leu Ile Leu Asn Tyr Cys Gln Cys Leu
225                 230                 235                 240

Leu Lys Lys Glu Glu Tyr Tyr Glu Val Leu Glu His Thr Ser Asp Ile
                245                 250                 255

Leu Arg His His Pro Gly Ile Val Lys Ala Tyr Tyr Val Arg Ala Arg
            260                 265                 270

Ala His Ala Glu Val Trp Asn Glu Ala Glu Ala Lys Ala Asp Leu Gln
        275                 280                 285

Lys Val Leu Glu Leu Glu Pro Ser Met Gln Lys Ala Val Arg Arg Glu
    290                 295                 300

Leu Arg Leu Leu Glu Asn Ala Trp Arg Arg Ser Arg Arg Arg Ser Gly
305                 310                 315                 320

Cys Ala Ala Gly Thr Cys
                325
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<210> 6537
<211> 787
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1412; "

<220>
<221> source
<223> /note="Gene Symbol: ARNT; "

<220>
<221> source
<223> /note="Gene Name:
aryl hydrocarbon receptor nuclear translocator; "

<220>
<221> source
<223> /note="Uniprot ID: P27540; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000346372"

<400> 6537
Met Ala Ala Thr Thr Ala Asn Pro Glu Met Thr Ser Asp Val Pro Ser
1   5   10   15

Leu Gly Pro Ala Ile Ala Ser Gly Asn Ser Gly Pro Gly Ile Gln Gly
            20   25   30

Gly Gly Ala Ile Val Gln Arg Ala Ile Lys Arg Arg Pro Gly Leu Asp
        35   40   45

Phe Asp Asp Asp Gly Glu Gly Asn Ser Lys Phe Leu Arg Cys Asp Asp
    50   55   60

Asp Gln Met Ser Asn Asp Lys Glu Arg Phe Ala Arg Ser Asp Asp Glu
65   70   75   80

Gln Ser Ser Ala Asp Lys Glu Arg Leu Ala Arg Glu Asn His Ser Glu
                85   90   95

Ile Glu Arg Arg Arg Arg Asn Lys Met Thr Ala Tyr Ile Thr Glu Leu
            100   105   110

```
Ser Asp Met Val Pro Thr Cys Ser Ala Leu Ala Arg Lys Pro Asp Lys
        115                 120                 125

Leu Thr Ile Leu Arg Met Ala Val Ser His Met Lys Ser Leu Arg Gly
    130                 135                 140

Thr Gly Asn Thr Ser Thr Asp Gly Ser Tyr Lys Pro Ser Phe Leu Thr
145                 150                 155                 160

Asp Gln Glu Leu Lys His Leu Ile Leu Glu Ala Ala Asp Gly Phe Leu
                165                 170                 175

Phe Ile Val Ser Cys Glu Thr Gly Arg Val Val Tyr Val Ser Asp Ser
            180                 185                 190

Val Thr Pro Val Leu Asn Gln Pro Gln Ser Glu Trp Phe Gly Ser Thr
        195                 200                 205

Leu Tyr Asp Gln Val His Pro Asp Asp Val Asp Lys Leu Arg Glu Gln
    210                 215                 220

Leu Ser Thr Ser Glu Asn Ala Leu Thr Gly Arg Ile Leu Asp Leu Lys
225                 230                 235                 240

Thr Gly Thr Val Lys Lys Glu Gly Gln Gln Ser Ser Met Arg Met Cys
                245                 250                 255

Met Gly Ser Arg Arg Ser Phe Ile Cys Arg Met Arg Cys Gly Ser Ser
            260                 265                 270

Ser Val Asp Pro Val Ser Val Asn Arg Leu Ser Phe Val Arg Asn Arg
        275                 280                 285

Cys Arg Asn Gly Leu Gly Ser Val Lys Asp Gly Glu Pro His Phe Val
    290                 295                 300

Val Val His Cys Thr Gly Tyr Ile Lys Ala Trp Pro Pro Ala Gly Val
305                 310                 315                 320

Ser Leu Pro Asp Asp Asp Pro Glu Ala Gly Gln Gly Ser Lys Phe Cys
                325                 330                 335

Leu Val Ala Ile Gly Arg Leu Gln Val Thr Ser Ser Pro Asn Cys Thr
```

```
            340                 345                 350

Asp Met Ser Asn Val Cys Gln Pro Thr Glu Phe Ile Ser Arg His Asn
        355                 360                 365

Ile Glu Gly Ile Phe Thr Phe Val Asp His Arg Cys Val Ala Thr Val
    370                 375                 380

Gly Tyr Gln Pro Gln Glu Leu Leu Gly Lys Asn Ile Val Glu Phe Cys
385                 390                 395                 400

His Pro Glu Asp Gln Gln Leu Leu Arg Asp Ser Phe Gln Gln Val Val
                405                 410                 415

Lys Leu Lys Gly Gln Val Leu Ser Val Met Phe Arg Phe Arg Ser Lys
            420                 425                 430

Asn Gln Glu Trp Leu Trp Met Arg Thr Ser Ser Phe Thr Phe Gln Asn
        435                 440                 445

Pro Tyr Ser Asp Glu Ile Glu Tyr Ile Ile Cys Thr Asn Thr Asn Val
    450                 455                 460

Lys Asn Ser Ser Gln Glu Pro Arg Pro Thr Leu Ser Asn Thr Ile Gln
465                 470                 475                 480

Arg Pro Gln Leu Gly Pro Thr Ala Asn Leu Pro Leu Glu Met Gly Ser
                485                 490                 495

Gly Gln Leu Ala Pro Arg Gln Gln Gln Gln Gln Thr Glu Leu Asp Met
            500                 505                 510

Val Pro Gly Arg Asp Gly Leu Ala Ser Tyr Asn His Ser Gln Val Val
        515                 520                 525

Gln Pro Val Thr Thr Thr Gly Pro Glu His Ser Lys Pro Leu Glu Lys
    530                 535                 540

Ser Asp Gly Leu Phe Ala Gln Asp Arg Asp Pro Arg Phe Ser Glu Ile
545                 550                 555                 560

Tyr His Asn Ile Asn Ala Asp Gln Ser Lys Gly Ile Ser Ser Ser Thr
                565                 570                 575
```

```
Val Pro Ala Thr Gln Gln Leu Phe Ser Gln Gly Asn Thr Phe Pro Pro
            580                 585                 590

Thr Pro Arg Pro Ala Glu Asn Phe Ser Gly Leu Ala Pro Pro Val Thr
        595                 600                 605

Ile Val Gln Pro Ser Ala Ser Ala Gly Gln Met Leu Ala Gln Ile Ser
    610                 615                 620

Arg His Ser Asn Pro Thr Gln Gly Ala Thr Pro Thr Trp Thr Pro Thr
625                 630                 635                 640

Thr Arg Ser Gly Phe Ser Ala Gln Gln Val Ala Thr Gln Ala Thr Ala
                645                 650                 655

Lys Thr Arg Thr Ser Gln Phe Gly Val Gly Ser Phe Gln Thr Pro Ser
            660                 665                 670

Ser Phe Ser Ser Met Ser Leu Pro Gly Ala Pro Thr Ala Ser Pro Gly
        675                 680                 685

Ala Ala Ala Tyr Pro Ser Leu Thr Asn Arg Gly Ser Asn Phe Ala Pro
    690                 695                 700

Glu Thr Gly Gln Thr Ala Gly Gln Phe Gln Thr Arg Thr Ala Glu Gly
705                 710                 715                 720

Val Gly Val Trp Pro Gln Trp Gln Gly Gln Gln Pro His His Arg Ser
                725                 730                 735

Ser Ser Ser Glu Gln His Val Gln Gln Pro Pro Ala Gln Gln Pro Gly
            740                 745                 750

Gln Pro Glu Val Phe Gln Glu Met Leu Ser Met Leu Gly Asp Gln Ser
        755                 760                 765

Asn Ser Tyr Asn Asn Glu Glu Phe Pro Asp Leu Thr Met Phe Pro Pro
    770                 775                 780

Phe Ser Glu
785
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<210> 6538
<211> 789
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1412; "

<220>
<221> source
<223> /note="Gene Symbol: ARNT; "

<220>
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<223> /note="Gene Name:
aryl hydrocarbon receptor nuclear translocator; "

<220>
<221> source
<223> /note="Uniprot ID: P27540; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000351407"

<400> 6538
Met Ala Ala Thr Thr Ala Asn Pro Glu Met Thr Ser Asp Val Pro Ser
1   5   10   15

Leu Gly Pro Ala Ile Ala Ser Gly Asn Ser Gly Pro Gly Ile Gln Gly
            20   25   30

Gly Gly Ala Ile Val Gln Arg Ala Ile Lys Arg Arg Pro Gly Leu Asp
        35   40   45

Phe Asp Asp Asp Gly Glu Gly Asn Ser Lys Phe Leu Arg Cys Asp Asp
    50   55   60

Asp Gln Met Ser Asn Asp Lys Glu Arg Phe Ala Arg Ser Asp Asp Glu
65   70   75   80

Gln Ser Ser Ala Asp Lys Glu Arg Leu Ala Arg Glu Asn His Ser Glu
                85   90   95

Ile Glu Arg Arg Arg Arg Asn Lys Met Thr Ala Tyr Ile Thr Glu Leu
            100   105   110

Ser Asp Met Val Pro Thr Cys Ser Ala Leu Ala Arg Lys Pro Asp Lys

```
        115                 120                 125

Leu Thr Ile Leu Arg Met Ala Val Ser His Met Lys Ser Leu Arg Gly
    130                 135                 140

Thr Gly Asn Thr Ser Thr Asp Gly Ser Tyr Lys Pro Ser Phe Leu Thr
145                 150                 155                 160

Asp Gln Glu Leu Lys His Leu Ile Leu Glu Ala Ala Asp Gly Phe Leu
                165                 170                 175

Phe Ile Val Ser Cys Glu Thr Gly Arg Val Val Tyr Val Ser Asp Ser
            180                 185                 190

Val Thr Pro Val Leu Asn Gln Pro Gln Ser Glu Trp Phe Gly Ser Thr
        195                 200                 205

Leu Tyr Asp Gln Val His Pro Asp Asp Val Asp Lys Leu Arg Glu Gln
    210                 215                 220

Leu Ser Thr Ser Glu Asn Ala Leu Thr Gly Arg Ile Leu Asp Leu Lys
225                 230                 235                 240

Thr Gly Thr Val Lys Lys Glu Gly Gln Gln Ser Ser Met Arg Met Cys
                245                 250                 255

Met Gly Ser Arg Arg Ser Phe Ile Cys Arg Met Arg Cys Gly Ser Ser
            260                 265                 270

Ser Val Asp Pro Val Ser Val Asn Arg Leu Ser Phe Val Arg Asn Arg
        275                 280                 285

Cys Arg Asn Gly Leu Gly Ser Val Lys Asp Gly Glu Pro His Phe Val
    290                 295                 300

Val Val His Cys Thr Gly Tyr Ile Lys Ala Trp Pro Pro Ala Gly Val
305                 310                 315                 320

Ser Leu Pro Asp Asp Asp Pro Glu Ala Gly Gln Gly Ser Lys Phe Cys
                325                 330                 335

Leu Val Ala Ile Gly Arg Leu Gln Val Thr Ser Ser Pro Asn Cys Thr
            340                 345                 350
```

```
Asp Met Ser Asn Val Cys Gln Pro Thr Glu Phe Ile Ser Arg His Asn
        355                 360                 365

Ile Glu Gly Ile Phe Thr Phe Val Asp His Arg Cys Val Ala Thr Val
    370                 375                 380

Gly Tyr Gln Pro Gln Glu Leu Leu Gly Lys Asn Ile Val Glu Phe Cys
385                 390                 395                 400

His Pro Glu Asp Gln Gln Leu Leu Arg Asp Ser Phe Gln Gln Val Val
                405                 410                 415

Lys Leu Lys Gly Gln Val Leu Ser Val Met Phe Arg Phe Arg Ser Lys
            420                 425                 430

Asn Gln Glu Trp Leu Trp Met Arg Thr Ser Ser Phe Thr Phe Gln Asn
        435                 440                 445

Pro Tyr Ser Asp Glu Ile Glu Tyr Ile Ile Cys Thr Asn Thr Asn Val
    450                 455                 460

Lys Asn Ser Ser Gln Glu Pro Arg Pro Thr Leu Ser Asn Thr Ile Gln
465                 470                 475                 480

Arg Pro Gln Leu Gly Pro Thr Ala Asn Leu Pro Leu Glu Met Gly Ser
                485                 490                 495

Gly Gln Leu Ala Pro Arg Gln Gln Gln Gln Gln Thr Glu Leu Asp Met
            500                 505                 510

Val Pro Gly Arg Asp Gly Leu Ala Ser Tyr Asn His Ser Gln Val Val
        515                 520                 525

Gln Pro Val Thr Thr Thr Gly Pro Glu His Ser Lys Pro Leu Glu Lys
    530                 535                 540

Ser Asp Gly Leu Phe Ala Gln Asp Arg Asp Pro Arg Phe Ser Glu Ile
545                 550                 555                 560

Tyr His Asn Ile Asn Ala Asp Gln Ser Lys Gly Ile Ser Ser Ser Thr
                565                 570                 575
```

```
Val Pro Ala Thr Gln Gln Leu Phe Ser Gln Gly Asn Thr Phe Pro Pro
            580                 585                 590

Thr Pro Arg Pro Ala Glu Asn Phe Arg Asn Ser Gly Leu Ala Pro Pro
        595                 600                 605

Val Thr Ile Val Gln Pro Ser Ala Ser Ala Gly Gln Met Leu Ala Gln
    610                 615                 620

Ile Ser Arg His Ser Asn Pro Thr Gln Gly Ala Thr Pro Thr Trp Thr
625                 630                 635                 640

Pro Thr Thr Arg Ser Gly Phe Ser Ala Gln Gln Val Ala Thr Gln Ala
                645                 650                 655

Thr Ala Lys Thr Arg Thr Ser Gln Phe Gly Val Gly Ser Phe Gln Thr
            660                 665                 670

Pro Ser Ser Phe Ser Ser Met Ser Leu Pro Gly Ala Pro Thr Ala Ser
        675                 680                 685

Pro Gly Ala Ala Ala Tyr Pro Ser Leu Thr Asn Arg Gly Ser Asn Phe
    690                 695                 700

Ala Pro Glu Thr Gly Gln Thr Ala Gly Gln Phe Gln Thr Arg Thr Ala
705                 710                 715                 720

Glu Gly Val Gly Val Trp Pro Gln Trp Gln Gly Gln Gln Pro His His
                725                 730                 735

Arg Ser Ser Ser Ser Glu Gln His Val Gln Gln Pro Pro Ala Gln Gln
            740                 745                 750

Pro Gly Gln Pro Glu Val Phe Gln Glu Met Leu Ser Met Leu Gly Asp
        755                 760                 765

Gln Ser Asn Ser Tyr Asn Asn Glu Glu Phe Pro Asp Leu Thr Met Phe
    770                 775                 780

Pro Pro Phe Ser Glu
785
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<210> 6539
<211> 775
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ARNT; "

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<223> /note="Gene Name:
aryl hydrocarbon receptor nuclear translocator; "

<220>
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<223> /note="Uniprot ID: P27540; "

<220>
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<400> 6539
Met Thr Ser Asp Val Pro Ser Leu Gly Pro Ala Ile Ala Ser Gly Asn
1   5   10   15

Ser Gly Pro Gly Ile Gln Gly Gly Gly Ala Ile Val Gln Arg Ala Ile
            20   25   30

Lys Arg Arg Pro Gly Leu Asp Phe Asp Asp Asp Gly Glu Gly Asn Ser
        35   40   45

Lys Phe Leu Arg Cys Asp Asp Asp Gln Met Ser Asn Asp Lys Glu Arg
    50   55   60

Phe Ala Arg Ser Asp Asp Glu Gln Ser Ser Ala Asp Lys Glu Arg Leu
65   70   75   80

Ala Arg Glu Asn His Ser Glu Ile Glu Arg Arg Arg Arg Asn Lys Met
                85   90   95

Thr Ala Tyr Ile Thr Glu Leu Ser Asp Met Val Pro Thr Cys Ser Ala
            100   105   110

Leu Ala Arg Lys Pro Asp Lys Leu Thr Ile Leu Arg Met Ala Val Ser
        115   120   125

```
His Met Lys Ser Leu Arg Gly Thr Gly Asn Thr Ser Thr Asp Gly Ser
    130                 135                 140

Tyr Lys Pro Ser Phe Leu Thr Asp Gln Glu Leu Lys His Leu Ile Leu
145                 150                 155                 160

Glu Ala Ala Asp Gly Phe Leu Phe Ile Val Ser Cys Glu Thr Gly Arg
                165                 170                 175

Val Val Tyr Val Ser Asp Ser Val Thr Pro Val Leu Asn Gln Pro Gln
            180                 185                 190

Ser Glu Trp Phe Gly Ser Thr Leu Tyr Asp Gln Val His Pro Asp Asp
        195                 200                 205

Val Asp Lys Leu Arg Glu Gln Leu Ser Thr Ser Glu Asn Ala Leu Thr
    210                 215                 220

Gly Arg Ile Leu Asp Leu Lys Thr Gly Thr Val Lys Lys Glu Gly Gln
225                 230                 235                 240

Gln Ser Ser Met Arg Met Cys Met Gly Ser Arg Arg Ser Phe Ile Cys
                245                 250                 255

Arg Met Arg Cys Gly Ser Ser Ser Val Asp Pro Val Ser Val Asn Arg
            260                 265                 270

Leu Ser Phe Val Arg Asn Arg Cys Arg Asn Gly Leu Gly Ser Val Lys
        275                 280                 285

Asp Gly Glu Pro His Phe Val Val Val His Cys Thr Gly Tyr Ile Lys
    290                 295                 300

Ala Trp Pro Pro Ala Asp Asp Asp Pro Glu Ala Gly Gln Gly Ser Lys
305                 310                 315                 320

Phe Cys Leu Val Ala Ile Gly Arg Leu Gln Val Thr Ser Ser Pro Asn
                325                 330                 335

Cys Thr Asp Met Ser Asn Val Cys Gln Pro Thr Glu Phe Ile Ser Arg
            340                 345                 350
```

```
His Asn Ile Glu Gly Ile Phe Thr Phe Val Asp His Arg Cys Val Ala
        355                 360                 365

Thr Val Gly Tyr Gln Pro Gln Glu Leu Leu Gly Lys Asn Ile Val Glu
    370                 375                 380

Phe Cys His Pro Glu Asp Gln Gln Leu Leu Arg Asp Ser Phe Gln Gln
385                 390                 395                 400

Val Val Lys Leu Lys Gly Gln Val Leu Ser Val Met Phe Arg Phe Arg
                405                 410                 415

Ser Lys Asn Gln Glu Trp Leu Trp Met Arg Thr Ser Ser Phe Thr Phe
            420                 425                 430

Gln Asn Pro Tyr Ser Asp Glu Ile Glu Tyr Ile Ile Cys Thr Asn Thr
        435                 440                 445

Asn Val Lys Asn Ser Ser Gln Glu Pro Arg Pro Thr Leu Ser Asn Thr
    450                 455                 460

Ile Gln Arg Pro Gln Leu Gly Pro Thr Ala Asn Leu Pro Leu Glu Met
465                 470                 475                 480

Gly Ser Gly Gln Leu Ala Pro Arg Gln Gln Gln Gln Gln Thr Glu Leu
                485                 490                 495

Asp Met Val Pro Gly Arg Asp Gly Leu Ala Ser Tyr Asn His Ser Gln
            500                 505                 510

Val Val Gln Pro Val Thr Thr Thr Gly Pro Glu His Ser Lys Pro Leu
        515                 520                 525

Glu Lys Ser Asp Gly Leu Phe Ala Gln Asp Arg Asp Pro Arg Phe Ser
    530                 535                 540

Glu Ile Tyr His Asn Ile Asn Ala Asp Gln Ser Lys Gly Ile Ser Ser
545                 550                 555                 560

Ser Thr Val Pro Ala Thr Gln Gln Leu Phe Ser Gln Gly Asn Thr Phe
                565                 570                 575
```

```
Pro Pro Thr Pro Arg Pro Ala Glu Asn Phe Arg Asn Ser Gly Leu Ala
            580                 585                 590

Pro Pro Val Thr Ile Val Gln Pro Ser Ala Ser Ala Gly Gln Met Leu
        595                 600                 605

Ala Gln Ile Ser Arg His Ser Asn Pro Thr Gln Gly Ala Thr Pro Thr
    610                 615                 620

Trp Thr Pro Thr Thr Arg Ser Gly Phe Ser Ala Gln Gln Val Ala Thr
625                 630                 635                 640

Gln Ala Thr Ala Lys Thr Arg Thr Ser Gln Phe Gly Val Gly Ser Phe
                645                 650                 655

Gln Thr Pro Ser Ser Phe Ser Ser Met Ser Leu Pro Gly Ala Pro Thr
            660                 665                 670

Ala Ser Pro Gly Ala Ala Ala Tyr Pro Ser Leu Thr Asn Arg Gly Ser
        675                 680                 685

Asn Phe Ala Pro Glu Thr Gly Gln Thr Ala Gly Gln Phe Gln Thr Arg
    690                 695                 700

Thr Ala Glu Gly Val Gly Val Trp Pro Gln Trp Gln Gly Gln Gln Pro
705                 710                 715                 720

His His Arg Ser Ser Ser Ser Glu Gln His Val Gln Gln Pro Pro Ala
                725                 730                 735

Gln Gln Pro Gly Gln Pro Glu Val Phe Gln Glu Met Leu Ser Met Leu
            740                 745                 750

Gly Asp Gln Ser Asn Ser Tyr Asn Asn Glu Glu Phe Pro Asp Leu Thr
        755                 760                 765

Met Phe Pro Pro Phe Ser Glu
    770                 775
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<210> 6540
<211> 55
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
aryl hydrocarbon receptor nuclear translocator; "

<220>
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<400> 6540
Met Ala Ala Thr Thr Ala Asn Pro Glu Met Thr Ser Asp Val Pro Ser
1 5 10 15

Leu Gly Pro Ala Ile Ala Ser Gly Asn Ser Gly Pro Gly Ile Gln Gly
20 25 30

Gly Gly Ala Ile Val Gln Arg Ala Ile Lys Arg Arg Pro Gly Trp Ser
35 40 45

Leu Ala Val Val Ala Gln Ala
50 55

<210> 6541
<211> 416
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
aryl hydrocarbon receptor nuclear translocator; "

<220>
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<223> /note="ENSP ID: ENSP00000425899"

<400> 6541

```
Met Ala Ala Thr Thr Ala Asn Pro Glu Met Thr Ser Asp Val Pro Ser
1               5                  10                  15

Leu Gly Pro Ala Ile Ala Ser Gly Asn Ser Gly Pro Gly Ile Gln Gly
            20                  25                  30

Gly Gly Ala Ile Val Gln Arg Ala Ile Lys Arg Arg Pro Gly Leu Asp
        35                  40                  45

Phe Asp Asp Asp Gly Glu Gly Asn Ser Lys Phe Leu Arg Cys Asp Asp
    50                  55                  60

Asp Gln Met Ser Asn Asp Lys Glu Arg Phe Ala Arg Ser Asp Asp Glu
65                  70                  75                  80

Gln Ser Ser Ala Asp Lys Glu Arg Leu Ala Arg Glu Asn His Ser Glu
                85                  90                  95

Ile Glu Arg Arg Arg Arg Asn Lys Met Thr Ala Tyr Ile Thr Glu Leu
            100                 105                 110

Ser Asp Met Val Pro Thr Cys Ser Ala Leu Ala Arg Lys Pro Asp Lys
        115                 120                 125

Leu Thr Ile Leu Arg Met Ala Val Ser His Met Lys Ser Leu Arg Gly
    130                 135                 140

Thr Gly Asn Thr Ser Thr Asp Gly Ser Tyr Lys Pro Ser Phe Leu Thr
145                 150                 155                 160

Asp Gln Glu Leu Lys His Leu Ile Leu Glu Ala Ala Asp Gly Phe Leu
                165                 170                 175

Phe Ile Val Ser Cys Glu Thr Gly Arg Val Val Tyr Val Ser Asp Ser
            180                 185                 190

Val Thr Pro Val Leu Asn Gln Pro Gln Ser Glu Trp Phe Gly Ser Thr
        195                 200                 205

Leu Tyr Asp Gln Val His Pro Asp Asp Val Asp Lys Leu Arg Glu Gln
    210                 215                 220

Leu Ser Thr Ser Glu Asn Ala Leu Thr Gly Arg Ile Leu Asp Leu Lys
```

```
225                 230                 235                 240

Thr Gly Thr Val Lys Lys Glu Gly Gln Gln Ser Ser Met Arg Met Cys
                245                 250                 255

Met Gly Ser Arg Arg Ser Phe Ile Cys Arg Met Arg Cys Gly Ser Ser
            260                 265                 270

Ser Val Asp Pro Val Ser Val Asn Arg Leu Ser Phe Val Arg Asn Arg
        275                 280                 285

Cys Arg Asn Gly Leu Gly Ser Val Lys Asp Gly Glu Pro His Phe Val
    290                 295                 300

Val Val His Cys Thr Gly Tyr Ile Lys Ala Trp Pro Pro Ala Gly Val
305                 310                 315                 320

Ser Leu Pro Asp Asp Asp Pro Glu Ala Gly Gln Gly Ser Lys Phe Cys
                325                 330                 335

Leu Val Ala Ile Gly Arg Leu Gln Val Thr Ser Ser Pro Asn Cys Thr
            340                 345                 350

Asp Met Ser Asn Val Cys Gln Pro Thr Glu Phe Ile Ser Arg His Asn
        355                 360                 365

Ile Glu Gly Ile Phe Thr Phe Val Asp His Arg Cys Val Ala Thr Val
    370                 375                 380

Gly Tyr Gln Pro Gln Glu Leu Leu Gly Lys Asn Ile Val Glu Phe Cys
385                 390                 395                 400

His Pro Glu Asp Gln Gln Leu Leu Arg Asp Ser Phe Gln Gln Glu Leu
                405                 410                 415


<210> 6542
<211> 774
<212> PRT
<213> Homo sapiens

<220>
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<221> source
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<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID: P27540; "

<220>
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<400> 6542

Met	Ala	Ala	Thr	Thr	Ala	Asn	Pro	Glu	Met	Thr	Ser	Asp	Val	Pro	Ser
1				5				10						15	

Leu	Gly	Pro	Ala	Ile	Ala	Ser	Gly	Asn	Ser	Gly	Pro	Gly	Ile	Gln	Gly
		20					25					30			

Gly	Gly	Ala	Ile	Val	Gln	Arg	Ala	Ile	Lys	Arg	Arg	Pro	Gly	Leu	Asp
	35					40					45				

Phe	Asp	Asp	Asp	Gly	Glu	Gly	Asn	Ser	Lys	Phe	Leu	Arg	Cys	Asp	Asp
	50					55					60				

Asp	Gln	Met	Ser	Asn	Asp	Lys	Glu	Arg	Phe	Ala	Arg	Glu	Asn	His	Ser
65				70					75						80

Glu	Ile	Glu	Arg	Arg	Arg	Arg	Asn	Lys	Met	Thr	Ala	Tyr	Ile	Thr	Glu
				85					90					95	

Leu	Ser	Asp	Met	Val	Pro	Thr	Cys	Ser	Ala	Leu	Ala	Arg	Lys	Pro	Asp
			100					105					110		

Lys	Leu	Thr	Ile	Leu	Arg	Met	Ala	Val	Ser	His	Met	Lys	Ser	Leu	Arg
		115					120					125			

Gly	Thr	Gly	Asn	Thr	Ser	Thr	Asp	Gly	Ser	Tyr	Lys	Pro	Ser	Phe	Leu
	130					135					140				

Thr	Asp	Gln	Glu	Leu	Lys	His	Leu	Ile	Leu	Glu	Ala	Ala	Asp	Gly	Phe
145					150					155					160

```
Leu Phe Ile Val Ser Cys Glu Thr Gly Arg Val Val Tyr Val Ser Asp
                165                 170                 175

Ser Val Thr Pro Val Leu Asn Gln Pro Gln Ser Glu Trp Phe Gly Ser
            180                 185                 190

Thr Leu Tyr Asp Gln Val His Pro Asp Asp Val Asp Lys Leu Arg Glu
        195                 200                 205

Gln Leu Ser Thr Ser Glu Asn Ala Leu Thr Gly Arg Ile Leu Asp Leu
    210                 215                 220

Lys Thr Gly Thr Val Lys Lys Glu Gly Gln Gln Ser Ser Met Arg Met
225                 230                 235                 240

Cys Met Gly Ser Arg Arg Ser Phe Ile Cys Arg Met Arg Cys Gly Ser
                245                 250                 255

Ser Ser Val Asp Pro Val Ser Val Asn Arg Leu Ser Phe Val Arg Asn
            260                 265                 270

Arg Cys Arg Asn Gly Leu Gly Ser Val Lys Asp Gly Glu Pro His Phe
        275                 280                 285

Val Val Val His Cys Thr Gly Tyr Ile Lys Ala Trp Pro Pro Ala Gly
    290                 295                 300

Val Ser Leu Pro Asp Asp Asp Pro Glu Ala Gly Gln Gly Ser Lys Phe
305                 310                 315                 320

Cys Leu Val Ala Ile Gly Arg Leu Gln Val Thr Ser Ser Pro Asn Cys
                325                 330                 335

Thr Asp Met Ser Asn Val Cys Gln Pro Thr Glu Phe Ile Ser Arg His
            340                 345                 350

Asn Ile Glu Gly Ile Phe Thr Phe Val Asp His Arg Cys Val Ala Thr
        355                 360                 365

Val Gly Tyr Gln Pro Gln Glu Leu Leu Gly Lys Asn Ile Val Glu Phe
    370                 375                 380

Cys His Pro Glu Asp Gln Gln Leu Leu Arg Asp Ser Phe Gln Gln Val
```

385 390 395 400

Val Lys Leu Lys Gly Gln Val Leu Ser Val Met Phe Arg Phe Arg Ser
405 410 415

Lys Asn Gln Glu Trp Leu Trp Met Arg Thr Ser Ser Phe Thr Phe Gln
420 425 430

Asn Pro Tyr Ser Asp Glu Ile Glu Tyr Ile Ile Cys Thr Asn Thr Asn
435 440 445

Val Lys Asn Ser Ser Gln Glu Pro Arg Pro Thr Leu Ser Asn Thr Ile
450 455 460

Gln Arg Pro Gln Leu Gly Pro Thr Ala Asn Leu Pro Leu Glu Met Gly
465 470 475 480

Ser Gly Gln Leu Ala Pro Arg Gln Gln Gln Gln Thr Glu Leu Asp
485 490 495

Met Val Pro Gly Arg Asp Gly Leu Ala Ser Tyr Asn His Ser Gln Val
500 505 510

Val Gln Pro Val Thr Thr Thr Gly Pro Glu His Ser Lys Pro Leu Glu
515 520 525

Lys Ser Asp Gly Leu Phe Ala Gln Asp Arg Asp Pro Arg Phe Ser Glu
530 535 540

Ile Tyr His Asn Ile Asn Ala Asp Gln Ser Lys Gly Ile Ser Ser Ser
545 550 555 560

Thr Val Pro Ala Thr Gln Gln Leu Phe Ser Gln Gly Asn Thr Phe Pro
565 570 575

Pro Thr Pro Arg Pro Ala Glu Asn Phe Arg Asn Ser Gly Leu Ala Pro
580 585 590

Pro Val Thr Ile Val Gln Pro Ser Ala Ser Ala Gly Gln Met Leu Ala
595 600 605

Gln Ile Ser Arg His Ser Asn Pro Thr Gln Gly Ala Thr Pro Thr Trp
610 615 620

```
Thr Pro Thr Thr Arg Ser Gly Phe Ser Ala Gln Gln Val Ala Thr Gln
625                 630                 635                 640

Ala Thr Ala Lys Thr Arg Thr Ser Gln Phe Gly Val Gly Ser Phe Gln
                645                 650                 655

Thr Pro Ser Ser Phe Ser Ser Met Ser Leu Pro Gly Ala Pro Thr Ala
            660                 665                 670

Ser Pro Gly Ala Ala Ala Tyr Pro Ser Leu Thr Asn Arg Gly Ser Asn
        675                 680                 685

Phe Ala Pro Glu Thr Gly Gln Thr Ala Gly Gln Phe Gln Thr Arg Thr
    690                 695                 700

Ala Glu Gly Val Gly Val Trp Pro Gln Trp Gln Gly Gln Gln Pro His
705                 710                 715                 720

His Arg Ser Ser Ser Ser Glu Gln His Val Gln Gln Pro Pro Ala Gln
                725                 730                 735

Gln Pro Gly Gln Pro Glu Val Phe Gln Glu Met Leu Ser Met Leu Gly
            740                 745                 750

Asp Gln Ser Asn Ser Tyr Asn Asn Glu Glu Phe Pro Asp Leu Thr Met
        755                 760                 765

Phe Pro Pro Phe Ser Glu
    770


<210> 6543
<211> 625
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1413; "

<220>
<221> source
<223> /note="Gene Symbol: ARNTL; "

<220>
<221> source
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<223> /note="Gene Name:
aryl hydrocarbon receptor nuclear translocator-like; "

<220>
<221> source
<223> /note="Uniprot ID: O00327; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000374357"

<400> 6543

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Met Ala Asp Gln Arg Met Asp Ile Ser Ser Thr Ile Ser Asp Phe Met
1               5                  10                  15

Ser Pro Gly Pro Thr Asp Leu Leu Ser Ser Ser Leu Gly Thr Ser Gly
            20                  25                  30

Val Asp Cys Asn Arg Lys Arg Lys Gly Ser Ser Thr Asp Tyr Gln Glu
        35                  40                  45

Ser Met Asp Thr Asp Lys Asp Asp Pro His Gly Arg Leu Glu Tyr Thr
    50                  55                  60

Glu His Gln Gly Arg Ile Lys Asn Ala Arg Glu Ala His Ser Gln Ile
65                  70                  75                  80

Glu Lys Arg Arg Arg Asp Lys Met Asn Ser Phe Ile Asp Glu Leu Ala
                85                  90                  95

Ser Leu Val Pro Thr Cys Asn Ala Met Ser Arg Lys Leu Asp Lys Leu
            100                 105                 110

Thr Val Leu Arg Met Ala Val Gln His Met Lys Thr Leu Arg Gly Ala
        115                 120                 125

Thr Asn Pro Tyr Thr Glu Ala Asn Tyr Lys Pro Thr Phe Leu Ser Asp
    130                 135                 140

Asp Glu Leu Lys His Leu Ile Leu Arg Ala Ala Asp Gly Phe Leu Phe
145                 150                 155                 160

Val Val Gly Cys Asp Arg Gly Lys Ile Leu Phe Val Ser Glu Ser Val
                165                 170                 175

Phe Lys Ile Leu Asn Tyr Ser Gln Asn Asp Leu Ile Gly Gln Ser Leu
```

```
            180                 185                 190

Phe Asp Tyr Leu His Pro Lys Asp Ile Ala Lys Val Lys Glu Gln Leu
        195                 200                 205

Ser Ser Ser Asp Thr Ala Pro Arg Glu Arg Leu Ile Asp Ala Lys Thr
    210                 215                 220

Gly Leu Pro Val Lys Thr Asp Ile Thr Pro Gly Pro Ser Arg Leu Cys
225                 230                 235                 240

Ser Gly Ala Arg Arg Ser Phe Phe Cys Arg Met Lys Cys Asn Arg Pro
                245                 250                 255

Ser Val Lys Val Glu Asp Lys Asp Phe Pro Ser Thr Cys Ser Lys Lys
            260                 265                 270

Lys Asp Arg Lys Ser Phe Cys Thr Ile His Ser Thr Gly Tyr Leu Lys
        275                 280                 285

Ser Trp Pro Pro Thr Lys Met Gly Leu Asp Glu Asp Asn Glu Pro Asp
    290                 295                 300

Asn Glu Gly Cys Asn Leu Ser Cys Leu Val Ala Ile Gly Arg Leu His
305                 310                 315                 320

Ser His Val Val Pro Gln Pro Val Asn Gly Glu Ile Arg Val Lys Ser
                325                 330                 335

Met Glu Tyr Val Ser Arg His Ala Ile Asp Gly Lys Phe Val Phe Val
            340                 345                 350

Asp Gln Arg Ala Thr Ala Ile Leu Ala Tyr Leu Pro Gln Glu Leu Leu
        355                 360                 365

Gly Thr Ser Cys Tyr Glu Tyr Phe His Gln Asp Asp Ile Gly His Leu
    370                 375                 380

Ala Glu Cys His Arg Gln Val Leu Gln Thr Arg Glu Lys Ile Thr Thr
385                 390                 395                 400

Asn Cys Tyr Lys Phe Lys Ile Lys Asp Gly Ser Phe Ile Thr Leu Arg
                405                 410                 415
```

Ser Arg Trp Phe Ser Phe Met Asn Pro Trp Thr Lys Glu Val Glu Tyr
420 425 430

Ile Val Ser Thr Asn Thr Val Val Leu Ala Asn Val Leu Glu Gly Gly
435 440 445

Asp Pro Thr Phe Pro Gln Leu Thr Ala Ser Pro His Ser Met Asp Ser
450 455 460

Met Leu Pro Ser Gly Glu Gly Gly Pro Lys Arg Thr His Pro Thr Val
465 470 475 480

Pro Gly Ile Pro Gly Gly Thr Arg Ala Gly Ala Gly Lys Ile Gly Arg
485 490 495

Met Ile Ala Glu Glu Ile Met Glu Ile His Arg Ile Arg Gly Ser Ser
500 505 510

Pro Ser Ser Cys Gly Ser Ser Pro Leu Asn Ile Thr Ser Thr Pro Pro
515 520 525

Pro Asp Ala Ser Ser Pro Gly Gly Lys Lys Ile Leu Asn Gly Gly Thr
530 535 540

Pro Asp Ile Pro Ser Ser Gly Leu Leu Ser Gly Gln Ala Gln Glu Asn
545 550 555 560

Pro Gly Tyr Pro Tyr Ser Asp Ser Ser Ser Ile Leu Gly Glu Asn Pro
565 570 575

His Ile Gly Ile Asp Met Ile Asp Asn Asp Gln Gly Ser Ser Ser Pro
580 585 590

Ser Asn Asp Glu Ala Ala Met Ala Val Ile Met Ser Leu Leu Glu Ala
595 600 605

Asp Ala Gly Leu Gly Gly Pro Val Asp Phe Ser Asp Leu Pro Trp Pro
610 615 620

Leu
625

<210> 6544
<211> 626
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1413; "

<220>
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<220>
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<223> /note="Gene Name:
aryl hydrocarbon receptor nuclear translocator-like; "

<220>
<221> source
<223> /note="Uniprot ID: O00327; "

<220>
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<223> /note="ENSP ID: ENSP00000384517"

<400> 6544
Met Ala Asp Gln Arg Met Asp Ile Ser Ser Thr Ile Ser Asp Phe Met
1   5   10   15

Ser Pro Gly Pro Thr Asp Leu Leu Ser Ser Ser Leu Gly Thr Ser Gly
            20   25   30

Val Asp Cys Asn Arg Lys Arg Lys Gly Ser Ser Thr Asp Tyr Gln Glu
        35   40   45

Ser Met Asp Thr Asp Lys Asp Asp Pro His Gly Arg Leu Glu Tyr Thr
    50   55   60

Glu His Gln Gly Arg Ile Lys Asn Ala Arg Glu Ala His Ser Gln Ile
65   70   75   80

Glu Lys Arg Arg Arg Asp Lys Met Asn Ser Phe Ile Asp Glu Leu Ala
                85   90   95

Ser Leu Val Pro Thr Cys Asn Ala Met Ser Arg Lys Leu Asp Lys Leu
            100   105   110

Thr Val Leu Arg Met Ala Val Gln His Met Lys Thr Leu Arg Gly Ala

```
        115                 120                 125

Thr Asn Pro Tyr Thr Glu Ala Asn Tyr Lys Pro Thr Phe Leu Ser Asp
    130                 135                 140

Asp Glu Leu Lys His Leu Ile Leu Arg Ala Ala Asp Gly Phe Leu Phe
145                 150                 155                 160

Val Val Gly Cys Asp Arg Gly Lys Ile Leu Phe Val Ser Glu Ser Val
                165                 170                 175

Phe Lys Ile Leu Asn Tyr Ser Gln Asn Asp Leu Ile Gly Gln Ser Leu
            180                 185                 190

Phe Asp Tyr Leu His Pro Lys Asp Ile Ala Lys Val Lys Glu Gln Leu
        195                 200                 205

Ser Ser Ser Asp Thr Ala Pro Arg Glu Arg Leu Ile Asp Ala Lys Thr
    210                 215                 220

Gly Leu Pro Val Lys Thr Asp Ile Thr Pro Gly Pro Ser Arg Leu Cys
225                 230                 235                 240

Ser Gly Ala Arg Arg Ser Phe Phe Cys Arg Met Lys Cys Asn Arg Pro
                245                 250                 255

Ser Val Lys Val Glu Asp Lys Asp Phe Pro Ser Thr Cys Ser Lys Lys
            260                 265                 270

Lys Ala Asp Arg Lys Ser Phe Cys Thr Ile His Ser Thr Gly Tyr Leu
        275                 280                 285

Lys Ser Trp Pro Pro Thr Lys Met Gly Leu Asp Glu Asp Asn Glu Pro
    290                 295                 300

Asp Asn Glu Gly Cys Asn Leu Ser Cys Leu Val Ala Ile Gly Arg Leu
305                 310                 315                 320

His Ser His Val Val Pro Gln Pro Val Asn Gly Glu Ile Arg Val Lys
                325                 330                 335

Ser Met Glu Tyr Val Ser Arg His Ala Ile Asp Gly Lys Phe Val Phe
            340                 345                 350
```

```
Val Asp Gln Arg Ala Thr Ala Ile Leu Ala Tyr Leu Pro Gln Glu Leu
        355                 360                 365

Leu Gly Thr Ser Cys Tyr Glu Tyr Phe His Gln Asp Asp Ile Gly His
    370                 375                 380

Leu Ala Glu Cys His Arg Gln Val Leu Gln Thr Arg Glu Lys Ile Thr
385                 390                 395                 400

Thr Asn Cys Tyr Lys Phe Lys Ile Lys Asp Gly Ser Phe Ile Thr Leu
                405                 410                 415

Arg Ser Arg Trp Phe Ser Phe Met Asn Pro Trp Thr Lys Glu Val Glu
            420                 425                 430

Tyr Ile Val Ser Thr Asn Thr Val Val Leu Ala Asn Val Leu Glu Gly
        435                 440                 445

Gly Asp Pro Thr Phe Pro Gln Leu Thr Ala Ser Pro His Ser Met Asp
    450                 455                 460

Ser Met Leu Pro Ser Gly Glu Gly Gly Pro Lys Arg Thr His Pro Thr
465                 470                 475                 480

Val Pro Gly Ile Pro Gly Gly Thr Arg Ala Gly Ala Gly Lys Ile Gly
                485                 490                 495

Arg Met Ile Ala Glu Glu Ile Met Glu Ile His Arg Ile Arg Gly Ser
            500                 505                 510

Ser Pro Ser Ser Cys Gly Ser Ser Pro Leu Asn Ile Thr Ser Thr Pro
        515                 520                 525

Pro Pro Asp Ala Ser Ser Pro Gly Gly Lys Lys Ile Leu Asn Gly Gly
    530                 535                 540

Thr Pro Asp Ile Pro Ser Ser Gly Leu Leu Ser Gly Gln Ala Gln Glu
545                 550                 555                 560

Asn Pro Gly Tyr Pro Tyr Ser Asp Ser Ser Ser Ile Leu Gly Glu Asn
                565                 570                 575
```

```
Pro His Ile Gly Ile Asp Met Ile Asp Asn Asp Gln Gly Ser Ser Ser
            580                 585                 590

Pro Ser Asn Asp Glu Ala Ala Met Ala Val Ile Met Ser Leu Leu Glu
        595                 600                 605

Ala Asp Ala Gly Leu Gly Gly Pro Val Asp Phe Ser Asp Leu Pro Trp
    610                 615                 620

Pro Leu
625
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<210> 6545
<211> 582
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ARNTL; "

<220>
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<223> /note="Gene Name:
aryl hydrocarbon receptor nuclear translocator-like; "

<220>
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<223> /note="Uniprot ID: O00327; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000385581"

<400> 6545

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Met Ile Asn Ile Glu Ser Met Asp Thr Asp Lys Asp Asp Pro His Gly
1               5                   10                  15

Arg Leu Glu Tyr Thr Glu His Gln Gly Arg Ile Lys Asn Ala Arg Glu
            20                  25                  30

Ala His Ser Gln Ile Glu Lys Arg Arg Arg Asp Lys Met Asn Ser Phe
        35                  40                  45

Ile Asp Glu Leu Ala Ser Leu Val Pro Thr Cys Asn Ala Met Ser Arg
```

```
    50                  55                  60

Lys Leu Asp Lys Leu Thr Val Leu Arg Met Ala Val Gln His Met Lys
65                  70                  75                  80

Thr Leu Arg Gly Ala Thr Asn Pro Tyr Thr Glu Ala Asn Tyr Lys Pro
                85                  90                  95

Thr Phe Leu Ser Asp Asp Glu Leu Lys His Leu Ile Leu Arg Ala Ala
            100                 105                 110

Asp Gly Phe Leu Phe Val Val Gly Cys Asp Arg Gly Lys Ile Leu Phe
        115                 120                 125

Val Ser Glu Ser Val Phe Lys Ile Leu Asn Tyr Ser Gln Asn Asp Leu
    130                 135                 140

Ile Gly Gln Ser Leu Phe Asp Tyr Leu His Pro Lys Asp Ile Ala Lys
145                 150                 155                 160

Val Lys Glu Gln Leu Ser Ser Ser Asp Thr Ala Pro Arg Glu Arg Leu
                165                 170                 175

Ile Asp Ala Lys Thr Gly Leu Pro Val Lys Thr Asp Ile Thr Pro Gly
            180                 185                 190

Pro Ser Arg Leu Cys Ser Gly Ala Arg Arg Ser Phe Phe Cys Arg Met
        195                 200                 205

Lys Cys Asn Arg Pro Ser Val Lys Val Glu Asp Lys Asp Phe Pro Ser
    210                 215                 220

Thr Cys Ser Lys Lys Lys Asp Arg Lys Ser Phe Cys Thr Ile His Ser
225                 230                 235                 240

Thr Gly Tyr Leu Lys Ser Trp Pro Pro Thr Lys Met Gly Leu Asp Glu
                245                 250                 255

Asp Asn Glu Pro Asp Asn Glu Gly Cys Asn Leu Ser Cys Leu Val Ala
            260                 265                 270

Ile Gly Arg Leu His Ser His Val Val Pro Gln Pro Val Asn Gly Glu
        275                 280                 285
```

```
Ile Arg Val Lys Ser Met Glu Tyr Val Ser Arg His Ala Ile Asp Gly
    290                 295                 300

Lys Phe Val Phe Val Asp Gln Arg Ala Thr Ala Ile Leu Ala Tyr Leu
305                 310                 315                 320

Pro Gln Glu Leu Leu Gly Thr Ser Cys Tyr Glu Tyr Phe His Gln Asp
                325                 330                 335

Asp Ile Gly His Leu Ala Glu Cys His Arg Gln Val Leu Gln Thr Arg
            340                 345                 350

Glu Lys Ile Thr Thr Asn Cys Tyr Lys Phe Lys Ile Lys Asp Gly Ser
        355                 360                 365

Phe Ile Thr Leu Arg Ser Arg Trp Phe Ser Phe Met Asn Pro Trp Thr
    370                 375                 380

Lys Glu Val Glu Tyr Ile Val Ser Thr Asn Thr Val Val Leu Ala Asn
385                 390                 395                 400

Val Leu Glu Gly Gly Asp Pro Thr Phe Pro Gln Leu Thr Ala Ser Pro
                405                 410                 415

His Ser Met Asp Ser Met Leu Pro Ser Gly Glu Gly Gly Pro Lys Arg
            420                 425                 430

Thr His Pro Thr Val Pro Gly Ile Pro Gly Gly Thr Arg Ala Gly Ala
        435                 440                 445

Gly Lys Ile Gly Arg Met Ile Ala Glu Glu Ile Met Glu Ile His Arg
    450                 455                 460

Ile Arg Gly Ser Ser Pro Ser Ser Cys Gly Ser Ser Pro Leu Asn Ile
465                 470                 475                 480

Thr Ser Thr Pro Pro Pro Asp Ala Ser Ser Pro Gly Gly Lys Lys Ile
                485                 490                 495

Leu Asn Gly Gly Thr Pro Asp Ile Pro Ser Ser Gly Leu Leu Ser Gly
            500                 505                 510
```

```
Gln Ala Gln Glu Asn Pro Gly Tyr Pro Tyr Ser Asp Ser Ser Ser Ile
        515                 520                 525

Leu Gly Glu Asn Pro His Ile Gly Ile Asp Met Ile Asp Asn Asp Gln
    530                 535                 540

Gly Ser Ser Ser Pro Ser Asn Asp Glu Ala Ala Met Ala Val Ile Met
545                 550                 555                 560

Ser Leu Leu Glu Ala Asp Ala Gly Leu Gly Gly Pro Val Asp Phe Ser
                565                 570                 575

Asp Leu Pro Trp Pro Leu
            580


<210> 6546
<211> 624
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1413; "

<220>
<221> source
<223> /note="Gene Symbol: ARNTL; "

<220>
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<223> /note="Gene Name:
      aryl hydrocarbon receptor nuclear translocator-like; "

<220>
<221> source
<223> /note="Uniprot ID:  O00327; "

<220>
<221> source
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<400> 6546
Met Ser Lys Glu Ala Val Ser Leu Trp Ala Leu Thr Val Ser Leu Gln
1               5                   10                  15

Pro Pro Val Pro Leu Cys Val Cys Arg Glu Met Thr Gly Ser Gly Arg
            20                  25                  30

Arg Lys Gln Gln Cys Val Thr Leu Pro Phe Ile Ser Arg Glu Leu Cys
```

```
        35                  40                  45

Phe Tyr Leu Leu Leu Phe Pro Pro Pro Arg Leu Glu Tyr Thr Glu His
    50                  55                  60

Gln Gly Arg Ile Lys Asn Ala Arg Glu Ala His Ser Gln Ile Glu Lys
65                  70                  75                  80

Arg Arg Arg Asp Lys Met Asn Ser Phe Ile Asp Glu Leu Ala Ser Leu
                85                  90                  95

Val Pro Thr Cys Asn Ala Met Ser Arg Lys Leu Asp Lys Leu Thr Val
            100                 105                 110

Leu Arg Met Ala Val Gln His Met Lys Thr Leu Arg Gly Ala Thr Asn
        115                 120                 125

Pro Tyr Thr Glu Ala Asn Tyr Lys Pro Thr Phe Leu Ser Asp Asp Glu
    130                 135                 140

Leu Lys His Leu Ile Leu Arg Ala Ala Asp Gly Phe Leu Phe Val Val
145                 150                 155                 160

Gly Cys Asp Arg Gly Lys Ile Leu Phe Val Ser Glu Ser Val Phe Lys
                165                 170                 175

Ile Leu Asn Tyr Ser Gln Asn Asp Leu Ile Gly Gln Ser Leu Phe Asp
            180                 185                 190

Tyr Leu His Pro Lys Asp Ile Ala Lys Val Lys Glu Gln Leu Ser Ser
        195                 200                 205

Ser Asp Thr Ala Pro Arg Glu Arg Leu Ile Asp Ala Lys Thr Gly Leu
    210                 215                 220

Pro Val Lys Thr Asp Ile Thr Pro Gly Pro Ser Arg Leu Cys Ser Gly
225                 230                 235                 240

Ala Arg Arg Ser Phe Phe Cys Arg Met Lys Cys Asn Arg Pro Ser Val
                245                 250                 255

Lys Val Glu Asp Lys Asp Phe Pro Ser Thr Cys Ser Lys Lys Lys Ala
            260                 265                 270
```

```
Asp Arg Lys Ser Phe Cys Thr Ile His Ser Thr Gly Tyr Leu Lys Ser
        275                 280                 285

Trp Pro Pro Thr Lys Met Gly Leu Asp Glu Asp Asn Glu Pro Asp Asn
    290                 295                 300

Glu Gly Cys Asn Leu Ser Cys Leu Val Ala Ile Gly Arg Leu His Ser
305                 310                 315                 320

His Val Val Pro Gln Pro Val Asn Gly Glu Ile Arg Val Lys Ser Met
                325                 330                 335

Glu Tyr Val Ser Arg His Ala Ile Asp Gly Lys Phe Val Phe Val Asp
            340                 345                 350

Gln Arg Ala Thr Ala Ile Leu Ala Tyr Leu Pro Gln Glu Leu Leu Gly
        355                 360                 365

Thr Ser Cys Tyr Glu Tyr Phe His Gln Asp Asp Ile Gly His Leu Ala
    370                 375                 380

Glu Cys His Arg Gln Val Leu Gln Thr Arg Glu Lys Ile Thr Thr Asn
385                 390                 395                 400

Cys Tyr Lys Phe Lys Ile Lys Asp Gly Ser Phe Ile Thr Leu Arg Ser
                405                 410                 415

Arg Trp Phe Ser Phe Met Asn Pro Trp Thr Lys Glu Val Glu Tyr Ile
            420                 425                 430

Val Ser Thr Asn Thr Val Val Leu Ala Asn Val Leu Glu Gly Gly Asp
        435                 440                 445

Pro Thr Phe Pro Gln Leu Thr Ala Ser Pro His Ser Met Asp Ser Met
    450                 455                 460

Leu Pro Ser Gly Glu Gly Gly Pro Lys Arg Thr His Pro Thr Val Pro
465                 470                 475                 480

Gly Ile Pro Gly Gly Thr Arg Ala Gly Ala Gly Lys Ile Gly Arg Met
                485                 490                 495
```

```
Ile Ala Glu Glu Ile Met Glu Ile His Arg Ile Arg Gly Ser Ser Pro
            500                 505                 510

Ser Ser Cys Gly Ser Ser Pro Leu Asn Ile Thr Ser Thr Pro Pro Pro
        515                 520                 525

Asp Ala Ser Ser Pro Gly Gly Lys Lys Ile Leu Asn Gly Gly Thr Pro
    530                 535                 540

Asp Ile Pro Ser Ser Gly Leu Leu Ser Gly Gln Ala Gln Glu Asn Pro
545                 550                 555                 560

Gly Tyr Pro Tyr Ser Asp Ser Ser Ser Ile Leu Gly Glu Asn Pro His
                565                 570                 575

Ile Gly Ile Asp Met Ile Asp Asn Asp Gln Gly Ser Ser Ser Pro Ser
            580                 585                 590

Asn Asp Glu Ala Ala Met Ala Val Ile Met Ser Leu Leu Glu Ala Asp
        595                 600                 605

Ala Gly Leu Gly Gly Pro Val Asp Phe Ser Asp Leu Pro Trp Pro Leu
    610                 615                 620
```

<210> 6547
<211> 583
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1413; "

<220>
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<223> /note="Gene Symbol: ARNTL; "

<220>
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<223> /note="Gene Name:
aryl hydrocarbon receptor nuclear translocator-like; "

<220>
<221> source
<223> /note="Uniprot ID: O00327; "

<220>
<221> source

<223> /note="ENSP ID: ENSP00000385915"

<400> 6547

```
Met Ile Asn Ile Glu Ser Met Asp Thr Asp Lys Asp Asp Pro His Gly
1               5                  10                  15

Arg Leu Glu Tyr Thr Glu His Gln Gly Arg Ile Lys Asn Ala Arg Glu
            20                  25                  30

Ala His Ser Gln Ile Glu Lys Arg Arg Arg Asp Lys Met Asn Ser Phe
        35                  40                  45

Ile Asp Glu Leu Ala Ser Leu Val Pro Thr Cys Asn Ala Met Ser Arg
    50                  55                  60

Lys Leu Asp Lys Leu Thr Val Leu Arg Met Ala Val Gln His Met Lys
65                  70                  75                  80

Thr Leu Arg Gly Ala Thr Asn Pro Tyr Thr Glu Ala Asn Tyr Lys Pro
                85                  90                  95

Thr Phe Leu Ser Asp Asp Glu Leu Lys His Leu Ile Leu Arg Ala Ala
            100                 105                 110

Asp Gly Phe Leu Phe Val Val Gly Cys Asp Arg Gly Lys Ile Leu Phe
        115                 120                 125

Val Ser Glu Ser Val Phe Lys Ile Leu Asn Tyr Ser Gln Asn Asp Leu
    130                 135                 140

Ile Gly Gln Ser Leu Phe Asp Tyr Leu His Pro Lys Asp Ile Ala Lys
145                 150                 155                 160

Val Lys Glu Gln Leu Ser Ser Ser Asp Thr Ala Pro Arg Glu Arg Leu
                165                 170                 175

Ile Asp Ala Lys Thr Gly Leu Pro Val Lys Thr Asp Ile Thr Pro Gly
            180                 185                 190

Pro Ser Arg Leu Cys Ser Gly Ala Arg Arg Ser Phe Phe Cys Arg Met
        195                 200                 205

Lys Cys Asn Arg Pro Ser Val Lys Val Glu Asp Lys Asp Phe Pro Ser
    210                 215                 220
```

```
Thr Cys Ser Lys Lys Lys Ala Asp Arg Lys Ser Phe Cys Thr Ile His
225                 230                 235                 240

Ser Thr Gly Tyr Leu Lys Ser Trp Pro Pro Thr Lys Met Gly Leu Asp
                245                 250                 255

Glu Asp Asn Glu Pro Asp Asn Glu Gly Cys Asn Leu Ser Cys Leu Val
            260                 265                 270

Ala Ile Gly Arg Leu His Ser His Val Val Pro Gln Pro Val Asn Gly
        275                 280                 285

Glu Ile Arg Val Lys Ser Met Glu Tyr Val Ser Arg His Ala Ile Asp
    290                 295                 300

Gly Lys Phe Val Phe Val Asp Gln Arg Ala Thr Ala Ile Leu Ala Tyr
305                 310                 315                 320

Leu Pro Gln Glu Leu Leu Gly Thr Ser Cys Tyr Glu Tyr Phe His Gln
                325                 330                 335

Asp Asp Ile Gly His Leu Ala Glu Cys His Arg Gln Val Leu Gln Thr
            340                 345                 350

Arg Glu Lys Ile Thr Thr Asn Cys Tyr Lys Phe Lys Ile Lys Asp Gly
        355                 360                 365

Ser Phe Ile Thr Leu Arg Ser Arg Trp Phe Ser Phe Met Asn Pro Trp
    370                 375                 380

Thr Lys Glu Val Glu Tyr Ile Val Ser Thr Asn Thr Val Val Leu Ala
385                 390                 395                 400

Asn Val Leu Glu Gly Gly Asp Pro Thr Phe Pro Gln Leu Thr Ala Ser
                405                 410                 415

Pro His Ser Met Asp Ser Met Leu Pro Ser Gly Glu Gly Gly Pro Lys
            420                 425                 430

Arg Thr His Pro Thr Val Pro Gly Ile Pro Gly Gly Thr Arg Ala Gly
        435                 440                 445
```

```
Ala Gly Lys Ile Gly Arg Met Ile Ala Glu Glu Ile Met Glu Ile His
    450                 455                 460

Arg Ile Arg Gly Ser Ser Pro Ser Ser Cys Gly Ser Ser Pro Leu Asn
465                 470                 475                 480

Ile Thr Ser Thr Pro Pro Pro Asp Ala Ser Ser Pro Gly Gly Lys Lys
                485                 490                 495

Ile Leu Asn Gly Gly Thr Pro Asp Ile Pro Ser Ser Gly Leu Leu Ser
            500                 505                 510

Gly Gln Ala Gln Glu Asn Pro Gly Tyr Pro Tyr Ser Asp Ser Ser Ser
        515                 520                 525

Ile Leu Gly Glu Asn Pro His Ile Gly Ile Asp Met Ile Asp Asn Asp
    530                 535                 540

Gln Gly Ser Ser Ser Pro Ser Asn Asp Glu Ala Ala Met Ala Val Ile
545                 550                 555                 560

Met Ser Leu Leu Glu Ala Asp Ala Gly Leu Gly Gly Pro Val Asp Phe
                565                 570                 575

Ser Asp Leu Pro Trp Pro Leu
            580


<210> 6548
<211> 100
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1413; "

<220>
<221> source
<223> /note="Gene Symbol: ARNTL; "

<220>
<221> source
<223> /note="Gene Name:
      aryl hydrocarbon receptor nuclear translocator-like; "

<220>
<221> source
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<223> /note="ENSP ID: ENSP00000431488"

<400> 6548
Met Ala Asp Gln Arg Met Asp Ile Ser Ser Thr Ile Ser Asp Phe Met
1   5   10   15

Ser Pro Gly Pro Thr Asp Leu Leu Ser Ser Ser Leu Gly Thr Ser Gly
            20   25   30

Val Asp Cys Asn Arg Lys Arg Lys Gly Ser Ser Thr Asp Tyr Gln Glu
        35   40   45

Ser Met Asp Thr Asp Lys Asp Asp Pro His Gly Arg Leu Glu Tyr Thr
    50   55   60

Glu His Gln Gly Arg Ile Lys Asn Ala Arg Glu Ala His Ser Gln Ile
65   70   75   80

Glu Lys Arg Arg Arg Asp Lys Met Asn Ser Phe Ile Asp Glu Leu Ala
                85   90   95

Ser Leu Val Pro
            100

<210> 6549
<211> 59
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1413; "

<220>
<221> source
<223> /note="Gene Symbol: ARNTL; "

<220>
<221> source
<223> /note="Gene Name:
      aryl hydrocarbon receptor nuclear translocator-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431566"

<400> 6549
Met Ala Asp Gln Arg Met Asp Ile Ser Ser Thr Ile Ser Asp Phe Met
1   5   10   15

Ser Pro Gly Pro Thr Asp Leu Leu Ser Ser Ser Leu Gly Thr Ser Gly
20 25 30

Val Asp Cys Asn Arg Lys Arg Lys Gly Ser Ser Thr Asp Tyr Gln Glu
35 40 45

Ser Met Asp Thr Asp Lys Asp Asp Pro His Gly
50 55

<210> 6550
<211> 76
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1413; "

<220>
<221> source
<223> /note="Gene Symbol: ARNTL; "

<220>
<221> source
<223> /note="Gene Name:
aryl hydrocarbon receptor nuclear translocator-like; "

<220>
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<223> /note="ENSP ID: ENSP00000433540"

<400> 6550
Met Ala Asp Gln Arg Met Asp Ile Ser Ser Thr Ile Ser Asp Phe Met
1 5 10 15

Ser Pro Gly Pro Thr Asp Leu Leu Ser Ser Ser Leu Gly Thr Ser Gly
20 25 30

Val Asp Cys Asn Arg Lys Arg Lys Gly Ser Ser Thr Asp Tyr Gln Glu
35 40 45

Ser Met Asp Thr Asp Lys Asp Asp Pro His Gly Arg Leu Glu Tyr Thr
50 55 60

Glu His Gln Gly Arg Ile Lys Asn Ala Arg Glu Ala
65 70 75

<210> 6551

<211> 135
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1413; "

<220>
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<223> /note="Gene Symbol: ARNTL; "

<220>
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<223> /note="Gene Name:
aryl hydrocarbon receptor nuclear translocator-like; "

<220>
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<223> /note="ENSP ID: ENSP00000433571"

<400> 6551

Met	Ala	Asp	Gln	Arg	Met	Asp	Ile	Ser	Ser	Thr	Ile	Ser	Asp	Phe	Met
1				5				10						15	
Ser	Pro	Gly	Pro	Thr	Asp	Leu	Leu	Ser	Ser	Ser	Leu	Gly	Thr	Ser	Gly
			20					25					30		
Val	Asp	Cys	Asn	Arg	Lys	Arg	Lys	Gly	Ser	Ser	Thr	Asp	Tyr	Gln	Glu
		35					40					45			
Ser	Met	Asp	Thr	Asp	Lys	Asp	Asp	Pro	His	Gly	Arg	Leu	Glu	Tyr	Thr
	50					55					60				
Glu	His	Gln	Gly	Arg	Ile	Lys	Asn	Ala	Arg	Glu	Ala	His	Ser	Gln	Ile
65					70					75					80
Glu	Lys	Arg	Arg	Arg	Asp	Lys	Met	Asn	Ser	Phe	Ile	Asp	Glu	Leu	Ala
				85					90					95	
Ser	Leu	Val	Pro	Thr	Cys	Asn	Ala	Met	Ser	Arg	Lys	Leu	Asp	Lys	Leu
			100					105					110		
Thr	Val	Leu	Arg	Met	Ala	Val	Gln	His	Met	Lys	Thr	Leu	Arg	Gly	Ala
		115					120					125			
Thr	Asn	Pro	Tyr	Thr	Glu	Ala									
	130					135									

<210> 6552
<211> 23
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ARNTL; "

<220>
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<223> /note="Gene Name:
aryl hydrocarbon receptor nuclear translocator-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000434044"

<400> 6552
Met Ala Asp Gln Arg Met Asp Ile Ser Ser Thr Ile Ser Asp Phe Met
1 5 10 15

Ser Pro Gly Pro Thr Asp Leu
20

<210> 6553
<211> 46
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1413; "

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<223> /note="Gene Symbol: ARNTL; "

<220>
<221> source
<223> /note="Gene Name:
aryl hydrocarbon receptor nuclear translocator-like; "

<220>
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<223> /note="ENSP ID: ENSP00000434263"

<400> 6553
Met Ile Asn Ile Glu Ser Met Asp Thr Asp Lys Asp Asp Pro His Gly
1 5 10 15

```
Arg Leu Glu Tyr Thr Glu His Gln Gly Arg Ile Lys Asn Ala Arg Glu
            20                  25                  30

Ala His Ser Gln Ile Glu Lys Arg Arg Arg Asp Lys Met Asn
        35                  40                  45


<210> 6554
<211> 60
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<223> /note="Gene Symbol: ARNTL; "

<220>
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<223> /note="Gene Name:
      aryl hydrocarbon receptor nuclear translocator-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000434781"

<400> 6554
Met Ala Asp Gln Arg Met Asp Ile Ser Ser Thr Ile Ser Asp Phe Met
1               5                  10                  15

Ser Pro Gly Pro Thr Asp Leu Leu Ser Ser Ser Leu Gly Thr Ser Gly
            20                  25                  30

Val Asp Cys Asn Arg Lys Arg Lys Gly Ser Ser Thr Asp Tyr Gln Leu
        35                  40                  45

Glu Tyr Thr Glu His Gln Gly Arg Ile Lys Asn Ala
    50                  55                  60


<210> 6555
<211> 141
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1413; "
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<220>
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<223> /note="Gene Name:
aryl hydrocarbon receptor nuclear translocator-like; "

<220>
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<223> /note="ENSP ID: ENSP00000436313"

<400> 6555
Met Ile Asn Ile Glu Ser Met Asp Thr Asp Lys Asp Asp Pro His Gly
1 5 10 15

Arg Leu Glu Tyr Thr Glu His Gln Gly Arg Ile Lys Asn Ala Arg Glu
20 25 30

Ala His Ser Gln Ile Glu Lys Arg Arg Arg Asp Lys Met Asn Ser Phe
35 40 45

Ile Asp Glu Leu Ala Ser Leu Val Pro Thr Cys Asn Ala Met Ser Arg
50 55 60

Lys Leu Asp Lys Leu Thr Val Leu Arg Met Ala Val Gln His Met Lys
65 70 75 80

Thr Leu Arg Gly Ala Thr Asn Pro Tyr Thr Glu Ala Asn Tyr Lys Pro
85 90 95

Thr Phe Leu Ser Asp Asp Glu Leu Lys His Leu Ile Leu Arg Ala Ala
100 105 110

Asp Gly Phe Leu Phe Val Val Gly Cys Asp Arg Gly Lys Ile Leu Phe
115 120 125

Val Ser Glu Ser Val Phe Lys Ile Leu Asn Tyr Ser Gln
130 135 140

<210> 6556
<211> 171
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1413; "

<220>
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<221> source
<223> /note="Gene Name:
aryl hydrocarbon receptor nuclear translocator-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436442"

<400> 6556

```
Arg Ala Thr Ala Ile Leu Ala Tyr Leu Pro Gln Glu Leu Leu Gly Thr
1               5                  10                  15

Ser Cys Tyr Glu Tyr Phe His Gln Asp Asp Ile Gly His Leu Ala Glu
            20                  25                  30

Cys His Arg Gln Val Leu Gln Thr Arg Glu Lys Ile Thr Thr Asn Cys
        35                  40                  45

Tyr Lys Phe Lys Ile Lys Asp Gly Ser Phe Ile Thr Leu Arg Ser Arg
    50                  55                  60

Trp Phe Ser Phe Met Asn Pro Trp Thr Lys Glu Val Glu Tyr Ile Val
65                  70                  75                  80

Ser Thr Asn Thr Val Val Leu Ser Arg Val Asp Thr Gly His Leu Gly
                85                  90                  95

Gln Val Glu Trp Cys Thr Val Leu Ser Arg Pro Asp Ser Arg Phe Leu
            100                 105                 110

Ile Ala Gly Met Phe Thr Glu Pro Thr Ser Trp Lys Ala Gly Thr Gln
        115                 120                 125

Pro Ser His Ser Ser Gln His Pro Pro Thr Ala Trp Thr Ala Cys Cys
    130                 135                 140

Pro Leu Glu Lys Val Ala Gln Arg Gly Pro Thr Pro Leu Phe Gln Gly
145                 150                 155                 160
```

Phe Gln Gly Glu Pro Gly Leu Gly Gln Glu Lys
165 170

<210> 6557
<211> 72
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1413; "

<220>
<221> source
<223> /note="Gene Symbol: ARNTL; "

<220>
<221> source
<223> /note="Gene Name:
aryl hydrocarbon receptor nuclear translocator-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436721"

<400> 6557
Met Ile Asn Ile Glu Ser Met Asp Thr Asp Lys Asp Asp Pro His Gly
1 5 10 15

Arg Leu Glu Tyr Thr Glu His Gln Gly Arg Ile Lys Asn Ala Arg Glu
20 25 30

Ala His Ser Gln Ile Glu Lys Arg Arg Arg Asp Lys Met Asn Ser Phe
35 40 45

Ile Asp Glu Leu Ala Ser Leu Val Pro Thr Cys Asn Ala Met Ser Arg
50 55 60

Lys Leu Asp Lys Leu Thr Val Leu
65 70

<210> 6558
<211> 588
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1414; "

<220>

<221> source
<223> /note="Gene Symbol: ARNTL2; "

<220>
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<223> /note="Gene Name:
aryl hydrocarbon receptor nuclear translocator-like 2; "

<220>
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<223> /note="Uniprot ID: Q8WYA1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000261178"

<400> 6558

Met	Ala	Ala	Glu	Glu	Glu	Ala	Ala	Ala	Gly	Gly	Lys	Val	Leu	Arg	Glu
1				5				10						15	

Glu	Asn	Gln	Cys	Ile	Ala	Pro	Val	Val	Ser	Ser	Arg	Val	Ser	Pro	Gly
		20					25					30			

Thr	Arg	Pro	Thr	Ala	Met	Gly	Ser	Phe	Ser	Ser	His	Met	Thr	Glu	Phe
	35					40					45				

Pro	Arg	Lys	Arg	Lys	Gly	Ser	Asp	Ser	Asp	Pro	Ser	Gln	Glu	Ala	His
50					55					60					

Ser	Gln	Thr	Glu	Lys	Arg	Arg	Arg	Asp	Lys	Met	Asn	Asn	Leu	Ile	Glu
65				70					75						80

Glu	Leu	Ser	Ala	Met	Ile	Pro	Gln	Cys	Asn	Pro	Met	Ala	Arg	Lys	Leu
				85					90					95	

Asp	Lys	Leu	Thr	Val	Leu	Arg	Met	Ala	Val	Gln	His	Leu	Arg	Ser	Leu
		100					105					110			

Lys	Gly	Leu	Thr	Asn	Ser	Tyr	Val	Gly	Ser	Asn	Tyr	Arg	Pro	Ser	Phe
	115					120					125				

Leu	Gln	Asp	Asn	Glu	Leu	Arg	His	Leu	Ile	Leu	Lys	Thr	Ala	Glu	Gly
130					135					140					

Phe	Leu	Phe	Val	Val	Gly	Cys	Glu	Arg	Gly	Lys	Ile	Leu	Phe	Val	Ser
145					150					155					160

```
Lys Ser Val Ser Lys Ile Leu Asn Tyr Asp Gln Ala Ser Leu Thr Gly
                165                 170                 175

Gln Ser Leu Phe Asp Phe Leu His Pro Lys Asp Val Ala Lys Val Lys
            180                 185                 190

Glu Gln Leu Ser Ser Phe Asp Ile Ser Pro Arg Glu Lys Leu Ile Asp
        195                 200                 205

Ala Lys Thr Gly Leu Gln Val His Ser Asn Leu His Ala Gly Arg Thr
    210                 215                 220

Arg Val Tyr Ser Gly Ser Arg Arg Ser Phe Phe Cys Arg Ile Lys Ser
225                 230                 235                 240

Cys Lys Ile Ser Val Lys Glu Glu His Gly Cys Leu Pro Asn Ser Lys
                245                 250                 255

Lys Lys Glu His Arg Lys Phe Tyr Thr Ile His Cys Thr Gly Tyr Leu
            260                 265                 270

Arg Ser Trp Pro Pro Asn Ile Val Gly Met Glu Glu Glu Arg Asn Ser
        275                 280                 285

Lys Lys Asp Asn Ser Asn Phe Thr Cys Leu Val Ala Ile Gly Arg Leu
    290                 295                 300

Gln Pro Tyr Ile Val Pro Gln Asn Ser Gly Glu Ile Asn Val Lys Pro
305                 310                 315                 320

Thr Glu Phe Ile Thr Arg Phe Ala Val Asn Gly Lys Phe Val Tyr Val
                325                 330                 335

Asp Gln Arg Ala Thr Ala Ile Leu Gly Tyr Leu Pro Gln Glu Leu Leu
            340                 345                 350

Gly Thr Ser Cys Tyr Glu Tyr Phe His Gln Asp Asp His Asn Asn Leu
        355                 360                 365

Thr Asp Lys His Lys Ala Val Leu Gln Ser Lys Glu Lys Ile Leu Thr
    370                 375                 380

Asp Ser Tyr Lys Phe Arg Ala Lys Asp Gly Ser Phe Val Thr Leu Lys
```

385 390 395 400

Ser Gln Trp Phe Ser Phe Thr Asn Pro Trp Thr Lys Glu Leu Glu Tyr
405 410 415

Ile Val Ser Val Asn Thr Leu Val Leu Gly His Ser Glu Pro Gly Glu
420 425 430

Ala Ser Phe Leu Pro Cys Ser Ser Gln Ser Ser Glu Glu Ser Ser Arg
435 440 445

Gln Ser Cys Met Ser Val Pro Gly Met Ser Thr Gly Thr Val Leu Gly
450 455 460

Ala Gly Ser Ile Gly Thr Asp Ile Ala Asn Glu Ile Leu Asp Leu Gln
465 470 475 480

Arg Leu Gln Ser Ser Ser Tyr Leu Asp Asp Ser Ser Pro Thr Gly Leu
485 490 495

Met Lys Asp Thr His Thr Val Asn Cys Arg Ser Met Ser Asn Lys Glu
500 505 510

Leu Phe Pro Pro Ser Pro Ser Glu Met Gly Glu Leu Glu Ala Thr Arg
515 520 525

Gln Asn Gln Ser Thr Val Ala Val His Ser His Glu Pro Leu Leu Ser
530 535 540

Asp Gly Ala Gln Leu Asp Phe Asp Ala Leu Cys Asp Asn Asp Asp Thr
545 550 555 560

Ala Met Ala Ala Phe Met Asn Tyr Leu Glu Ala Glu Gly Gly Leu Gly
565 570 575

Asp Pro Gly Asp Phe Ser Asp Ile Gln Trp Thr Leu
580 585

<210> 6559
<211> 636
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<223> /note="Gene Name:
aryl hydrocarbon receptor nuclear translocator-like 2; "

<220>
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<223> /note="Uniprot ID: Q8WYA1; "

<220>
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Met Ala Ala Glu Glu Glu Ala Ala Ala Gly Gly Lys Val Leu Arg Glu
1   5   10   15

Glu Asn Gln Cys Ile Ala Pro Val Val Ser Ser Arg Val Ser Pro Gly
            20   25   30

Thr Arg Pro Thr Ala Met Gly Ser Phe Ser Ser His Met Thr Glu Phe
        35   40   45

Pro Arg Lys Arg Lys Gly Ser Asp Ser Asp Pro Ser Gln Ser Gly Ile
    50   55   60

Met Thr Glu Lys Val Val Glu Lys Leu Ser Gln Asn Pro Leu Thr Tyr
65   70   75   80

Leu Leu Ser Thr Arg Ile Glu Ile Ser Ala Ser Ser Gly Ser Arg Val
                85   90   95

Glu Asp Gly Glu His Gln Val Lys Met Lys Ala Phe Arg Glu Ala His
            100   105   110

Ser Gln Thr Glu Lys Arg Arg Arg Asp Lys Met Asn Asn Leu Ile Glu
        115   120   125

Glu Leu Ser Ala Met Ile Pro Gln Cys Asn Pro Met Ala Arg Lys Leu
    130   135   140

```
Asp Lys Leu Thr Val Leu Arg Met Ala Val Gln His Leu Arg Ser Leu
145                 150                 155                 160

Lys Gly Leu Thr Asn Ser Tyr Val Gly Ser Asn Tyr Arg Pro Ser Phe
                165                 170                 175

Leu Gln Asp Asn Glu Leu Arg His Leu Ile Leu Lys Thr Ala Glu Gly
            180                 185                 190

Phe Leu Phe Val Val Gly Cys Glu Arg Gly Lys Ile Leu Phe Val Ser
        195                 200                 205

Lys Ser Val Ser Lys Ile Leu Asn Tyr Asp Gln Ala Ser Leu Thr Gly
    210                 215                 220

Gln Ser Leu Phe Asp Phe Leu His Pro Lys Asp Val Ala Lys Val Lys
225                 230                 235                 240

Glu Gln Leu Ser Ser Phe Asp Ile Ser Pro Arg Glu Lys Leu Ile Asp
                245                 250                 255

Ala Lys Thr Gly Leu Gln Val His Ser Asn Leu His Ala Gly Arg Thr
            260                 265                 270

Arg Val Tyr Ser Gly Ser Arg Arg Ser Phe Phe Cys Arg Ile Lys Ser
        275                 280                 285

Cys Lys Ile Ser Val Lys Glu Glu His Gly Cys Leu Pro Asn Ser Lys
    290                 295                 300

Lys Lys Glu His Arg Lys Phe Tyr Thr Ile His Cys Thr Gly Tyr Leu
305                 310                 315                 320

Arg Ser Trp Pro Pro Asn Ile Val Gly Met Glu Glu Glu Arg Asn Ser
                325                 330                 335

Lys Lys Asp Asn Ser Asn Phe Thr Cys Leu Val Ala Ile Gly Arg Leu
            340                 345                 350

Gln Pro Tyr Ile Val Pro Gln Asn Ser Gly Glu Ile Asn Val Lys Pro
        355                 360                 365

Thr Glu Phe Ile Thr Arg Phe Ala Val Asn Gly Lys Phe Val Tyr Val
```

370 375 380

Asp Gln Arg Ala Thr Ala Ile Leu Gly Tyr Leu Pro Gln Glu Leu Leu
385 390 395 400

Gly Thr Ser Cys Tyr Glu Tyr Phe His Gln Asp Asp His Asn Asn Leu
405 410 415

Thr Asp Lys His Lys Ala Val Leu Gln Ser Lys Glu Lys Ile Leu Thr
420 425 430

Asp Ser Tyr Lys Phe Arg Ala Lys Asp Gly Ser Phe Val Thr Leu Lys
435 440 445

Ser Gln Trp Phe Ser Phe Thr Asn Pro Trp Thr Lys Glu Leu Glu Tyr
450 455 460

Ile Val Ser Val Asn Thr Leu Val Leu Gly His Ser Glu Pro Gly Glu
465 470 475 480

Ala Ser Phe Leu Pro Cys Ser Ser Gln Ser Ser Glu Glu Ser Ser Arg
485 490 495

Gln Ser Cys Met Ser Val Pro Gly Met Ser Thr Gly Thr Val Leu Gly
500 505 510

Ala Gly Ser Ile Gly Thr Asp Ile Ala Asn Glu Ile Leu Asp Leu Gln
515 520 525

Arg Leu Gln Ser Ser Ser Tyr Leu Asp Asp Ser Ser Pro Thr Gly Leu
530 535 540

Met Lys Asp Thr His Thr Val Asn Cys Arg Ser Met Ser Asn Lys Glu
545 550 555 560

Leu Phe Pro Pro Ser Pro Ser Glu Met Gly Glu Leu Glu Ala Thr Arg
565 570 575

Gln Asn Gln Ser Thr Val Ala Val His Ser His Glu Pro Leu Leu Ser
580 585 590

Asp Gly Ala Gln Leu Asp Phe Asp Ala Leu Cys Asp Asn Asp Asp Thr
595 600 605

```
Ala Met Ala Ala Phe Met Asn Tyr Leu Glu Ala Glu Gly Gly Leu Gly
    610                 615                 620

Asp Pro Gly Asp Phe Ser Asp Ile Gln Trp Thr Leu
625                 630                 635
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<210> 6560
<211> 622
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<213> Homo sapiens

<220>
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aryl hydrocarbon receptor nuclear translocator-like 2; "

<220>
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<220>
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<223> /note="ENSP ID: ENSP00000312247"

<400> 6560

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Met Ala Ala Glu Glu Glu Ala Ala Ala Gly Gly Lys Val Leu Arg Glu
1               5                   10                  15

Glu Asn Gln Cys Ile Ala Pro Val Val Ser Ser Arg Val Ser Pro Gly
            20                  25                  30

Thr Arg Pro Thr Ala Met Gly Ser Phe Ser Ser His Met Thr Glu Phe
        35                  40                  45

Pro Arg Lys Arg Lys Gly Ser Asp Ser Asp Pro Ser Gln Ser Gly Ile
    50                  55                  60

Met Thr Glu Lys Val Val Glu Lys Leu Ser Gln Asn Pro Leu Thr Tyr
65                  70                  75                  80
```

```
Leu Leu Ser Thr Arg Ile Glu Ile Ser Ala Ser Ser Gly Ser Arg Glu
                85                  90                  95

Ala His Ser Gln Thr Glu Lys Arg Arg Arg Asp Lys Met Asn Asn Leu
            100                 105                 110

Ile Glu Glu Leu Ser Ala Met Ile Pro Gln Cys Asn Pro Met Ala Arg
        115                 120                 125

Lys Leu Asp Lys Leu Thr Val Leu Arg Met Ala Val Gln His Leu Arg
    130                 135                 140

Ser Leu Lys Gly Leu Thr Asn Ser Tyr Val Gly Ser Asn Tyr Arg Pro
145                 150                 155                 160

Ser Phe Leu Gln Asp Asn Glu Leu Arg His Leu Ile Leu Lys Thr Ala
                165                 170                 175

Glu Gly Phe Leu Phe Val Val Gly Cys Glu Arg Gly Lys Ile Leu Phe
            180                 185                 190

Val Ser Lys Ser Val Ser Lys Ile Leu Asn Tyr Asp Gln Ala Ser Leu
        195                 200                 205

Thr Gly Gln Ser Leu Phe Asp Phe Leu His Pro Lys Asp Val Ala Lys
    210                 215                 220

Val Lys Glu Gln Leu Ser Ser Phe Asp Ile Ser Pro Arg Glu Lys Leu
225                 230                 235                 240

Ile Asp Ala Lys Thr Gly Leu Gln Val His Ser Asn Leu His Ala Gly
                245                 250                 255

Arg Thr Arg Val Tyr Ser Gly Ser Arg Arg Ser Phe Phe Cys Arg Ile
            260                 265                 270

Lys Ser Cys Lys Ile Ser Val Lys Glu Glu His Gly Cys Leu Pro Asn
        275                 280                 285

Ser Lys Lys Lys Glu His Arg Lys Phe Tyr Thr Ile His Cys Thr Gly
    290                 295                 300

Tyr Leu Arg Ser Trp Pro Pro Asn Ile Val Gly Met Glu Glu Glu Arg
```

305 310 315 320

Asn Ser Lys Lys Asp Asn Ser Asn Phe Thr Cys Leu Val Ala Ile Gly
325 330 335

Arg Leu Gln Pro Tyr Ile Val Pro Gln Asn Ser Gly Glu Ile Asn Val
340 345 350

Lys Pro Thr Glu Phe Ile Thr Arg Phe Ala Val Asn Gly Lys Phe Val
355 360 365

Tyr Val Asp Gln Arg Ala Thr Ala Ile Leu Gly Tyr Leu Pro Gln Glu
370 375 380

Leu Leu Gly Thr Ser Cys Tyr Glu Tyr Phe His Gln Asp Asp His Asn
385 390 395 400

Asn Leu Thr Asp Lys His Lys Ala Val Leu Gln Ser Lys Glu Lys Ile
405 410 415

Leu Thr Asp Ser Tyr Lys Phe Arg Ala Lys Asp Gly Ser Phe Val Thr
420 425 430

Leu Lys Ser Gln Trp Phe Ser Phe Thr Asn Pro Trp Thr Lys Glu Leu
435 440 445

Glu Tyr Ile Val Ser Val Asn Thr Leu Val Leu Gly His Ser Glu Pro
450 455 460

Gly Glu Ala Ser Phe Leu Pro Cys Ser Ser Gln Ser Ser Glu Glu Ser
465 470 475 480

Ser Arg Gln Ser Cys Met Ser Val Pro Gly Met Ser Thr Gly Thr Val
485 490 495

Leu Gly Ala Gly Ser Ile Gly Thr Asp Ile Ala Asn Glu Ile Leu Asp
500 505 510

Leu Gln Arg Leu Gln Ser Ser Ser Tyr Leu Asp Asp Ser Ser Pro Thr
515 520 525

Gly Leu Met Lys Asp Thr His Thr Val Asn Cys Arg Ser Met Ser Asn
530 535 540

```
Lys Glu Leu Phe Pro Pro Ser Pro Ser Glu Met Gly Glu Leu Glu Ala
545                 550                 555                 560


Thr Arg Gln Asn Gln Ser Thr Val Ala Val His Ser His Glu Pro Leu
                565                 570                 575


Leu Ser Asp Gly Ala Gln Leu Asp Phe Asp Ala Leu Cys Asp Asn Asp
            580                 585                 590


Asp Thr Ala Met Ala Ala Phe Met Asn Tyr Leu Glu Ala Glu Gly Gly
        595                 600                 605


Leu Gly Asp Pro Gly Asp Phe Ser Asp Ile Gln Trp Thr Leu
    610                 615                 620


<210> 6561
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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000379238"

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Met Ala Ala Glu Glu Glu Ala Ala Ala Gly Gly Glu Val Ala Gly Gly
1               5                   10                  15


Glu Ala Thr Ala Pro Gly Lys Val Leu Arg Glu Glu Asn Gln Cys Ile
            20                  25                  30
```

```
Ala Pro Val Val Ser Ser Arg Val Ser Pro Gly Thr Arg Pro Thr Ala
        35                  40                  45

Met Gly Ser Phe Ser Ser His Met Thr Glu Phe Pro Arg Lys Arg Lys
    50                  55                  60

Gly Ser Asp Ser Asp Pro Ser Gln Glu Ala His Ser Gln Thr Glu Lys
65                  70                  75                  80

Arg Arg Arg Asp Lys Met Asn Asn Leu Ile Glu Glu Leu Ser Ala Met
                85                  90                  95

Ile Pro Gln Cys Asn Pro Met Ala Arg Lys Leu Asp Lys Leu Thr Val
            100                 105                 110

Leu Arg Met Ala Val Gln His Leu Arg Ser Leu Lys Gly Leu Thr Asn
        115                 120                 125

Ser Tyr Val Gly Ser Asn Tyr Arg Pro Ser Phe Leu Gln Asp Asn Glu
    130                 135                 140

Leu Arg His Leu Ile Leu Lys Thr Ala Glu Gly Phe Leu Phe Val Val
145                 150                 155                 160

Gly Cys Glu Arg Gly Lys Ile Leu Phe Val Ser Lys Ser Val Ser Lys
                165                 170                 175

Ile Leu Asn Tyr Asp Gln Ala Ser Leu Thr Gly Gln Ser Leu Phe Asp
            180                 185                 190

Phe Leu His Pro Lys Asp Val Ala Lys Val Lys Glu Gln Leu Ser Ser
        195                 200                 205

Phe Asp Ile Ser Pro Arg Glu Lys Leu Ile Asp Ala Lys Thr Gly Leu
    210                 215                 220

Gln Val His Ser Asn Leu His Ala Gly Arg Thr Arg Val Tyr Ser Gly
225                 230                 235                 240

Ser Arg Arg Ser Phe Phe Cys Arg Ile Lys Ser Cys Lys Ile Ser Val
                245                 250                 255

Lys Glu Glu His Gly Cys Leu Pro Asn Ser Lys Lys Lys Glu His Arg
```

260 265 270

Lys Phe Tyr Thr Ile His Cys Thr Gly Tyr Leu Arg Ser Trp Pro Pro
275 280 285

Asn Ile Val Gly Met Glu Glu Glu Arg Asn Ser Lys Lys Asp Asn Ser
290 295 300

Asn Phe Thr Cys Leu Val Ala Ile Gly Arg Leu Gln Pro Tyr Ile Val
305 310 315 320

Pro Gln Asn Ser Gly Glu Ile Asn Val Lys Pro Thr Glu Phe Ile Thr
325 330 335

Arg Phe Ala Val Asn Gly Lys Phe Val Tyr Val Asp Gln Arg Ala Thr
340 345 350

Ala Ile Leu Gly Tyr Leu Pro Gln Glu Leu Leu Gly Thr Ser Cys Tyr
355 360 365

Glu Tyr Phe His Gln Asp Asp His Asn Asn Leu Thr Asp Lys His Lys
370 375 380

Ala Val Leu Gln Ser Lys Glu Lys Ile Leu Thr Asp Ser Tyr Lys Phe
385 390 395 400

Arg Ala Lys Asp Gly Ser Phe Val Thr Leu Lys Ser Gln Trp Phe Ser
405 410 415

Phe Thr Asn Pro Trp Thr Lys Glu Leu Glu Tyr Ile Val Ser Val Asn
420 425 430

Thr Leu Val Leu Gly His Ser Glu Pro Gly Glu Ala Ser Phe Leu Pro
435 440 445

Cys Ser Ser Gln Ser Ser Glu Glu Ser Ser Arg Gln Ser Cys Met Ser
450 455 460

Val Pro Gly Met Ser Thr Gly Thr Val Leu Gly Ala Gly Ser Ile Gly
465 470 475 480

Thr Asp Ile Ala Asn Glu Ile Leu Asp Leu Gln Arg Leu Gln Ser Ser
485 490 495

```
Ser Tyr Leu Asp Asp Ser Ser Pro Thr Gly Leu Met Lys Asp Thr His
            500                 505                 510

Thr Val Asn Cys Arg Ser Met Ser Asn Lys Glu Leu Phe Pro Pro Ser
        515                 520                 525

Pro Ser Glu Met Gly Glu Leu Glu Ala Thr Arg Gln Asn Gln Ser Thr
    530                 535                 540

Val Ala Val His Ser His Glu Pro Leu Leu Ser Asp Gly Ala Gln Leu
545                 550                 555                 560

Asp Phe Asp Ala Leu Cys Asp Asn Asp Asp Thr Ala Met Ala Ala Phe
                565                 570                 575

Met Asn Tyr Leu Glu Ala Glu Gly Gly Leu Gly Asp Pro Gly Asp Phe
            580                 585                 590

Ser Asp Ile Gln Trp Thr Leu
        595
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<210> 6562
<211> 588
<212> PRT
<213> Homo sapiens

<220>
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aryl hydrocarbon receptor nuclear translocator-like 2; "

<220>
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<223> /note="ENSP ID: ENSP00000400185"

<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 6562
Xaa Pro Val Val Ser Ser Arg Val Ser Pro Gly Thr Arg Pro Thr Ala
1 5 10 15

Met Gly Ser Phe Ser Ser His Met Thr Glu Phe Pro Arg Lys Arg Lys
20 25 30

Gly Ser Asp Ser Asp Pro Ser His Gln Asn Pro Leu Thr Tyr Leu Leu
35 40 45

Ser Thr Arg Ile Glu Ile Ser Ala Ser Ser Gly Ser Arg Glu Ala His
50 55 60

Ser Gln Thr Glu Lys Arg Arg Arg Asp Lys Met Asn Asn Leu Ile Glu
65 70 75 80

Glu Leu Ser Ala Met Ile Pro Gln Cys Asn Pro Met Ala Arg Lys Leu
85 90 95

Asp Lys Leu Thr Val Leu Arg Met Ala Val Gln His Leu Arg Ser Leu
100 105 110

Lys Gly Leu Thr Asn Ser Tyr Val Gly Ser Asn Tyr Arg Pro Ser Phe
115 120 125

Leu Gln Asp Asn Glu Leu Arg His Leu Ile Leu Lys Thr Ala Glu Gly
130 135 140

Phe Leu Phe Val Val Gly Cys Glu Arg Gly Lys Ile Leu Phe Val Ser
145 150 155 160

Lys Ser Val Ser Lys Ile Leu Asn Tyr Asp Gln Ala Ser Leu Thr Gly
165 170 175

Gln Ser Leu Phe Asp Phe Leu His Pro Lys Asp Val Ala Lys Val Lys
180 185 190

Glu Gln Leu Ser Ser Phe Asp Ile Ser Pro Arg Glu Lys Leu Ile Asp
195 200 205

Ala Lys Thr Gly Leu Gln Val His Ser Asn Leu His Ala Gly Arg Thr
210 215 220

```
Arg Val Tyr Ser Gly Ser Arg Arg Ser Phe Phe Cys Arg Ile Lys Ser
225                 230                 235                 240

Cys Lys Ile Ser Val Lys Glu Glu His Gly Cys Leu Pro Asn Ser Lys
                245                 250                 255

Lys Lys Glu His Arg Lys Phe Tyr Thr Ile His Cys Thr Gly Tyr Leu
            260                 265                 270

Arg Ser Trp Pro Pro Asn Ile Val Gly Met Glu Glu Glu Arg Asn Ser
        275                 280                 285

Lys Lys Asp Asn Ser Asn Phe Thr Cys Leu Val Ala Ile Gly Arg Leu
    290                 295                 300

Gln Pro Tyr Ile Val Pro Gln Asn Ser Gly Glu Ile Asn Val Lys Pro
305                 310                 315                 320

Thr Glu Phe Ile Thr Arg Phe Ala Val Asn Gly Lys Phe Val Tyr Val
                325                 330                 335

Asp Gln Arg Ala Thr Ala Ile Leu Gly Tyr Leu Pro Gln Glu Leu Leu
            340                 345                 350

Gly Thr Ser Cys Tyr Glu Tyr Phe His Gln Asp Asp His Asn Asn Leu
        355                 360                 365

Thr Asp Lys His Lys Ala Val Leu Gln Ser Lys Glu Lys Ile Leu Thr
    370                 375                 380

Asp Ser Tyr Lys Phe Arg Ala Lys Asp Gly Ser Phe Val Thr Leu Lys
385                 390                 395                 400

Ser Gln Trp Phe Ser Phe Thr Asn Pro Trp Thr Lys Glu Leu Glu Tyr
                405                 410                 415

Ile Val Ser Val Asn Thr Leu Val Leu Gly His Ser Glu Pro Gly Glu
            420                 425                 430

Ala Ser Phe Leu Pro Cys Ser Ser Gln Ser Ser Glu Glu Ser Ser Arg
        435                 440                 445
```

```
Gln Ser Cys Met Ser Val Pro Gly Met Ser Thr Gly Thr Val Leu Gly
    450                 455                 460

Ala Gly Ser Ile Gly Thr Asp Ile Ala Asn Glu Ile Leu Asp Leu Gln
465                 470                 475                 480

Arg Leu Gln Ser Ser Ser Tyr Leu Asp Asp Ser Ser Pro Thr Gly Leu
                485                 490                 495

Met Lys Asp Thr His Thr Val Asn Cys Arg Ser Met Ser Asn Lys Glu
            500                 505                 510

Leu Phe Pro Pro Ser Pro Ser Glu Met Gly Glu Leu Glu Ala Thr Arg
        515                 520                 525

Gln Asn Gln Ser Thr Val Ala Val His Ser His Glu Pro Leu Leu Ser
    530                 535                 540

Asp Gly Ala Gln Leu Asp Phe Asp Ala Leu Cys Asp Asn Asp Asp Thr
545                 550                 555                 560

Ala Met Ala Ala Phe Met Asn Tyr Leu Glu Ala Glu Gly Gly Leu Gly
                565                 570                 575

Asp Pro Gly Asp Phe Ser Asp Ile Gln Trp Thr Leu
            580                 585


<210> 6563
<211> 540
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Uniprot ID:  Q8WYA1; "
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<400> 6563
Met Ala Ala Glu Glu Glu Ala Ala Ala Gly Gly Glu Val Ala Gly Gly
1   5   10   15

Glu Ala Thr Ala Pro Gly Lys Val Leu Arg Glu Glu Asn Gln Cys Ile
            20   25   30

Ala Pro Val Val Ser Ser Arg Val Ser Pro Gly Thr Arg Pro Thr Ala
        35   40   45

Met Gly Ser Phe Ser Ser His Met Thr Glu Phe Pro Arg Lys Arg Lys
    50   55   60

Gly Ser Asp Ser Asp Pro Ser Gln Glu Ala His Ser Gln Thr Glu Lys
65   70   75   80

Arg Arg Arg Asp Lys Met Asn Asn Leu Ile Glu Glu Leu Ser Ala Met
                85   90   95

Ile Pro Gln Cys Asn Pro Met Ala Arg Lys Leu Asp Lys Leu Thr Val
            100   105   110

Leu Arg Met Ala Val Gln His Leu Arg Ser Leu Lys Gly Leu Thr Asn
        115   120   125

Ser Tyr Val Gly Ser Asn Tyr Arg Pro Ser Phe Leu Gln Asp Asn Glu
    130   135   140

Leu Arg His Leu Ile Leu Lys Thr Ala Glu Gly Phe Leu Phe Val Val
145   150   155   160

Gly Cys Glu Arg Gly Lys Ile Leu Phe Val Ser Lys Ser Val Ser Lys
                165   170   175

Ile Leu Asn Tyr Asp Gln Ala Ser Leu Thr Gly Gln Ser Leu Phe Asp
            180   185   190

Phe Leu His Pro Lys Asp Val Ala Lys Val Lys Glu Gln Leu Ser Ser
        195   200   205

```
Phe Asp Ile Ser Pro Arg Glu Lys Leu Ile Asp Ala Lys Thr Gly Leu
    210                 215                 220

Gln Val His Ser Asn Leu His Ala Gly Arg Thr Arg Val Tyr Ser Gly
225                 230                 235                 240

Ser Arg Arg Ser Phe Phe Cys Arg Ile Lys Ser Cys Lys Ile Ser Val
                245                 250                 255

Lys Glu Glu His Gly Cys Leu Pro Asn Ser Lys Lys Lys Glu His Arg
            260                 265                 270

Lys Phe Tyr Thr Ile His Cys Thr Gly Tyr Leu Arg Ser Trp Pro Pro
        275                 280                 285

Asn Ile Val Gly Met Glu Glu Glu Arg Asn Ser Lys Lys Asp Asn Ser
    290                 295                 300

Asn Phe Thr Cys Leu Val Ala Ile Gly Arg Leu Gln Pro Tyr Ile Val
305                 310                 315                 320

Pro Gln Asn Ser Gly Glu Ile Asn Val Lys Pro Thr Glu Phe Ile Thr
                325                 330                 335

Arg Phe Ala Val Asn Gly Lys Phe Val Tyr Val Asp Gln Arg Ala Thr
            340                 345                 350

Ala Ile Leu Gly Tyr Leu Pro Gln Glu Leu Leu Gly Thr Ser Cys Tyr
        355                 360                 365

Glu Tyr Phe His Gln Asp Asp His Asn Asn Leu Thr Asp Lys His Lys
    370                 375                 380

Ala Val Leu Gln Ser Lys Glu Lys Ile Leu Thr Asp Ser Tyr Lys Phe
385                 390                 395                 400

Arg Ala Lys Asp Gly Ser Phe Val Thr Leu Lys Ser Gln Trp Phe Ser
                405                 410                 415

Phe Thr Asn Pro Trp Thr Lys Glu Leu Glu Tyr Ile Val Ser Val Asn
            420                 425                 430
```

```
Thr Leu Val Leu Gly His Ser Glu Pro Gly Glu Ala Ser Phe Leu Pro
        435                 440                 445

Cys Ser Ser Gln Ser Ser Glu Glu Ser Ser Arg Gln Ser Cys Met Ser
    450                 455                 460

Val Pro Gly Met Ser Thr Gly Thr Val Leu Gly Ala Gly Ser Ile Gly
465                 470                 475                 480

Thr Asp Ile Ala Asn Glu Ile Leu Asp Leu Gln Arg Leu Gln Ser Ser
                485                 490                 495

Ser Tyr Leu Asp Asp Ser Ser Pro Thr Gly Leu Met Lys Asp Thr His
            500                 505                 510

Thr Val Asn Cys Arg Ser Val Met Val His Ser Trp Ile Ser Met Pro
        515                 520                 525

Tyr Val Thr Met Met Thr Gln Pro Trp Leu His Leu
    530                 535                 540


<210> 6564
<211> 602
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Uniprot ID:  Q8WYA1; "

<220>
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<223> /note="ENSP ID: ENSP00000442438"

<400> 6564
Met Ala Ala Glu Glu Glu Ala Ala Ala Gly Gly Lys Val Leu Arg Glu
1               5                   10                  15
```

```
Glu Asn Gln Cys Ile Ala Pro Val Val Ser Ser Arg Val Ser Pro Gly
            20                  25                  30

Thr Arg Pro Thr Ala Met Gly Ser Phe Ser Ser His Met Thr Glu Phe
        35                  40                  45

Pro Arg Lys Arg Lys Gly Ser Asp Ser Asp Pro Ser Gln Val Glu Asp
    50                  55                  60

Gly Glu His Gln Val Lys Met Lys Ala Phe Arg Glu Ala His Ser Gln
65                  70                  75                  80

Thr Glu Lys Arg Arg Arg Asp Lys Met Asn Asn Leu Ile Glu Glu Leu
                85                  90                  95

Ser Ala Met Ile Pro Gln Cys Asn Pro Met Ala Arg Lys Leu Asp Lys
            100                 105                 110

Leu Thr Val Leu Arg Met Ala Val Gln His Leu Arg Ser Leu Lys Gly
        115                 120                 125

Leu Thr Asn Ser Tyr Val Gly Ser Asn Tyr Arg Pro Ser Phe Leu Gln
    130                 135                 140

Asp Asn Glu Leu Arg His Leu Ile Leu Lys Thr Ala Glu Gly Phe Leu
145                 150                 155                 160

Phe Val Val Gly Cys Glu Arg Gly Lys Ile Leu Phe Val Ser Lys Ser
                165                 170                 175

Val Ser Lys Ile Leu Asn Tyr Asp Gln Ala Ser Leu Thr Gly Gln Ser
            180                 185                 190

Leu Phe Asp Phe Leu His Pro Lys Asp Val Ala Lys Val Lys Glu Gln
        195                 200                 205

Leu Ser Ser Phe Asp Ile Ser Pro Arg Glu Lys Leu Ile Asp Ala Lys
    210                 215                 220

Thr Gly Leu Gln Val His Ser Asn Leu His Ala Gly Arg Thr Arg Val
225                 230                 235                 240
```

Tyr Ser Gly Ser Arg Arg Ser Phe Phe Cys Arg Ile Lys Ser Cys Lys
245 250 255

Ile Ser Val Lys Glu Glu His Gly Cys Leu Pro Asn Ser Lys Lys Lys
260 265 270

Glu His Arg Lys Phe Tyr Thr Ile His Cys Thr Gly Tyr Leu Arg Ser
275 280 285

Trp Pro Pro Asn Ile Val Gly Met Glu Glu Glu Arg Asn Ser Lys Lys
290 295 300

Asp Asn Ser Asn Phe Thr Cys Leu Val Ala Ile Gly Arg Leu Gln Pro
305 310 315 320

Tyr Ile Val Pro Gln Asn Ser Gly Glu Ile Asn Val Lys Pro Thr Glu
325 330 335

Phe Ile Thr Arg Phe Ala Val Asn Gly Lys Phe Val Tyr Val Asp Gln
340 345 350

Arg Ala Thr Ala Ile Leu Gly Tyr Leu Pro Gln Glu Leu Leu Gly Thr
355 360 365

Ser Cys Tyr Glu Tyr Phe His Gln Asp Asp His Asn Asn Leu Thr Asp
370 375 380

Lys His Lys Ala Val Leu Gln Ser Lys Glu Lys Ile Leu Thr Asp Ser
385 390 395 400

Tyr Lys Phe Arg Ala Lys Asp Gly Ser Phe Val Thr Leu Lys Ser Gln
405 410 415

Trp Phe Ser Phe Thr Asn Pro Trp Thr Lys Glu Leu Glu Tyr Ile Val
420 425 430

Ser Val Asn Thr Leu Val Leu Gly His Ser Glu Pro Gly Glu Ala Ser
435 440 445

Phe Leu Pro Cys Ser Ser Gln Ser Ser Glu Glu Ser Ser Arg Gln Ser
450 455 460

```
Cys Met Ser Val Pro Gly Met Ser Thr Gly Thr Val Leu Gly Ala Gly
465                 470                 475                 480

Ser Ile Gly Thr Asp Ile Ala Asn Glu Ile Leu Asp Leu Gln Arg Leu
                485                 490                 495

Gln Ser Ser Ser Tyr Leu Asp Asp Ser Ser Pro Thr Gly Leu Met Lys
            500                 505                 510

Asp Thr His Thr Val Asn Cys Arg Ser Met Ser Asn Lys Glu Leu Phe
        515                 520                 525

Pro Pro Ser Pro Ser Glu Met Gly Glu Leu Glu Ala Thr Arg Gln Asn
    530                 535                 540

Gln Ser Thr Val Ala Val His Ser His Glu Pro Leu Leu Ser Asp Gly
545                 550                 555                 560

Ala Gln Leu Asp Phe Asp Ala Leu Cys Asp Asn Asp Asp Thr Ala Met
                565                 570                 575

Ala Ala Phe Met Asn Tyr Leu Glu Ala Glu Gly Gly Leu Gly Asp Pro
            580                 585                 590

Gly Asp Phe Ser Asp Ile Gln Trp Thr Leu
        595                 600


<210> 6565
<211> 551
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ARNTL2; "

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<223> /note="Gene Name:
      aryl hydrocarbon receptor nuclear translocator-like 2; "

<220>
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<223> /note="Uniprot ID:  Q8WYA1; "
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<220>
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<223> /note="ENSP ID: ENSP00000445836"

<400> 6565
Met Gly Ser Phe Ser Ser His Met Thr Glu Phe Pro Arg Lys Arg Lys
1   5   10   15

Gly Ser Asp Ser Asp Pro Ser Gln Glu Ala His Ser Gln Thr Glu Lys
            20   25   30

Arg Arg Arg Asp Lys Met Asn Asn Leu Ile Glu Glu Leu Ser Ala Met
        35   40   45

Ile Pro Gln Cys Asn Pro Met Ala Arg Lys Leu Asp Lys Leu Thr Val
    50   55   60

Leu Arg Met Ala Val Gln His Leu Arg Ser Leu Lys Gly Leu Thr Asn
65   70   75   80

Ser Tyr Val Gly Ser Asn Tyr Arg Pro Ser Phe Leu Gln Asp Asn Glu
                85   90   95

Leu Arg His Leu Ile Leu Lys Thr Ala Glu Gly Phe Leu Phe Val Val
            100   105   110

Gly Cys Glu Arg Gly Lys Ile Leu Phe Val Ser Lys Ser Val Ser Lys
        115   120   125

Ile Leu Asn Tyr Asp Gln Ala Ser Leu Thr Gly Gln Ser Leu Phe Asp
    130   135   140

Phe Leu His Pro Lys Asp Val Ala Lys Val Lys Glu Gln Leu Ser Ser
145   150   155   160

Phe Asp Ile Ser Pro Arg Glu Lys Leu Ile Asp Ala Lys Thr Gly Leu
                165   170   175

Gln Val His Ser Asn Leu His Ala Gly Arg Thr Arg Val Tyr Ser Gly
            180   185   190

Ser Arg Arg Ser Phe Phe Cys Arg Ile Lys Ser Cys Lys Ile Ser Val
        195   200   205

```
Lys Glu Glu His Gly Cys Leu Pro Asn Ser Lys Lys Lys Glu His Arg
    210                 215                 220

Lys Phe Tyr Thr Ile His Cys Thr Gly Tyr Leu Arg Ser Trp Pro Pro
225                 230                 235                 240

Asn Ile Val Gly Met Glu Glu Glu Arg Asn Ser Lys Lys Asp Asn Ser
                245                 250                 255

Asn Phe Thr Cys Leu Val Ala Ile Gly Arg Leu Gln Pro Tyr Ile Val
            260                 265                 270

Pro Gln Asn Ser Gly Glu Ile Asn Val Lys Pro Thr Glu Phe Ile Thr
        275                 280                 285

Arg Phe Ala Val Asn Gly Lys Phe Val Tyr Val Asp Gln Arg Ala Thr
    290                 295                 300

Ala Ile Leu Gly Tyr Leu Pro Gln Glu Leu Leu Gly Thr Ser Cys Tyr
305                 310                 315                 320

Glu Tyr Phe His Gln Asp Asp His Asn Asn Leu Thr Asp Lys His Lys
                325                 330                 335

Ala Val Leu Gln Ser Lys Glu Lys Ile Leu Thr Asp Ser Tyr Lys Phe
            340                 345                 350

Arg Ala Lys Asp Gly Ser Phe Val Thr Leu Lys Ser Gln Trp Phe Ser
        355                 360                 365

Phe Thr Asn Pro Trp Thr Lys Glu Leu Glu Tyr Ile Val Ser Val Asn
    370                 375                 380

Thr Leu Val Leu Gly His Ser Glu Pro Gly Glu Ala Ser Phe Leu Pro
385                 390                 395                 400

Cys Ser Ser Gln Ser Ser Glu Glu Ser Ser Arg Gln Ser Cys Met Ser
                405                 410                 415

Val Pro Gly Met Ser Thr Gly Thr Val Leu Gly Ala Gly Ser Ile Gly
            420                 425                 430
```

```
Thr Asp Ile Ala Asn Glu Ile Leu Asp Leu Gln Arg Leu Gln Ser Ser
        435                 440                 445

Ser Tyr Leu Asp Asp Ser Ser Pro Thr Gly Leu Met Lys Asp Thr His
    450                 455                 460

Thr Val Asn Cys Arg Ser Met Ser Asn Lys Glu Leu Phe Pro Pro Ser
465                 470                 475                 480

Pro Ser Glu Met Gly Glu Leu Glu Ala Thr Arg Gln Asn Gln Ser Thr
                485                 490                 495

Val Ala Val His Ser His Glu Pro Leu Leu Ser Asp Gly Ala Gln Leu
            500                 505                 510

Asp Phe Asp Ala Leu Cys Asp Asn Asp Asp Thr Ala Met Ala Ala Phe
        515                 520                 525

Met Asn Tyr Leu Glu Ala Glu Gly Gly Leu Gly Asp Pro Gly Asp Phe
    530                 535                 540

Ser Asp Ile Gln Trp Thr Leu
545                 550


<210> 6566
<211> 399
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1415; "

<220>
<221> source
<223> /note="Gene Symbol: AADAC; "

<220>
<221> source
<223> /note="Gene Name:
      arylacetamide deacetylase; "

<220>
<221> source
<223> /note="Uniprot ID:  P22760; "

<220>
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<223> /note="ENSP ID: ENSP00000232892"
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<400> 6566
Met Gly Arg Lys Ser Leu Tyr Leu Leu Ile Val Gly Ile Leu Ile Ala
1 5 10 15

Tyr Tyr Ile Tyr Thr Pro Leu Pro Asp Asn Val Glu Glu Pro Trp Arg
20 25 30

Met Met Trp Ile Asn Ala His Leu Lys Thr Ile Gln Asn Leu Ala Thr
35 40 45

Phe Val Glu Leu Leu Gly Leu His His Phe Met Asp Ser Phe Lys Val
50 55 60

Val Gly Ser Phe Asp Glu Val Pro Pro Thr Ser Asp Glu Asn Val Thr
65 70 75 80

Val Thr Glu Thr Lys Phe Asn Asn Ile Leu Val Arg Val Tyr Val Pro
85 90 95

Lys Arg Lys Ser Glu Ala Leu Arg Arg Gly Leu Phe Tyr Ile His Gly
100 105 110

Gly Gly Trp Cys Val Gly Ser Ala Ala Leu Ser Gly Tyr Asp Leu Leu
115 120 125

Ser Arg Trp Thr Ala Asp Arg Leu Asp Ala Val Val Val Ser Thr Asn
130 135 140

Tyr Arg Leu Ala Pro Lys Tyr His Phe Pro Ile Gln Phe Glu Asp Val
145 150 155 160

Tyr Asn Ala Leu Arg Trp Phe Leu Arg Lys Lys Val Leu Ala Lys Tyr
165 170 175

Gly Val Asn Pro Glu Arg Ile Gly Ile Ser Gly Asp Ser Ala Gly Gly
180 185 190

Asn Leu Ala Ala Ala Val Thr Gln Gln Leu Leu Asp Asp Pro Asp Val
195 200 205

Lys Ile Lys Leu Lys Ile Gln Ser Leu Ile Tyr Pro Ala Leu Gln Pro
210 215 220

```
Leu Asp Val Asp Leu Pro Ser Tyr Gln Glu Asn Ser Asn Phe Leu Phe
225                 230                 235                 240

Leu Ser Lys Ser Leu Met Val Arg Phe Trp Ser Glu Tyr Phe Thr Thr
                245                 250                 255

Asp Arg Ser Leu Glu Lys Ala Met Leu Ser Arg Gln His Val Pro Val
            260                 265                 270

Glu Ser Ser His Leu Phe Lys Phe Val Asn Trp Ser Ser Leu Leu Pro
        275                 280                 285

Glu Arg Phe Ile Lys Gly His Val Tyr Asn Asn Pro Asn Tyr Gly Ser
    290                 295                 300

Ser Glu Leu Ala Lys Lys Tyr Pro Gly Phe Leu Asp Val Arg Ala Ala
305                 310                 315                 320

Pro Leu Leu Ala Asp Asp Asn Lys Leu Arg Gly Leu Pro Leu Thr Tyr
                325                 330                 335

Val Ile Thr Cys Gln Tyr Asp Leu Leu Arg Asp Asp Gly Leu Met Tyr
            340                 345                 350

Val Thr Arg Leu Arg Asn Thr Gly Val Gln Val Thr His Asn His Val
        355                 360                 365

Glu Asp Gly Phe His Gly Ala Phe Ser Phe Leu Gly Leu Lys Ile Ser
    370                 375                 380

His Arg Leu Ile Asn Gln Tyr Ile Glu Trp Leu Lys Glu Asn Leu
385                 390                 395


<210> 6567
<211> 204
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1415; "

<220>
<221> source
<223> /note="Gene Symbol: AADAC; "
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<220>
<221> source
<223> /note="Gene Name:
arylacetamide deacetylase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000419620"

<400> 6567
Met Gly Arg Lys Ser Leu Tyr Leu Leu Ile Val Gly Ile Leu Ile Ala
1 5 10 15

Tyr Tyr Ile Tyr Thr Pro Leu Pro Asp Asn Val Glu Glu Pro Trp Arg
20 25 30

Met Met Trp Ile Asn Ala His Leu Lys Thr Ile Gln Asn Leu Ala Thr
35 40 45

Phe Val Glu Leu Leu Gly Leu His His Phe Met Asp Ser Phe Lys Val
50 55 60

Val Gly Ser Phe Asp Glu Val Pro Pro Thr Ser Asp Glu Asn Val Thr
65 70 75 80

Val Thr Glu Thr Lys Phe Asn Asn Ile Leu Val Arg Val Tyr Val Pro
85 90 95

Lys Arg Lys Ser Glu Ala Leu Arg Arg Gly Leu Phe Tyr Ile His Gly
100 105 110

Gly Gly Trp Cys Val Gly Ser Ala Ala Leu Ser Gly Tyr Asp Leu Leu
115 120 125

Ser Arg Trp Thr Ala Asp Arg Leu Asp Ala Val Val Val Ser Thr Asn
130 135 140

Tyr Arg Leu Ala Pro Lys Tyr His Phe Pro Ile Gln Phe Glu Asp Val
145 150 155 160

Tyr Asn Ala Leu Arg Trp Phe Leu Arg Lys Lys Val Leu Ala Lys Tyr
165 170 175

Gly Val Asn Pro Glu Arg Ile Gly Ile Ser Gly Asp Ser Ala Gly Gly
180 185 190

Asn Leu Ala Ala Ala Val Thr Gln Gln Val Cys Ser
195 200

<210> 6568
<211> 401
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1416; "

<220>
<221> source
<223> /note="Gene Symbol: AADACL2; "

<220>
<221> source
<223> /note="Gene Name:
arylacetamide deacetylase-like 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q6P093; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000348911"

<400> 6568
Met Gly Leu Lys Ala Leu Cys Leu Gly Leu Leu Cys Val Leu Phe Val
1 5 10 15

Ser His Phe Tyr Thr Pro Met Pro Asp Asn Ile Glu Glu Ser Trp Lys
20 25 30

Ile Met Ala Leu Asp Ala Ile Ala Lys Thr Cys Thr Phe Thr Ala Met
35 40 45

Cys Phe Glu Asn Met Arg Ile Met Arg Tyr Glu Glu Phe Ile Ser Met
50 55 60

Ile Phe Arg Leu Asp Tyr Thr Gln Pro Leu Ser Asp Glu Tyr Ile Thr
65 70 75 80

Val Thr Asp Thr Thr Phe Val Asp Ile Pro Val Arg Leu Tyr Leu Pro
85 90 95

```
Lys Arg Lys Ser Glu Thr Arg Arg Arg Ala Val Ile Tyr Phe His Gly
            100                 105                 110

Gly Gly Phe Cys Phe Gly Ser Ser Lys Gln Arg Ala Phe Asp Phe Leu
        115                 120                 125

Asn Arg Trp Thr Ala Asn Thr Leu Asp Ala Val Val Val Gly Val Asp
    130                 135                 140

Tyr Arg Leu Ala Pro Gln His His Phe Pro Ala Gln Phe Glu Asp Gly
145                 150                 155                 160

Leu Ala Ala Val Lys Phe Phe Leu Leu Glu Lys Ile Leu Thr Lys Tyr
                165                 170                 175

Gly Val Asp Pro Thr Arg Ile Cys Ile Ala Gly Asp Ser Ser Gly Gly
            180                 185                 190

Asn Leu Ala Thr Ala Val Thr Gln Gln Val Gln Asn Asp Ala Glu Ile
        195                 200                 205

Lys His Lys Ile Lys Met Gln Val Leu Leu Tyr Pro Gly Leu Gln Ile
    210                 215                 220

Thr Asp Ser Tyr Leu Pro Ser His Arg Glu Asn Glu His Gly Ile Val
225                 230                 235                 240

Leu Thr Arg Asp Val Ala Ile Lys Leu Val Ser Leu Tyr Phe Thr Lys
                245                 250                 255

Asp Glu Ala Leu Pro Trp Ala Met Arg Arg Asn Gln His Met Pro Leu
            260                 265                 270

Glu Ser Arg His Leu Phe Lys Phe Val Asn Trp Ser Ile Leu Leu Pro
        275                 280                 285

Glu Lys Tyr Arg Lys Asp Tyr Val Tyr Thr Glu Pro Ile Leu Gly Gly
    290                 295                 300

Leu Ser Tyr Ser Leu Pro Gly Leu Thr Asp Ser Arg Ala Leu Pro Leu
305                 310                 315                 320

Leu Ala Asn Asp Ser Gln Leu Gln Asn Leu Pro Leu Thr Tyr Ile Leu
```

325 330 335

Thr Cys Gln His Asp Leu Leu Arg Asp Asp Gly Leu Met Tyr Val Thr
340 345 350

Arg Leu Arg Asn Val Gly Val Gln Val Val His Glu His Ile Glu Asp
355 360 365

Gly Ile His Gly Ala Leu Ser Phe Met Thr Ser Pro Phe Tyr Leu Arg
370 375 380

Leu Gly Leu Arg Ile Arg Asp Met Tyr Val Ser Trp Leu Asp Lys Asn
385 390 395 400

Leu

<210> 6569
<211> 53
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1416; "

<220>
<221> source
<223> /note="Gene Symbol: AADACL2; "

<220>
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<223> /note="Gene Name:
arylacetamide deacetylase-like 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000387390"

<400> 6569
Met Gly Leu Lys Ala Leu Cys Leu Gly Leu Leu Cys Val Leu Phe Val
1 5 10 15

Ser His Phe Tyr Thr Pro Met Pro Asp Asn Ile Glu Glu Ser Trp Lys
20 25 30

Ile Met Ala Leu Asp Ala Ile Ala Lys Thr Cys Thr Phe Thr Asn Arg
35 40 45

Gly Leu Leu Thr Ser
50

<210> 6570
<211> 401
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1416; "

<220>
<221> source
<223> /note="Gene Symbol: AADACL2; "

<220>
<221> source
<223> /note="Gene Name:
arylacetamide deacetylase-like 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q6P093; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000461239"

<400> 6570
Met Gly Leu Lys Ala Leu Cys Leu Gly Leu Leu Cys Val Leu Phe Val
1 5 10 15

Ser His Phe Tyr Thr Pro Met Pro Asp Asn Ile Glu Glu Ser Trp Lys
20 25 30

Ile Met Ala Leu Asp Ala Ile Ala Lys Thr Cys Thr Phe Thr Ala Met
35 40 45

Cys Phe Glu Asn Met Arg Ile Met Arg Tyr Glu Glu Phe Ile Ser Met
50 55 60

Ile Phe Arg Leu Asp Tyr Thr Gln Pro Leu Ser Asp Glu Tyr Ile Thr
65 70 75 80

Val Thr Asp Thr Thr Phe Val Asp Ile Pro Val Arg Leu Tyr Leu Pro
85 90 95

Lys Arg Lys Ser Glu Thr Arg Arg Arg Ala Val Ile Tyr Phe His Gly

```
            100                 105                 110

Gly Gly Phe Cys Phe Gly Ser Ser Lys Gln Arg Ala Phe Asp Phe Leu
        115                 120                 125

Asn Arg Trp Thr Ala Asn Thr Leu Asp Ala Val Val Val Gly Val Asp
    130                 135                 140

Tyr Arg Leu Ala Pro Gln His His Phe Pro Ala Gln Phe Glu Asp Gly
145                 150                 155                 160

Leu Ala Ala Val Lys Phe Phe Leu Leu Glu Lys Ile Leu Thr Lys Tyr
                165                 170                 175

Gly Val Asp Pro Thr Arg Ile Cys Ile Ala Gly Asp Ser Ser Gly Gly
            180                 185                 190

Asn Leu Ala Thr Ala Val Thr Gln Gln Val Gln Asn Asp Ala Glu Ile
        195                 200                 205

Lys His Lys Ile Lys Met Gln Val Leu Leu Tyr Pro Gly Leu Gln Ile
    210                 215                 220

Thr Asp Ser Tyr Leu Pro Ser His Arg Glu Asn Glu His Gly Ile Val
225                 230                 235                 240

Leu Thr Arg Asp Val Ala Ile Lys Leu Val Ser Leu Tyr Phe Thr Lys
                245                 250                 255

Asp Glu Ala Leu Pro Trp Ala Met Arg Arg Asn Gln His Met Pro Leu
            260                 265                 270

Glu Ser Arg His Leu Phe Lys Phe Val Asn Trp Ser Ile Leu Leu Pro
        275                 280                 285

Glu Lys Tyr Arg Lys Asp Tyr Val Tyr Thr Glu Pro Ile Leu Gly Gly
    290                 295                 300

Leu Ser Tyr Ser Leu Pro Gly Leu Thr Asp Ser Arg Ala Leu Pro Leu
305                 310                 315                 320

Leu Ala Asn Asp Ser Gln Leu Gln Asn Leu Pro Leu Thr Tyr Ile Leu
                325                 330                 335
```

```
Thr Cys Gln His Asp Leu Leu Arg Asp Asp Gly Leu Met Tyr Val Thr
            340                 345                 350

Arg Leu Arg Asn Val Gly Val Gln Val Val His Glu His Ile Glu Asp
        355                 360                 365

Gly Ile His Gly Ala Leu Ser Phe Met Thr Ser Pro Phe Tyr Leu Arg
    370                 375                 380

Leu Gly Leu Arg Ile Arg Asp Met Tyr Val Ser Trp Leu Asp Lys Asn
385                 390                 395                 400

Leu
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<210> 6571
<211> 53
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1416; "

<220>
<221> source
<223> /note="Gene Symbol: AADACL2; "

<220>
<221> source
<223> /note="Gene Name:
arylacetamide deacetylase-like 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000461479"

<400> 6571

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Met Gly Leu Lys Ala Leu Cys Leu Gly Leu Leu Cys Val Leu Phe Val
1               5                   10                  15

Ser His Phe Tyr Thr Pro Met Pro Asp Asn Ile Glu Glu Ser Trp Lys
            20                  25                  30

Ile Met Ala Leu Asp Ala Ile Ala Lys Thr Cys Thr Phe Thr Asn Arg
        35                  40                  45
```

Gly Leu Leu Thr Ser
    50

<210> 6572
<211> 407
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1417; "

<220>
<221> source
<223> /note="Gene Symbol: AADACL3; "

<220>
<221> source
<223> /note="Gene Name:
      arylacetamide deacetylase-like 3; "

<220>
<221> source
<223> /note="Uniprot ID: Q5VUY0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000352268"

<400> 6572
Met Trp Asp Leu Ala Leu Ile Phe Leu Ala Ala Ala Cys Val Phe Ser
1   5   10   15

Leu Gly Val Thr Leu Trp Val Ile Cys Ser His Phe Phe Thr Val His
            20   25   30

Ile Pro Ala Ala Val Gly His Pro Val Lys Leu Arg Val Leu His Cys
        35   40   45

Ile Phe Gln Leu Leu Leu Thr Trp Gly Met Ile Phe Glu Lys Leu Arg
    50   55   60

Ile Cys Ser Met Pro Gln Phe Phe Cys Phe Met Gln Asp Leu Pro Pro
65   70   75   80

Leu Lys Tyr Asp Pro Asp Val Val Val Thr Asp Phe Arg Phe Gly Thr
                85   90   95

Ile Pro Val Lys Leu Tyr Gln Pro Lys Ala Ser Thr Cys Thr Leu Lys
            100   105   110

```
Pro Gly Ile Val Tyr Tyr His Gly Gly Gly Gly Val Met Gly Ser Leu
        115                 120                 125

Lys Thr His His Gly Ile Cys Ser Arg Leu Cys Lys Glu Ser Asp Ser
    130                 135                 140

Val Val Leu Ala Val Gly Tyr Arg Lys Leu Pro Lys His Lys Phe Pro
145                 150                 155                 160

Val Pro Val Arg Asp Cys Leu Val Ala Thr Ile His Phe Leu Lys Ser
                165                 170                 175

Leu Asp Ala Tyr Gly Val Asp Pro Ala Arg Val Val Val Cys Gly Asp
            180                 185                 190

Ser Phe Gly Gly Ala Ile Ala Ala Val Val Cys Gln Gln Leu Val Asp
        195                 200                 205

Arg Pro Asp Leu Pro Arg Ile Arg Ala Gln Ile Leu Ile Tyr Ala Ile
    210                 215                 220

Leu Gln Ala Leu Asp Leu Gln Thr Pro Ser Phe Gln Gln Arg Lys Asn
225                 230                 235                 240

Ile Pro Leu Leu Thr Trp Ser Phe Ile Cys Tyr Phe Phe Phe Gln Asn
                245                 250                 255

Leu Asp Phe Ser Ser Ser Trp Gln Glu Val Ile Met Lys Gly Ala His
            260                 265                 270

Leu Pro Ala Glu Val Trp Glu Lys Tyr Arg Lys Trp Leu Gly Pro Glu
        275                 280                 285

Asn Ile Pro Glu Arg Phe Lys Glu Arg Gly Tyr Gln Leu Lys Pro His
    290                 295                 300

Glu Pro Met Asn Glu Ala Ala Tyr Leu Glu Val Ser Val Val Leu Asp
305                 310                 315                 320

Val Met Cys Ser Pro Leu Ile Ala Glu Asp Asp Ile Val Ser Gln Leu
                325                 330                 335
```

```
Pro Glu Thr Cys Ile Val Ser Cys Glu Tyr Asp Ala Leu Arg Asp Asn
            340                 345                 350

Ser Leu Leu Tyr Lys Lys Arg Leu Glu Asp Leu Gly Val Pro Val Thr
        355                 360                 365

Trp His His Met Glu Asp Gly Phe His Gly Val Leu Arg Thr Ile Asp
    370                 375                 380

Met Ser Phe Leu His Phe Pro Cys Ser Met Arg Ile Leu Ser Ala Leu
385                 390                 395                 400

Val Gln Phe Val Lys Gly Leu
                405


<210> 6573
<211> 407
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1418; "

<220>
<221> source
<223> /note="Gene Symbol: AADACL4; "

<220>
<221> source
<223> /note="Gene Name:
      arylacetamide deacetylase-like 4; "

<220>
<221> source
<223> /note="Uniprot ID:  Q5VUY2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000365395"

<400> 6573
Met Ala Val Pro Trp Leu Val Leu Leu Leu Ala Leu Pro Ile Phe Phe
1               5                   10                  15

Leu Gly Val Phe Val Trp Ala Val Phe Glu His Phe Leu Thr Thr Asp
            20                  25                  30

Ile Pro Ala Thr Leu Gln His Pro Ala Lys Leu Arg Phe Leu His Cys
```

```
        35                  40                  45

Ile Phe Leu Tyr Leu Val Thr Leu Gly Asn Ile Phe Glu Lys Leu Gly
    50                  55                  60

Ile Cys Ser Met Pro Lys Phe Ile Arg Phe Leu His Asp Ser Val Arg
65                  70                  75                  80

Ile Lys Lys Asp Pro Glu Leu Val Val Thr Asp Leu Arg Phe Gly Thr
                85                  90                  95

Ile Pro Val Arg Leu Phe Gln Pro Lys Ala Ala Ser Ser Arg Pro Arg
            100                 105                 110

Arg Gly Ile Ile Phe Tyr His Gly Gly Ala Thr Val Phe Gly Ser Leu
        115                 120                 125

Asp Cys Tyr His Gly Leu Cys Asn Tyr Leu Ala Arg Glu Thr Glu Ser
    130                 135                 140

Val Leu Leu Met Ile Gly Tyr Arg Lys Leu Pro Asp His His Ser Pro
145                 150                 155                 160

Ala Leu Phe Gln Asp Cys Met Asn Ala Ser Ile His Phe Leu Lys Ala
                165                 170                 175

Leu Glu Thr Tyr Gly Val Asp Pro Ser Arg Val Val Val Cys Gly Glu
            180                 185                 190

Ser Val Gly Gly Ala Ala Val Ala Ala Ile Thr Gln Ala Leu Val Gly
        195                 200                 205

Arg Ser Asp Leu Pro Arg Ile Arg Ala Gln Val Leu Ile Tyr Pro Val
    210                 215                 220

Val Gln Ala Phe Cys Leu Gln Leu Pro Ser Phe Gln Gln Asn Gln Asn
225                 230                 235                 240

Val Pro Leu Leu Ser Arg Lys Phe Met Val Thr Ser Leu Cys Asn Tyr
                245                 250                 255

Leu Ala Ile Asp Leu Ser Trp Arg Asp Ala Ile Leu Asn Gly Thr Cys
            260                 265                 270
```

```
Val Pro Pro Asp Val Trp Arg Lys Tyr Glu Lys Trp Leu Ser Pro Asp
        275                 280                 285

Asn Ile Pro Lys Lys Phe Lys Asn Arg Gly Tyr Gln Pro Trp Ser Pro
    290                 295                 300

Gly Pro Phe Asn Glu Ala Ala Tyr Leu Glu Ala Lys His Met Leu Asp
305                 310                 315                 320

Val Glu Asn Ser Pro Leu Ile Ala Asp Asp Glu Val Ile Ala Gln Leu
                325                 330                 335

Pro Glu Ala Phe Leu Val Ser Cys Glu Asn Asp Ile Leu Arg Asp Asp
            340                 345                 350

Ser Leu Leu Tyr Lys Lys Arg Leu Glu Asp Gln Gly Val Arg Val Thr
        355                 360                 365

Trp Tyr His Leu Tyr Asp Gly Phe His Gly Ser Ile Ile Phe Phe Asp
    370                 375                 380

Lys Lys Ala Leu Ser Phe Pro Cys Ser Leu Lys Ile Val Asn Ala Val
385                 390                 395                 400

Val Ser Tyr Ile Lys Gly Ile
                405
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<210> 6574
<211> 308
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1419; "

<220>
<221> source
<223> /note="Gene Symbol: AFMID; "

<220>
<221> source
<223> /note="Gene Name:
arylformamidase; "

<220>

<221> source
<223> /note="Uniprot ID: Q63HM1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000328938"

<400> 6574

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Met Met Asp Val Ser Gly Val Gly Phe Pro Ser Lys Val Pro Trp Lys
1               5                  10                  15

Lys Met Ser Ala Glu Glu Leu Glu Asn Gln Tyr Cys Pro Ser Arg Trp
            20                  25                  30

Val Val Arg Leu Gly Ala Glu Glu Ala Leu Arg Thr Tyr Ser Gln Ile
        35                  40                  45

Gly Ile Glu Ala Thr Thr Arg Ala Arg Ala Thr Arg Lys Ser Leu Leu
    50                  55                  60

His Val Pro Tyr Gly Asp Gly Glu Gly Glu Lys Val Asp Ile Tyr Phe
65                  70                  75                  80

Pro Asp Glu Ser Ser Glu Ala Leu Pro Phe Phe Leu Phe Phe His Gly
                85                  90                  95

Gly Tyr Trp Gln Ser Gly Ser Lys Asp Glu Ser Ala Phe Met Val His
            100                 105                 110

Pro Leu Thr Ala Gln Gly Val Ala Val Val Ile Val Ala Tyr Gly Ile
        115                 120                 125

Ala Pro Lys Gly Thr Leu Asp His Met Val Asp Gln Val Thr Arg Ser
    130                 135                 140

Val Ala Phe Val Gln Lys Arg Tyr Pro Ser Asn Lys Gly Ile Tyr Leu
145                 150                 155                 160

Cys Gly His Ser Ala Gly Ala His Leu Ala Ala Met Met Leu Leu Ala
                165                 170                 175

Asp Trp Thr Lys His Gly Val Thr Pro Asn Leu Arg Gly Phe Phe Leu
            180                 185                 190

Val Ser Gly Val Phe Asp Leu Glu Pro Ile Val Tyr Thr Ser Gln Asn
```

```
        195                 200                 205

Val Ala Leu Gln Leu Thr Leu Glu Asp Ala Gln Arg Asn Ser Pro Gln
    210                 215                 220

Leu Lys Val Ala Gln Ala Gln Pro Val Asp Pro Thr Cys Arg Val Leu
225                 230                 235                 240

Val Val Val Gly Gln Phe Asp Ser Pro Glu Phe His Arg Gln Ser Trp
                245                 250                 255

Glu Phe Tyr Gln Val Leu Pro Val Gln Thr Leu Cys Gln Gly Glu Trp
            260                 265                 270

Lys Ala Ser Phe Glu Glu Leu His Asp Val Asp His Phe Glu Ile Val
        275                 280                 285

Glu Asn Leu Thr Gln Lys Asp Asn Val Leu Thr Gln Ile Ile Leu Lys
    290                 295                 300

Thr Ile Phe Gln
305
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<210> 6575
<211> 303
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1419; "

<220>
<221> source
<223> /note="Gene Symbol: AFMID; "

<220>
<221> source
<223> /note="Gene Name:
arylformamidase; "

<220>
<221> source
<223> /note="Uniprot ID: Q63HM1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000386890"

<400> 6575
Met Met Asp Val Ser Gly Val Gly Phe Pro Ser Lys Val Pro Trp Lys
1 5 10 15

Lys Met Ser Ala Glu Glu Leu Glu Asn Gln Tyr Cys Pro Ser Arg Trp
20 25 30

Val Val Arg Leu Gly Ala Glu Glu Ala Leu Arg Thr Tyr Ser Gln Ile
35 40 45

Gly Ile Glu Ala Thr Thr Arg Ala Arg Ala Thr Arg Lys Ser Leu Leu
50 55 60

His Val Pro Tyr Gly Asp Gly Glu Gly Glu Lys Val Asp Ile Tyr Phe
65 70 75 80

Pro Asp Glu Ser Ser Glu Ala Leu Pro Phe Phe Leu Phe Phe His Gly
85 90 95

Gly Tyr Trp Gln Ser Gly Ser Lys Asp Glu Ser Ala Phe Met Val His
100 105 110

Pro Leu Thr Ala Gln Gly Val Ala Val Val Ile Val Ala Tyr Gly Ile
115 120 125

Ala Pro Lys Gly Thr Leu Asp His Met Val Asp Gln Val Thr Arg Ser
130 135 140

Val Ala Phe Val Gln Lys Arg Tyr Pro Ser Asn Lys Gly Ile Tyr Leu
145 150 155 160

Cys Gly His Ser Ala Gly Ala His Leu Ala Ala Met Met Leu Leu Ala
165 170 175

Asp Trp Thr Lys His Gly Val Thr Pro Asn Leu Arg Gly Phe Phe Leu
180 185 190

Val Ser Gly Val Phe Asp Leu Glu Pro Ile Val Tyr Thr Ser Gln Asn
195 200 205

Val Ala Leu Gln Leu Thr Leu Glu Asp Ala Gln Arg Asn Ser Pro Gln
210 215 220

```
Leu Lys Val Ala Gln Ala Gln Pro Val Asp Pro Thr Cys Arg Val Leu
225                 230                 235                 240

Val Val Val Gly Gln Phe Asp Ser Pro Glu Phe His Arg Gln Ser Trp
                245                 250                 255

Glu Phe Tyr Gln Thr Leu Cys Gln Gly Glu Trp Lys Ala Ser Phe Glu
            260                 265                 270

Glu Leu His Asp Val Asp His Phe Glu Ile Val Glu Asn Leu Thr Gln
        275                 280                 285

Lys Asp Asn Val Leu Thr Gln Ile Ile Leu Lys Thr Ile Phe Gln
    290                 295                 300


<210> 6576
<211> 93
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1419; "

<220>
<221> source
<223> /note="Gene Symbol: AFMID; "

<220>
<221> source
<223> /note="Gene Name:
      arylformamidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000464929"

<400> 6576
Met Met Asp Val Ser Gly Val Gly Phe Pro Ser Lys Val Pro Trp Lys
1               5                   10                  15

Lys Met Ser Ala Glu Glu Leu Glu Asn Gln Tyr Cys Pro Ser Arg Trp
            20                  25                  30

Val Val Arg Leu Gly Ala Glu Glu Ala Leu Arg Thr Tyr Ser Gln Ile
        35                  40                  45

Gly Ile Glu Ala Leu Pro Phe Phe Leu Phe Phe His Gly Gly Tyr Trp
    50                  55                  60
```

```
Gln Ser Gly Arg Pro Cys Val Lys Glu Ser Gly Lys Pro His Leu Lys
65                  70                  75                  80


Ser Ser Thr Met Trp Thr Thr Leu Lys Leu Leu Arg Ile
                85                  90


<210> 6577
<211> 111
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
<221> source
<223> /note="Gene Name:
      arylformamidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000465406"

<400> 6577
Met Met Asp Val Ser Gly Val Gly Phe Pro Ser Lys Val Pro Trp Lys
1               5                   10                  15


Lys Met Ser Ala Glu Glu Leu Glu Asn Gln Tyr Cys Pro Ser Arg Trp
            20                  25                  30


Val Val Arg Leu Gly Ala Glu Glu Ala Leu Arg Thr Tyr Ser Gln Ile
        35                  40                  45


Gly Ile Glu Ala Thr Thr Arg Ala Arg Ala Thr Arg Lys Ser Leu Leu
    50                  55                  60


His Val Pro Tyr Gly Asp Gly Glu Gly Glu Lys Val Asp Ile Tyr Phe
65                  70                  75                  80


Pro Asp Glu Ser Ser Glu Ala Leu Pro Phe Phe Leu Phe Phe His Gly
                85                  90                  95
```

Gly Tyr Trp Gln Ser Gly Arg Leu Phe Pro Gly Glu Trp Gly Leu
100 105 110

<210> 6578
<211> 37
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1419; "

<220>
<221> source
<223> /note="Gene Symbol: AFMID; "

<220>
<221> source
<223> /note="Gene Name:
arylformamidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466241"

<400> 6578
Met Ser Ala Glu Glu Leu Glu Asn Gln Tyr Cys Pro Ser Arg Trp Val
1 5 10 15

Val Arg Leu Gly Ala Glu Glu Ala Leu Arg Thr Tyr Ser Gln Ile Gly
20 25 30

Ile Glu Val His Leu
35

<210> 6579
<211> 206
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1419; "

<220>
<221> source
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<220>
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<223> /note="Gene Name:
arylformamidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466515"

<400> 6579
Met Met Asp Val Ser Gly Val Gly Phe Pro Ser Lys Val Pro Trp Lys
1   5   10   15

Lys Met Ser Ala Glu Glu Leu Glu Asn Gln Tyr Cys Pro Ser Arg Trp
            20   25   30

Val Val Arg Leu Gly Ala Glu Glu Ala Leu Arg Thr Tyr Ser Gln Ile
        35   40   45

Gly Ile Glu Ala Thr Thr Arg Ala Arg Ala Thr Arg Lys Ser Leu Leu
    50   55   60

His Val Pro Tyr Gly Asp Gly Glu Gly Glu Lys Val Asp Ile Tyr Phe
65   70   75   80

Pro Asp Glu Ser Ser Glu Ala Leu Pro Phe Phe Leu Phe Phe His Gly
                85   90   95

Gly Tyr Trp Gln Ser Gly Ser Lys Asp Glu Ser Ala Phe Met Val His
            100   105   110

Pro Leu Thr Ala Gln Gly Val Ala Val Val Ile Val Ala Tyr Gly Ile
        115   120   125

Ala Pro Lys Gly Thr Leu Asp His Met Val Asp Gln Val Thr Arg Ser
    130   135   140

Val Ala Phe Val Gln Lys Arg Tyr Pro Ser Asn Lys Trp Val Leu Pro
145   150   155   160

Val Asp Phe Leu Pro Val Gly Pro Gln Trp Val Gly Gly Gln Cys Asn
                165   170   175

Gln Tyr Leu Gly Tyr Ser Gln Ala Ala Pro Leu Ala Cys Gly Ala Glu
            180   185   190

Ser Lys Leu Gly Leu Phe Glu Gly Gly Leu Met Leu Trp Gly
        195   200   205

<210> 6580
<211> 187
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1419; "

<220>
<221> source
<223> /note="Gene Symbol: AFMID; "

<220>
<221> source
<223> /note="Gene Name:
arylformamidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466566"

<400> 6580
Met Met Asp Val Ser Gly Val Gly Phe Pro Ser Lys Val Pro Trp Lys
1 5 10 15

Lys Met Ser Ala Glu Glu Leu Glu Asn Gln Tyr Cys Pro Ser Arg Trp
20 25 30

Val Val Arg Leu Gly Ala Glu Glu Ala Leu Arg Thr Tyr Ser Gln Ile
35 40 45

Gly Ile Glu Ala Thr Thr Arg Ala Arg Ala Thr Arg Lys Ser Leu Leu
50 55 60

His Val Pro Tyr Gly Asp Gly Glu Gly Glu Lys Val Asp Ile Tyr Phe
65 70 75 80

Pro Asp Glu Ser Ser Glu Ala Leu Pro Phe Phe Leu Phe Phe His Gly
85 90 95

Gly Tyr Trp Gln Ser Gly Arg His Pro Gly Pro His Gly Arg Pro Gly
100 105 110

Asp Pro Gln Arg Cys Val Cys Pro Glu Ala Val Ser Lys Gln Gln Val
115 120 125

Gly Val Ala Ser Arg Phe Ser Ser Cys Trp Thr Ser Val Gly Gly Arg
130 135 140

```
Thr Val Gln Ser Val Pro Arg Ile Gln Pro Ser Cys Pro Ser Gly Leu
145                 150                 155                 160


Trp Ser Arg Lys Gln Ile Gly Thr Leu Arg Arg Gly Pro Asp Val Val
                165                 170                 175


Gly Lys Leu Arg Ala Asn Pro Ala Leu Cys Ser
            180                 185


<210> 6581
<211> 57
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1419; "

<220>
<221> source
<223> /note="Gene Symbol: AFMID; "

<220>
<221> source
<223> /note="Gene Name:
      arylformamidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466859"

<400> 6581
Met Met Asp Val Ser Gly Val Gly Phe Pro Ser Lys Val Pro Trp Lys
1               5                   10                  15


Lys Met Ser Ala Glu Glu Leu Glu Asn Gln Tyr Cys Pro Ser Arg Trp
            20                  25                  30


Val Val Arg Leu Gly Ala Glu Glu Ala Leu Arg Thr Tyr Ser Gln Ile
        35                  40                  45


Gly Ile Glu Gly Leu Arg Thr Pro Val
    50                  55


<210> 6582
<211> 84
<212> PRT
<213> Homo sapiens
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<220>
<221> source
<223> /note="Payload ID: 1419; "

<220>
<221> source
<223> /note="Gene Symbol: AFMID; "

<220>
<221> source
<223> /note="Gene Name:
arylformamidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467365"

<400> 6582
Met Met Asp Val Ser Gly Val Gly Phe Pro Ser Lys Val Pro Trp Lys
1 5 10 15

Lys Met Ser Ala Glu Glu Leu Glu Asn Gln Tyr Cys Pro Ser Arg Trp
20 25 30

Val Val Arg Leu Gly Ala Glu Glu Ala Leu Arg Thr Tyr Ser Gln Ile
35 40 45

Gly Ile Glu Asp Tyr Leu Glu Asn Asn Leu Pro Val Val Leu Thr Ile
50 55 60

Leu Gly Ala Trp Ser Thr Cys Ile Pro Pro Trp Glu Ala Ser Pro Lys
65 70 75 80

Ser Phe Arg Ser

<210> 6583
<211> 60
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1419; "

<220>
<221> source
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<221> source
<223> /note="Gene Name:
arylformamidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467869"

<400> 6583
Met Met Asp Val Ser Gly Val Gly Phe Pro Ser Lys Val Pro Trp Lys
1 5 10 15

Lys Met Ser Ala Glu Glu Leu Glu Asn Gln Tyr Cys Pro Ser Arg Trp
20 25 30

Val Val Arg Leu Gly Ala Glu Glu Ala Leu Arg Thr Tyr Ser Gln Ile
35 40 45

Gly Ile Glu Glu Ile Trp Thr Trp Glu Pro Val Asn
50 55 60

<210> 6584
<211> 717
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1420; "

<220>
<221> source
<223> /note="Gene Symbol: ARNT2; "

<220>
<221> source
<223> /note="Gene Name:
aryl-hydrocarbon receptor nuclear translocator 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q9HBZ2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000307479"

<400> 6584
Met Ala Thr Pro Ala Ala Val Asn Pro Pro Glu Met Ala Ser Asp Ile
1 5 10 15

Pro Gly Ser Val Thr Leu Pro Val Ala Pro Met Ala Ala Thr Gly Gln

```
            20                  25                  30

Val Arg Met Ala Gly Ala Met Pro Ala Arg Gly Gly Lys Arg Arg Ser
        35                  40                  45

Gly Met Asp Phe Asp Asp Glu Asp Gly Glu Gly Pro Ser Lys Phe Ser
    50                  55                  60

Arg Glu Asn His Ser Glu Ile Glu Arg Arg Arg Arg Asn Lys Met Thr
65                  70                  75                  80

Gln Tyr Ile Thr Glu Leu Ser Asp Met Val Pro Thr Cys Ser Ala Leu
                85                  90                  95

Ala Arg Lys Pro Asp Lys Leu Thr Ile Leu Arg Met Ala Val Ser His
            100                 105                 110

Met Lys Ser Met Arg Gly Thr Gly Asn Lys Ser Thr Asp Gly Ala Tyr
        115                 120                 125

Lys Pro Ser Phe Leu Thr Glu Gln Glu Leu Lys His Leu Ile Leu Glu
    130                 135                 140

Ala Ala Asp Gly Phe Leu Phe Val Val Ala Ala Glu Thr Gly Arg Val
145                 150                 155                 160

Ile Tyr Val Ser Asp Ser Val Thr Pro Val Leu Asn Gln Pro Gln Ser
                165                 170                 175

Glu Trp Phe Gly Ser Thr Leu Tyr Glu Gln Val His Pro Asp Asp Val
            180                 185                 190

Glu Lys Leu Arg Glu Gln Leu Cys Thr Ser Glu Asn Ser Met Thr Gly
        195                 200                 205

Arg Ile Leu Asp Leu Lys Thr Gly Thr Val Lys Lys Glu Gly Gln Gln
    210                 215                 220

Ser Ser Met Arg Met Cys Met Gly Ser Arg Arg Ser Phe Ile Cys Arg
225                 230                 235                 240

Met Arg Cys Gly Asn Ala Pro Leu Asp His Leu Pro Leu Asn Arg Ile
                245                 250                 255
```

```
Thr Thr Met Arg Lys Arg Phe Arg Asn Gly Leu Gly Pro Val Lys Glu
            260                 265                 270

Gly Glu Ala Gln Tyr Ala Val Val His Cys Thr Gly Tyr Ile Lys Ala
        275                 280                 285

Trp Pro Pro Ala Gly Met Thr Ile Pro Glu Glu Asp Ala Asp Val Gly
    290                 295                 300

Gln Gly Ser Lys Tyr Cys Leu Val Ala Ile Gly Arg Leu Gln Val Thr
305                 310                 315                 320

Ser Ser Pro Val Cys Met Asp Met Asn Gly Met Ser Val Pro Thr Glu
                325                 330                 335

Phe Leu Ser Arg His Asn Ser Asp Gly Ile Ile Thr Phe Val Asp Pro
            340                 345                 350

Arg Cys Ile Ser Val Ile Gly Tyr Gln Pro Gln Asp Leu Leu Gly Lys
        355                 360                 365

Asp Ile Leu Glu Phe Cys His Pro Glu Asp Gln Ser His Leu Arg Glu
    370                 375                 380

Ser Phe Gln Gln Val Val Lys Leu Lys Gly Gln Val Leu Ser Val Met
385                 390                 395                 400

Tyr Arg Phe Arg Thr Lys Asn Arg Glu Trp Met Leu Ile Arg Thr Ser
                405                 410                 415

Ser Phe Thr Phe Gln Asn Pro Tyr Ser Asp Glu Ile Glu Tyr Ile Ile
            420                 425                 430

Cys Thr Asn Thr Asn Val Lys Gln Leu Gln Gln Gln Gln Ala Glu Leu
        435                 440                 445

Glu Val His Gln Arg Asp Gly Leu Ser Ser Tyr Asp Leu Ser Gln Val
    450                 455                 460

Pro Val Pro Asn Leu Pro Ala Gly Val His Glu Ala Gly Lys Ser Val
465                 470                 475                 480
```

```
Glu Lys Ala Asp Ala Ile Phe Ser Gln Glu Arg Asp Pro Arg Phe Ala
                485                 490                 495

Glu Met Phe Ala Gly Ile Ser Ala Ser Glu Lys Lys Met Met Ser Ser
            500                 505                 510

Ala Ser Ala Ala Gly Thr Gln Gln Ile Tyr Ser Gln Gly Ser Pro Phe
        515                 520                 525

Pro Ser Gly His Ser Gly Lys Ala Phe Ser Ser Ser Val Val His Val
    530                 535                 540

Pro Gly Val Asn Asp Ile Gln Ser Ser Ser Ser Thr Gly Gln Asn Met
545                 550                 555                 560

Ser Gln Ile Ser Arg Gln Leu Asn Gln Ser Gln Val Ala Trp Thr Gly
                565                 570                 575

Ser Arg Pro Pro Phe Pro Gly Gln Gln Ile Pro Ser Gln Ser Ser Lys
            580                 585                 590

Thr Gln Ser Ser Pro Phe Gly Ile Gly Thr Ser His Thr Tyr Pro Ala
        595                 600                 605

Asp Pro Ser Ser Tyr Ser Pro Leu Ser Ser Pro Ala Thr Ser Ser Pro
    610                 615                 620

Ser Gly Asn Ala Tyr Ser Ser Leu Ala Asn Arg Thr Pro Gly Phe Ala
625                 630                 635                 640

Glu Ser Gly Gln Ser Ser Gly Gln Phe Gln Gly Arg Pro Ser Glu Val
                645                 650                 655

Trp Ser Gln Trp Gln Ser Gln His His Gly Gln Gln Ser Gly Glu Gln
            660                 665                 670

His Ser His Gln Gln Pro Gly Gln Thr Glu Val Phe Gln Asp Met Leu
        675                 680                 685

Pro Met Pro Gly Asp Pro Thr Gln Gly Thr Gly Asn Tyr Asn Ile Glu
    690                 695                 700
```

```
Asp Phe Ala Asp Leu Gly Met Phe Pro Pro Phe Ser Glu
705                 710                 715


<210> 6585
<211> 130
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1420; "

<220>
<221> source
<223> /note="Gene Symbol: ARNT2; "

<220>
<221> source
<223> /note="Gene Name:
      aryl-hydrocarbon receptor nuclear translocator 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000452961"

<400> 6585
Met Arg Met Cys Met Gly Ser Arg Arg Ser Phe Ile Cys Arg Met Arg
1               5                   10                  15


Cys Gly Asn Ala Pro Leu Asp His Leu Pro Leu Asn Arg Ile Thr Thr
            20                  25                  30


Met Arg Lys Arg Phe Arg Asn Gly Leu Gly Pro Val Lys Glu Gly Glu
        35                  40                  45


Ala Gln Tyr Ala Val Val His Cys Thr Gly Tyr Ile Lys Ala Trp Pro
    50                  55                  60


Pro Ala Gly Met Thr Ile Pro Glu Glu Asp Ala Asp Val Gly Gln Gly
65                  70                  75                  80


Ser Lys Tyr Cys Leu Val Ala Ile Gly Arg Leu Gln Val Thr Ser Ser
                85                  90                  95


Pro Val Cys Met Asp Met Asn Gly Met Ser Val Pro Thr Glu Phe Leu
            100                 105                 110


Ser Arg His Asn Ser Asp Gly Ile Ile Thr Phe Val Asp Pro Arg Cys
        115                 120                 125
```

Ile Ser
130

<210> 6586
<211> 706
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1420; "

<220>
<221> source
<223> /note="Gene Symbol: ARNT2; "

<220>
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<223> /note="Gene Name:
aryl-hydrocarbon receptor nuclear translocator 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q9HBZ2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453651"

<400> 6586
Met Ala Ser Asp Ile Pro Gly Ser Val Thr Leu Pro Val Ala Pro Met
1 5 10 15

Ala Ala Thr Gly Gln Val Arg Met Ala Gly Ala Met Pro Ala Arg Gly
20 25 30

Gly Lys Arg Arg Ser Gly Met Asp Phe Asp Asp Glu Asp Gly Glu Gly
35 40 45

Pro Ser Lys Phe Ser Arg Glu Asn His Ser Glu Ile Glu Arg Arg Arg
50 55 60

Arg Asn Lys Met Thr Gln Tyr Ile Thr Glu Leu Ser Asp Met Val Pro
65 70 75 80

Thr Cys Ser Ala Leu Ala Arg Lys Pro Asp Lys Leu Thr Ile Leu Arg
85 90 95

```
Met Ala Val Ser His Met Lys Ser Met Arg Gly Thr Gly Asn Lys Ser
            100                 105                 110

Thr Asp Gly Ala Tyr Lys Pro Ser Phe Leu Thr Glu Gln Glu Leu Lys
        115                 120                 125

His Leu Ile Leu Glu Ala Ala Asp Gly Phe Leu Phe Val Val Ala Ala
    130                 135                 140

Glu Thr Gly Arg Val Ile Tyr Val Ser Asp Ser Val Thr Pro Val Leu
145                 150                 155                 160

Asn Gln Pro Gln Ser Glu Trp Phe Gly Ser Thr Leu Tyr Glu Gln Val
                165                 170                 175

His Pro Asp Asp Val Glu Lys Leu Arg Glu Gln Leu Cys Thr Ser Glu
            180                 185                 190

Asn Ser Met Thr Gly Arg Ile Leu Asp Leu Lys Thr Gly Thr Val Lys
        195                 200                 205

Lys Glu Gly Gln Gln Ser Ser Met Arg Met Cys Met Gly Ser Arg Arg
    210                 215                 220

Ser Phe Ile Cys Arg Met Arg Cys Gly Asn Ala Pro Leu Asp His Leu
225                 230                 235                 240

Pro Leu Asn Arg Ile Thr Thr Met Arg Lys Arg Phe Arg Asn Gly Leu
                245                 250                 255

Gly Pro Val Lys Glu Gly Glu Ala Gln Tyr Ala Val Val His Cys Thr
            260                 265                 270

Gly Tyr Ile Lys Ala Trp Pro Pro Ala Gly Met Thr Ile Pro Glu Glu
        275                 280                 285

Asp Ala Asp Val Gly Gln Gly Ser Lys Tyr Cys Leu Val Ala Ile Gly
    290                 295                 300

Arg Leu Gln Val Thr Ser Ser Pro Val Cys Met Asp Met Asn Gly Met
305                 310                 315                 320

Ser Val Pro Thr Glu Phe Leu Ser Arg His Asn Ser Asp Gly Ile Ile
```

325 330 335

Thr Phe Val Asp Pro Arg Cys Ile Ser Val Ile Gly Tyr Gln Pro Gln
340 345 350

Asp Leu Leu Gly Lys Asp Ile Leu Glu Phe Cys His Pro Glu Asp Gln
355 360 365

Ser His Leu Arg Glu Ser Phe Gln Gln Val Val Lys Leu Lys Gly Gln
370 375 380

Val Leu Ser Val Met Tyr Arg Phe Arg Thr Lys Asn Arg Glu Trp Met
385 390 395 400

Leu Ile Arg Thr Ser Ser Phe Thr Phe Gln Asn Pro Tyr Ser Asp Glu
405 410 415

Ile Glu Tyr Ile Ile Cys Thr Asn Thr Asn Val Lys Gln Leu Gln Gln
420 425 430

Gln Gln Ala Glu Leu Glu Val His Gln Arg Asp Gly Leu Ser Ser Tyr
435 440 445

Asp Leu Ser Gln Val Pro Val Pro Asn Leu Pro Ala Gly Val His Glu
450 455 460

Ala Gly Lys Ser Val Glu Lys Ala Asp Ala Ile Phe Ser Gln Glu Arg
465 470 475 480

Asp Pro Arg Phe Ala Glu Met Phe Ala Gly Ile Ser Ala Ser Glu Lys
485 490 495

Lys Met Met Ser Ser Ala Ser Ala Ala Gly Thr Gln Gln Ile Tyr Ser
500 505 510

Gln Gly Ser Pro Phe Pro Ser Gly His Ser Gly Lys Ala Phe Ser Ser
515 520 525

Ser Val Val His Val Pro Gly Val Asn Asp Ile Gln Ser Ser Ser Ser
530 535 540

Thr Gly Gln Asn Met Ser Gln Ile Ser Arg Gln Leu Asn Gln Ser Gln
545 550 555 560

```
Val Ala Trp Thr Gly Ser Arg Pro Pro Phe Pro Gly Gln Gln Ile Pro
                565                 570                 575

Ser Gln Ser Ser Lys Thr Gln Ser Ser Pro Phe Gly Ile Gly Thr Ser
            580                 585                 590

His Thr Tyr Pro Ala Asp Pro Ser Ser Tyr Ser Pro Leu Ser Ser Pro
        595                 600                 605

Ala Thr Ser Ser Pro Ser Gly Asn Ala Tyr Ser Ser Leu Ala Asn Arg
    610                 615                 620

Thr Pro Gly Phe Ala Glu Ser Gly Gln Ser Ser Gly Gln Phe Gln Gly
625                 630                 635                 640

Arg Pro Ser Glu Val Trp Ser Gln Trp Gln Ser Gln His His Gly Gln
                645                 650                 655

Gln Ser Gly Glu Gln His Ser His Gln Gln Pro Gly Gln Thr Glu Val
            660                 665                 670

Phe Gln Asp Met Leu Pro Met Pro Gly Asp Pro Thr Gln Gly Thr Gly
        675                 680                 685

Asn Tyr Asn Ile Glu Asp Phe Ala Asp Leu Gly Met Phe Pro Pro Phe
    690                 695                 700

Ser Glu
705


<210> 6587
<211> 706
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1420; "

<220>
<221> source
<223> /note="Gene Symbol: ARNT2; "

<220>
<221> source
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<223> /note="Gene Name:
aryl-hydrocarbon receptor nuclear translocator 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q9HBZ2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453792"

<400> 6587

```
Met Ala Ser Asp Ile Pro Gly Ser Val Thr Leu Pro Val Ala Pro Met
1               5                  10                  15

Ala Ala Thr Gly Gln Val Arg Met Ala Gly Ala Met Pro Ala Arg Gly
            20                  25                  30

Gly Lys Arg Arg Ser Gly Met Asp Phe Asp Asp Glu Asp Gly Glu Gly
        35                  40                  45

Pro Ser Lys Phe Ser Arg Glu Asn His Ser Glu Ile Glu Arg Arg Arg
    50                  55                  60

Arg Asn Lys Met Thr Gln Tyr Ile Thr Glu Leu Ser Asp Met Val Pro
65                  70                  75                  80

Thr Cys Ser Ala Leu Ala Arg Lys Pro Asp Lys Leu Thr Ile Leu Arg
                85                  90                  95

Met Ala Val Ser His Met Lys Ser Met Arg Gly Thr Gly Asn Lys Ser
            100                 105                 110

Thr Asp Gly Ala Tyr Lys Pro Ser Phe Leu Thr Glu Gln Glu Leu Lys
        115                 120                 125

His Leu Ile Leu Glu Ala Ala Asp Gly Phe Leu Phe Val Val Ala Ala
    130                 135                 140

Glu Thr Gly Arg Val Ile Tyr Val Ser Asp Ser Val Thr Pro Val Leu
145                 150                 155                 160

Asn Gln Pro Gln Ser Glu Trp Phe Gly Ser Thr Leu Tyr Glu Gln Val
                165                 170                 175

His Pro Asp Asp Val Glu Lys Leu Arg Glu Gln Leu Cys Thr Ser Glu
```

```
            180                 185                 190

Asn Ser Met Thr Gly Arg Ile Leu Asp Leu Lys Thr Gly Thr Val Lys
        195                 200                 205

Lys Glu Gly Gln Gln Ser Ser Met Arg Met Cys Met Gly Ser Arg Arg
    210                 215                 220

Ser Phe Ile Cys Arg Met Arg Cys Gly Asn Ala Pro Leu Asp His Leu
225                 230                 235                 240

Pro Leu Asn Arg Ile Thr Thr Met Arg Lys Arg Phe Arg Asn Gly Leu
                245                 250                 255

Gly Pro Val Lys Glu Gly Glu Ala Gln Tyr Ala Val Val His Cys Thr
            260                 265                 270

Gly Tyr Ile Lys Ala Trp Pro Pro Ala Gly Met Thr Ile Pro Glu Glu
        275                 280                 285

Asp Ala Asp Val Gly Gln Gly Ser Lys Tyr Cys Leu Val Ala Ile Gly
    290                 295                 300

Arg Leu Gln Val Thr Ser Ser Pro Val Cys Met Asp Met Asn Gly Met
305                 310                 315                 320

Ser Val Pro Thr Glu Phe Leu Ser Arg His Asn Ser Asp Gly Ile Ile
                325                 330                 335

Thr Phe Val Asp Pro Arg Cys Ile Ser Val Ile Gly Tyr Gln Pro Gln
            340                 345                 350

Asp Leu Leu Gly Lys Asp Ile Leu Glu Phe Cys His Pro Glu Asp Gln
        355                 360                 365

Ser His Leu Arg Glu Ser Phe Gln Gln Val Val Lys Leu Lys Gly Gln
    370                 375                 380

Val Leu Ser Val Met Tyr Arg Phe Arg Thr Lys Asn Arg Glu Trp Met
385                 390                 395                 400

Leu Ile Arg Thr Ser Ser Phe Thr Phe Gln Asn Pro Tyr Ser Asp Glu
                405                 410                 415
```

```
Ile Glu Tyr Ile Ile Cys Thr Asn Thr Asn Val Lys Gln Leu Gln Gln
            420                 425                 430

Gln Gln Ala Glu Leu Glu Val His Gln Arg Asp Gly Leu Ser Ser Tyr
        435                 440                 445

Asp Leu Ser Gln Val Pro Val Pro Asn Leu Pro Ala Gly Val His Glu
    450                 455                 460

Ala Gly Lys Ser Val Glu Lys Ala Asp Ala Ile Phe Ser Gln Glu Arg
465                 470                 475                 480

Asp Pro Arg Phe Ala Glu Met Phe Ala Gly Ile Ser Ala Ser Glu Lys
                485                 490                 495

Lys Met Met Ser Ser Ala Ser Ala Ala Gly Thr Gln Gln Ile Tyr Ser
            500                 505                 510

Gln Gly Ser Pro Phe Pro Ser Gly His Ser Gly Lys Ala Phe Ser Ser
        515                 520                 525

Ser Val Val His Val Pro Gly Val Asn Asp Ile Gln Ser Ser Ser Ser
    530                 535                 540

Thr Gly Gln Asn Met Ser Gln Ile Ser Arg Gln Leu Asn Gln Ser Gln
545                 550                 555                 560

Val Ala Trp Thr Gly Ser Arg Pro Pro Phe Pro Gly Gln Gln Ile Pro
                565                 570                 575

Ser Gln Ser Ser Lys Thr Gln Ser Ser Pro Phe Gly Ile Gly Thr Ser
            580                 585                 590

His Thr Tyr Pro Ala Asp Pro Ser Ser Tyr Ser Pro Leu Ser Ser Pro
        595                 600                 605

Ala Thr Ser Ser Pro Ser Gly Asn Ala Tyr Ser Ser Leu Ala Asn Arg
    610                 615                 620

Thr Pro Gly Phe Ala Glu Ser Gly Gln Ser Ser Gly Gln Phe Gln Gly
625                 630                 635                 640
```

```
Arg Pro Ser Glu Val Trp Ser Gln Trp Gln Ser Gln His His Gly Gln
                645                 650                 655

Gln Ser Gly Glu Gln His Ser His Gln Gln Pro Gly Gln Thr Glu Val
            660                 665                 670

Phe Gln Asp Met Leu Pro Met Pro Gly Asp Pro Thr Gln Gly Thr Gly
        675                 680                 685

Asn Tyr Asn Ile Glu Asp Phe Ala Asp Leu Gly Met Phe Pro Pro Phe
    690                 695                 700

Ser Glu
705


<210> 6588
<211> 716
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ARNT2; "

<220>
<221> source
<223> /note="Gene Name:
      aryl-hydrocarbon receptor nuclear translocator 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000479393"

<400> 6588
Met Ala Thr Pro Ala Ala Val Asn Pro Pro Glu Met Ala Ser Asp Ile
1               5                   10                  15

Pro Gly Ser Val Thr Leu Pro Val Ala Pro Met Ala Ala Thr Gly Gln
            20                  25                  30

Val Arg Met Ala Gly Ala Met Pro Ala Arg Gly Gly Lys Arg Arg Ser
        35                  40                  45

Gly Met Asp Phe Asp Asp Glu Asp Gly Glu Gly Pro Ser Lys Phe Ser
```

```
    50                  55                  60

Arg Glu Asn His Ser Glu Ile Glu Arg Arg Arg Arg Asn Lys Met Thr
65                  70                  75                  80

Gln Tyr Ile Thr Glu Leu Ser Asp Met Val Pro Thr Cys Ser Ala Leu
                85                  90                  95

Ala Arg Lys Pro Asp Lys Leu Thr Ile Leu Arg Met Ala Val Ser His
            100                 105                 110

Met Lys Ser Met Arg Gly Thr Gly Asn Lys Ser Thr Asp Gly Ala Tyr
        115                 120                 125

Lys Pro Ser Phe Leu Thr Glu Gln Glu Leu Lys His Leu Ile Leu Glu
    130                 135                 140

Ala Ala Asp Gly Phe Leu Phe Val Val Ala Ala Glu Thr Gly Arg Val
145                 150                 155                 160

Ile Tyr Val Ser Asp Ser Val Thr Pro Val Leu Asn Gln Pro Gln Ser
                165                 170                 175

Glu Trp Phe Gly Ser Thr Leu Tyr Glu Gln Val His Pro Asp Asp Val
            180                 185                 190

Glu Lys Leu Arg Glu Gln Leu Cys Thr Ser Glu Asn Ser Met Thr Gly
        195                 200                 205

Arg Ile Leu Asp Leu Lys Thr Gly Thr Val Lys Lys Glu Gly Gln Gln
    210                 215                 220

Ser Ser Met Arg Met Cys Met Gly Ser Arg Arg Ser Phe Ile Cys Arg
225                 230                 235                 240

Met Arg Cys Gly Asn Ala Pro Leu Asp His Leu Pro Leu Asn Arg Ile
                245                 250                 255

Thr Thr Met Arg Lys Arg Phe Arg Asn Gly Leu Gly Pro Val Lys Glu
            260                 265                 270

Gly Glu Ala Gln Tyr Ala Val Val His Cys Thr Gly Tyr Ile Lys Ala
        275                 280                 285
```

```
Trp Pro Pro Ala Gly Met Thr Ile Pro Glu Glu Asp Ala Asp Val Gly
    290                 295                 300

Gln Gly Ser Lys Tyr Cys Leu Val Ala Ile Gly Arg Leu Gln Val Thr
305                 310                 315                 320

Ser Ser Pro Val Cys Met Asp Met Asn Gly Met Ser Val Pro Thr Glu
                325                 330                 335

Phe Leu Ser Arg His Asn Ser Asp Gly Ile Ile Thr Phe Val Asp Pro
            340                 345                 350

Arg Cys Ile Ser Val Ile Gly Tyr Gln Pro Gln Asp Leu Leu Gly Lys
        355                 360                 365

Asp Ile Leu Glu Phe Cys His Pro Glu Asp Gln Ser His Leu Arg Glu
    370                 375                 380

Ser Phe Gln Gln Val Val Lys Leu Lys Gly Gln Val Leu Ser Val Met
385                 390                 395                 400

Tyr Arg Phe Arg Thr Lys Asn Arg Glu Trp Met Leu Ile Arg Thr Ser
                405                 410                 415

Ser Phe Thr Phe Gln Asn Pro Tyr Ser Asp Glu Ile Glu Tyr Ile Ile
            420                 425                 430

Cys Thr Asn Thr Asn Val Lys Gln Leu Gln Gln Gln Gln Ala Glu Leu
        435                 440                 445

Glu Val His Gln Arg Asp Gly Leu Ser Ser Tyr Asp Leu Ser Gln Val
    450                 455                 460

Pro Val Pro Asn Leu Pro Ala Gly Val His Glu Ala Gly Lys Ser Val
465                 470                 475                 480

Glu Lys Ala Asp Ala Ile Phe Ser Gln Glu Arg Asp Pro Arg Phe Ala
                485                 490                 495

Glu Met Phe Ala Gly Ile Ser Ala Ser Glu Lys Lys Met Met Ser Ser
            500                 505                 510
```

```
Ala Ser Ala Ala Gly Thr Gln Gln Ile Tyr Ser Gln Gly Ser Pro Phe
        515                 520                 525

Pro Ser Gly His Ser Gly Lys Ala Phe Ser Ser Ser Val Val His Val
    530                 535                 540

Pro Gly Val Asn Asp Ile Gln Ser Ser Ser Ser Thr Gly Gln Asn Met
545                 550                 555                 560

Ser Gln Ile Ser Arg Gln Leu Asn Gln Ser Gln Val Ala Trp Thr Gly
                565                 570                 575

Ser Arg Pro Pro Phe Pro Gly Gln Gln Ile Pro Ser Gln Ser Ser Lys
            580                 585                 590

Thr Gln Ser Ser Pro Phe Gly Ile Gly Thr Ser His Thr Tyr Pro Ala
        595                 600                 605

Asp Pro Ser Ser Tyr Ser Pro Leu Ser Ser Pro Ala Thr Ser Ser Pro
    610                 615                 620

Ser Gly Asn Ala Tyr Ser Ser Leu Ala Asn Arg Thr Pro Gly Phe Ala
625                 630                 635                 640

Glu Ser Gly Gln Ser Ser Gly Gln Phe Gln Gly Arg Pro Ser Glu Val
                645                 650                 655

Trp Ser Gln Trp Gln Ser Gln His His Gly Gln Gln Ser Gly Glu Gln
            660                 665                 670

His Ser His Gln Gln Pro Gly Gln Thr Glu Val Phe Gln Asp Met Leu
        675                 680                 685

Pro Met Pro Gly Asp Pro Arg Asn Glu Trp Trp Ser Pro His Ser Arg
    690                 695                 700

Gln His Phe Arg Gln Pro Ile Ser Tyr Ala Arg Met
705                 710                 715
```

<210> 6589
<211> 566
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1420; "

<220>
<221> source
<223> /note="Gene Symbol: ARNT2; "

<220>
<221> source
<223> /note="Gene Name:
aryl-hydrocarbon receptor nuclear translocator 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000483762"

<400> 6589
Met Ala Thr Pro Ala Ala Val Asn Pro Pro Glu Met Ala Ser Asp Ile
1 5 10 15

Pro Gly Ser Val Thr Leu Pro Val Ala Pro Met Ala Ala Thr Gly Gln
20 25 30

Val Arg Met Ala Gly Ala Met Pro Ala Arg Gly Gly Lys Arg Arg Ser
35 40 45

Gly Met Asp Phe Asp Asp Glu Asp Gly Glu Gly Pro Ser Lys Phe Ser
50 55 60

Arg Glu Asn His Ser Glu Ile Glu Arg Arg Arg Arg Asn Lys Met Thr
65 70 75 80

Gln Tyr Ile Thr Glu Leu Ser Asp Met Val Pro Thr Cys Ser Ala Leu
85 90 95

Ala Arg Lys Pro Asp Lys Leu Thr Ile Leu Arg Met Ala Val Ser His
100 105 110

Met Lys Ser Met Arg Gly Thr Gly Asn Lys Ser Thr Asp Gly Ala Tyr
115 120 125

Lys Pro Ser Phe Leu Thr Glu Gln Glu Leu Lys His Leu Ile Leu Glu
130 135 140

Ala Ala Asp Gly Phe Leu Phe Val Val Ala Ala Glu Thr Gly Arg Val
145 150 155 160

```
Ile Tyr Val Ser Asp Ser Val Thr Pro Val Leu Asn Gln Pro Gln Ser
                165                 170                 175

Glu Trp Phe Gly Ser Thr Leu Tyr Glu Gln Val His Pro Asp Asp Val
            180                 185                 190

Glu Lys Leu Arg Glu Gln Leu Cys Thr Ser Glu Asn Ser Met Thr Gly
        195                 200                 205

Arg Ile Leu Asp Leu Lys Thr Gly Thr Val Lys Lys Glu Gly Gln Gln
    210                 215                 220

Ser Ser Met Arg Met Cys Met Gly Ser Arg Arg Ser Phe Ile Cys Arg
225                 230                 235                 240

Met Arg Cys Gly Asn Ala Pro Leu Asp His Leu Pro Leu Asn Arg Ile
                245                 250                 255

Thr Thr Met Arg Lys Arg Phe Arg Asn Gly Leu Gly Pro Val Lys Glu
            260                 265                 270

Gly Glu Ala Gln Tyr Ala Val Val His Cys Thr Gly Tyr Ile Lys Ala
        275                 280                 285

Trp Pro Pro Ala Gly Met Thr Ile Pro Glu Glu Asp Ala Asp Val Gly
    290                 295                 300

Gln Gly Ser Lys Tyr Cys Leu Val Ala Ile Gly Arg Leu Gln Val Thr
305                 310                 315                 320

Ser Ser Pro Val Cys Met Asp Met Asn Gly Met Ser Val Pro Thr Glu
                325                 330                 335

Phe Leu Ser Arg His Asn Ser Asp Gly Ile Ile Thr Phe Val Asp Pro
            340                 345                 350

Arg Cys Ile Ser Val Ile Gly Tyr Gln Pro Gln Asp Leu Leu Gly Lys
        355                 360                 365

Asp Ile Leu Glu Phe Cys His Pro Glu Asp Gln Ser His Leu Arg Glu
    370                 375                 380
```

```
Ser Phe Gln Gln Val Val Lys Leu Lys Gly Gln Val Leu Ser Val Met
385                 390                 395                 400

Tyr Arg Phe Arg Thr Lys Asn Arg Glu Trp Met Leu Ile Arg Thr Ser
                405                 410                 415

Ser Phe Thr Phe Gln Asn Pro Tyr Ser Asp Glu Ile Glu Tyr Ile Ile
            420                 425                 430

Cys Thr Asn Thr Asn Val Lys Gln Leu Gln Gln Gln Gln Ala Glu Leu
        435                 440                 445

Glu Val His Gln Arg Asp Gly Leu Ser Ser Tyr Asp Leu Ser Gln Val
    450                 455                 460

Pro Val Pro Asn Leu Pro Ala Gly Val His Glu Ala Gly Lys Ser Val
465                 470                 475                 480

Glu Lys Ala Asp Ala Ile Phe Ser Gln Glu Arg Asp Pro Arg Phe Ala
                485                 490                 495

Glu Met Phe Ala Gly Ile Ser Ala Ser Glu Lys Lys Met Met Ser Ser
            500                 505                 510

Ala Ser Ala Ala Gly Thr Gln Gln Ile Tyr Ser Gln Gly Ser Pro Phe
        515                 520                 525

Pro Ser Gly His Ser Gly Lys Ala Phe Ser Ser Ser Val Val His Val
    530                 535                 540

Pro Gly Val Asn Asp Ile Gln Ser Ser Ser Ser Thr Gly Gln Asn Met
545                 550                 555                 560

Ser Gln Ile Ser Gly Ser
                565


<210> 6590
<211> 719
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1421; "
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<220>
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<223> /note="Gene Symbol: AHRR; "

<220>
<221> source
<223> /note="Gene Name:
aryl-hydrocarbon receptor repressor; "

<220>
<221> source
<223> /note="Uniprot ID: A9YTQ3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000323816"

<400> 6590
Met Pro Arg Thr Met Ile Pro Pro Gly Glu Cys Thr Tyr Ala Gly Arg
1   5   10   15

Lys Arg Arg Arg Pro Leu Gln Lys Gln Arg Pro Ala Val Gly Ala Glu
            20   25   30

Lys Ser Asn Pro Ser Lys Arg His Arg Asp Arg Leu Asn Ala Glu Leu
        35   40   45

Asp His Leu Ala Ser Leu Leu Pro Phe Pro Pro Asp Ile Ile Ser Lys
    50   55   60

Leu Asp Lys Leu Ser Val Leu Arg Leu Ser Val Ser Tyr Leu Arg Val
65   70   75   80

Lys Ser Phe Phe Gln Val Val Gln Glu Gln Ser Ser Arg Gln Pro Ala
                85   90   95

Ala Gly Ala Pro Ser Pro Gly Asp Ser Cys Pro Leu Ala Gly Ser Ala
            100   105   110

Val Leu Glu Gly Arg Leu Leu Leu Glu Ser Leu Asn Gly Phe Ala Leu
        115   120   125

Val Val Ser Ala Glu Gly Thr Ile Phe Tyr Ala Ser Ala Thr Ile Val
    130   135   140

Asp Tyr Leu Gly Phe His Gln Thr Asp Val Met His Gln Asn Ile Tyr
145   150   155   160

```
Asp Tyr Ile His Val Asp Asp Arg Gln Asp Phe Cys Arg Gln Leu His
                165                 170                 175

Trp Ala Met Asp Pro Pro Gln Val Val Phe Gly Gln Pro Pro Pro Leu
            180                 185                 190

Glu Thr Gly Asp Asp Ala Ile Leu Gly Arg Leu Leu Arg Ala Gln Glu
        195                 200                 205

Trp Gly Thr Gly Thr Pro Thr Glu Tyr Ser Ala Phe Leu Thr Arg Cys
    210                 215                 220

Phe Ile Cys Arg Val Arg Cys Leu Leu Asp Ser Thr Ser Gly Phe Leu
225                 230                 235                 240

Ala Arg Gly Ser Gln Ala Trp Gln Leu Arg Leu Cys Cys Pro Glu Pro
                245                 250                 255

Leu Met Thr Met Gln Phe Gln Gly Lys Leu Lys Phe Leu Phe Gly Gln
            260                 265                 270

Lys Lys Lys Ala Pro Ser Gly Ala Met Leu Pro Pro Arg Leu Ser Leu
        275                 280                 285

Phe Cys Ile Ala Ala Pro Val Leu Leu Pro Ser Ala Ala Glu Met Lys
    290                 295                 300

Met Arg Ser Ala Leu Leu Arg Ala Lys Pro Arg Ala Asp Thr Ala Ala
305                 310                 315                 320

Thr Ala Asp Ala Lys Val Lys Ala Thr Thr Ser Leu Cys Glu Ser Glu
                325                 330                 335

Leu His Gly Lys Pro Asn Tyr Ser Ala Gly Arg Ser Ser Arg Glu Ser
            340                 345                 350

Gly Val Leu Val Leu Arg Glu Gln Thr Asp Ala Gly Arg Trp Ala Gln
        355                 360                 365

Val Pro Ala Arg Ala Pro Cys Leu Cys Leu Arg Gly Gly Pro Asp Leu
    370                 375                 380
```

```
Val Leu Asp Pro Lys Gly Gly Ser Gly Asp Arg Glu Glu Glu Gln His
385                 390                 395                 400

Arg Met Leu Ser Arg Ala Ser Gly Val Thr Gly Arg Arg Glu Thr Pro
                405                 410                 415

Gly Pro Thr Lys Pro Leu Pro Trp Thr Ala Gly Lys His Ser Glu Asp
            420                 425                 430

Gly Ala Arg Pro Arg Leu Gln Pro Ser Lys Asn Asp Pro Pro Ser Leu
        435                 440                 445

Arg Pro Met Pro Arg Gly Ser Cys Leu Pro Cys Pro Cys Val Gln Gly
    450                 455                 460

Thr Phe Arg Asn Ser Pro Ile Ser His Pro Pro Ser Pro Ser Pro Ser
465                 470                 475                 480

Ala Tyr Ser Ser Arg Thr Ser Arg Pro Met Arg Asp Val Gly Glu Asp
                485                 490                 495

Gln Val His Pro Pro Leu Cys His Phe Pro Gln Arg Ser Leu Gln His
            500                 505                 510

Gln Leu Pro Gln Pro Gly Ala Gln Arg Phe Ala Thr Arg Gly Tyr Pro
        515                 520                 525

Met Glu Asp Met Lys Leu Gln Gly Val Pro Met Pro Pro Gly Asp Leu
    530                 535                 540

Cys Gly Pro Thr Leu Leu Leu Asp Val Ser Ile Lys Met Glu Lys Asp
545                 550                 555                 560

Ser Gly Cys Glu Gly Ala Ala Asp Gly Cys Val Pro Ser Gln Val Trp
                565                 570                 575

Leu Gly Ala Ser Asp Arg Ser His Pro Ala Thr Phe Pro Thr Arg Met
            580                 585                 590

His Leu Lys Thr Glu Pro Asp Ser Arg Gln Gln Val Tyr Ile Ser His
        595                 600                 605
```

```
Leu Gly His Gly Val Arg Gly Ala Gln Pro His Gly Arg Ala Thr Ala
    610                 615                 620

Gly Arg Ser Arg Glu Leu Thr Pro Phe His Pro Ala His Cys Ala Cys
625                 630                 635                 640

Leu Glu Pro Thr Asp Gly Leu Pro Gln Ser Glu Pro Pro His Gln Leu
                645                 650                 655

Cys Ala Arg Gly Arg Gly Glu Gln Ser Cys Thr Cys Arg Ala Ala Glu
            660                 665                 670

Ala Ala Pro Val Val Lys Arg Glu Pro Leu Asp Ser Pro Gln Trp Ala
        675                 680                 685

Thr His Ser Gln Gly Met Val Pro Gly Met Leu Pro Lys Ser Ala Leu
    690                 695                 700

Ala Thr Leu Val Pro Pro Gln Ala Ser Gly Cys Thr Phe Leu Pro
705                 710                 715


<210> 6591
<211> 701
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1421; "

<220>
<221> source
<223> /note="Gene Symbol: AHRR; "

<220>
<221> source
<223> /note="Gene Name:
      aryl-hydrocarbon receptor repressor; "

<220>
<221> source
<223> /note="Uniprot ID:  A9YTQ3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000424601"

<400> 6591
Met Pro Arg Thr Met Ile Pro Pro Gly Glu Cys Thr Tyr Ala Gly Arg
1               5                  10                  15
```

```
Lys Arg Arg Arg Pro Leu Gln Lys Gln Arg Pro Ala Val Gly Ala Glu
            20                  25                  30

Lys Ser Asn Pro Ser Lys Arg His Arg Asp Arg Leu Asn Ala Glu Leu
        35                  40                  45

Asp His Leu Ala Ser Leu Leu Pro Phe Pro Pro Asp Ile Ile Ser Lys
    50                  55                  60

Leu Asp Lys Leu Ser Val Leu Arg Leu Ser Val Ser Tyr Leu Arg Val
65                  70                  75                  80

Lys Ser Phe Phe Gln Val Val Gln Glu Gln Ser Ser Arg Gln Pro Ala
                85                  90                  95

Ala Gly Ala Pro Ser Pro Gly Asp Ser Cys Pro Leu Ala Gly Ser Ala
            100                 105                 110

Val Leu Glu Gly Arg Leu Leu Leu Glu Ser Leu Asn Gly Phe Ala Leu
        115                 120                 125

Val Val Ser Ala Glu Gly Thr Ile Phe Tyr Ala Ser Ala Thr Ile Val
    130                 135                 140

Asp Tyr Leu Gly Phe His Gln Thr Asp Val Met His Gln Asn Ile Tyr
145                 150                 155                 160

Asp Tyr Ile His Val Asp Asp Arg Gln Asp Phe Cys Arg Gln Leu His
                165                 170                 175

Trp Ala Met Asp Pro Pro Gln Val Val Phe Gly Gln Pro Pro Pro Leu
            180                 185                 190

Glu Thr Gly Asp Asp Ala Ile Leu Gly Arg Leu Leu Arg Ala Gln Glu
        195                 200                 205

Trp Gly Thr Gly Thr Pro Thr Glu Tyr Ser Ala Phe Leu Thr Arg Cys
    210                 215                 220

Phe Ile Cys Arg Val Arg Cys Leu Leu Asp Ser Thr Ser Gly Phe Leu
225                 230                 235                 240
```

```
Thr Met Gln Phe Gln Gly Lys Leu Lys Phe Leu Phe Gly Gln Lys Lys
                245                 250                 255

Lys Ala Pro Ser Gly Ala Met Leu Pro Pro Arg Leu Ser Leu Phe Cys
            260                 265                 270

Ile Ala Ala Pro Val Leu Leu Pro Ser Ala Ala Glu Met Lys Met Arg
        275                 280                 285

Ser Ala Leu Leu Arg Ala Lys Pro Arg Ala Asp Thr Ala Ala Thr Ala
    290                 295                 300

Asp Ala Lys Val Lys Ala Thr Thr Ser Leu Cys Glu Ser Glu Leu His
305                 310                 315                 320

Gly Lys Pro Asn Tyr Ser Ala Gly Arg Ser Ser Arg Glu Ser Gly Val
                325                 330                 335

Leu Val Leu Arg Glu Gln Thr Asp Ala Gly Arg Trp Ala Gln Val Pro
            340                 345                 350

Ala Arg Ala Pro Cys Leu Cys Leu Arg Gly Gly Pro Asp Leu Val Leu
        355                 360                 365

Asp Pro Lys Gly Gly Ser Gly Asp Arg Glu Glu Glu Gln His Arg Met
    370                 375                 380

Leu Ser Arg Ala Ser Gly Val Thr Gly Arg Arg Glu Thr Pro Gly Pro
385                 390                 395                 400

Thr Lys Pro Leu Pro Trp Thr Ala Gly Lys His Ser Glu Asp Gly Ala
                405                 410                 415

Arg Pro Arg Leu Gln Pro Ser Lys Asn Asp Pro Pro Ser Leu Arg Pro
            420                 425                 430

Met Pro Arg Gly Ser Cys Leu Pro Cys Pro Cys Val Gln Gly Thr Phe
        435                 440                 445

Arg Asn Ser Pro Ile Ser His Pro Pro Ser Pro Ser Pro Ser Ala Tyr
    450                 455                 460
```

```
Ser Ser Arg Thr Ser Arg Pro Met Arg Asp Val Gly Glu Asp Gln Val
465                 470                 475                 480

His Pro Pro Leu Cys His Phe Pro Gln Arg Ser Leu Gln His Gln Leu
                485                 490                 495

Pro Gln Pro Gly Ala Gln Arg Phe Ala Thr Arg Gly Tyr Pro Met Glu
            500                 505                 510

Asp Met Lys Leu Gln Gly Val Pro Met Pro Pro Gly Asp Leu Cys Gly
        515                 520                 525

Pro Thr Leu Leu Leu Asp Val Ser Ile Lys Met Glu Lys Asp Ser Gly
    530                 535                 540

Cys Glu Gly Ala Ala Asp Gly Cys Val Pro Ser Gln Val Trp Leu Gly
545                 550                 555                 560

Ala Ser Asp Arg Ser His Pro Ala Thr Phe Pro Thr Arg Met His Leu
                565                 570                 575

Lys Thr Glu Pro Asp Ser Arg Gln Gln Val Tyr Ile Ser His Leu Gly
            580                 585                 590

His Gly Val Arg Gly Ala Gln Pro His Gly Arg Ala Thr Ala Gly Arg
        595                 600                 605

Ser Arg Glu Leu Thr Pro Phe His Pro Ala His Cys Ala Cys Leu Glu
    610                 615                 620

Pro Thr Asp Gly Leu Pro Gln Ser Glu Pro Pro His Gln Leu Cys Ala
625                 630                 635                 640

Arg Gly Arg Gly Glu Gln Ser Cys Thr Cys Arg Ala Ala Glu Ala Ala
                645                 650                 655

Pro Val Val Lys Arg Glu Pro Leu Asp Ser Pro Gln Trp Ala Thr His
            660                 665                 670

Ser Gln Gly Met Val Pro Gly Met Leu Pro Lys Ser Ala Leu Ala Thr
        675                 680                 685

Leu Val Pro Pro Gln Ala Ser Gly Cys Thr Phe Leu Pro
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690 695 700

<210> 6592
<211> 547
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1421; "

<220>
<221> source
<223> /note="Gene Symbol: AHRR; "

<220>
<221> source
<223> /note="Gene Name:
aryl-hydrocarbon receptor repressor; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000424880"

<400> 6592
Met His Gln Asn Ile Tyr Asp Tyr Ile His Val Asp Asp Arg Gln Asp
1 5 10 15

Phe Cys Arg Gln Leu His Trp Ala Met Asp Pro Pro Gln Val Val Phe
20 25 30

Gly Gln Pro Pro Pro Leu Glu Thr Gly Asp Asp Ala Ile Leu Gly Arg
35 40 45

Leu Leu Arg Ala Gln Glu Trp Gly Thr Gly Thr Pro Thr Glu Tyr Ser
50 55 60

Ala Phe Leu Thr Arg Cys Phe Ile Cys Arg Val Arg Cys Leu Leu Asp
65 70 75 80

Ser Thr Ser Gly Phe Leu Thr Met Gln Phe Gln Gly Lys Leu Lys Phe
85 90 95

Leu Phe Gly Gln Lys Lys Lys Ala Pro Ser Gly Ala Met Leu Pro Pro
100 105 110

Arg Leu Ser Leu Phe Cys Ile Ala Ala Pro Val Leu Leu Pro Ser Ala
115 120 125

```
Ala Glu Met Lys Met Arg Ser Ala Leu Leu Arg Ala Lys Pro Arg Ala
    130                 135                 140

Asp Thr Ala Ala Thr Ala Asp Ala Lys Val Lys Ala Thr Thr Ser Leu
145                 150                 155                 160

Cys Glu Ser Glu Leu His Gly Lys Pro Asn Tyr Ser Ala Gly Arg Ser
                165                 170                 175

Ser Arg Glu Ser Gly Val Leu Val Leu Arg Glu Gln Thr Asp Ala Gly
            180                 185                 190

Arg Trp Ala Gln Val Pro Ala Arg Ala Pro Cys Leu Cys Leu Arg Gly
        195                 200                 205

Gly Pro Asp Leu Val Leu Asp Pro Lys Gly Gly Ser Gly Asp Arg Glu
    210                 215                 220

Glu Glu Gln His Arg Met Leu Ser Arg Ala Ser Gly Val Thr Gly Arg
225                 230                 235                 240

Arg Glu Thr Pro Gly Pro Thr Lys Pro Leu Pro Trp Thr Ala Gly Lys
                245                 250                 255

His Ser Glu Asp Gly Ala Arg Pro Arg Leu Gln Pro Ser Lys Asn Asp
            260                 265                 270

Pro Pro Ser Leu Arg Pro Met Pro Arg Gly Ser Cys Leu Pro Cys Pro
        275                 280                 285

Cys Val Gln Gly Thr Phe Arg Asn Ser Pro Ile Ser His Pro Pro Ser
    290                 295                 300

Pro Ser Pro Ser Ala Tyr Ser Ser Arg Thr Ser Arg Pro Met Arg Asp
305                 310                 315                 320

Val Gly Glu Asp Gln Val His Pro Pro Leu Cys His Phe Pro Gln Arg
                325                 330                 335

Ser Leu Gln His Gln Leu Pro Gln Pro Gly Ala Gln Arg Phe Ala Thr
            340                 345                 350
```

```
Arg Gly Tyr Pro Met Glu Asp Met Lys Leu Gln Gly Val Pro Met Pro
        355                 360                 365

Pro Gly Asp Leu Cys Gly Pro Thr Leu Leu Leu Asp Val Ser Ile Lys
    370                 375                 380

Met Glu Lys Asp Ser Gly Cys Glu Gly Ala Ala Asp Gly Cys Val Pro
385                 390                 395                 400

Ser Gln Val Trp Leu Gly Ala Ser Asp Arg Ser His Pro Ala Thr Phe
                405                 410                 415

Pro Thr Arg Met His Leu Lys Thr Glu Pro Asp Ser Arg Gln Gln Val
            420                 425                 430

Tyr Ile Ser His Leu Gly His Gly Val Arg Gly Ala Gln Pro His Gly
        435                 440                 445

Arg Ala Thr Ala Gly Arg Ser Arg Glu Leu Thr Pro Phe His Pro Ala
    450                 455                 460

His Cys Ala Cys Leu Glu Pro Thr Asp Gly Leu Pro Gln Ser Glu Pro
465                 470                 475                 480

Pro His Gln Leu Cys Ala Arg Gly Arg Gly Glu Gln Ser Cys Thr Cys
                485                 490                 495

Arg Ala Ala Glu Ala Ala Pro Val Val Lys Arg Glu Pro Leu Asp Ser
            500                 505                 510

Pro Gln Trp Ala Thr His Ser Gln Gly Met Val Pro Gly Met Leu Pro
        515                 520                 525

Lys Ser Ala Leu Ala Thr Leu Val Pro Pro Gln Ala Ser Gly Cys Thr
    530                 535                 540

Phe Leu Pro
545
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<210> 6593
<211> 215
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
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<220>
<221> source
<223> /note="Gene Name:
aryl-hydrocarbon receptor repressor; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000426076"

<400> 6593
Leu Leu Pro Ser Ala Ala Glu Met Lys Met Arg Ser Ala Leu Leu Arg
1 5 10 15

Ala Lys Pro Arg Ala Asp Thr Ala Ala Thr Ala Asp Ala Lys Asp Arg
20 25 30

Glu Glu Glu Gln His Arg Met Leu Ser Arg Ala Ser Gly Val Thr Gly
35 40 45

Arg Arg Glu Thr Pro Gly Pro Thr Lys Pro Leu Pro Trp Thr Ala Gly
50 55 60

Lys His Ser Glu Asp Gly Ala Arg Pro Arg Leu Gln Pro Ser Lys Asn
65 70 75 80

Asp Pro Pro Ser Leu Arg Pro Met Pro Arg Gly Ser Cys Leu Pro Cys
85 90 95

Pro Cys Val Gln Gly Thr Phe Arg Asn Ser Pro Ile Ser His Pro Pro
100 105 110

Ser Pro Ser Pro Ser Ala Tyr Ser Ser Arg Thr Ser Arg Pro Met Arg
115 120 125

Asp Val Gly Glu Asp Gln Val His Pro Pro Leu Cys His Phe Pro Gln
130 135 140

Arg Ser Leu Gln His Gln Leu Pro Gln Pro Gly Ala Gln Arg Phe Ala
145 150 155 160

```
Thr Arg Gly Tyr Pro Met Glu Asp Met Lys Leu Gln Gly Val Pro Met
                165                 170                 175

Pro Pro Gly Asp Leu Cys Gly Pro Thr Leu Leu Leu Asp Val Ser Ile
            180                 185                 190

Lys Met Glu Lys Asp Ser Gly Cys Glu Gly Ala Ala Asp Gly Cys Val
        195                 200                 205

Pro Ser Gln Val Trp Leu Gly
    210                 215


<210> 6594
<211> 557
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1421; "

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Name:
      aryl-hydrocarbon receptor repressor; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000426932"

<400> 6594
Met Arg Gly Arg Gly Met Pro Thr Asp Val Met His Gln Asn Ile Tyr
1               5                   10                  15

Asp Tyr Ile His Val Asp Asp Arg Gln Asp Phe Cys Arg Gln Leu His
            20                  25                  30

Trp Ala Met Asp Pro Pro Gln Val Val Phe Gly Gln Pro Pro Pro Leu
        35                  40                  45

Glu Thr Gly Asp Asp Ala Ile Leu Gly Arg Leu Leu Arg Ala Gln Glu
    50                  55                  60

Trp Gly Thr Gly Thr Pro Thr Glu Tyr Ser Ala Phe Leu Thr Arg Cys
```

65 70 75 80

Phe Ile Cys Arg Val Arg Cys Leu Leu Asp Ser Thr Ser Gly Phe Leu
85 90 95

Thr Met Gln Phe Gln Gly Lys Leu Lys Phe Leu Phe Gly Gln Lys Lys
100 105 110

Lys Ala Pro Ser Gly Ala Met Leu Pro Pro Arg Leu Ser Leu Phe Cys
115 120 125

Ile Ala Ala Pro Val Leu Leu Pro Ser Ala Ala Glu Met Lys Met Arg
130 135 140

Ser Ala Leu Leu Arg Ala Lys Pro Arg Ala Asp Thr Ala Ala Thr Ala
145 150 155 160

Asp Ala Lys Val Lys Ala Thr Thr Ser Leu Cys Glu Ser Glu Leu His
165 170 175

Gly Lys Pro Asn Tyr Ser Ala Gly Arg Ser Ser Arg Glu Ser Gly Val
180 185 190

Leu Val Leu Arg Glu Gln Thr Asp Ala Gly Arg Trp Ala Gln Val Pro
195 200 205

Ala Arg Ala Pro Cys Leu Cys Leu Arg Gly Gly Pro Asp Leu Val Leu
210 215 220

Asp Pro Lys Gly Gly Ser Gly Asp Arg Glu Glu Glu Gln His Arg Met
225 230 235 240

Leu Ser Arg Ala Ser Gly Val Thr Gly Arg Arg Glu Thr Pro Gly Pro
245 250 255

Thr Lys Pro Leu Pro Trp Thr Ala Gly Lys His Ser Glu Asp Gly Ala
260 265 270

Arg Pro Arg Leu Gln Pro Ser Lys Asn Asp Pro Pro Ser Leu Arg Pro
275 280 285

Met Pro Arg Gly Ser Cys Leu Pro Cys Pro Cys Val Gln Gly Thr Phe
290 295 300

```
Arg Asn Ser Pro Ile Ser His Pro Pro Ser Pro Ser Pro Ser Ala Tyr
305                 310                 315                 320

Ser Ser Arg Thr Ser Arg Pro Met Arg Asp Val Gly Glu Asp Gln Val
                325                 330                 335

His Pro Pro Leu Cys His Phe Pro Gln Arg Ser Leu Gln His Gln Leu
            340                 345                 350

Pro Gln Pro Gly Ala Gln Arg Phe Ala Thr Arg Gly Tyr Pro Met Glu
        355                 360                 365

Asp Met Lys Leu Gln Gly Val Pro Met Pro Pro Gly Asp Leu Cys Gly
    370                 375                 380

Pro Thr Leu Leu Leu Asp Val Ser Ile Lys Met Glu Lys Asp Ser Gly
385                 390                 395                 400

Cys Glu Gly Ala Ala Asp Gly Cys Val Pro Ser Gln Val Trp Leu Gly
                405                 410                 415

Ala Ser Asp Arg Ser His Pro Ala Thr Phe Pro Thr Arg Met His Leu
            420                 425                 430

Lys Thr Glu Pro Asp Ser Arg Gln Gln Val Tyr Ile Ser His Leu Gly
        435                 440                 445

His Gly Val Arg Gly Ala Gln Pro His Gly Arg Ala Thr Ala Gly Arg
    450                 455                 460

Ser Arg Glu Leu Thr Pro Phe His Pro Ala His Cys Ala Cys Leu Glu
465                 470                 475                 480

Pro Thr Asp Gly Leu Pro Gln Ser Glu Pro Pro His Gln Leu Cys Ala
                485                 490                 495

Arg Gly Arg Gly Glu Gln Ser Cys Thr Cys Arg Ala Ala Glu Ala Ala
            500                 505                 510

Pro Val Val Lys Arg Glu Pro Leu Asp Ser Pro Gln Trp Ala Thr His
        515                 520                 525
```

Ser Gln Gly Met Val Pro Gly Met Leu Pro Lys Ser Ala Leu Ala Thr
530 535 540

Leu Val Pro Pro Gln Ala Ser Gly Cys Thr Phe Leu Pro
545 550 555

<210> 6595
<211> 157
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1421; "

<220>
<221> source
<223> /note="Gene Symbol: AHRR; "

<220>
<221> source
<223> /note="Gene Name:
aryl-hydrocarbon receptor repressor; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000428893"

<400> 6595
Met Ile Pro Pro Gly Glu Cys Thr Tyr Ala Gly Arg Lys Arg Arg Arg
1 5 10 15

Pro Leu Gln Lys Gln Arg Pro Ala Val Gly Ala Glu Lys Ser Asn Pro
20 25 30

Ser Lys Arg His Arg Asp Arg Leu Asn Ala Glu Leu Asp His Leu Ala
35 40 45

Ser Leu Leu Pro Phe Pro Pro Asp Ile Ile Ser Lys Leu Asp Lys Leu
50 55 60

Ser Val Leu Arg Leu Ser Val Ser Tyr Leu Arg Val Lys Ser Phe Phe
65 70 75 80

Gln Val Val Gln Glu Gln Ser Ser Arg Gln Pro Ala Ala Gly Ala Pro
85 90 95

Ser Pro Gly Asp Ser Cys Pro Leu Ala Gly Ser Ala Val Leu Glu Gly

```
            100                 105                 110

Arg Leu Leu Leu Glu Ser Leu Asn Gly Phe Ala Leu Val Val Ser Ala
        115                 120                 125

Glu Gly Thr Ile Phe Tyr Ala Ser Ala Thr Ile Val Asp Tyr Leu Gly
    130                 135                 140

Phe His Gln Thr Asp Val Met His Gln Asn Ile Tyr Asp
145                 150                 155


<210> 6596
<211> 81
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
      aryl-hydrocarbon receptor repressor; "

<220>
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<223> /note="ENSP ID: ENSP00000429944"

<400> 6596
Met Ile Pro Pro Gly Glu Cys Thr Tyr Ala Gly Arg Lys Arg Arg Arg
1               5                   10                  15

Pro Leu Gln Lys Gln Arg Pro Ala Val Gly Ala Glu Lys Ser Asn Pro
            20                  25                  30

Ser Lys Arg His Arg Asp Arg Leu Asn Ala Glu Leu Asp His Leu Ala
        35                  40                  45

Ser Leu Leu Pro Phe Pro Pro Asp Ile Ile Ser Lys Leu Asp Lys Leu
    50                  55                  60

Ser Val Leu Arg Leu Ser Val Ser Tyr Leu Arg Val Lys Ser Phe Phe
65                  70                  75                  80
```

Gln

<210> 6597
<211> 139
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: AHRR; "

<220>
<221> source
<223> /note="Gene Name:
aryl-hydrocarbon receptor repressor; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430842"

<400> 6597
Met Ile Pro Pro Gly Glu Cys Thr Tyr Ala Gly Arg Lys Arg Arg Arg
1 5 10 15

Pro Leu Gln Lys Gln Arg Pro Ala Val Gly Ala Glu Lys Ser Asn Pro
20 25 30

Ser Lys Arg His Arg Asp Arg Leu Asn Ala Glu Leu Asp His Leu Ala
35 40 45

Ser Leu Leu Pro Phe Pro Pro Asp Ile Ile Ser Lys Leu Asp Lys Leu
50 55 60

Ser Val Leu Arg Leu Ser Val Ser Tyr Leu Arg Val Lys Ser Phe Phe
65 70 75 80

Gln Gly Gln Gly Leu Ala Val Ala Asp Ala Glu Asp Val Asp Asp His
85 90 95

Thr Gly Glu Arg Arg Pro Met Ser Phe Arg Arg Pro Arg Ala Leu Asp
100 105 110

Thr Gln Ala Leu Arg Arg Thr Gln Phe Gly Leu His Leu Leu Met Val

```
        115                 120                 125

Asn Ile Ala Gly Leu Ile Ala Thr Asp Arg Leu
    130                 135


<210> 6598
<211> 12
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: AHRR; "

<220>
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<223> /note="Gene Name:
      aryl-hydrocarbon receptor repressor; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430914"

<400> 6598
Met His Gln Asn Ile Tyr Asp Tyr Ile His Val Asp
1               5                   10


<210> 6599
<211> 509
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1422; "

<220>
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<223> /note="Gene Symbol: ARSA; "

<220>
<221> source
<223> /note="Gene Name:
      arylsulfatase A; "

<220>
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<223> /note="ENSP ID: ENSP00000216124"

<400> 6599
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Met Ser Met Gly Ala Pro Arg Ser Leu Leu Leu Ala Leu Ala Ala Gly
1               5                  10                  15

Leu Ala Val Ala Arg Pro Pro Asn Ile Val Leu Ile Phe Ala Asp Asp
            20                  25                  30

Leu Gly Tyr Gly Asp Leu Gly Cys Tyr Gly His Pro Ser Ser Thr Thr
        35                  40                  45

Pro Asn Leu Asp Gln Leu Ala Ala Gly Gly Leu Arg Phe Thr Asp Phe
    50                  55                  60

Tyr Val Pro Val Ser Leu Cys Thr Pro Ser Arg Ala Ala Leu Leu Thr
65                  70                  75                  80

Gly Arg Leu Pro Val Arg Met Gly Met Tyr Pro Gly Val Leu Val Pro
                85                  90                  95

Ser Ser Arg Gly Gly Leu Pro Leu Glu Glu Val Thr Val Ala Glu Val
            100                 105                 110

Leu Ala Ala Arg Gly Tyr Leu Thr Gly Met Ala Gly Lys Trp His Leu
        115                 120                 125

Gly Val Gly Pro Glu Gly Ala Phe Leu Pro Pro His Gln Gly Phe His
    130                 135                 140

Arg Phe Leu Gly Ile Pro Tyr Ser His Asp Gln Gly Pro Cys Gln Asn
145                 150                 155                 160

Leu Thr Cys Phe Pro Pro Ala Thr Pro Cys Asp Gly Gly Cys Asp Gln
                165                 170                 175

Gly Leu Val Pro Ile Pro Leu Leu Ala Asn Leu Ser Val Glu Ala Gln
            180                 185                 190

Pro Pro Trp Leu Pro Gly Leu Glu Ala Arg Tyr Met Ala Phe Ala His
        195                 200                 205

Asp Leu Met Ala Asp Ala Gln Arg Gln Asp Arg Pro Phe Phe Leu Tyr
    210                 215                 220

Tyr Ala Ser His His Thr His Tyr Pro Gln Phe Ser Gly Gln Ser Phe
```

225 230 235 240

Ala Glu Arg Ser Gly Arg Gly Pro Phe Gly Asp Ser Leu Met Glu Leu
245 250 255

Asp Ala Ala Val Gly Thr Leu Met Thr Ala Ile Gly Asp Leu Gly Leu
260 265 270

Leu Glu Glu Thr Leu Val Ile Phe Thr Ala Asp Asn Gly Pro Glu Thr
275 280 285

Met Arg Met Ser Arg Gly Gly Cys Ser Gly Leu Leu Arg Cys Gly Lys
290 295 300

Gly Thr Thr Tyr Glu Gly Gly Val Arg Glu Pro Ala Leu Ala Phe Trp
305 310 315 320

Pro Gly His Ile Ala Pro Gly Val Thr His Glu Leu Ala Ser Ser Leu
325 330 335

Asp Leu Leu Pro Thr Leu Ala Ala Leu Ala Gly Ala Pro Leu Pro Asn
340 345 350

Val Thr Leu Asp Gly Phe Asp Leu Ser Pro Leu Leu Leu Gly Thr Gly
355 360 365

Lys Ser Pro Arg Gln Ser Leu Phe Phe Tyr Pro Ser Tyr Pro Asp Glu
370 375 380

Val Arg Gly Val Phe Ala Val Arg Thr Gly Lys Tyr Lys Ala His Phe
385 390 395 400

Phe Thr Gln Gly Ser Ala His Ser Asp Thr Thr Ala Asp Pro Ala Cys
405 410 415

His Ala Ser Ser Ser Leu Thr Ala His Glu Pro Pro Leu Leu Tyr Asp
420 425 430

Leu Ser Lys Asp Pro Gly Glu Asn Tyr Asn Leu Leu Gly Gly Val Ala
435 440 445

Gly Ala Thr Pro Glu Val Leu Gln Ala Leu Lys Gln Leu Gln Leu Leu
450 455 460

```
Lys Ala Gln Leu Asp Ala Ala Val Thr Phe Gly Pro Ser Gln Val Ala
465                 470                 475                 480


Arg Gly Glu Asp Pro Ala Leu Gln Ile Cys Cys His Pro Gly Cys Thr
                485                 490                 495


Pro Arg Pro Ala Cys Cys His Cys Pro Asp Pro His Ala
            500                 505


<210> 6600
<211> 509
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1422; "

<220>
<221> source
<223> /note="Gene Symbol: ARSA; "

<220>
<221> source
<223> /note="Gene Name:
      arylsulfatase A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000348406"

<400> 6600
Met Ser Met Gly Ala Pro Arg Ser Leu Leu Leu Ala Leu Ala Ala Gly
1               5                   10                  15


Leu Ala Val Ala Arg Pro Pro Asn Ile Val Leu Ile Phe Ala Asp Asp
            20                  25                  30


Leu Gly Tyr Gly Asp Leu Gly Cys Tyr Gly His Pro Ser Ser Thr Thr
        35                  40                  45


Pro Asn Leu Asp Gln Leu Ala Ala Gly Gly Leu Arg Phe Thr Asp Phe
    50                  55                  60


Tyr Val Pro Val Ser Leu Cys Thr Pro Ser Arg Ala Ala Leu Leu Thr
65                  70                  75                  80
```

```
Gly Arg Leu Pro Val Arg Met Gly Met Tyr Pro Gly Val Leu Val Pro
                85                  90                  95

Ser Ser Arg Gly Gly Leu Pro Leu Glu Glu Val Thr Val Ala Glu Val
            100                 105                 110

Leu Ala Ala Arg Gly Tyr Leu Thr Gly Met Ala Gly Lys Trp His Leu
        115                 120                 125

Gly Val Gly Pro Glu Gly Ala Phe Leu Pro Pro His Gln Gly Phe His
    130                 135                 140

Arg Phe Leu Gly Ile Pro Tyr Ser His Asp Gln Gly Pro Cys Gln Asn
145                 150                 155                 160

Leu Thr Cys Phe Pro Pro Ala Thr Pro Cys Asp Gly Gly Cys Asp Gln
                165                 170                 175

Gly Leu Val Pro Ile Pro Leu Leu Ala Asn Leu Ser Val Glu Ala Gln
            180                 185                 190

Pro Pro Trp Leu Pro Gly Leu Glu Ala Arg Tyr Met Ala Phe Ala His
        195                 200                 205

Asp Leu Met Ala Asp Ala Gln Arg Gln Asp Arg Pro Phe Phe Leu Tyr
    210                 215                 220

Tyr Ala Ser His His Thr His Tyr Pro Gln Phe Ser Gly Gln Ser Phe
225                 230                 235                 240

Ala Glu Arg Ser Gly Arg Gly Pro Phe Gly Asp Ser Leu Met Glu Leu
                245                 250                 255

Asp Ala Ala Val Gly Thr Leu Met Thr Ala Ile Gly Asp Leu Gly Leu
            260                 265                 270

Leu Glu Glu Thr Leu Val Ile Phe Thr Ala Asp Asn Gly Pro Glu Thr
        275                 280                 285

Met Arg Met Ser Arg Gly Gly Cys Ser Gly Leu Leu Arg Cys Gly Lys
    290                 295                 300

Gly Thr Thr Tyr Glu Gly Gly Val Arg Glu Pro Ala Leu Ala Phe Trp
```

305 310 315 320

Pro Gly His Ile Ala Pro Gly Val Thr His Glu Leu Ala Ser Ser Leu
325 330 335

Asp Leu Leu Pro Thr Leu Ala Ala Leu Ala Gly Ala Pro Leu Pro Asn
340 345 350

Val Thr Leu Asp Gly Phe Asp Leu Ser Pro Leu Leu Leu Gly Thr Gly
355 360 365

Lys Ser Pro Arg Gln Ser Leu Phe Phe Tyr Pro Ser Tyr Pro Asp Glu
370 375 380

Val Arg Gly Val Phe Ala Val Arg Thr Gly Lys Tyr Lys Ala His Phe
385 390 395 400

Phe Thr Gln Gly Ser Ala His Ser Asp Thr Thr Ala Asp Pro Ala Cys
405 410 415

His Ala Ser Ser Ser Leu Thr Ala His Glu Pro Pro Leu Leu Tyr Asp
420 425 430

Leu Ser Lys Asp Pro Gly Glu Asn Tyr Asn Leu Leu Gly Gly Val Ala
435 440 445

Gly Ala Thr Pro Glu Val Leu Gln Ala Leu Lys Gln Leu Gln Leu Leu
450 455 460

Lys Ala Gln Leu Asp Ala Ala Val Thr Phe Gly Pro Ser Gln Val Ala
465 470 475 480

Arg Gly Glu Asp Pro Ala Leu Gln Ile Cys Cys His Pro Gly Cys Thr
485 490 495

Pro Arg Pro Ala Cys Cys His Cys Pro Asp Pro His Ala
500 505

<210> 6601
<211> 509
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1422; "

<220>
<221> source
<223> /note="Gene Symbol: ARSA; "

<220>
<221> source
<223> /note="Gene Name:
arylsulfatase A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000378981"

<400> 6601

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Met Ser Met Gly Ala Pro Arg Ser Leu Leu Leu Ala Leu Ala Ala Gly
1               5                  10                  15

Leu Ala Val Ala Arg Pro Pro Asn Ile Val Leu Ile Phe Ala Asp Asp
            20                  25                  30

Leu Gly Tyr Gly Asp Leu Gly Cys Tyr Gly His Pro Ser Ser Thr Thr
        35                  40                  45

Pro Asn Leu Asp Gln Leu Ala Ala Gly Gly Leu Arg Phe Thr Asp Phe
    50                  55                  60

Tyr Val Pro Val Ser Leu Cys Thr Pro Ser Arg Ala Ala Leu Leu Thr
65                  70                  75                  80

Gly Arg Leu Pro Val Arg Met Gly Met Tyr Pro Gly Val Leu Val Pro
                85                  90                  95

Ser Ser Arg Gly Gly Leu Pro Leu Glu Glu Val Thr Val Ala Glu Val
            100                 105                 110

Leu Ala Ala Arg Gly Tyr Leu Thr Gly Met Ala Gly Lys Trp His Leu
        115                 120                 125

Gly Val Gly Pro Glu Gly Ala Phe Leu Pro Pro His Gln Gly Phe His
    130                 135                 140

Arg Phe Leu Gly Ile Pro Tyr Ser His Asp Gln Gly Pro Cys Gln Asn
145                 150                 155                 160
```

```
Leu Thr Cys Phe Pro Pro Ala Thr Pro Cys Asp Gly Gly Cys Asp Gln
                165                 170                 175

Gly Leu Val Pro Ile Pro Leu Leu Ala Asn Leu Ser Val Glu Ala Gln
            180                 185                 190

Pro Pro Trp Leu Pro Gly Leu Glu Ala Arg Tyr Met Ala Phe Ala His
        195                 200                 205

Asp Leu Met Ala Asp Ala Gln Arg Gln Asp Arg Pro Phe Phe Leu Tyr
    210                 215                 220

Tyr Ala Ser His His Thr His Tyr Pro Gln Phe Ser Gly Gln Ser Phe
225                 230                 235                 240

Ala Glu Arg Ser Gly Arg Gly Pro Phe Gly Asp Ser Leu Met Glu Leu
                245                 250                 255

Asp Ala Ala Val Gly Thr Leu Met Thr Ala Ile Gly Asp Leu Gly Leu
            260                 265                 270

Leu Glu Glu Thr Leu Val Ile Phe Thr Ala Asp Asn Gly Pro Glu Thr
        275                 280                 285

Met Arg Met Ser Arg Gly Gly Cys Ser Gly Leu Leu Arg Cys Gly Lys
    290                 295                 300

Gly Thr Thr Tyr Glu Gly Gly Val Arg Glu Pro Ala Leu Ala Phe Trp
305                 310                 315                 320

Pro Gly His Ile Ala Pro Gly Val Thr His Glu Leu Ala Ser Ser Leu
                325                 330                 335

Asp Leu Leu Pro Thr Leu Ala Ala Leu Ala Gly Ala Pro Leu Pro Asn
            340                 345                 350

Val Thr Leu Asp Gly Phe Asp Leu Ser Pro Leu Leu Leu Gly Thr Gly
        355                 360                 365

Lys Ser Pro Arg Gln Ser Leu Phe Phe Tyr Pro Ser Tyr Pro Asp Glu
    370                 375                 380

Val Arg Gly Val Phe Ala Val Arg Thr Gly Lys Tyr Lys Ala His Phe
```

```
385                 390                 395                 400

Phe Thr Gln Gly Ser Ala His Ser Asp Thr Thr Ala Asp Pro Ala Cys
                405                 410                 415

His Ala Ser Ser Ser Leu Thr Ala His Glu Pro Pro Leu Leu Tyr Asp
            420                 425                 430

Leu Ser Lys Asp Pro Gly Glu Asn Tyr Asn Leu Leu Gly Gly Val Ala
        435                 440                 445

Gly Ala Thr Pro Glu Val Leu Gln Ala Leu Lys Gln Leu Gln Leu Leu
    450                 455                 460

Lys Ala Gln Leu Asp Ala Ala Val Thr Phe Gly Pro Ser Gln Val Ala
465                 470                 475                 480

Arg Gly Glu Asp Pro Ala Leu Gln Ile Cys Cys His Pro Gly Cys Thr
                485                 490                 495

Pro Arg Pro Ala Cys Cys His Cys Pro Asp Pro His Ala
            500                 505


<210> 6602
<211> 509
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1422; "

<220>
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<223> /note="Gene Symbol: ARSA; "

<220>
<221> source
<223> /note="Gene Name:
      arylsulfatase A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000378983"

<400> 6602
Met Ser Met Gly Ala Pro Arg Ser Leu Leu Leu Ala Leu Ala Ala Gly
1               5                   10                  15
```

```
Leu Ala Val Ala Arg Pro Pro Asn Ile Val Leu Ile Phe Ala Asp Asp
            20                  25                  30

Leu Gly Tyr Gly Asp Leu Gly Cys Tyr Gly His Pro Ser Ser Thr Thr
        35                  40                  45

Pro Asn Leu Asp Gln Leu Ala Ala Gly Gly Leu Arg Phe Thr Asp Phe
    50                  55                  60

Tyr Val Pro Val Ser Leu Cys Thr Pro Ser Arg Ala Ala Leu Leu Thr
65                  70                  75                  80

Gly Arg Leu Pro Val Arg Met Gly Met Tyr Pro Gly Val Leu Val Pro
                85                  90                  95

Ser Ser Arg Gly Gly Leu Pro Leu Glu Glu Val Thr Val Ala Glu Val
            100                 105                 110

Leu Ala Ala Arg Gly Tyr Leu Thr Gly Met Ala Gly Lys Trp His Leu
        115                 120                 125

Gly Val Gly Pro Glu Gly Ala Phe Leu Pro Pro His Gln Gly Phe His
    130                 135                 140

Arg Phe Leu Gly Ile Pro Tyr Ser His Asp Gln Gly Pro Cys Gln Asn
145                 150                 155                 160

Leu Thr Cys Phe Pro Pro Ala Thr Pro Cys Asp Gly Gly Cys Asp Gln
                165                 170                 175

Gly Leu Val Pro Ile Pro Leu Leu Ala Asn Leu Ser Val Glu Ala Gln
            180                 185                 190

Pro Pro Trp Leu Pro Gly Leu Glu Ala Arg Tyr Met Ala Phe Ala His
        195                 200                 205

Asp Leu Met Ala Asp Ala Gln Arg Gln Asp Arg Pro Phe Phe Leu Tyr
    210                 215                 220

Tyr Ala Ser His His Thr His Tyr Pro Gln Phe Ser Gly Gln Ser Phe
225                 230                 235                 240
```

```
Ala Glu Arg Ser Gly Arg Gly Pro Phe Gly Asp Ser Leu Met Glu Leu
                245                 250                 255

Asp Ala Ala Val Gly Thr Leu Met Thr Ala Ile Gly Asp Leu Gly Leu
            260                 265                 270

Leu Glu Glu Thr Leu Val Ile Phe Thr Ala Asp Asn Gly Pro Glu Thr
        275                 280                 285

Met Arg Met Ser Arg Gly Gly Cys Ser Gly Leu Leu Arg Cys Gly Lys
    290                 295                 300

Gly Thr Thr Tyr Glu Gly Gly Val Arg Glu Pro Ala Leu Ala Phe Trp
305                 310                 315                 320

Pro Gly His Ile Ala Pro Gly Val Thr His Glu Leu Ala Ser Ser Leu
                325                 330                 335

Asp Leu Leu Pro Thr Leu Ala Ala Leu Ala Gly Ala Pro Leu Pro Asn
            340                 345                 350

Val Thr Leu Asp Gly Phe Asp Leu Ser Pro Leu Leu Leu Gly Thr Gly
        355                 360                 365

Lys Ser Pro Arg Gln Ser Leu Phe Phe Tyr Pro Ser Tyr Pro Asp Glu
    370                 375                 380

Val Arg Gly Val Phe Ala Val Arg Thr Gly Lys Tyr Lys Ala His Phe
385                 390                 395                 400

Phe Thr Gln Gly Ser Ala His Ser Asp Thr Thr Ala Asp Pro Ala Cys
                405                 410                 415

His Ala Ser Ser Ser Leu Thr Ala His Glu Pro Pro Leu Leu Tyr Asp
            420                 425                 430

Leu Ser Lys Asp Pro Gly Glu Asn Tyr Asn Leu Leu Gly Gly Val Ala
        435                 440                 445

Gly Ala Thr Pro Glu Val Leu Gln Ala Leu Lys Gln Leu Gln Leu Leu
    450                 455                 460

Lys Ala Gln Leu Asp Ala Ala Val Thr Phe Gly Pro Ser Gln Val Ala
```

```
465                 470                 475                 480

Arg Gly Glu Asp Pro Ala Leu Gln Ile Cys Cys His Pro Gly Cys Thr
                485                 490                 495

Pro Arg Pro Ala Cys Cys His Cys Pro Asp Pro His Ala
            500                 505


<210> 6603
<211> 423
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ARSA; "

<220>
<221> source
<223> /note="Gene Name:
      arylsulfatase A; "

<220>
<221> source
<223> /note="Uniprot ID:  P15289; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000412542"

<400> 6603
Met Gly Met Tyr Pro Gly Val Leu Val Pro Ser Ser Arg Gly Gly Leu
1               5                   10                  15

Pro Leu Glu Glu Val Thr Val Ala Glu Val Leu Ala Ala Arg Gly Tyr
            20                  25                  30

Leu Thr Gly Met Ala Gly Lys Trp His Leu Gly Val Gly Pro Glu Gly
        35                  40                  45

Ala Phe Leu Pro Pro His Gln Gly Phe His Arg Phe Leu Gly Ile Pro
    50                  55                  60

Tyr Ser His Asp Gln Gly Pro Cys Gln Asn Leu Thr Cys Phe Pro Pro
65                  70                  75                  80
```

```
Ala Thr Pro Cys Asp Gly Gly Cys Asp Gln Gly Leu Val Pro Ile Pro
                85                  90                  95

Leu Leu Ala Asn Leu Ser Val Glu Ala Gln Pro Pro Trp Leu Pro Gly
            100                 105                 110

Leu Glu Ala Arg Tyr Met Ala Phe Ala His Asp Leu Met Ala Asp Ala
        115                 120                 125

Gln Arg Gln Asp Arg Pro Phe Phe Leu Tyr Tyr Ala Ser His His Thr
    130                 135                 140

His Tyr Pro Gln Phe Ser Gly Gln Ser Phe Ala Glu Arg Ser Gly Arg
145                 150                 155                 160

Gly Pro Phe Gly Asp Ser Leu Met Glu Leu Asp Ala Ala Val Gly Thr
                165                 170                 175

Leu Met Thr Ala Ile Gly Asp Leu Gly Leu Leu Glu Glu Thr Leu Val
            180                 185                 190

Ile Phe Thr Ala Asp Asn Gly Pro Glu Thr Met Arg Met Ser Arg Gly
        195                 200                 205

Gly Cys Ser Gly Leu Leu Arg Cys Gly Lys Gly Thr Thr Tyr Glu Gly
    210                 215                 220

Gly Val Arg Glu Pro Ala Leu Ala Phe Trp Pro Gly His Ile Ala Pro
225                 230                 235                 240

Gly Val Thr His Glu Leu Ala Ser Ser Leu Asp Leu Leu Pro Thr Leu
                245                 250                 255

Ala Ala Leu Ala Gly Ala Pro Leu Pro Asn Val Thr Leu Asp Gly Phe
            260                 265                 270

Asp Leu Ser Pro Leu Leu Leu Gly Thr Gly Lys Ser Pro Arg Gln Ser
        275                 280                 285

Leu Phe Phe Tyr Pro Ser Tyr Pro Asp Glu Val Arg Gly Val Phe Ala
    290                 295                 300
```

```
Val Arg Thr Gly Lys Tyr Lys Ala His Phe Phe Thr Gln Gly Ser Ala
305                 310                 315                 320

His Ser Asp Thr Thr Ala Asp Pro Ala Cys His Ala Ser Ser Ser Leu
                325                 330                 335

Thr Ala His Glu Pro Pro Leu Leu Tyr Asp Leu Ser Lys Asp Pro Gly
            340                 345                 350

Glu Asn Tyr Asn Leu Leu Gly Gly Val Ala Gly Ala Thr Pro Glu Val
        355                 360                 365

Leu Gln Ala Leu Lys Gln Leu Gln Leu Leu Lys Ala Gln Leu Asp Ala
    370                 375                 380

Ala Val Thr Phe Gly Pro Ser Gln Val Ala Arg Gly Glu Asp Pro Ala
385                 390                 395                 400

Leu Gln Ile Cys Cys His Pro Gly Cys Thr Pro Arg Pro Ala Cys Cys
                405                 410                 415

His Cys Pro Asp Pro His Ala
            420


<210> 6604
<211> 69
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1422; "

<220>
<221> source
<223> /note="Gene Symbol: ARSA; "

<220>
<221> source
<223> /note="Gene Name:
      arylsulfatase A; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000477013"


<220>
<221> MOD_RES
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<222> (1)..(1)
<223> Any amino acid

<400> 6604
Xaa Pro Ser Tyr Pro Asp Glu Val Arg Gly Val Phe Ala Val Arg Thr
1   5   10   15

Gly Lys Tyr Lys Ala His Phe Phe Thr Gln Gly Ser Ala His Ser Asp
            20   25   30

Thr Thr Ala Asp Pro Ala Cys His Ala Ser Ser Ser Leu Thr Ala His
        35   40   45

Glu Pro Pro Leu Leu Tyr Asp Leu Ser Lys Asp Pro Asp Gly Val Ser
    50   55   60

Leu Cys Arg Pro Gly
65

<210> 6605
<211> 533
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1423; "

<220>
<221> source
<223> /note="Gene Symbol: ARSB; "

<220>
<221> source
<223> /note="Gene Name:
arylsulfatase B; "

<220>
<221> source
<223> /note="Uniprot ID: P15848; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000264914"

<400> 6605
Met Gly Pro Arg Gly Ala Ala Ser Leu Pro Arg Gly Pro Gly Pro Arg
1   5   10   15

Arg Leu Leu Leu Pro Val Val Leu Pro Leu Leu Leu Leu Leu Leu Leu
            20   25   30

```
Ala Pro Pro Gly Ser Gly Ala Gly Ala Ser Arg Pro Pro His Leu Val
        35                  40                  45

Phe Leu Leu Ala Asp Asp Leu Gly Trp Asn Asp Val Gly Phe His Gly
    50                  55                  60

Ser Arg Ile Arg Thr Pro His Leu Asp Ala Leu Ala Ala Gly Gly Val
65                  70                  75                  80

Leu Leu Asp Asn Tyr Tyr Thr Gln Pro Leu Cys Thr Pro Ser Arg Ser
                85                  90                  95

Gln Leu Leu Thr Gly Arg Tyr Gln Ile Arg Thr Gly Leu Gln His Gln
            100                 105                 110

Ile Ile Trp Pro Cys Gln Pro Ser Cys Val Pro Leu Asp Glu Lys Leu
        115                 120                 125

Leu Pro Gln Leu Leu Lys Glu Ala Gly Tyr Thr Thr His Met Val Gly
    130                 135                 140

Lys Trp His Leu Gly Met Tyr Arg Lys Glu Cys Leu Pro Thr Arg Arg
145                 150                 155                 160

Gly Phe Asp Thr Tyr Phe Gly Tyr Leu Leu Gly Ser Glu Asp Tyr Tyr
                165                 170                 175

Ser His Glu Arg Cys Thr Leu Ile Asp Ala Leu Asn Val Thr Arg Cys
            180                 185                 190

Ala Leu Asp Phe Arg Asp Gly Glu Glu Val Ala Thr Gly Tyr Lys Asn
        195                 200                 205

Met Tyr Ser Thr Asn Ile Phe Thr Lys Arg Ala Ile Ala Leu Ile Thr
    210                 215                 220

Asn His Pro Pro Glu Lys Pro Leu Phe Leu Tyr Leu Ala Leu Gln Ser
225                 230                 235                 240

Val His Glu Pro Leu Gln Val Pro Glu Glu Tyr Leu Lys Pro Tyr Asp
                245                 250                 255
```

```
Phe Ile Gln Asp Lys Asn Arg His His Tyr Ala Gly Met Val Ser Leu
            260                 265                 270

Met Asp Glu Ala Val Gly Asn Val Thr Ala Ala Leu Lys Ser Ser Gly
        275                 280                 285

Leu Trp Asn Asn Thr Val Phe Ile Phe Ser Thr Asp Asn Gly Gly Gln
    290                 295                 300

Thr Leu Ala Gly Gly Asn Asn Trp Pro Leu Arg Gly Arg Lys Trp Ser
305                 310                 315                 320

Leu Trp Glu Gly Gly Val Arg Gly Val Gly Phe Val Ala Ser Pro Leu
                325                 330                 335

Leu Lys Gln Lys Gly Val Lys Asn Arg Glu Leu Ile His Ile Ser Asp
            340                 345                 350

Trp Leu Pro Thr Leu Val Lys Leu Ala Arg Gly His Thr Asn Gly Thr
        355                 360                 365

Lys Pro Leu Asp Gly Phe Asp Val Trp Lys Thr Ile Ser Glu Gly Ser
    370                 375                 380

Pro Ser Pro Arg Ile Glu Leu Leu His Asn Ile Asp Pro Asn Phe Val
385                 390                 395                 400

Asp Ser Ser Pro Cys Pro Arg Asn Ser Met Ala Pro Ala Lys Asp Asp
                405                 410                 415

Ser Ser Leu Pro Glu Tyr Ser Ala Phe Asn Thr Ser Val His Ala Ala
            420                 425                 430

Ile Arg His Gly Asn Trp Lys Leu Leu Thr Gly Tyr Pro Gly Cys Gly
        435                 440                 445

Tyr Trp Phe Pro Pro Pro Ser Gln Tyr Asn Val Ser Glu Ile Pro Ser
    450                 455                 460

Ser Asp Pro Pro Thr Lys Thr Leu Trp Leu Phe Asp Ile Asp Arg Asp
465                 470                 475                 480
```

```
Pro Glu Glu Arg His Asp Leu Ser Arg Glu Tyr Pro His Ile Val Thr
                485                 490                 495

Lys Leu Leu Ser Arg Leu Gln Phe Tyr His Lys His Ser Val Pro Val
            500                 505                 510

Tyr Phe Pro Ala Gln Asp Pro Arg Cys Asp Pro Lys Ala Thr Gly Val
        515                 520                 525

Trp Gly Pro Trp Met
    530


<210> 6606
<211> 413
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1423; "

<220>
<221> source
<223> /note="Gene Symbol: ARSB; "

<220>
<221> source
<223> /note="Gene Name:
      arylsulfatase B; "

<220>
<221> source
<223> /note="Uniprot ID:  P15848; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000379455"

<400> 6606
Met Gly Pro Arg Gly Ala Ala Ser Leu Pro Arg Gly Pro Gly Pro Arg
1               5                   10                  15

Arg Leu Leu Leu Pro Val Val Leu Pro Leu Leu Leu Leu Leu Leu Leu
            20                  25                  30

Ala Pro Pro Gly Ser Gly Ala Gly Ala Ser Arg Pro Pro His Leu Val
        35                  40                  45

Phe Leu Leu Ala Asp Asp Leu Gly Trp Asn Asp Val Gly Phe His Gly
    50                  55                  60
```

```
Ser Arg Ile Arg Thr Pro His Leu Asp Ala Leu Ala Ala Gly Gly Val
65                  70                  75                  80

Leu Leu Asp Asn Tyr Tyr Thr Gln Pro Leu Cys Thr Pro Ser Arg Ser
                85                  90                  95

Gln Leu Leu Thr Gly Arg Tyr Gln Ile Arg Thr Gly Leu Gln His Gln
            100                 105                 110

Ile Ile Trp Pro Cys Gln Pro Ser Cys Val Pro Leu Asp Glu Lys Leu
        115                 120                 125

Leu Pro Gln Leu Leu Lys Glu Ala Gly Tyr Thr Thr His Met Val Gly
    130                 135                 140

Lys Trp His Leu Gly Met Tyr Arg Lys Glu Cys Leu Pro Thr Arg Arg
145                 150                 155                 160

Gly Phe Asp Thr Tyr Phe Gly Tyr Leu Leu Gly Ser Glu Asp Tyr Tyr
                165                 170                 175

Ser His Glu Arg Cys Thr Leu Ile Asp Ala Leu Asn Val Thr Arg Cys
            180                 185                 190

Ala Leu Asp Phe Arg Asp Gly Glu Glu Val Ala Thr Gly Tyr Lys Asn
        195                 200                 205

Met Tyr Ser Thr Asn Ile Phe Thr Lys Arg Ala Ile Ala Leu Ile Thr
    210                 215                 220

Asn His Pro Pro Glu Lys Pro Leu Phe Leu Tyr Leu Ala Leu Gln Ser
225                 230                 235                 240

Val His Glu Pro Leu Gln Val Pro Glu Glu Tyr Leu Lys Pro Tyr Asp
                245                 250                 255

Phe Ile Gln Asp Lys Asn Arg His His Tyr Ala Gly Met Val Ser Leu
            260                 265                 270

Met Asp Glu Ala Val Gly Asn Val Thr Ala Ala Leu Lys Ser Ser Gly
        275                 280                 285
```

```
Leu Trp Asn Asn Thr Val Phe Ile Phe Ser Thr Asp Asn Gly Gly Gln
    290                 295                 300

Thr Leu Ala Gly Gly Asn Asn Trp Pro Leu Arg Gly Arg Lys Trp Ser
305                 310                 315                 320

Leu Trp Glu Gly Gly Val Arg Gly Val Gly Phe Val Ala Ser Pro Leu
                325                 330                 335

Leu Lys Gln Lys Gly Val Lys Asn Arg Glu Leu Ile His Ile Ser Asp
            340                 345                 350

Trp Leu Pro Thr Leu Val Lys Leu Ala Arg Gly His Thr Asn Gly Thr
        355                 360                 365

Lys Pro Leu Asp Gly Phe Asp Val Trp Lys Thr Ile Ser Glu Gly Ser
    370                 375                 380

Pro Ser Pro Arg Ile Glu Leu Leu His Asn Ile Asp Pro Asn Phe Val
385                 390                 395                 400

Asp Ser Ser Pro Tyr Trp Pro Glu Cys Ser Leu Leu Leu
                405                 410


<210> 6607
<211> 45
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000428611"

<400> 6607
Met Gly Pro Arg Gly Ala Ala Ser Leu Pro Arg Gly Pro Gly Pro Arg
```

1 5 10 15

Arg Leu Leu Leu Pro Val Val Leu Pro Leu Leu Leu Leu Leu Leu
20 25 30

Ala Pro Pro Gly Ser Gly Ala Gly Ala Ser Arg Pro Pro
35 40 45

<210> 6608
<211> 413
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ARSB; "

<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="Uniprot ID: P15848; "

<220>
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<223> /note="ENSP ID: ENSP00000456339"

<400> 6608
Met Gly Pro Arg Gly Ala Ala Ser Leu Pro Arg Gly Pro Gly Pro Arg
1 5 10 15

Arg Leu Leu Leu Pro Val Val Leu Pro Leu Leu Leu Leu Leu Leu Leu
20 25 30

Ala Pro Pro Gly Ser Gly Ala Gly Ala Ser Arg Pro Pro His Leu Val
35 40 45

Phe Leu Leu Ala Asp Asp Leu Gly Trp Asn Asp Val Gly Phe His Gly
50 55 60

Ser Arg Ile Arg Thr Pro His Leu Asp Ala Leu Ala Ala Gly Gly Val
65 70 75 80

```
Leu Leu Asp Asn Tyr Tyr Thr Gln Pro Leu Cys Thr Pro Ser Arg Ser
                85                  90                  95

Gln Leu Leu Thr Gly Arg Tyr Gln Ile Arg Thr Gly Leu Gln His Gln
            100                 105                 110

Ile Ile Trp Pro Cys Gln Pro Ser Cys Val Pro Leu Asp Glu Lys Leu
        115                 120                 125

Leu Pro Gln Leu Leu Lys Glu Ala Gly Tyr Thr Thr His Met Val Gly
    130                 135                 140

Lys Trp His Leu Gly Met Tyr Arg Lys Glu Cys Leu Pro Thr Arg Arg
145                 150                 155                 160

Gly Phe Asp Thr Tyr Phe Gly Tyr Leu Leu Gly Ser Glu Asp Tyr Tyr
                165                 170                 175

Ser His Glu Arg Cys Thr Leu Ile Asp Ala Leu Asn Val Thr Arg Cys
            180                 185                 190

Ala Leu Asp Phe Arg Asp Gly Glu Glu Val Ala Thr Gly Tyr Lys Asn
        195                 200                 205

Met Tyr Ser Thr Asn Ile Phe Thr Lys Arg Ala Ile Ala Leu Ile Thr
    210                 215                 220

Asn His Pro Pro Glu Lys Pro Leu Phe Leu Tyr Leu Ala Leu Gln Ser
225                 230                 235                 240

Val His Glu Pro Leu Gln Val Pro Glu Glu Tyr Leu Lys Pro Tyr Asp
                245                 250                 255

Phe Ile Gln Asp Lys Asn Arg His His Tyr Ala Gly Met Val Ser Leu
            260                 265                 270

Met Asp Glu Ala Val Gly Asn Val Thr Ala Ala Leu Lys Ser Ser Gly
        275                 280                 285

Leu Trp Asn Asn Thr Val Phe Ile Phe Ser Thr Asp Asn Gly Gly Gln
    290                 295                 300
```

```
Thr Leu Ala Gly Gly Asn Asn Trp Pro Leu Arg Gly Arg Lys Trp Ser
305                 310                 315                 320

Leu Trp Glu Gly Gly Val Arg Gly Val Gly Phe Val Ala Ser Pro Leu
                325                 330                 335

Leu Lys Gln Lys Gly Val Lys Asn Arg Glu Leu Ile His Ile Ser Asp
            340                 345                 350

Trp Leu Pro Thr Leu Val Lys Leu Ala Arg Gly His Thr Asn Gly Thr
        355                 360                 365

Lys Pro Leu Asp Gly Phe Asp Val Trp Lys Thr Ile Ser Glu Gly Ser
    370                 375                 380

Pro Ser Pro Arg Ile Glu Leu Leu His Asn Ile Asp Pro Asn Phe Val
385                 390                 395                 400

Asp Ser Ser Pro Tyr Trp Pro Glu Cys Ser Leu Leu Leu
                405                 410


<210> 6609
<211> 593
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1424; "

<220>
<221> source
<223> /note="Gene Symbol: ARSD; "

<220>
<221> source
<223> /note="Gene Name:
      arylsulfatase D; "

<220>
<221> source
<223> /note="Uniprot ID:  P51689; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000370546"

<400> 6609
Met Arg Ser Ala Ala Arg Arg Gly Arg Ala Ala Pro Ala Ala Arg Asp
1               5                   10                  15
```

```
Ser Leu Pro Val Leu Leu Phe Leu Cys Leu Leu Leu Lys Thr Cys Glu
            20                  25                  30

Pro Lys Thr Ala Asn Ala Phe Lys Pro Asn Ile Leu Leu Ile Met Ala
        35                  40                  45

Asp Asp Leu Gly Thr Gly Asp Leu Gly Cys Tyr Gly Asn Asn Thr Leu
    50                  55                  60

Arg Thr Pro Asn Ile Asp Gln Leu Ala Glu Glu Gly Val Arg Leu Thr
65                  70                  75                  80

Gln His Leu Ala Ala Ala Pro Leu Cys Thr Pro Ser Arg Ala Ala Phe
                85                  90                  95

Leu Thr Gly Arg His Ser Phe Arg Ser Gly Met Asp Ala Ser Asn Gly
            100                 105                 110

Tyr Arg Ala Leu Gln Trp Asn Ala Gly Ser Gly Gly Leu Pro Glu Asn
        115                 120                 125

Glu Thr Thr Phe Ala Arg Ile Leu Gln Gln His Gly Tyr Ala Thr Gly
    130                 135                 140

Leu Ile Gly Lys Trp His Gln Gly Val Asn Cys Ala Ser Arg Gly Asp
145                 150                 155                 160

His Cys His His Pro Leu Asn His Gly Phe Asp Tyr Phe Tyr Gly Met
                165                 170                 175

Pro Phe Thr Leu Thr Asn Asp Cys Asp Pro Gly Arg Pro Pro Glu Val
            180                 185                 190

Asp Ala Ala Leu Arg Ala Gln Leu Trp Gly Tyr Thr Gln Phe Leu Ala
        195                 200                 205

Leu Gly Ile Leu Thr Leu Ala Ala Gly Gln Thr Cys Gly Phe Phe Ser
    210                 215                 220

Val Ser Ala Arg Ala Val Thr Gly Met Ala Gly Val Gly Cys Leu Phe
225                 230                 235                 240
```

```
Phe Ile Ser Trp Tyr Ser Ser Phe Gly Phe Val Arg Arg Trp Asn Cys
                245                 250                 255

Ile Leu Met Arg Asn His Asp Val Thr Glu Gln Pro Met Val Leu Glu
            260                 265                 270

Lys Thr Ala Ser Leu Met Leu Lys Glu Ala Val Ser Tyr Ile Glu Arg
        275                 280                 285

His Lys His Gly Pro Phe Leu Leu Phe Leu Ser Leu Leu His Val His
    290                 295                 300

Ile Pro Leu Val Thr Thr Ser Ala Phe Leu Gly Lys Ser Gln His Gly
305                 310                 315                 320

Leu Tyr Gly Asp Asn Val Glu Glu Met Asp Trp Leu Ile Gly Lys Val
                325                 330                 335

Leu Asn Ala Ile Glu Asp Asn Gly Leu Lys Asn Ser Thr Phe Thr Tyr
            340                 345                 350

Phe Thr Ser Asp His Gly Gly His Leu Glu Ala Arg Asp Gly His Ser
        355                 360                 365

Gln Leu Gly Gly Trp Asn Gly Ile Tyr Lys Gly Gly Lys Gly Met Gly
    370                 375                 380

Gly Trp Glu Gly Gly Ile Arg Val Pro Gly Ile Phe His Trp Pro Gly
385                 390                 395                 400

Val Leu Pro Ala Gly Arg Val Ile Gly Glu Pro Thr Ser Leu Met Asp
                405                 410                 415

Val Phe Pro Thr Val Val Gln Leu Val Gly Gly Glu Val Pro Gln Asp
            420                 425                 430

Arg Val Ile Asp Gly His Ser Leu Val Pro Leu Leu Gln Gly Ala Glu
        435                 440                 445

Ala Arg Ser Ala His Glu Phe Leu Phe His Tyr Cys Gly Gln His Leu
    450                 455                 460
```

```
His Ala Ala Arg Trp His Gln Lys Asp Ser Gly Ser Val Trp Lys Val
465                 470                 475                 480

His Tyr Thr Thr Pro Gln Phe His Pro Glu Gly Ala Gly Ala Cys Tyr
                485                 490                 495

Gly Arg Gly Val Cys Pro Cys Ser Gly Glu Gly Val Thr His His Arg
            500                 505                 510

Pro Pro Leu Leu Phe Asp Leu Ser Arg Asp Pro Ser Glu Ala Arg Pro
        515                 520                 525

Leu Thr Pro Asp Ser Glu Pro Leu Tyr His Ala Val Ile Ala Arg Val
    530                 535                 540

Gly Ala Ala Val Ser Glu His Arg Gln Thr Leu Ser Pro Val Pro Gln
545                 550                 555                 560

Gln Phe Ser Met Ser Asn Ile Leu Trp Lys Pro Trp Leu Gln Pro Cys
                565                 570                 575

Cys Gly His Phe Pro Phe Cys Ser Cys His Glu Asp Gly Asp Gly Thr
            580                 585                 590

Pro
```

<210> 6610
<211> 159
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1424; "

<220>
<221> source
<223> /note="Gene Symbol: ARSD; "

<220>
<221> source
<223> /note="Gene Name:
arylsulfatase D; "

<220>
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<223> /note="ENSP ID: ENSP00000409180"

<400> 6610
Pro Gly Val Leu Pro Ala Gly Arg Val Ile Gly Glu Pro Thr Ser Leu
1 5 10 15

Met Asp Val Phe Pro Thr Val Val Gln Leu Val Gly Gly Glu Val Pro
20 25 30

Gln Asp Arg Val Ile Asp Gly His Ser Leu Val Pro Leu Leu Gln Gly
35 40 45

Ala Glu Ala Arg Ser Ala His Glu Phe Leu Phe His Tyr Cys Gly Gln
50 55 60

His Leu His Ala Ala Arg Trp His Gln Lys Asp Ser Gly Ser Val Trp
65 70 75 80

Lys Val His Tyr Thr Thr Pro Gln Phe His Pro Glu Gly Ala Gly Ala
85 90 95

Cys Tyr Gly Arg Gly Val Cys Pro Cys Ser Gly Glu Gly Val Thr His
100 105 110

His Arg Pro Pro Leu Leu Phe Asp Leu Ser Arg Asp Pro Ser Glu Ala
115 120 125

Arg Pro Leu Thr Pro Asp Ser Glu Pro Leu Tyr His Ala Val Ile Ala
130 135 140

Arg Gly His Leu Leu Ala Glu Leu Asn Leu Lys Pro Lys Arg Arg
145 150 155

<210> 6611
<211> 82
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1424; "

<220>
<221> source
<223> /note="Gene Symbol: ARSD; "

<220>
<221> source

<223> /note="Gene Name:
arylsulfatase D; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000453789"

<400> 6611
Met Arg Ser Ala Ala Arg Arg Gly Arg Ala Ala Pro Ala Ala Arg Asp
1 5 10 15

Ser Leu Pro Val Leu Leu Phe Leu Cys Leu Leu Leu Lys Thr Cys Glu
20 25 30

Pro Lys Thr Ala Asn Ala Phe Lys Pro Asn Ile Leu Leu Ile Met Ala
35 40 45

Asp Asp Leu Gly Thr Gly Asp Leu Gly Cys Tyr Gly Asn Asn Thr Leu
50 55 60

Arg Asp Arg Phe Ser Leu Cys Cys Gln Gly Leu Ser Arg Thr Pro Gly
65 70 75 80

Leu Lys

<210> 6612
<211> 589
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1425; "

<220>
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<223> /note="Gene Symbol: ARSE; "

<220>
<221> source
<223> /note="Gene Name:
arylsulfatase E (chondrodysplasia punctata 1); "

<220>
<221> source
<223> /note="Uniprot ID: P51690; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000370526"

<400> 6612
Met Leu His Leu His His Ser Cys Leu Cys Phe Arg Ser Trp Leu Pro
1 5 10 15

Ala Met Leu Ala Val Leu Leu Ser Leu Ala Pro Ser Ala Ser Ser Asp
20 25 30

Ile Ser Ala Ser Arg Pro Asn Ile Leu Leu Leu Met Ala Asp Asp Leu
35 40 45

Gly Ile Gly Asp Ile Gly Cys Tyr Gly Asn Asn Thr Met Arg Thr Pro
50 55 60

Asn Ile Asp Arg Leu Ala Glu Asp Gly Val Lys Leu Thr Gln His Ile
65 70 75 80

Ser Ala Ala Ser Leu Cys Thr Pro Ser Arg Ala Ala Phe Leu Thr Gly
85 90 95

Arg Tyr Pro Val Arg Ser Gly Met Val Ser Ser Ile Gly Tyr Arg Val
100 105 110

Leu Gln Trp Thr Gly Ala Ser Gly Gly Leu Pro Thr Asn Glu Thr Thr
115 120 125

Phe Ala Lys Ile Leu Lys Glu Lys Gly Tyr Ala Thr Gly Leu Ile Gly
130 135 140

Lys Trp His Leu Gly Leu Asn Cys Glu Ser Ala Ser Asp His Cys His
145 150 155 160

His Pro Leu His His Gly Phe Asp His Phe Tyr Gly Met Pro Phe Ser
165 170 175

Leu Met Gly Asp Cys Ala Arg Trp Glu Leu Ser Glu Lys Arg Val Asn
180 185 190

Leu Glu Gln Lys Leu Asn Phe Leu Phe Gln Val Leu Ala Leu Val Ala
195 200 205

Leu Thr Leu Val Ala Gly Lys Leu Thr His Leu Ile Pro Val Ser Trp
210 215 220

```
Met Pro Val Ile Trp Ser Ala Leu Ser Ala Val Leu Leu Leu Ala Ser
225                 230                 235                 240

Ser Tyr Phe Val Gly Ala Leu Ile Val His Ala Asp Cys Phe Leu Met
                245                 250                 255

Arg Asn His Thr Ile Thr Glu Gln Pro Met Cys Phe Gln Arg Thr Thr
            260                 265                 270

Pro Leu Ile Leu Gln Glu Val Ala Ser Phe Leu Lys Arg Asn Lys His
        275                 280                 285

Gly Pro Phe Leu Leu Phe Val Ser Phe Leu His Val His Ile Pro Leu
    290                 295                 300

Ile Thr Met Glu Asn Phe Leu Gly Lys Ser Leu His Gly Leu Tyr Gly
305                 310                 315                 320

Asp Asn Val Glu Glu Met Asp Trp Met Val Gly Arg Ile Leu Asp Thr
                325                 330                 335

Leu Asp Val Glu Gly Leu Ser Asn Ser Thr Leu Ile Tyr Phe Thr Ser
            340                 345                 350

Asp His Gly Gly Ser Leu Glu Asn Gln Leu Gly Asn Thr Gln Tyr Gly
        355                 360                 365

Gly Trp Asn Gly Ile Tyr Lys Gly Gly Lys Gly Met Gly Gly Trp Glu
    370                 375                 380

Gly Gly Ile Arg Val Pro Gly Ile Phe Arg Trp Pro Gly Val Leu Pro
385                 390                 395                 400

Ala Gly Arg Val Ile Gly Glu Pro Thr Ser Leu Met Asp Val Phe Pro
                405                 410                 415

Thr Val Val Arg Leu Ala Gly Gly Glu Val Pro Gln Asp Arg Val Ile
            420                 425                 430

Asp Gly Gln Asp Leu Leu Pro Leu Leu Leu Gly Thr Ala Gln His Ser
        435                 440                 445
```

```
Asp His Glu Phe Leu Met His Tyr Cys Glu Arg Phe Leu His Ala Ala
    450                 455                 460

Arg Trp His Gln Arg Asp Arg Gly Thr Met Trp Lys Val His Phe Val
465                 470                 475                 480

Thr Pro Val Phe Gln Pro Glu Gly Ala Gly Ala Cys Tyr Gly Arg Lys
                485                 490                 495

Val Cys Pro Cys Phe Gly Glu Lys Val Val His His Asp Pro Pro Leu
            500                 505                 510

Leu Phe Asp Leu Ser Arg Asp Pro Ser Glu Thr His Ile Leu Thr Pro
        515                 520                 525

Ala Ser Glu Pro Val Phe Tyr Gln Val Met Glu Arg Val Gln Gln Ala
    530                 535                 540

Val Trp Glu His Gln Arg Thr Leu Ser Pro Val Pro Leu Gln Leu Asp
545                 550                 555                 560

Arg Leu Gly Asn Ile Trp Arg Pro Trp Leu Gln Pro Cys Cys Gly Pro
                565                 570                 575

Phe Pro Leu Cys Trp Cys Leu Arg Glu Asp Asp Pro Gln
            580                 585


<210> 6613
<211> 178
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1425; "

<220>
<221> source
<223> /note="Gene Symbol: ARSE; "

<220>
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<223> /note="Gene Name:
      arylsulfatase E (chondrodysplasia punctata 1); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406528"
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<400> 6613
Met Leu His Leu His His Ser Cys Leu Cys Phe Arg Ser Trp Leu Pro
1 5 10 15

Ala Met Leu Ala Val Leu Leu Ser Leu Ala Pro Ser Ala Ser Ser Asp
20 25 30

Ile Ser Ala Ser Arg Pro Asn Ile Leu Leu Leu Met Ala Asp Asp Leu
35 40 45

Gly Ile Gly Asp Ile Gly Cys Tyr Gly Asn Asn Thr Met Arg Thr Pro
50 55 60

Asn Ile Asp Arg Leu Ala Glu Asp Gly Val Lys Leu Thr Gln His Ile
65 70 75 80

Ser Ala Ala Ser Leu Cys Thr Pro Ser Arg Ala Ala Phe Leu Thr Gly
85 90 95

Arg Tyr Pro Val Arg Ser Gly Met Val Ser Ser Ile Gly Tyr Arg Val
100 105 110

Leu Gln Trp Thr Gly Ala Ser Gly Gly Leu Pro Thr Asn Glu Thr Thr
115 120 125

Phe Ala Lys Ile Leu Lys Glu Lys Gly Tyr Ala Thr Gly Leu Ile Gly
130 135 140

Lys Trp His Leu Gly Leu Asn Cys Glu Ser Ala Ser Asp His Cys His
145 150 155 160

His Pro Leu His His Gly Phe Asp His Phe Tyr Gly Met Pro Phe Ser
165 170 175

Leu Met

<210> 6614
<211> 544
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1425; "

<220>
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<220>
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<223> /note="Gene Name:
arylsulfatase E (chondrodysplasia punctata 1); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000438198"

<400> 6614

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Met Ser Gly Ser Arg Glu Arg Asp Asn Met Leu His Leu His His Ser
1               5                  10                  15

Trp Thr Pro Asn Ile Asp Arg Leu Ala Glu Asp Gly Val Lys Leu Thr
            20                  25                  30

Gln His Ile Ser Ala Ala Ser Leu Cys Thr Pro Ser Arg Ala Ala Phe
        35                  40                  45

Leu Thr Gly Arg Tyr Pro Val Arg Ser Gly Met Val Ser Ser Ile Gly
    50                  55                  60

Tyr Arg Val Leu Gln Trp Thr Gly Ala Ser Gly Gly Leu Pro Thr Asn
65                  70                  75                  80

Glu Thr Thr Phe Ala Lys Ile Leu Lys Glu Lys Gly Tyr Ala Thr Gly
                85                  90                  95

Leu Ile Gly Lys Trp His Leu Gly Leu Asn Cys Glu Ser Ala Ser Asp
            100                 105                 110

His Cys His His Pro Leu His His Gly Phe Asp His Phe Tyr Gly Met
        115                 120                 125

Pro Phe Ser Leu Met Gly Asp Cys Ala Arg Trp Glu Leu Ser Glu Lys
    130                 135                 140

Arg Val Asn Leu Glu Gln Lys Leu Asn Phe Leu Phe Gln Val Leu Ala
145                 150                 155                 160

Leu Val Ala Leu Thr Leu Val Ala Gly Lys Leu Thr His Leu Ile Pro
```

```
                165                 170                 175

Val Ser Trp Met Pro Val Ile Trp Ser Ala Leu Ser Ala Val Leu Leu
            180                 185                 190

Leu Ala Ser Ser Tyr Phe Val Gly Ala Leu Ile Val His Ala Asp Cys
        195                 200                 205

Phe Leu Met Arg Asn His Thr Ile Thr Glu Gln Pro Met Cys Phe Gln
    210                 215                 220

Arg Thr Thr Pro Leu Ile Leu Gln Glu Val Ala Ser Phe Leu Lys Arg
225                 230                 235                 240

Asn Lys His Gly Pro Phe Leu Leu Phe Val Ser Phe Leu His Val His
                245                 250                 255

Ile Pro Leu Ile Thr Met Glu Asn Phe Leu Gly Lys Ser Leu His Gly
            260                 265                 270

Leu Tyr Gly Asp Asn Val Glu Glu Met Asp Trp Met Val Gly Arg Ile
        275                 280                 285

Leu Asp Thr Leu Asp Val Glu Gly Leu Ser Asn Ser Thr Leu Ile Tyr
    290                 295                 300

Phe Thr Ser Asp His Gly Gly Ser Leu Glu Asn Gln Leu Gly Asn Thr
305                 310                 315                 320

Gln Tyr Gly Gly Trp Asn Gly Ile Tyr Lys Gly Gly Lys Gly Met Gly
                325                 330                 335

Gly Trp Glu Gly Gly Ile Arg Val Pro Gly Ile Phe Arg Trp Pro Gly
            340                 345                 350

Val Leu Pro Ala Gly Arg Val Ile Gly Glu Pro Thr Ser Leu Met Asp
        355                 360                 365

Val Phe Pro Thr Val Val Arg Leu Ala Gly Gly Glu Val Pro Gln Asp
    370                 375                 380

Arg Val Ile Asp Gly Gln Asp Leu Leu Pro Leu Leu Leu Gly Thr Ala
385                 390                 395                 400
```

```
Gln His Ser Asp His Glu Phe Leu Met His Tyr Cys Glu Arg Phe Leu
                405                 410                 415

His Ala Ala Arg Trp His Gln Arg Asp Arg Gly Thr Met Trp Lys Val
            420                 425                 430

His Phe Val Thr Pro Val Phe Gln Pro Glu Gly Ala Gly Ala Cys Tyr
        435                 440                 445

Gly Arg Lys Val Cys Pro Cys Phe Gly Glu Lys Val Val His His Asp
    450                 455                 460

Pro Pro Leu Leu Phe Asp Leu Ser Arg Asp Pro Ser Glu Thr His Ile
465                 470                 475                 480

Leu Thr Pro Ala Ser Glu Pro Val Phe Tyr Gln Val Met Glu Arg Val
                485                 490                 495

Gln Gln Ala Val Trp Glu His Gln Arg Thr Leu Ser Pro Val Pro Leu
            500                 505                 510

Gln Leu Asp Arg Leu Gly Asn Ile Trp Arg Pro Trp Leu Gln Pro Cys
        515                 520                 525

Cys Gly Pro Phe Pro Leu Cys Trp Cys Leu Arg Glu Asp Asp Pro Gln
    530                 535                 540


<210> 6615
<211> 614
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ARSE; "

<220>
<221> source
<223> /note="Gene Name:
      arylsulfatase E (chondrodysplasia punctata 1); "

<220>
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<221> source
<223> /note="ENSP ID: ENSP00000441417"

<400> 6615
Met Arg Pro Val Ile Asn Arg Cys Ala Pro Gly Ser Leu Asp Leu Met
1 5 10 15

Leu Pro Gln Ala Ala Ser Glu Gly Ile Val Phe His Ser Leu Gln Ile
20 25 30

Ser Leu Cys Phe Arg Ser Trp Leu Pro Ala Met Leu Ala Val Leu Leu
35 40 45

Ser Leu Ala Pro Ser Ala Ser Ser Asp Ile Ser Ala Ser Arg Pro Asn
50 55 60

Ile Leu Leu Leu Met Ala Asp Asp Leu Gly Ile Gly Asp Ile Gly Cys
65 70 75 80

Tyr Gly Asn Asn Thr Met Arg Thr Pro Asn Ile Asp Arg Leu Ala Glu
85 90 95

Asp Gly Val Lys Leu Thr Gln His Ile Ser Ala Ala Ser Leu Cys Thr
100 105 110

Pro Ser Arg Ala Ala Phe Leu Thr Gly Arg Tyr Pro Val Arg Ser Gly
115 120 125

Met Val Ser Ser Ile Gly Tyr Arg Val Leu Gln Trp Thr Gly Ala Ser
130 135 140

Gly Gly Leu Pro Thr Asn Glu Thr Thr Phe Ala Lys Ile Leu Lys Glu
145 150 155 160

Lys Gly Tyr Ala Thr Gly Leu Ile Gly Lys Trp His Leu Gly Leu Asn
165 170 175

Cys Glu Ser Ala Ser Asp His Cys His His Pro Leu His His Gly Phe
180 185 190

Asp His Phe Tyr Gly Met Pro Phe Ser Leu Met Gly Asp Cys Ala Arg
195 200 205

Trp Glu Leu Ser Glu Lys Arg Val Asn Leu Glu Gln Lys Leu Asn Phe

```
    210                 215                 220

Leu Phe Gln Val Leu Ala Leu Val Ala Leu Thr Leu Val Ala Gly Lys
225                 230                 235                 240

Leu Thr His Leu Ile Pro Val Ser Trp Met Pro Val Ile Trp Ser Ala
                245                 250                 255

Leu Ser Ala Val Leu Leu Leu Ala Ser Ser Tyr Phe Val Gly Ala Leu
            260                 265                 270

Ile Val His Ala Asp Cys Phe Leu Met Arg Asn His Thr Ile Thr Glu
        275                 280                 285

Gln Pro Met Cys Phe Gln Arg Thr Thr Pro Leu Ile Leu Gln Glu Val
    290                 295                 300

Ala Ser Phe Leu Lys Arg Asn Lys His Gly Pro Phe Leu Leu Phe Val
305                 310                 315                 320

Ser Phe Leu His Val His Ile Pro Leu Ile Thr Met Glu Asn Phe Leu
                325                 330                 335

Gly Lys Ser Leu His Gly Leu Tyr Gly Asp Asn Val Glu Glu Met Asp
            340                 345                 350

Trp Met Val Gly Arg Ile Leu Asp Thr Leu Asp Val Glu Gly Leu Ser
        355                 360                 365

Asn Ser Thr Leu Ile Tyr Phe Thr Ser Asp His Gly Gly Ser Leu Glu
    370                 375                 380

Asn Gln Leu Gly Asn Thr Gln Tyr Gly Gly Trp Asn Gly Ile Tyr Lys
385                 390                 395                 400

Gly Gly Lys Gly Met Gly Gly Trp Glu Gly Gly Ile Arg Val Pro Gly
                405                 410                 415

Ile Phe Arg Trp Pro Gly Val Leu Pro Ala Gly Arg Val Ile Gly Glu
            420                 425                 430

Pro Thr Ser Leu Met Asp Val Phe Pro Thr Val Val Arg Leu Ala Gly
        435                 440                 445
```

```
Gly Glu Val Pro Gln Asp Arg Val Ile Asp Gly Gln Asp Leu Leu Pro
    450                 455                 460

Leu Leu Leu Gly Thr Ala Gln His Ser Asp His Glu Phe Leu Met His
465                 470                 475                 480

Tyr Cys Glu Arg Phe Leu His Ala Ala Arg Trp His Gln Arg Asp Arg
                485                 490                 495

Gly Thr Met Trp Lys Val His Phe Val Thr Pro Val Phe Gln Pro Glu
            500                 505                 510

Gly Ala Gly Ala Cys Tyr Gly Arg Lys Val Cys Pro Cys Phe Gly Glu
        515                 520                 525

Lys Val Val His His Asp Pro Pro Leu Leu Phe Asp Leu Ser Arg Asp
    530                 535                 540

Pro Ser Glu Thr His Ile Leu Thr Pro Ala Ser Glu Pro Val Phe Tyr
545                 550                 555                 560

Gln Val Met Glu Arg Val Gln Gln Ala Val Trp Glu His Gln Arg Thr
                565                 570                 575

Leu Ser Pro Val Pro Leu Gln Leu Asp Arg Leu Gly Asn Ile Trp Arg
            580                 585                 590

Pro Trp Leu Gln Pro Cys Cys Gly Pro Phe Pro Leu Cys Trp Cys Leu
        595                 600                 605

Arg Glu Asp Asp Pro Gln
    610


<210> 6616
<211> 590
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1426; "

<220>
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<223> /note="Gene Symbol: ARSF; "

<220>
<221> source
<223> /note="Gene Name:
arylsulfatase F; "

<220>
<221> source
<223> /note="Uniprot ID: P54793; "

<220>
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<400> 6616

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Met Arg Pro Arg Arg Pro Leu Val Phe Met Ser Leu Val Cys Ala Leu
1               5                   10                  15

Leu Asn Thr Cys Gln Ala His Arg Val His Asp Asp Lys Pro Asn Ile
            20                  25                  30

Val Leu Ile Met Val Asp Asp Leu Gly Ile Gly Asp Leu Gly Cys Tyr
        35                  40                  45

Gly Asn Asp Thr Met Arg Thr Pro His Ile Asp Arg Leu Ala Arg Glu
    50                  55                  60

Gly Val Arg Leu Thr Gln His Ile Ser Ala Ala Ser Leu Cys Ser Pro
65                  70                  75                  80

Ser Arg Ser Ala Phe Leu Thr Gly Arg Tyr Pro Ile Arg Ser Gly Met
                85                  90                  95

Val Ser Ser Gly Asn Arg Arg Val Ile Gln Asn Leu Ala Val Pro Ala
            100                 105                 110

Gly Leu Pro Leu Asn Glu Thr Thr Leu Ala Ala Leu Leu Lys Lys Gln
        115                 120                 125

Gly Tyr Ser Thr Gly Leu Ile Gly Lys Trp His Gln Gly Leu Asn Cys
    130                 135                 140

Asp Ser Arg Ser Asp Gln Cys His His Pro Tyr Asn Tyr Gly Phe Asp
145                 150                 155                 160

Tyr Tyr Tyr Gly Met Pro Phe Thr Leu Val Asp Ser Cys Trp Pro Asp
```

```
                165                 170                 175

Pro Ser Arg Asn Thr Glu Leu Ala Phe Glu Ser Gln Leu Trp Leu Cys
            180                 185                 190

Val Gln Leu Val Ala Ile Ala Ile Leu Thr Leu Thr Phe Gly Lys Leu
        195                 200                 205

Ser Gly Trp Val Ser Val Pro Trp Leu Leu Ile Phe Ser Met Ile Leu
    210                 215                 220

Phe Ile Phe Leu Leu Gly Tyr Ala Trp Phe Ser Ser His Thr Ser Pro
225                 230                 235                 240

Leu Tyr Trp Asp Cys Leu Leu Met Arg Gly His Glu Ile Thr Glu Gln
                245                 250                 255

Pro Met Lys Ala Glu Arg Ala Gly Ser Ile Met Val Lys Glu Ala Ile
            260                 265                 270

Ser Phe Leu Glu Arg His Ser Lys Glu Thr Phe Leu Leu Phe Phe Ser
        275                 280                 285

Phe Leu His Val His Thr Pro Leu Pro Thr Thr Asp Asp Phe Thr Gly
    290                 295                 300

Thr Ser Lys His Gly Leu Tyr Gly Asp Asn Val Glu Glu Met Asp Ser
305                 310                 315                 320

Met Val Gly Lys Ile Leu Asp Ala Ile Asp Asp Phe Gly Leu Arg Asn
                325                 330                 335

Asn Thr Leu Val Tyr Phe Thr Ser Asp His Gly Gly His Leu Glu Ala
            340                 345                 350

Arg Arg Gly His Ala Gln Leu Gly Gly Trp Asn Gly Ile Tyr Lys Gly
        355                 360                 365

Gly Lys Gly Met Gly Gly Trp Glu Gly Gly Ile Arg Val Pro Gly Ile
    370                 375                 380

Val Arg Trp Pro Gly Lys Val Pro Ala Gly Arg Leu Ile Lys Glu Pro
385                 390                 395                 400
```

```
Thr Ser Leu Met Asp Ile Leu Pro Thr Val Ala Ser Val Ser Gly Gly
                405                 410                 415

Ser Leu Pro Gln Asp Arg Val Ile Asp Gly Arg Asp Leu Met Pro Leu
            420                 425                 430

Leu Gln Gly Asn Val Arg His Ser Glu His Glu Phe Leu Phe His Tyr
        435                 440                 445

Cys Gly Ser Tyr Leu His Ala Val Arg Trp Ile Pro Lys Asp Asp Ser
    450                 455                 460

Gly Ser Val Trp Lys Ala His Tyr Val Thr Pro Val Phe Gln Pro Pro
465                 470                 475                 480

Ala Ser Gly Gly Cys Tyr Val Thr Ser Leu Cys Arg Cys Phe Gly Glu
                485                 490                 495

Gln Val Thr Tyr His Asn Pro Pro Leu Leu Phe Asp Leu Ser Arg Asp
            500                 505                 510

Pro Ser Glu Ser Thr Pro Leu Thr Pro Ala Thr Glu Pro Leu His Asp
        515                 520                 525

Phe Val Ile Lys Lys Val Ala Asn Ala Leu Lys Glu His Gln Glu Thr
    530                 535                 540

Ile Val Pro Val Thr Tyr Gln Leu Ser Glu Leu Asn Gln Gly Arg Thr
545                 550                 555                 560

Trp Leu Lys Pro Cys Cys Gly Val Phe Pro Phe Cys Leu Cys Asp Lys
                565                 570                 575

Glu Glu Glu Val Ser Gln Pro Arg Gly Pro Asn Glu Lys Arg
            580                 585                 590
```

<210> 6617
<211> 590
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1426; "

<220>
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<223> /note="Gene Symbol: ARSF; "

<220>
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<223> /note="Gene Name:
arylsulfatase F; "

<220>
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<223> /note="Uniprot ID: P54793; "

<220>
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<400> 6617

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Met Arg Pro Arg Arg Pro Leu Val Phe Met Ser Leu Val Cys Ala Leu
1               5                  10                  15

Leu Asn Thr Cys Gln Ala His Arg Val His Asp Asp Lys Pro Asn Ile
            20                  25                  30

Val Leu Ile Met Val Asp Asp Leu Gly Ile Gly Asp Leu Gly Cys Tyr
        35                  40                  45

Gly Asn Asp Thr Met Arg Thr Pro His Ile Asp Arg Leu Ala Arg Glu
    50                  55                  60

Gly Val Arg Leu Thr Gln His Ile Ser Ala Ala Ser Leu Cys Ser Pro
65                  70                  75                  80

Ser Arg Ser Ala Phe Leu Thr Gly Arg Tyr Pro Ile Arg Ser Gly Met
                85                  90                  95

Val Ser Ser Gly Asn Arg Arg Val Ile Gln Asn Leu Ala Val Pro Ala
            100                 105                 110

Gly Leu Pro Leu Asn Glu Thr Thr Leu Ala Ala Leu Leu Lys Lys Gln
        115                 120                 125

Gly Tyr Ser Thr Gly Leu Ile Gly Lys Trp His Gln Gly Leu Asn Cys
    130                 135                 140

Asp Ser Arg Ser Asp Gln Cys His His Pro Tyr Asn Tyr Gly Phe Asp
```

145 150 155 160

Tyr Tyr Tyr Gly Met Pro Phe Thr Leu Val Asp Ser Cys Trp Pro Asp
165 170 175

Pro Ser Arg Asn Thr Glu Leu Ala Phe Glu Ser Gln Leu Trp Leu Cys
180 185 190

Val Gln Leu Val Ala Ile Ala Ile Leu Thr Leu Thr Phe Gly Lys Leu
195 200 205

Ser Gly Trp Val Ser Val Pro Trp Leu Leu Ile Phe Ser Met Ile Leu
210 215 220

Phe Ile Phe Leu Leu Gly Tyr Ala Trp Phe Ser Ser His Thr Ser Pro
225 230 235 240

Leu Tyr Trp Asp Cys Leu Leu Met Arg Gly His Glu Ile Thr Glu Gln
245 250 255

Pro Met Lys Ala Glu Arg Ala Gly Ser Ile Met Val Lys Glu Ala Ile
260 265 270

Ser Phe Leu Glu Arg His Ser Lys Glu Thr Phe Leu Leu Phe Phe Ser
275 280 285

Phe Leu His Val His Thr Pro Leu Pro Thr Thr Asp Asp Phe Thr Gly
290 295 300

Thr Ser Lys His Gly Leu Tyr Gly Asp Asn Val Glu Glu Met Asp Ser
305 310 315 320

Met Val Gly Lys Ile Leu Asp Ala Ile Asp Asp Phe Gly Leu Arg Asn
325 330 335

Asn Thr Leu Val Tyr Phe Thr Ser Asp His Gly Gly His Leu Glu Ala
340 345 350

Arg Arg Gly His Ala Gln Leu Gly Gly Trp Asn Gly Ile Tyr Lys Gly
355 360 365

Gly Lys Gly Met Gly Gly Trp Glu Gly Gly Ile Arg Val Pro Gly Ile
370 375 380

Val Arg Trp Pro Gly Lys Val Pro Ala Gly Arg Leu Ile Lys Glu Pro
385 390 395 400

Thr Ser Leu Met Asp Ile Leu Pro Thr Val Ala Ser Val Ser Gly Gly
405 410 415

Ser Leu Pro Gln Asp Arg Val Ile Asp Gly Arg Asp Leu Met Pro Leu
420 425 430

Leu Gln Gly Asn Val Arg His Ser Glu His Glu Phe Leu Phe His Tyr
435 440 445

Cys Gly Ser Tyr Leu His Ala Val Arg Trp Ile Pro Lys Asp Asp Ser
450 455 460

Gly Ser Val Trp Lys Ala His Tyr Val Thr Pro Val Phe Gln Pro Pro
465 470 475 480

Ala Ser Gly Gly Cys Tyr Val Thr Ser Leu Cys Arg Cys Phe Gly Glu
485 490 495

Gln Val Thr Tyr His Asn Pro Pro Leu Leu Phe Asp Leu Ser Arg Asp
500 505 510

Pro Ser Glu Ser Thr Pro Leu Thr Pro Ala Thr Glu Pro Leu His Asp
515 520 525

Phe Val Ile Lys Lys Val Ala Asn Ala Leu Lys Glu His Gln Glu Thr
530 535 540

Ile Val Pro Val Thr Tyr Gln Leu Ser Glu Leu Asn Gln Gly Arg Thr
545 550 555 560

Trp Leu Lys Pro Cys Cys Gly Val Phe Pro Phe Cys Leu Cys Asp Lys
565 570 575

Glu Glu Glu Val Ser Gln Pro Arg Gly Pro Asn Glu Lys Arg
580 585 590

<210> 6618
<211> 562
<212> PRT

<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ARSH; "

<220>
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<223> /note="Gene Name:
arylsulfatase
family, member H; "

<220>
<221> source
<223> /note="Uniprot ID: Q5FYA8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000370522"

<400> 6618

```
Met Thr Arg Asn Ala Arg Pro Asn Ile Val Leu Leu Met Ala Asp Asp
1               5                   10                  15


Leu Gly Val Gly Asp Leu Cys Cys Tyr Gly Asn Asn Ser Val Ser Thr
            20                  25                  30


Pro Asn Ile Asp Arg Leu Ala Ser Glu Gly Val Arg Leu Thr Gln His
        35                  40                  45


Leu Ala Ala Ala Ser Met Cys Thr Pro Ser Arg Ala Ala Phe Leu Thr
    50                  55                  60


Gly Arg Tyr Pro Ile Arg Ser Gly Met Val Ser Ala Tyr Asn Leu Asn
65                  70                  75                  80


Arg Ala Phe Thr Trp Leu Gly Gly Ser Gly Gly Leu Pro Thr Asn Glu
                85                  90                  95


Thr Thr Phe Ala Lys Leu Leu Gln His Arg Gly Tyr Arg Thr Gly Leu
            100                 105                 110


Ile Gly Lys Trp His Leu Gly Leu Ser Cys Ala Ser Arg Asn Asp His
        115                 120                 125
```

```
Cys Tyr His Pro Leu Asn His Gly Phe His Tyr Phe Tyr Gly Val Pro
    130                 135                 140

Phe Gly Leu Leu Ser Asp Cys Gln Ala Ser Lys Thr Pro Glu Leu His
145                 150                 155                 160

Arg Trp Leu Arg Ile Lys Leu Trp Ile Ser Thr Val Ala Leu Ala Leu
                165                 170                 175

Val Pro Phe Leu Leu Leu Ile Pro Lys Phe Ala Arg Trp Phe Ser Val
            180                 185                 190

Pro Trp Lys Val Ile Phe Val Phe Ala Leu Leu Ala Phe Leu Phe Phe
        195                 200                 205

Thr Ser Trp Tyr Ser Ser Tyr Gly Phe Thr Arg Arg Trp Asn Cys Ile
    210                 215                 220

Leu Met Arg Asn His Glu Ile Ile Gln Gln Pro Met Lys Glu Glu Lys
225                 230                 235                 240

Val Ala Ser Leu Met Leu Lys Glu Ala Leu Ala Phe Ile Glu Arg Tyr
                245                 250                 255

Lys Arg Glu Pro Phe Leu Leu Phe Phe Ser Phe Leu His Val His Thr
            260                 265                 270

Pro Leu Ile Ser Lys Lys Lys Phe Val Gly Arg Ser Lys Tyr Gly Arg
        275                 280                 285

Tyr Gly Asp Asn Val Glu Glu Met Asp Trp Met Val Gly Lys Ile Leu
    290                 295                 300

Asp Ala Leu Asp Gln Glu Arg Leu Ala Asn His Thr Leu Val Tyr Phe
305                 310                 315                 320

Thr Ser Asp Asn Gly Gly His Leu Glu Pro Leu Asp Gly Ala Val Gln
                325                 330                 335

Leu Gly Gly Trp Asn Gly Ile Tyr Lys Gly Gly Lys Gly Met Gly Gly
            340                 345                 350

Trp Glu Gly Gly Ile Arg Val Pro Gly Ile Phe Arg Trp Pro Ser Val
```

355 360 365

Leu Glu Ala Gly Arg Val Ile Asn Glu Pro Thr Ser Leu Met Asp Ile
370 375 380

Tyr Pro Thr Leu Ser Tyr Ile Gly Gly Gly Ile Leu Ser Gln Asp Arg
385 390 395 400

Val Ile Asp Gly Gln Asn Leu Met Pro Leu Leu Glu Gly Arg Ala Ser
405 410 415

His Ser Asp His Glu Phe Leu Phe His Tyr Cys Gly Val Tyr Leu His
420 425 430

Thr Val Arg Trp His Gln Lys Asp Cys Ala Thr Val Trp Lys Ala His
435 440 445

Tyr Val Thr Pro Lys Phe Tyr Pro Glu Gly Thr Gly Ala Cys Tyr Gly
450 455 460

Ser Gly Ile Cys Ser Cys Ser Gly Asp Val Thr Tyr His Asp Pro Pro
465 470 475 480

Leu Leu Phe Asp Ile Ser Arg Asp Pro Ser Glu Ala Leu Pro Leu Asn
485 490 495

Pro Asp Asn Glu Pro Leu Phe Asp Ser Val Ile Lys Lys Met Glu Ala
500 505 510

Ala Ile Arg Glu His Arg Arg Thr Leu Thr Pro Val Pro Gln Gln Phe
515 520 525

Ser Val Phe Asn Thr Ile Trp Lys Pro Trp Leu Gln Pro Cys Cys Gly
530 535 540

Thr Phe Pro Phe Cys Gly Cys Asp Lys Glu Asp Asp Ile Leu Pro Met
545 550 555 560

Ala Pro

<210> 6619
<211> 569

<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1428; "

<220>
<221> source
<223> /note="Gene Symbol: ARSI; "

<220>
<221> source
<223> /note="Gene Name:
arylsulfatase
family, member I; "

<220>
<221> source
<223> /note="Uniprot ID: Q5FYB1; "

<220>
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<223> /note="ENSP ID: ENSP00000333395"

<400> 6619

```
Met His Thr Leu Thr Gly Phe Ser Leu Val Ser Leu Leu Ser Phe Gly
1               5                  10                  15

Tyr Leu Ser Trp Asp Trp Ala Lys Pro Ser Phe Val Ala Asp Gly Pro
            20                  25                  30

Gly Glu Ala Gly Glu Gln Pro Ser Ala Ala Pro Pro Gln Pro Pro His
        35                  40                  45

Ile Ile Phe Ile Leu Thr Asp Asp Gln Gly Tyr His Asp Val Gly Tyr
    50                  55                  60

His Gly Ser Asp Ile Glu Thr Pro Thr Leu Asp Arg Leu Ala Ala Lys
65                  70                  75                  80

Gly Val Lys Leu Glu Asn Tyr Tyr Ile Gln Pro Ile Cys Thr Pro Ser
                85                  90                  95

Arg Ser Gln Leu Leu Thr Gly Arg Tyr Gln Ile His Thr Gly Leu Gln
            100                 105                 110

His Ser Ile Ile Arg Pro Gln Gln Pro Asn Cys Leu Pro Leu Asp Gln
        115                 120                 125
```

```
Val Thr Leu Pro Gln Lys Leu Gln Glu Ala Gly Tyr Ser Thr His Met
    130                 135                 140

Val Gly Lys Trp His Leu Gly Phe Tyr Arg Lys Glu Cys Leu Pro Thr
145                 150                 155                 160

Arg Arg Gly Phe Asp Thr Phe Leu Gly Ser Leu Thr Gly Asn Val Asp
                165                 170                 175

Tyr Tyr Thr Tyr Asp Asn Cys Asp Gly Pro Gly Val Cys Gly Phe Asp
            180                 185                 190

Leu His Glu Gly Glu Asn Val Ala Trp Gly Leu Ser Gly Gln Tyr Ser
        195                 200                 205

Thr Met Leu Tyr Ala Gln Arg Ala Ser His Ile Leu Ala Ser His Ser
    210                 215                 220

Pro Gln Arg Pro Leu Phe Leu Tyr Val Ala Phe Gln Ala Val His Thr
225                 230                 235                 240

Pro Leu Gln Ser Pro Arg Glu Tyr Leu Tyr Arg Tyr Arg Thr Met Gly
                245                 250                 255

Asn Val Ala Arg Arg Lys Tyr Ala Ala Met Val Thr Cys Met Asp Glu
            260                 265                 270

Ala Val Arg Asn Ile Thr Trp Ala Leu Lys Arg Tyr Gly Phe Tyr Asn
        275                 280                 285

Asn Ser Val Ile Ile Phe Ser Ser Asp Asn Gly Gly Gln Thr Phe Ser
    290                 295                 300

Gly Gly Ser Asn Trp Pro Leu Arg Gly Arg Lys Gly Thr Tyr Trp Glu
305                 310                 315                 320

Gly Gly Val Arg Gly Leu Gly Phe Val His Ser Pro Leu Leu Lys Arg
                325                 330                 335

Lys Gln Arg Thr Ser Arg Ala Leu Met His Ile Thr Asp Trp Tyr Pro
            340                 345                 350
```

```
Thr Leu Val Gly Leu Ala Gly Gly Thr Thr Ser Ala Ala Asp Gly Leu
        355                 360                 365

Asp Gly Tyr Asp Val Trp Pro Ala Ile Ser Glu Gly Arg Ala Ser Pro
    370                 375                 380

Arg Thr Glu Ile Leu His Asn Ile Asp Pro Leu Tyr Asn His Ala Gln
385                 390                 395                 400

His Gly Ser Leu Glu Gly Gly Phe Gly Ile Trp Asn Thr Ala Val Gln
                405                 410                 415

Ala Ala Ile Arg Val Gly Glu Trp Lys Leu Leu Thr Gly Asp Pro Gly
            420                 425                 430

Tyr Gly Asp Trp Ile Pro Pro Gln Thr Leu Ala Thr Phe Pro Gly Ser
        435                 440                 445

Trp Trp Asn Leu Glu Arg Met Ala Ser Val Arg Gln Ala Val Trp Leu
    450                 455                 460

Phe Asn Ile Ser Ala Asp Pro Tyr Glu Arg Glu Asp Leu Ala Gly Gln
465                 470                 475                 480

Arg Pro Asp Val Val Arg Thr Leu Leu Ala Arg Leu Ala Glu Tyr Asn
                485                 490                 495

Arg Thr Ala Ile Pro Val Arg Tyr Pro Ala Glu Asn Pro Arg Ala His
            500                 505                 510

Pro Asp Phe Asn Gly Gly Ala Trp Gly Pro Trp Ala Ser Asp Glu Glu
        515                 520                 525

Glu Glu Glu Glu Glu Gly Arg Ala Arg Ser Phe Ser Arg Gly Arg Arg
    530                 535                 540

Lys Lys Lys Cys Lys Ile Cys Lys Leu Arg Ser Phe Phe Arg Lys Leu
545                 550                 555                 560

Asn Thr Arg Leu Met Ser Gln Arg Ile
                565
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<210> 6620

<211> 86
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
arylsulfatase
family, member I; "

<220>
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<223> /note="ENSP ID: ENSP00000420955"

<400> 6620
Met Val Gly Lys Trp His Leu Gly Phe Tyr Arg Lys Glu Cys Leu Pro
1 5 10 15

Thr Arg Arg Gly Phe Asp Thr Phe Leu Gly Ser Leu Thr Gly Asn Val
20 25 30

Asp Tyr Tyr Thr Tyr Asp Asn Cys Asp Gly Pro Gly Val Cys Gly Phe
35 40 45

Asp Leu His Glu Gly Glu Asn Val Ala Trp Gly Leu Ser Gly Gln Tyr
50 55 60

Ser Thr Met Leu Tyr Ala Gln Arg Ala Ser His Ile Leu Ala Ser His
65 70 75 80

Ser Pro Gln Arg Pro Leu
85

<210> 6621
<211> 426
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1428; "

<220>

<221> source
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<220>
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family, member I; "

<220>
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<220>
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<223> /note="ENSP ID: ENSP00000426879"

<400> 6621

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Met Val Gly Lys Trp His Leu Gly Phe Tyr Arg Lys Glu Cys Leu Pro
1               5                  10                  15

Thr Arg Arg Gly Phe Asp Thr Phe Leu Gly Ser Leu Thr Gly Asn Val
            20                  25                  30

Asp Tyr Tyr Thr Tyr Asp Asn Cys Asp Gly Pro Gly Val Cys Gly Phe
        35                  40                  45

Asp Leu His Glu Gly Glu Asn Val Ala Trp Gly Leu Ser Gly Gln Tyr
    50                  55                  60

Ser Thr Met Leu Tyr Ala Gln Arg Ala Ser His Ile Leu Ala Ser His
65                  70                  75                  80

Ser Pro Gln Arg Pro Leu Phe Leu Tyr Val Ala Phe Gln Ala Val His
                85                  90                  95

Thr Pro Leu Gln Ser Pro Arg Glu Tyr Leu Tyr Arg Tyr Arg Thr Met
            100                 105                 110

Gly Asn Val Ala Arg Arg Lys Tyr Ala Ala Met Val Thr Cys Met Asp
        115                 120                 125

Glu Ala Val Arg Asn Ile Thr Trp Ala Leu Lys Arg Tyr Gly Phe Tyr
    130                 135                 140

Asn Asn Ser Val Ile Ile Phe Ser Ser Asp Asn Gly Gly Gln Thr Phe
145                 150                 155                 160
```

```
Ser Gly Gly Ser Asn Trp Pro Leu Arg Gly Arg Lys Gly Thr Tyr Trp
                165                 170                 175

Glu Gly Gly Val Arg Gly Leu Gly Phe Val His Ser Pro Leu Leu Lys
            180                 185                 190

Arg Lys Gln Arg Thr Ser Arg Ala Leu Met His Ile Thr Asp Trp Tyr
        195                 200                 205

Pro Thr Leu Val Gly Leu Ala Gly Gly Thr Thr Ser Ala Ala Asp Gly
    210                 215                 220

Leu Asp Gly Tyr Asp Val Trp Pro Ala Ile Ser Glu Gly Arg Ala Ser
225                 230                 235                 240

Pro Arg Thr Glu Ile Leu His Asn Ile Asp Pro Leu Tyr Asn His Ala
                245                 250                 255

Gln His Gly Ser Leu Glu Gly Gly Phe Gly Ile Trp Asn Thr Ala Val
            260                 265                 270

Gln Ala Ala Ile Arg Val Gly Glu Trp Lys Leu Leu Thr Gly Asp Pro
        275                 280                 285

Gly Tyr Gly Asp Trp Ile Pro Pro Gln Thr Leu Ala Thr Phe Pro Gly
    290                 295                 300

Ser Trp Trp Asn Leu Glu Arg Met Ala Ser Val Arg Gln Ala Val Trp
305                 310                 315                 320

Leu Phe Asn Ile Ser Ala Asp Pro Tyr Glu Arg Glu Asp Leu Ala Gly
                325                 330                 335

Gln Arg Pro Asp Val Val Arg Thr Leu Leu Ala Arg Leu Ala Glu Tyr
            340                 345                 350

Asn Arg Thr Ala Ile Pro Val Arg Tyr Pro Ala Glu Asn Pro Arg Ala
        355                 360                 365

His Pro Asp Phe Asn Gly Gly Ala Trp Gly Pro Trp Ala Ser Asp Glu
    370                 375                 380
```

```
Glu Glu Glu Glu Glu Glu Gly Arg Ala Arg Ser Phe Ser Arg Gly Arg
385                 390                 395                 400


Arg Lys Lys Lys Cys Lys Ile Cys Lys Leu Arg Ser Phe Phe Arg Lys
                405                 410                 415


Leu Asn Thr Arg Leu Met Ser Gln Arg Ile
            420                 425


<210> 6622
<211> 599
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1429; "

<220>
<221> source
<223> /note="Gene Symbol: ARSJ; "

<220>
<221> source
<223> /note="Gene Name:
      arylsulfatase
      family, member J; "

<220>
<221> source
<223> /note="Uniprot ID:  Q5FYB0; "

<220>
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<223> /note="ENSP ID: ENSP00000320219"

<400> 6622
Met Ala Pro Arg Gly Cys Ala Gly His Pro Pro Pro Pro Ser Pro Gln
1               5                   10                  15


Ala Cys Val Cys Pro Gly Lys Met Leu Ala Met Gly Ala Leu Ala Gly
            20                  25                  30


Phe Trp Ile Leu Cys Leu Leu Thr Tyr Gly Tyr Leu Ser Trp Gly Gln
        35                  40                  45


Ala Leu Glu Glu Glu Glu Glu Gly Ala Leu Leu Ala Gln Ala Gly Glu
    50                  55                  60


Lys Leu Glu Pro Ser Thr Thr Ser Thr Ser Gln Pro His Leu Ile Phe
```

65 70 75 80

Ile Leu Ala Asp Asp Gln Gly Phe Arg Asp Val Gly Tyr His Gly Ser
85 90 95

Glu Ile Lys Thr Pro Thr Leu Asp Lys Leu Ala Ala Glu Gly Val Lys
100 105 110

Leu Glu Asn Tyr Tyr Val Gln Pro Ile Cys Thr Pro Ser Arg Ser Gln
115 120 125

Phe Ile Thr Gly Lys Tyr Gln Ile His Thr Gly Leu Gln His Ser Ile
130 135 140

Ile Arg Pro Thr Gln Pro Asn Cys Leu Pro Leu Asp Asn Ala Thr Leu
145 150 155 160

Pro Gln Lys Leu Lys Glu Val Gly Tyr Ser Thr His Met Val Gly Lys
165 170 175

Trp His Leu Gly Phe Tyr Arg Lys Glu Cys Met Pro Thr Arg Arg Gly
180 185 190

Phe Asp Thr Phe Phe Gly Ser Leu Leu Gly Ser Gly Asp Tyr Tyr Thr
195 200 205

His Tyr Lys Cys Asp Ser Pro Gly Met Cys Gly Tyr Asp Leu Tyr Glu
210 215 220

Asn Asp Asn Ala Ala Trp Asp Tyr Asp Asn Gly Ile Tyr Ser Thr Gln
225 230 235 240

Met Tyr Thr Gln Arg Val Gln Gln Ile Leu Ala Ser His Asn Pro Thr
245 250 255

Lys Pro Ile Phe Leu Tyr Ile Ala Tyr Gln Ala Val His Ser Pro Leu
260 265 270

Gln Ala Pro Gly Arg Tyr Phe Glu His Tyr Arg Ser Ile Ile Asn Ile
275 280 285

Asn Arg Arg Arg Tyr Ala Ala Met Leu Ser Cys Leu Asp Glu Ala Ile
290 295 300

```
Asn Asn Val Thr Leu Ala Leu Lys Thr Tyr Gly Phe Tyr Asn Asn Ser
305                 310                 315                 320

Ile Ile Ile Tyr Ser Ser Asp Asn Gly Gly Gln Pro Thr Ala Gly Gly
                325                 330                 335

Ser Asn Trp Pro Leu Arg Gly Ser Lys Gly Thr Tyr Trp Glu Gly Gly
            340                 345                 350

Ile Arg Ala Val Gly Phe Val His Ser Pro Leu Leu Lys Asn Lys Gly
        355                 360                 365

Thr Val Cys Lys Glu Leu Val His Ile Thr Asp Trp Tyr Pro Thr Leu
    370                 375                 380

Ile Ser Leu Ala Glu Gly Gln Ile Asp Glu Asp Ile Gln Leu Asp Gly
385                 390                 395                 400

Tyr Asp Ile Trp Glu Thr Ile Ser Glu Gly Leu Arg Ser Pro Arg Val
                405                 410                 415

Asp Ile Leu His Asn Ile Asp Pro Ile Tyr Thr Lys Ala Lys Asn Gly
            420                 425                 430

Ser Trp Ala Ala Gly Tyr Gly Ile Trp Asn Thr Ala Ile Gln Ser Ala
        435                 440                 445

Ile Arg Val Gln His Trp Lys Leu Leu Thr Gly Asn Pro Gly Tyr Ser
    450                 455                 460

Asp Trp Val Pro Pro Gln Ser Phe Ser Asn Leu Gly Pro Asn Arg Trp
465                 470                 475                 480

His Asn Glu Arg Ile Thr Leu Ser Thr Gly Lys Ser Val Trp Leu Phe
                485                 490                 495

Asn Ile Thr Ala Asp Pro Tyr Glu Arg Val Asp Leu Ser Asn Arg Tyr
            500                 505                 510

Pro Gly Ile Val Lys Lys Leu Leu Arg Arg Leu Ser Gln Phe Asn Lys
        515                 520                 525
```

```
Thr Ala Val Pro Val Arg Tyr Pro Pro Lys Asp Pro Arg Ser Asn Pro
    530                 535                 540

Arg Leu Asn Gly Gly Val Trp Gly Pro Trp Tyr Lys Glu Glu Thr Lys
545                 550                 555                 560

Lys Lys Lys Pro Ser Lys Asn Gln Ala Glu Lys Lys Gln Lys Lys Ser
                565                 570                 575

Lys Lys Lys Lys Lys Lys Gln Gln Lys Ala Val Ser Gly Ser Thr Cys
            580                 585                 590

His Ser Gly Val Thr Cys Gly
        595
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<210> 6623
<211> 133
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1429; "

<220>
<221> source
<223> /note="Gene Symbol: ARSJ; "

<220>
<221> source
<223> /note="Gene Name:
arylsulfatase
family, member J; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000421327"

<400> 6623

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Met Ala Pro Arg Gly Cys Ala Gly His Pro Pro Pro Pro Ser Pro Gln
1               5                   10                  15

Ala Cys Val Cys Pro Gly Lys Met Leu Ala Met Gly Ala Leu Ala Gly
            20                  25                  30

Phe Trp Ile Leu Cys Leu Leu Thr Tyr Gly Tyr Leu Ser Trp Gly Gln
        35                  40                  45
```

```
Ala Leu Glu Glu Glu Glu Glu Gly Ala Leu Leu Ala Gln Ala Gly Glu
    50                  55                  60

Lys Leu Glu Pro Ser Thr Thr Ser Thr Ser Gln Pro His Leu Ile Phe
65                  70                  75                  80

Ile Leu Ala Asp Asp Gln Gly Phe Arg Asp Val Gly Tyr His Gly Ser
                85                  90                  95

Glu Ile Lys Thr Pro Thr Leu Asp Lys Leu Ala Ala Glu Gly Val Lys
            100                 105                 110

Leu Glu Asn Tyr Tyr Val Gln Pro Ile Cys Thr Pro Ser Arg Ser Gln
        115                 120                 125

Phe Ile Thr Gly Lys
    130


<210> 6624
<211> 536
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ARSK; "

<220>
<221> source
<223> /note="Gene Name:
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      family, member K; "

<220>
<221> source
<223> /note="Uniprot ID:  Q6UWY0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000369346"

<400> 6624
Met Leu Leu Leu Trp Val Ser Val Val Ala Ala Leu Ala Leu Ala Val
1               5                   10                  15

Leu Ala Pro Gly Ala Gly Glu Gln Arg Arg Arg Ala Ala Lys Ala Pro
```

20 25 30

Asn Val Val Leu Val Val Ser Asp Ser Phe Asp Gly Arg Leu Thr Phe
35 40 45

His Pro Gly Ser Gln Val Val Lys Leu Pro Phe Ile Asn Phe Met Lys
50 55 60

Thr Arg Gly Thr Ser Phe Leu Asn Ala Tyr Thr Asn Ser Pro Ile Cys
65 70 75 80

Cys Pro Ser Arg Ala Ala Met Trp Ser Gly Leu Phe Thr His Leu Thr
85 90 95

Glu Ser Trp Asn Asn Phe Lys Gly Leu Asp Pro Asn Tyr Thr Thr Trp
100 105 110

Met Asp Val Met Glu Arg His Gly Tyr Arg Thr Gln Lys Phe Gly Lys
115 120 125

Leu Asp Tyr Thr Ser Gly His His Ser Ile Ser Asn Arg Val Glu Ala
130 135 140

Trp Thr Arg Asp Val Ala Phe Leu Leu Arg Gln Glu Gly Arg Pro Met
145 150 155 160

Val Asn Leu Ile Arg Asn Arg Thr Lys Val Arg Val Met Glu Arg Asp
165 170 175

Trp Gln Asn Thr Asp Lys Ala Val Asn Trp Leu Arg Lys Glu Ala Ile
180 185 190

Asn Tyr Thr Glu Pro Phe Val Ile Tyr Leu Gly Leu Asn Leu Pro His
195 200 205

Pro Tyr Pro Ser Pro Ser Ser Gly Glu Asn Phe Gly Ser Ser Thr Phe
210 215 220

His Thr Ser Leu Tyr Trp Leu Glu Lys Val Ser His Asp Ala Ile Lys
225 230 235 240

Ile Pro Lys Trp Ser Pro Leu Ser Glu Met His Pro Val Asp Tyr Tyr
245 250 255

```
Ser Ser Tyr Thr Lys Asn Cys Thr Gly Arg Phe Thr Lys Lys Glu Ile
            260                 265                 270

Lys Asn Ile Arg Ala Phe Tyr Tyr Ala Met Cys Ala Glu Thr Asp Ala
        275                 280                 285

Met Leu Gly Glu Ile Ile Leu Ala Leu His Gln Leu Asp Leu Leu Gln
    290                 295                 300

Lys Thr Ile Val Ile Tyr Ser Ser Asp His Gly Glu Leu Ala Met Glu
305                 310                 315                 320

His Arg Gln Phe Tyr Lys Met Ser Met Tyr Glu Ala Ser Ala His Val
                325                 330                 335

Pro Leu Leu Met Met Gly Pro Gly Ile Lys Ala Gly Leu Gln Val Ser
            340                 345                 350

Asn Val Val Ser Leu Val Asp Ile Tyr Pro Thr Met Leu Asp Ile Ala
        355                 360                 365

Gly Ile Pro Leu Pro Gln Asn Leu Ser Gly Tyr Ser Leu Leu Pro Leu
    370                 375                 380

Ser Ser Glu Thr Phe Lys Asn Glu His Lys Val Lys Asn Leu His Pro
385                 390                 395                 400

Pro Trp Ile Leu Ser Glu Phe His Gly Cys Asn Val Asn Ala Ser Thr
                405                 410                 415

Tyr Met Leu Arg Thr Asn His Trp Lys Tyr Ile Ala Tyr Ser Asp Gly
            420                 425                 430

Ala Ser Ile Leu Pro Gln Leu Phe Asp Leu Ser Ser Asp Pro Asp Glu
        435                 440                 445

Leu Thr Asn Val Ala Val Lys Phe Pro Glu Ile Thr Tyr Ser Leu Asp
    450                 455                 460

Gln Lys Leu His Ser Ile Ile Asn Tyr Pro Lys Val Ser Ala Ser Val
465                 470                 475                 480
```

```
His Gln Tyr Asn Lys Glu Gln Phe Ile Lys Trp Lys Gln Ser Ile Gly
                485                 490                 495

Gln Asn Tyr Ser Asn Val Ile Ala Asn Leu Arg Trp His Gln Asp Trp
            500                 505                 510

Gln Lys Glu Pro Arg Lys Tyr Glu Asn Ala Ile Asp Gln Trp Leu Lys
        515                 520                 525

Thr His Met Asn Pro Arg Ala Val
    530                 535


<210> 6625
<211> 46
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ARSK; "

<220>
<221> source
<223> /note="Gene Name:
      arylsulfatase
      family, member K; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000422126"

<400> 6625
Met Leu Leu Leu Trp Val Ser Val Val Ala Ala Leu Ala Leu Ala Val
1               5                   10                  15

Leu Ala Pro Gly Ala Gly Glu Gln Arg Arg Arg Ala Ala Lys Ala Pro
            20                  25                  30

Asn Val Val Leu Val Val Ser Asp Ser Phe Ile Pro Asp Asp
        35                  40                  45


<210> 6626
<211> 153
<212> PRT
<213> Homo sapiens
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<220>
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<223> /note="Payload ID: 1430; "

<220>
<221> source
<223> /note="Gene Symbol: ARSK; "

<220>
<221> source
<223> /note="Gene Name:
arylsulfatase
family, member K; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000422608"

<400> 6626

```
Met Leu Leu Leu Trp Val Ser Val Val Ala Ala Leu Ala Leu Ala Val
1               5                  10                  15

Leu Ala Pro Gly Ala Gly Glu Gln Arg Arg Arg Ala Ala Lys Ala Pro
            20                  25                  30

Asn Val Val Leu Val Val Ser Asp Ser Phe Asp Gly Arg Leu Thr Phe
        35                  40                  45

His Pro Gly Ser Gln Val Val Lys Leu Pro Phe Ile Asn Phe Met Lys
    50                  55                  60

Thr Arg Gly Thr Ser Phe Leu Asn Ala Tyr Thr Asn Ser Pro Ile Cys
65                  70                  75                  80

Cys Pro Ser Arg Ala Ala Met Trp Ser Gly Leu Phe Thr His Leu Thr
                85                  90                  95

Glu Ser Trp Asn Asn Phe Lys Gly Leu Asp Pro Asn Tyr Thr Thr Trp
            100                 105                 110

Met Asp Val Met Glu Arg His Gly Tyr Arg Thr Gln Lys Phe Gly Lys
        115                 120                 125

Leu Asp Tyr Thr Ser Gly His His Ser Ile Arg His Ser Glu Arg Gly
    130                 135                 140

Ser Thr Asn Gln Arg Ser Glu Lys Val
```

145 150

<210> 6627
<211> 395
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1430; "

<220>
<221> source
<223> /note="Gene Symbol: ARSK; "

<220>
<221> source
<223> /note="Gene Name:
arylsulfatase
family, member K; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000423636"

<400> 6627
Met Leu Leu Leu Trp Val Ser Val Val Ala Ala Leu Ala Leu Ala Val
1 5 10 15

Leu Ala Pro Gly Ala Gly Glu Gln Arg Arg Arg Ala Ala Lys Ala Pro
20 25 30

Asn Val Val Leu Val Val Ser Asp Ser Phe Asp Gly Arg Leu Thr Phe
35 40 45

His Pro Gly Ser Gln Val Val Lys Leu Pro Phe Ile Asn Phe Met Lys
50 55 60

Thr Arg Gly Thr Ser Phe Leu Asn Ala Tyr Thr Asn Ser Pro Ile Cys
65 70 75 80

Cys Pro Ser Arg Ala Ala Met Trp Ser Gly Leu Phe Thr His Leu Thr
85 90 95

Glu Ser Trp Asn Asn Phe Lys Gly Leu Asp Pro Asn Tyr Thr Thr Trp
100 105 110

Met Asp Val Met Glu Arg His Gly Tyr Arg Thr Gln Lys Phe Gly Lys
115 120 125

```
Leu Asp Tyr Thr Ser Gly His His Ser Ile Ser Asn Arg Val Glu Ala
    130                 135                 140

Trp Thr Arg Asp Val Ala Phe Leu Leu Arg Gln Glu Gly Arg Pro Met
145                 150                 155                 160

Val Asn Leu Ile Arg Asn Arg Thr Lys Val Arg Val Met Glu Arg Asp
                165                 170                 175

Trp Gln Asn Thr Asp Lys Ala Val Asn Trp Leu Arg Lys Glu Ala Ile
            180                 185                 190

Asn Tyr Thr Glu Pro Phe Val Ile Tyr Leu Gly Leu Asn Leu Pro His
        195                 200                 205

Pro Tyr Pro Ser Pro Ser Ser Gly Glu Asn Phe Gly Ser Ser Thr Phe
    210                 215                 220

His Thr Ser Leu Tyr Trp Leu Glu Lys Val Ser His Asp Ala Ile Lys
225                 230                 235                 240

Ile Pro Lys Trp Ser Pro Leu Ser Glu Met His Pro Val Asp Tyr Tyr
                245                 250                 255

Ser Ser Tyr Thr Lys Asn Cys Thr Gly Arg Phe Thr Lys Lys Glu Ile
            260                 265                 270

Lys Asn Ile Arg Ala Phe Tyr Tyr Ala Met Cys Ala Glu Thr Asp Ala
        275                 280                 285

Met Leu Gly Glu Ile Ile Leu Ala Leu His Gln Leu Asp Leu Leu Gln
    290                 295                 300

Lys Thr Ile Val Ile Tyr Ser Ser Asp His Gly Glu Leu Ala Met Glu
305                 310                 315                 320

His Arg Gln Phe Tyr Lys Met Ser Met Tyr Glu Ala Ser Ala His Val
                325                 330                 335

Pro Leu Leu Met Met Gly Pro Gly Ile Lys Ala Gly Leu Gln Val Ser
            340                 345                 350
```

Asn Val Val Ser Leu Val Asp Ile Tyr Pro Thr Met Leu Asp Glu Lys
        355   360   365

Thr Glu Val Glu Ile Ser Lys Leu Leu Ala Glu Val His Met Ala Ser
    370   375   380

Gly Ile Leu Leu Glu Phe Leu Cys Leu Arg Thr
385   390   395

<210> 6628
<211> 92
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1430; "

<220>
<221> source
<223> /note="Gene Symbol: ARSK; "

<220>
<221> source
<223> /note="Gene Name:
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      family, member K; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000424018"

<400> 6628
Arg Ala Ala Lys Ala Pro Asn Val Val Leu Val Val Ser Asp Ser Phe
1   5   10   15

Asp Gly Arg Leu Thr Phe His Pro Gly Ser Gln Val Val Lys Leu Pro
            20   25   30

Phe Ile Asn Phe Met Lys Thr Arg Gly Thr Ser Phe Leu Asn Ala Tyr
        35   40   45

Thr Asn Ser Pro Ile Cys Cys Pro Ser Arg Ala Val Ile Val Trp Lys
    50   55   60

Arg Gly Gln Glu Met Leu Leu Ser Tyr Ser Asp Lys Lys Ala Gly Pro
65   70   75   80

Trp Leu Ile Leu Ser Val Thr Gly Leu Lys Ser Glu
85 90

<210> 6629
<211> 525
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1431; "

<220>
<221> source
<223> /note="Gene Symbol: ARSG; "

<220>
<221> source
<223> /note="Gene Name:
arylsulfatase G; "

<220>
<221> source
<223> /note="Uniprot ID: Q96EG1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000407193"

<400> 6629
Met Gly Trp Leu Phe Leu Lys Val Leu Leu Ala Gly Val Ser Phe Ser
1 5 10 15

Gly Phe Leu Tyr Pro Leu Val Asp Phe Cys Ile Ser Gly Lys Thr Arg
20 25 30

Gly Gln Lys Pro Asn Phe Val Ile Ile Leu Ala Asp Asp Met Gly Trp
35 40 45

Gly Asp Leu Gly Ala Asn Trp Ala Glu Thr Lys Asp Thr Ala Asn Leu
50 55 60

Asp Lys Met Ala Ser Glu Gly Met Arg Phe Val Asp Phe His Ala Ala
65 70 75 80

Ala Ser Thr Cys Ser Pro Ser Arg Ala Ser Leu Leu Thr Gly Arg Leu
85 90 95

Gly Leu Arg Asn Gly Val Thr Arg Asn Phe Ala Val Thr Ser Val Gly
100 105 110

```
Gly Leu Pro Leu Asn Glu Thr Thr Leu Ala Glu Val Leu Gln Gln Ala
        115                 120                 125

Gly Tyr Val Thr Gly Ile Ile Gly Lys Trp His Leu Gly His His Gly
    130                 135                 140

Ser Tyr His Pro Asn Phe Arg Gly Phe Asp Tyr Tyr Phe Gly Ile Pro
145                 150                 155                 160

Tyr Ser His Asp Met Gly Cys Thr Asp Thr Pro Gly Tyr Asn His Pro
                165                 170                 175

Pro Cys Pro Ala Cys Pro Gln Gly Asp Gly Pro Ser Arg Asn Leu Gln
            180                 185                 190

Arg Asp Cys Tyr Thr Asp Val Ala Leu Pro Leu Tyr Glu Asn Leu Asn
        195                 200                 205

Ile Val Glu Gln Pro Val Asn Leu Ser Ser Leu Ala Gln Lys Tyr Ala
    210                 215                 220

Glu Lys Ala Thr Gln Phe Ile Gln Arg Ala Ser Thr Ser Gly Arg Pro
225                 230                 235                 240

Phe Leu Leu Tyr Val Ala Leu Ala His Met His Val Pro Leu Pro Val
                245                 250                 255

Thr Gln Leu Pro Ala Ala Pro Arg Gly Arg Ser Leu Tyr Gly Ala Gly
            260                 265                 270

Leu Trp Glu Met Asp Ser Leu Val Gly Gln Ile Lys Asp Lys Val Asp
        275                 280                 285

His Thr Val Lys Glu Asn Thr Phe Leu Trp Phe Thr Gly Asp Asn Gly
    290                 295                 300

Pro Trp Ala Gln Lys Cys Glu Leu Ala Gly Ser Val Gly Pro Phe Thr
305                 310                 315                 320

Gly Phe Trp Gln Thr Arg Gln Gly Gly Ser Pro Ala Lys Gln Thr Thr
                325                 330                 335
```

```
Trp Glu Gly Gly His Arg Val Pro Ala Leu Ala Tyr Trp Pro Gly Arg
            340                 345                 350

Val Pro Val Asn Val Thr Ser Thr Ala Leu Leu Ser Val Leu Asp Ile
        355                 360                 365

Phe Pro Thr Val Val Ala Leu Ala Gln Ala Ser Leu Pro Gln Gly Arg
    370                 375                 380

Arg Phe Asp Gly Val Asp Val Ser Glu Val Leu Phe Gly Arg Ser Gln
385                 390                 395                 400

Pro Gly His Arg Val Leu Phe His Pro Asn Ser Gly Ala Ala Gly Glu
                405                 410                 415

Phe Gly Ala Leu Gln Thr Val Arg Leu Glu Arg Tyr Lys Ala Phe Tyr
            420                 425                 430

Ile Thr Gly Gly Ala Arg Ala Cys Asp Gly Ser Thr Gly Pro Glu Leu
        435                 440                 445

Gln His Lys Phe Pro Leu Ile Phe Asn Leu Glu Asp Asp Thr Ala Glu
    450                 455                 460

Ala Val Pro Leu Glu Arg Gly Gly Ala Glu Tyr Gln Ala Val Leu Pro
465                 470                 475                 480

Glu Val Arg Lys Val Leu Ala Asp Val Leu Gln Asp Ile Ala Asn Asp
                485                 490                 495

Asn Ile Ser Ser Ala Asp Tyr Thr Gln Asp Pro Ser Val Thr Pro Cys
            500                 505                 510

Cys Asn Pro Tyr Gln Ile Ala Cys Arg Cys Gln Ala Ala
        515                 520                 525


<210> 6630
<211> 361
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1431; "
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<220>
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<223> /note="Gene Symbol: ARSG; "

<220>
<221> source
<223> /note="Gene Name:
arylsulfatase G; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000413953"

<400> 6630

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Met Gly Cys Thr Asp Thr Pro Gly Tyr Asn His Pro Pro Cys Pro Ala
1               5                  10                  15

Cys Pro Gln Gly Asp Gly Pro Ser Arg Asn Leu Gln Arg Asp Cys Tyr
            20                  25                  30

Thr Asp Val Ala Leu Pro Leu Tyr Glu Asn Leu Asn Ile Val Glu Gln
        35                  40                  45

Pro Val Asn Leu Ser Ser Leu Ala Gln Lys Tyr Ala Glu Lys Ala Thr
    50                  55                  60

Gln Phe Ile Gln Arg Ala Ser Thr Ser Gly Arg Pro Phe Leu Leu Tyr
65                  70                  75                  80

Val Ala Leu Ala His Met His Val Pro Leu Pro Val Thr Gln Leu Pro
                85                  90                  95

Ala Ala Pro Arg Gly Arg Ser Leu Tyr Gly Ala Gly Leu Trp Glu Met
            100                 105                 110

Asp Ser Leu Val Gly Gln Ile Lys Asp Lys Val Asp His Thr Val Lys
        115                 120                 125

Glu Asn Thr Phe Leu Trp Phe Thr Gly Asp Asn Gly Pro Trp Ala Gln
    130                 135                 140

Lys Cys Glu Leu Ala Gly Ser Val Gly Pro Phe Thr Gly Phe Trp Gln
145                 150                 155                 160

Thr Arg Gln Gly Gly Ser Pro Ala Lys Gln Thr Thr Trp Glu Gly Gly
                165                 170                 175
```

```
His Arg Val Pro Ala Leu Ala Tyr Trp Pro Gly Arg Val Pro Val Asn
            180                 185                 190

Val Thr Ser Thr Ala Leu Leu Ser Val Leu Asp Ile Phe Pro Thr Val
        195                 200                 205

Val Ala Leu Ala Gln Ala Ser Leu Pro Gln Gly Arg Arg Phe Asp Gly
    210                 215                 220

Val Asp Val Ser Glu Val Leu Phe Gly Arg Ser Gln Pro Gly His Arg
225                 230                 235                 240

Val Leu Phe His Pro Asn Ser Gly Ala Ala Gly Glu Phe Gly Ala Leu
                245                 250                 255

Gln Thr Val Arg Leu Glu Arg Tyr Lys Ala Phe Tyr Ile Thr Gly Gly
            260                 265                 270

Ala Arg Ala Cys Asp Gly Ser Thr Gly Pro Glu Leu Gln His Lys Phe
        275                 280                 285

Pro Leu Ile Phe Asn Leu Glu Asp Asp Thr Ala Glu Ala Val Pro Leu
    290                 295                 300

Glu Arg Gly Gly Ala Glu Tyr Gln Ala Val Leu Pro Glu Val Arg Lys
305                 310                 315                 320

Val Leu Ala Asp Val Leu Gln Asp Ile Ala Asn Asp Asn Ile Ser Ser
                325                 330                 335

Ala Asp Tyr Thr Gln Asp Pro Ser Val Thr Pro Cys Cys Asn Pro Tyr
            340                 345                 350

Gln Ile Ala Cys Arg Cys Gln Ala Ala
        355                 360
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<210> 6631
<211> 28
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1431; "

<220>
<221> source
<223> /note="Gene Symbol: ARSG; "

<220>
<221> source
<223> /note="Gene Name:
arylsulfatase G; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000462306"

<400> 6631
Met Gly Trp Leu Phe Leu Lys Val Leu Leu Ala Gly Val Ser Phe Ser
1 5 10 15

Gly Phe Leu Tyr Pro Leu Val Asp Phe Cys Ile Ser
20 25

<210> 6632
<211> 525
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<223> /note="Gene Symbol: ARSG; "

<220>
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<223> /note="Gene Name:
arylsulfatase G; "

<220>
<221> source
<223> /note="Uniprot ID: Q96EG1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000480910"

<400> 6632
Met Gly Trp Leu Phe Leu Lys Val Leu Leu Ala Gly Val Ser Phe Ser
1 5 10 15

Gly Phe Leu Tyr Pro Leu Val Asp Phe Cys Ile Ser Gly Lys Thr Arg
20 25 30

```
Gly Gln Lys Pro Asn Phe Val Ile Ile Leu Ala Asp Asp Met Gly Trp
        35                  40                  45

Gly Asp Leu Gly Ala Asn Trp Ala Glu Thr Lys Asp Thr Ala Asn Leu
    50                  55                  60

Asp Lys Met Ala Ser Glu Gly Met Arg Phe Val Asp Phe His Ala Ala
65                  70                  75                  80

Ala Ser Thr Cys Ser Pro Ser Arg Ala Ser Leu Leu Thr Gly Arg Leu
                85                  90                  95

Gly Leu Arg Asn Gly Val Thr Arg Asn Phe Ala Val Thr Ser Val Gly
            100                 105                 110

Gly Leu Pro Leu Asn Glu Thr Thr Leu Ala Glu Val Leu Gln Gln Ala
        115                 120                 125

Gly Tyr Val Thr Gly Ile Ile Gly Lys Trp His Leu Gly His His Gly
    130                 135                 140

Ser Tyr His Pro Asn Phe Arg Gly Phe Asp Tyr Tyr Phe Gly Ile Pro
145                 150                 155                 160

Tyr Ser His Asp Met Gly Cys Thr Asp Thr Pro Gly Tyr Asn His Pro
                165                 170                 175

Pro Cys Pro Ala Cys Pro Gln Gly Asp Gly Pro Ser Arg Asn Leu Gln
            180                 185                 190

Arg Asp Cys Tyr Thr Asp Val Ala Leu Pro Leu Tyr Glu Asn Leu Asn
        195                 200                 205

Ile Val Glu Gln Pro Val Asn Leu Ser Ser Leu Ala Gln Lys Tyr Ala
    210                 215                 220

Glu Lys Ala Thr Gln Phe Ile Gln Arg Ala Ser Thr Ser Gly Arg Pro
225                 230                 235                 240

Phe Leu Leu Tyr Val Ala Leu Ala His Met His Val Pro Leu Pro Val
                245                 250                 255
```

```
Thr Gln Leu Pro Ala Ala Pro Arg Gly Arg Ser Leu Tyr Gly Ala Gly
            260                 265                 270

Leu Trp Glu Met Asp Ser Leu Val Gly Gln Ile Lys Asp Lys Val Asp
        275                 280                 285

His Thr Val Lys Glu Asn Thr Phe Leu Trp Phe Thr Gly Asp Asn Gly
    290                 295                 300

Pro Trp Ala Gln Lys Cys Glu Leu Ala Gly Ser Val Gly Pro Phe Thr
305                 310                 315                 320

Gly Phe Trp Gln Thr Arg Gln Gly Gly Ser Pro Ala Lys Gln Thr Thr
                325                 330                 335

Trp Glu Gly Gly His Arg Val Pro Ala Leu Ala Tyr Trp Pro Gly Arg
            340                 345                 350

Val Pro Val Asn Val Thr Ser Thr Ala Leu Leu Ser Val Leu Asp Ile
        355                 360                 365

Phe Pro Thr Val Val Ala Leu Ala Gln Ala Ser Leu Pro Gln Gly Arg
    370                 375                 380

Arg Phe Asp Gly Val Asp Val Ser Glu Val Leu Phe Gly Arg Ser Gln
385                 390                 395                 400

Pro Gly His Arg Val Leu Phe His Pro Asn Ser Gly Ala Ala Gly Glu
                405                 410                 415

Phe Gly Ala Leu Gln Thr Val Arg Leu Glu Arg Tyr Lys Ala Phe Tyr
            420                 425                 430

Ile Thr Gly Gly Ala Arg Ala Cys Asp Gly Ser Thr Gly Pro Glu Leu
        435                 440                 445

Gln His Lys Phe Pro Leu Ile Phe Asn Leu Glu Asp Asp Thr Ala Glu
    450                 455                 460

Ala Val Pro Leu Glu Arg Gly Gly Ala Glu Tyr Gln Ala Val Leu Pro
465                 470                 475                 480
```

```
Glu Val Arg Lys Val Leu Ala Asp Val Leu Gln Asp Ile Ala Asn Asp
                485                 490                 495

Asn Ile Ser Ser Ala Asp Tyr Thr Gln Asp Pro Ser Val Thr Pro Cys
            500                 505                 510

Cys Asn Pro Tyr Gln Ile Ala Cys Arg Cys Gln Ala Ala
        515                 520                 525


<210> 6633
<211> 2969
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1432; "

<220>
<221> source
<223> /note="Gene Symbol: ASH1L; "

<220>
<221> source
<223> /note="Gene Name:
      ash1 (absent, small, or homeotic)-like (Drosophila); "

<220>
<221> source
<223> /note="Uniprot ID:  Q9NR48; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000357330"

<400> 6633
Met Asp Pro Arg Asn Thr Ala Met Leu Gly Leu Gly Ser Asp Ser Glu
1               5                   10                  15

Gly Phe Ser Arg Lys Ser Pro Ser Ala Ile Ser Thr Gly Thr Leu Val
            20                  25                  30

Ser Lys Arg Glu Val Glu Leu Glu Lys Asn Thr Lys Glu Glu Glu Asp
        35                  40                  45

Leu Arg Lys Arg Asn Arg Glu Arg Asn Ile Glu Ala Gly Lys Asp Asp
    50                  55                  60

Gly Leu Thr Asp Ala Gln Gln Gln Phe Ser Val Lys Glu Thr Asn Phe
65                  70                  75                  80
```

```
Ser Glu Gly Asn Leu Lys Leu Lys Ile Gly Leu Gln Ala Lys Arg Thr
                85                  90                  95

Lys Lys Pro Pro Lys Asn Leu Glu Asn Tyr Val Cys Arg Pro Ala Ile
            100                 105                 110

Lys Thr Thr Ile Lys His Pro Arg Lys Ala Leu Lys Ser Gly Lys Met
        115                 120                 125

Thr Asp Glu Lys Asn Glu His Cys Pro Ser Lys Arg Asp Pro Ser Lys
    130                 135                 140

Leu Tyr Lys Lys Ala Asp Asp Val Ala Ala Ile Glu Cys Gln Ser Glu
145                 150                 155                 160

Glu Val Ile Arg Leu His Ser Gln Gly Glu Asn Asn Pro Leu Ser Lys
                165                 170                 175

Lys Leu Ser Pro Val His Ser Glu Met Ala Asp Tyr Ile Asn Ala Thr
            180                 185                 190

Pro Ser Thr Leu Leu Gly Ser Arg Asp Pro Asp Leu Lys Asp Arg Ala
        195                 200                 205

Leu Leu Asn Gly Gly Thr Ser Val Thr Glu Lys Leu Ala Gln Leu Ile
    210                 215                 220

Ala Thr Cys Pro Pro Ser Lys Ser Ser Lys Thr Lys Pro Lys Lys Leu
225                 230                 235                 240

Gly Thr Gly Thr Thr Ala Gly Leu Val Ser Lys Asp Leu Ile Arg Lys
                245                 250                 255

Ala Gly Val Gly Ser Val Ala Gly Ile Ile His Lys Asp Leu Ile Lys
            260                 265                 270

Lys Pro Thr Ile Ser Thr Ala Val Gly Leu Val Thr Lys Asp Pro Gly
        275                 280                 285

Lys Lys Pro Val Phe Asn Ala Ala Val Gly Leu Val Asn Lys Asp Ser
    290                 295                 300
```

Val Lys Lys Leu Gly Thr Gly Thr Thr Ala Val Phe Ile Asn Lys Asn
305 310 315 320

Leu Gly Lys Lys Pro Gly Thr Ile Thr Thr Val Gly Leu Leu Ser Lys
325 330 335

Asp Ser Gly Lys Lys Leu Gly Ile Gly Ile Val Pro Gly Leu Val His
340 345 350

Lys Glu Ser Gly Lys Lys Leu Gly Leu Gly Thr Val Val Gly Leu Val
355 360 365

Asn Lys Asp Leu Gly Lys Lys Leu Gly Ser Thr Val Gly Leu Val Ala
370 375 380

Lys Asp Cys Ala Lys Lys Ile Val Ala Ser Ser Ala Met Gly Leu Val
385 390 395 400

Asn Lys Asp Ile Gly Lys Lys Leu Met Ser Cys Pro Leu Ala Gly Leu
405 410 415

Ile Ser Lys Asp Ala Ile Asn Leu Lys Ala Glu Ala Leu Leu Pro Thr
420 425 430

Gln Glu Pro Leu Lys Ala Ser Cys Ser Thr Asn Ile Asn Asn Gln Glu
435 440 445

Ser Gln Glu Leu Ser Glu Ser Leu Lys Asp Ser Ala Thr Ser Lys Thr
450 455 460

Phe Glu Lys Asn Val Val Arg Gln Asn Lys Glu Ser Ile Leu Glu Lys
465 470 475 480

Phe Ser Val Arg Lys Glu Ile Ile Asn Leu Glu Lys Glu Met Phe Asn
485 490 495

Glu Gly Thr Cys Ile Gln Gln Asp Ser Phe Ser Ser Ser Glu Lys Gly
500 505 510

Ser Tyr Glu Thr Ser Lys His Glu Lys Gln Pro Pro Val Tyr Cys Thr
515 520 525

```
Ser Pro Asp Phe Lys Met Gly Gly Ala Ser Asp Val Ser Thr Ala Lys
    530                 535                 540

Ser Pro Phe Ser Ala Val Gly Glu Ser Asn Leu Pro Ser Pro Ser Pro
545                 550                 555                 560

Thr Val Ser Val Asn Pro Leu Thr Arg Ser Pro Pro Glu Thr Ser Ser
                565                 570                 575

Gln Leu Ala Pro Asn Pro Leu Leu Leu Ser Ser Thr Thr Glu Leu Ile
            580                 585                 590

Glu Glu Ile Ser Glu Ser Val Gly Lys Asn Gln Phe Thr Ser Glu Ser
        595                 600                 605

Thr His Leu Asn Val Gly His Arg Ser Val Gly His Ser Ile Ser Ile
    610                 615                 620

Glu Cys Lys Gly Ile Asp Lys Glu Val Asn Asp Ser Lys Thr Thr His
625                 630                 635                 640

Ile Asp Ile Pro Arg Ile Ser Ser Ser Leu Gly Lys Lys Pro Ser Leu
                645                 650                 655

Thr Ser Glu Ser Ser Ile His Thr Ile Thr Pro Ser Val Val Asn Phe
            660                 665                 670

Thr Ser Leu Phe Ser Asn Lys Pro Phe Leu Lys Leu Gly Ala Val Ser
        675                 680                 685

Ala Ser Asp Lys His Cys Gln Val Ala Glu Ser Leu Ser Thr Ser Leu
    690                 695                 700

Gln Ser Lys Pro Leu Lys Lys Arg Lys Gly Arg Lys Pro Arg Trp Thr
705                 710                 715                 720

Lys Val Val Ala Arg Ser Thr Cys Arg Ser Pro Lys Gly Leu Glu Leu
                725                 730                 735

Glu Arg Ser Glu Leu Phe Lys Asn Val Ser Cys Ser Ser Leu Ser Asn
            740                 745                 750

Ser Asn Ser Glu Pro Ala Lys Phe Met Lys Asn Ile Gly Pro Pro Ser
```

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        755                 760                 765

Phe Val Asp His Asp Phe Leu Lys Arg Arg Leu Pro Lys Leu Ser Lys
    770                 775                 780

Ser Thr Ala Pro Ser Leu Ala Leu Leu Ala Asp Ser Glu Lys Pro Ser
785                 790                 795                 800

His Lys Ser Phe Ala Thr His Lys Leu Ser Ser Ser Met Cys Val Ser
                805                 810                 815

Ser Asp Leu Leu Ser Asp Ile Tyr Lys Pro Lys Arg Gly Arg Pro Lys
            820                 825                 830

Ser Lys Glu Met Pro Gln Leu Glu Gly Pro Pro Lys Arg Thr Leu Lys
        835                 840                 845

Ile Pro Ala Ser Lys Val Phe Ser Leu Gln Ser Lys Glu Glu Gln Glu
    850                 855                 860

Pro Pro Ile Leu Gln Pro Glu Ile Glu Ile Pro Ser Phe Lys Gln Gly
865                 870                 875                 880

Leu Ser Val Ser Pro Phe Pro Lys Lys Arg Gly Arg Pro Lys Arg Gln
                885                 890                 895

Met Arg Ser Pro Val Lys Met Lys Pro Pro Val Leu Ser Val Ala Pro
            900                 905                 910

Phe Val Ala Thr Glu Ser Pro Ser Lys Leu Glu Ser Glu Ser Asp Asn
        915                 920                 925

His Arg Ser Ser Ser Asp Phe Phe Glu Ser Glu Asp Gln Leu Gln Asp
    930                 935                 940

Pro Asp Asp Leu Asp Asp Ser His Arg Pro Ser Val Cys Ser Met Ser
945                 950                 955                 960

Asp Leu Glu Met Glu Pro Asp Lys Lys Ile Thr Lys Arg Asn Asn Gly
                965                 970                 975

Gln Leu Met Lys Thr Ile Ile Arg Lys Ile Asn Lys Met Lys Thr Leu
            980                 985                 990
```

Lys Arg Lys Lys Leu Leu Asn Gln Ile Leu Ser Ser Ser Val Glu Ser
995 1000 1005

Ser Asn Lys Gly Lys Val Gln Ser Lys Leu His Asn Thr Val Ser
1010 1015 1020

Ser Leu Ala Ala Thr Phe Gly Ser Lys Leu Gly Gln Gln Ile Asn
1025 1030 1035

Val Ser Lys Lys Gly Thr Ile Tyr Ile Gly Lys Arg Arg Gly Arg
1040 1045 1050

Lys Pro Lys Thr Val Leu Asn Gly Ile Leu Ser Gly Ser Pro Thr
1055 1060 1065

Ser Leu Ala Val Leu Glu Gln Thr Ala Gln Gln Ala Ala Gly Ser
1070 1075 1080

Ala Leu Gly Gln Ile Leu Pro Pro Leu Leu Pro Ser Ser Ala Ser
1085 1090 1095

Ser Ser Glu Ile Leu Pro Ser Pro Ile Cys Ser Gln Ser Ser Gly
1100 1105 1110

Thr Ser Gly Gly Gln Ser Pro Val Ser Ser Asp Ala Gly Phe Val
1115 1120 1125

Glu Pro Ser Ser Val Pro Tyr Leu His Leu His Ser Arg Gln Gly
1130 1135 1140

Ser Met Ile Gln Thr Leu Ala Met Lys Lys Ala Ser Lys Gly Arg
1145 1150 1155

Arg Arg Leu Ser Pro Pro Thr Leu Leu Pro Asn Ser Pro Ser His
1160 1165 1170

Leu Ser Glu Leu Thr Ser Leu Lys Glu Ala Thr Pro Ser Pro Ile
1175 1180 1185

Ser Glu Ser His Ser Asp Glu Thr Ile Pro Ser Asp Ser Gly Ile
1190 1195 1200

```
Gly Thr  Asp Asn Asn Ser Thr  Ser Asp Arg Ala Glu  Lys Phe Cys
    1205                 1210                 1215

Gly Gln  Lys Lys Arg Arg His  Ser Phe Glu His Val  Ser Leu Ile
    1220                 1225                 1230

Pro Pro  Glu Thr Ser Thr Val  Leu Ser Ser Leu Lys  Glu Lys His
    1235                 1240                 1245

Lys His  Lys Cys Lys Arg Arg  Asn His Asp Tyr Leu  Ser Tyr Asp
    1250                 1255                 1260

Lys Met  Lys Arg Gln Lys Arg  Lys Arg Lys Lys Lys  Tyr Pro Gln
    1265                 1270                 1275

Leu Arg  Asn Arg Gln Asp Pro  Asp Phe Ile Ala Glu  Leu Glu Glu
    1280                 1285                 1290

Leu Ile  Ser Arg Leu Ser Glu  Ile Arg Ile Thr His  Arg Ser His
    1295                 1300                 1305

His Phe  Ile Pro Arg Asp Leu  Leu Pro Thr Ile Phe  Arg Ile Asn
    1310                 1315                 1320

Phe Asn  Ser Phe Tyr Thr His  Pro Ser Phe Pro Leu  Asp Pro Leu
    1325                 1330                 1335

His Tyr  Ile Arg Lys Pro Asp  Leu Lys Lys Lys Arg  Gly Arg Pro
    1340                 1345                 1350

Pro Lys  Met Arg Glu Ala Met  Ala Glu Met Pro Phe  Met His Ser
    1355                 1360                 1365

Leu Ser  Phe Pro Leu Ser Ser  Thr Gly Phe Tyr Pro  Ser Tyr Gly
    1370                 1375                 1380

Met Pro  Tyr Ser Pro Ser Pro  Leu Thr Ala Ala Pro  Ile Gly Leu
    1385                 1390                 1395

Gly Tyr  Tyr Gly Arg Tyr Pro  Pro Thr Leu Tyr Pro  Pro Pro Pro
    1400                 1405                 1410
```

```
Ser Pro  Ser Phe Thr Thr Pro  Leu Pro Pro Pro Ser  Tyr Met His
    1415                1420                1425

Ala Gly  His Leu Leu Leu Asn  Pro Ala Lys Tyr His  Lys Lys Lys
    1430                1435                1440

His Lys  Leu Leu Arg Gln Glu  Ala Phe Leu Thr Thr  Ser Arg Thr
    1445                1450                1455

Pro Leu  Leu Ser Met Ser Thr  Tyr Pro Ser Val Pro  Pro Glu Met
    1460                1465                1470

Ala Tyr  Gly Trp Met Val Glu  His Lys His Arg His  Arg His Lys
    1475                1480                1485

His Arg  Glu His Arg Ser Ser  Glu Gln Pro Gln Val  Ser Met Asp
    1490                1495                1500

Thr Gly  Ser Ser Arg Ser Val  Leu Glu Ser Leu Lys  Arg Tyr Arg
    1505                1510                1515

Phe Gly  Lys Asp Ala Val Gly  Glu Arg Tyr Lys His  Lys Glu Lys
    1520                1525                1530

His Arg  Cys His Met Ser Cys  Pro His Leu Ser Pro  Ser Lys Ser
    1535                1540                1545

Leu Ile  Asn Arg Glu Glu Gln  Trp Val His Arg Glu  Pro Ser Glu
    1550                1555                1560

Ser Ser  Pro Leu Ala Leu Gly  Leu Gln Thr Pro Leu  Gln Ile Asp
    1565                1570                1575

Cys Ser  Glu Ser Ser Pro Ser  Leu Ser Leu Gly Gly  Phe Thr Pro
    1580                1585                1590

Asn Ser  Glu Pro Ala Ser Ser  Asp Glu His Thr Asn  Leu Phe Thr
    1595                1600                1605

Ser Ala  Ile Gly Ser Cys Arg  Val Ser Asn Pro Asn  Ser Ser Gly
    1610                1615                1620
```

Arg Lys Lys Leu Thr Asp Ser Pro Gly Leu Phe Ser Ala Gln Asp
1625 1630 1635

Thr Ser Leu Asn Arg Leu His Arg Lys Glu Ser Leu Pro Ser Asn
1640 1645 1650

Glu Arg Ala Val Gln Thr Leu Ala Gly Ser Gln Pro Thr Ser Asp
1655 1660 1665

Lys Pro Ser Gln Arg Pro Ser Glu Ser Thr Asn Cys Ser Pro Thr
1670 1675 1680

Arg Lys Arg Ser Ser Ser Glu Ser Thr Ser Ser Thr Val Asn Gly
1685 1690 1695

Val Pro Ser Arg Ser Pro Arg Leu Val Ala Ser Gly Asp Asp Ser
1700 1705 1710

Val Asp Ser Leu Leu Gln Arg Met Val Gln Asn Glu Asp Gln Glu
1715 1720 1725

Pro Met Glu Lys Ser Ile Asp Ala Val Ile Ala Thr Ala Ser Ala
1730 1735 1740

Pro Pro Ser Ser Ser Pro Gly Arg Ser His Ser Lys Asp Arg Thr
1745 1750 1755

Leu Gly Lys Pro Asp Ser Leu Leu Val Pro Ala Val Thr Ser Asp
1760 1765 1770

Ser Cys Asn Asn Ser Ile Ser Leu Leu Ser Glu Lys Leu Thr Ser
1775 1780 1785

Ser Cys Ser Pro His His Ile Lys Arg Ser Val Val Glu Ala Met
1790 1795 1800

Gln Arg Gln Ala Arg Lys Met Cys Asn Tyr Asp Lys Ile Leu Ala
1805 1810 1815

Thr Lys Lys Asn Leu Asp His Val Asn Lys Ile Leu Lys Ala Lys
1820 1825 1830

Lys Leu Gln Arg Gln Ala Arg Thr Gly Asn Asn Phe Val Lys Arg

1835 1840 1845

Arg Pro Gly Arg Pro Arg Lys Cys Pro Leu Gln Ala Val Val Ser
1850 1855 1860

Met Gln Ala Phe Gln Ala Ala Gln Phe Val Asn Pro Glu Leu Asn
1865 1870 1875

Arg Asp Glu Glu Gly Ala Ala Leu His Leu Ser Pro Asp Thr Val
1880 1885 1890

Thr Asp Val Ile Glu Ala Val Val Gln Ser Val Asn Leu Asn Pro
1895 1900 1905

Glu His Lys Lys Gly Leu Lys Arg Lys Gly Trp Leu Leu Glu Glu
1910 1915 1920

Gln Thr Arg Lys Lys Gln Lys Pro Leu Pro Glu Glu Glu Glu Gln
1925 1930 1935

Glu Asn Asn Lys Ser Phe Asn Glu Ala Pro Val Glu Ile Pro Ser
1940 1945 1950

Pro Ser Glu Thr Pro Ala Lys Pro Ser Glu Pro Glu Ser Thr Leu
1955 1960 1965

Gln Pro Val Leu Ser Leu Ile Pro Arg Glu Lys Lys Pro Pro Arg
1970 1975 1980

Pro Pro Lys Lys Lys Tyr Gln Lys Ala Gly Leu Tyr Ser Asp Val
1985 1990 1995

Tyr Lys Thr Thr Asp Pro Lys Ser Arg Leu Ile Gln Leu Lys Lys
2000 2005 2010

Glu Lys Leu Glu Tyr Thr Pro Gly Glu His Glu Tyr Gly Leu Phe
2015 2020 2025

Pro Ala Pro Ile His Val Val Phe Phe Val Ser Gly Lys Tyr Leu
2030 2035 2040

Arg Gln Lys Arg Ile Asp Phe Gln Leu Pro Tyr Asp Ile Leu Trp
2045 2050 2055

```
Gln Trp  Lys His Asn Gln Leu  Tyr Lys Lys Pro Asp  Val Pro Leu
    2060                2065                2070

Tyr Lys  Lys Ile Arg Ser Asn  Val Tyr Val Asp Val  Lys Pro Leu
    2075                2080                2085

Ser Gly  Tyr Glu Ala Thr Thr  Cys Asn Cys Lys Lys  Pro Asp Asp
    2090                2095                2100

Asp Thr  Arg Lys Gly Cys Val  Asp Asp Cys Leu Asn  Arg Met Ile
    2105                2110                2115

Phe Ala  Glu Cys Ser Pro Asn  Thr Cys Pro Cys Gly  Glu Gln Cys
    2120                2125                2130

Cys Asn  Gln Arg Ile Gln Arg  His Glu Trp Val Gln  Cys Leu Glu
    2135                2140                2145

Arg Phe  Arg Ala Glu Glu Lys  Gly Trp Gly Ile Arg  Thr Lys Glu
    2150                2155                2160

Pro Leu  Lys Ala Gly Gln Phe  Ile Ile Glu Tyr Leu  Gly Glu Val
    2165                2170                2175

Val Ser  Glu Gln Glu Phe Arg  Asn Arg Met Ile Glu  Gln Tyr His
    2180                2185                2190

Asn His  Ser Asp His Tyr Cys  Leu Asn Leu Asp Ser  Gly Met Val
    2195                2200                2205

Ile Asp  Ser Tyr Arg Met Gly  Asn Glu Ala Arg Phe  Ile Asn His
    2210                2215                2220

Ser Cys  Asp Pro Asn Cys Glu  Met Gln Lys Trp Ser  Val Asn Gly
    2225                2230                2235

Val Tyr  Arg Ile Gly Leu Tyr  Ala Leu Lys Asp Met  Pro Ala Gly
    2240                2245                2250

Thr Glu  Leu Thr Tyr Asp Tyr  Asn Phe His Ser Phe  Asn Val Glu
    2255                2260                2265
```

```
Lys Gln  Gln Leu Cys Lys Cys  Gly Phe Glu Lys Cys  Arg Gly Ile
    2270                2275                2280

Ile Gly  Gly Lys Ser Gln Arg  Val Asn Gly Leu Thr  Ser Ser Lys
    2285                2290                2295

Asn Ser  Gln Pro Met Ala Thr  His Lys Lys Ser Gly  Arg Ser Lys
    2300                2305                2310

Glu Lys  Arg Lys Ser Lys His  Lys Leu Lys Lys Arg  Arg Gly His
    2315                2320                2325

Leu Ser  Glu Glu Pro Ser Glu  Asn Ile Asn Thr Pro  Thr Arg Leu
    2330                2335                2340

Thr Pro  Gln Leu Gln Met Lys  Pro Met Ser Asn Arg  Glu Arg Asn
    2345                2350                2355

Phe Val  Leu Lys His His Val  Phe Leu Val Arg Asn  Trp Glu Lys
    2360                2365                2370

Ile Arg  Gln Lys Gln Glu Glu  Val Lys His Thr Ser  Asp Asn Ile
    2375                2380                2385

His Ser  Ala Ser Leu Tyr Thr  Arg Trp Asn Gly Ile  Cys Arg Asp
    2390                2395                2400

Asp Gly  Asn Ile Lys Ser Asp  Val Phe Met Thr Gln  Phe Ser Ala
    2405                2410                2415

Leu Gln  Thr Ala Arg Ser Val  Arg Thr Arg Arg Leu  Ala Ala Ala
    2420                2425                2430

Glu Glu  Asn Ile Glu Val Ala  Arg Ala Ala Arg Leu  Ala Gln Ile
    2435                2440                2445

Phe Lys  Glu Ile Cys Asp Gly  Ile Ile Ser Tyr Lys  Asp Ser Ser
    2450                2455                2460

Arg Gln  Ala Leu Ala Ala Pro  Leu Leu Asn Leu Pro  Pro Lys Lys
    2465                2470                2475
```

```
Lys Asn  Ala Asp Tyr Tyr Glu  Lys Ile Ser Asp Pro  Leu Asp Leu
    2480                 2485                 2490

Ile Thr  Ile Glu Lys Gln Ile  Leu Thr Gly Tyr Tyr  Lys Thr Val
    2495                 2500                 2505

Glu Ala  Phe Asp Ala Asp Met  Leu Lys Val Phe Arg  Asn Ala Glu
    2510                 2515                 2520

Lys Tyr  Tyr Gly Arg Lys Ser  Pro Val Gly Arg Asp  Val Cys Arg
    2525                 2530                 2535

Leu Arg  Lys Ala Tyr Tyr Asn  Ala Arg His Glu Ala  Ser Ala Gln
    2540                 2545                 2550

Ile Asp  Glu Ile Val Gly Glu  Thr Ala Ser Glu Ala  Asp Ser Ser
    2555                 2560                 2565

Glu Thr  Ser Val Ser Glu Lys  Glu Asn Gly His Glu  Lys Asp Asp
    2570                 2575                 2580

Asp Val  Ile Arg Cys Ile Cys  Gly Leu Tyr Lys Asp  Glu Gly Leu
    2585                 2590                 2595

Met Ile  Gln Cys Asp Lys Cys  Met Val Trp Gln His  Cys Asp Cys
    2600                 2605                 2610

Met Gly  Val Asn Ser Asp Val  Glu His Tyr Leu Cys  Glu Gln Cys
    2615                 2620                 2625

Asp Pro  Arg Pro Val Asp Arg  Glu Val Pro Met Ile  Pro Arg Pro
    2630                 2635                 2640

His Tyr  Ala Gln Pro Gly Cys  Val Tyr Phe Ile Cys  Leu Leu Arg
    2645                 2650                 2655

Asp Asp  Leu Leu Leu Arg Gln  Gly Asp Cys Val Tyr  Leu Met Arg
    2660                 2665                 2670

Asp Ser  Arg Arg Thr Pro Asp  Gly His Pro Val Arg  Gln Ser Tyr
    2675                 2680                 2685

Arg Leu  Leu Ser His Ile Asn  Arg Asp Lys Leu Asp  Ile Phe Arg
```

2690 2695 2700

Ile Glu Lys Leu Trp Lys Asn Glu Lys Glu Glu Arg Phe Ala Phe
2705 2710 2715

Gly His His Tyr Phe Arg Pro His Glu Thr His His Ser Pro Ser
2720 2725 2730

Arg Arg Phe Tyr His Asn Glu Leu Phe Arg Val Pro Leu Tyr Glu
2735 2740 2745

Ile Ile Pro Leu Glu Ala Val Val Gly Thr Cys Cys Val Leu Asp
2750 2755 2760

Leu Tyr Thr Tyr Cys Lys Gly Arg Pro Lys Gly Val Lys Glu Gln
2765 2770 2775

Asp Val Tyr Ile Cys Asp Tyr Arg Leu Asp Lys Ser Ala His Leu
2780 2785 2790

Phe Tyr Lys Ile His Arg Asn Arg Tyr Pro Val Cys Thr Lys Pro
2795 2800 2805

Tyr Ala Phe Asp His Phe Pro Lys Lys Leu Thr Pro Lys Lys Asp
2810 2815 2820

Phe Ser Pro His Tyr Val Pro Asp Asn Tyr Lys Arg Asn Gly Gly
2825 2830 2835

Arg Ser Ser Trp Lys Ser Glu Arg Ser Lys Pro Pro Leu Lys Asp
2840 2845 2850

Leu Gly Gln Glu Asp Asp Ala Leu Pro Leu Ile Glu Glu Val Leu
2855 2860 2865

Ala Ser Gln Glu Gln Ala Ala Asn Glu Ile Pro Ser Leu Glu Glu
2870 2875 2880

Pro Glu Arg Glu Gly Ala Thr Ala Asn Val Ser Glu Gly Glu Lys
2885 2890 2895

Lys Thr Glu Glu Ser Ser Gln Glu Pro Gln Ser Thr Cys Thr Pro
2900 2905 2910

```
Glu Glu  Arg Arg His Asn Gln  Arg Glu Arg Leu Asn  Gln Ile Leu
    2915                2920                2925


Leu Asn  Leu Leu Glu Lys Ile  Pro Gly Lys Asn Ala  Ile Asp Val
    2930                2935                2940


Thr Tyr  Leu Leu Glu Glu Gly  Ser Gly Arg Lys Leu  Arg Arg Arg
    2945                2950                2955


Thr Leu  Phe Ile Pro Glu Asn  Ser Phe Arg Lys
    2960                2965


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Gly Phe Ser Arg Lys Ser Pro Ser Ala Ile Ser Thr Gly Thr Leu Val
            20                  25                  30


Ser Lys Arg Glu Val Glu Leu Glu Lys Asn Thr Lys Glu Glu Glu Asp
        35                  40                  45
```

```
Leu Arg Lys Arg Asn Arg Glu Arg Asn Ile Glu Ala Gly Lys Asp Asp
    50                  55                  60

Gly Leu Thr Asp Ala Gln Gln Gln Phe Ser Val Lys Glu Thr Asn Phe
65                  70                  75                  80

Ser Glu Gly Asn Leu Lys Leu Lys Ile Gly Leu Gln Ala Lys Arg Thr
                85                  90                  95

Lys Lys Pro Pro Lys Asn Leu Glu Asn Tyr Val Cys Arg Pro Ala Ile
            100                 105                 110

Lys Thr Thr Ile Lys His Pro Arg Lys Ala Leu Lys Ser Gly Lys Met
        115                 120                 125

Thr Asp Glu Lys Asn Glu His Cys Pro Ser Lys Arg Asp Pro Ser Lys
    130                 135                 140

Leu Tyr Lys Lys Ala Asp Asp Val Ala Ala Ile Glu Cys Gln Ser Glu
145                 150                 155                 160

Glu Val Ile Arg Leu His Ser Gln Gly Glu Asn Asn Pro Leu Ser Lys
                165                 170                 175

Lys Leu Ser Pro Val His Ser Glu Met Ala Asp Tyr Ile Asn Ala Thr
            180                 185                 190

Pro Ser Thr Leu Leu Gly Ser Arg Asp Pro Asp Leu Lys Asp Arg Ala
        195                 200                 205

Leu Leu Asn Gly Gly Thr Ser Val Thr Glu Lys Leu Ala Gln Leu Ile
    210                 215                 220

Ala Thr Cys Pro Pro Ser Lys Ser Ser Lys Thr Lys Pro Lys Lys Leu
225                 230                 235                 240

Gly Thr Gly Thr Thr Ala Gly Leu Val Ser Lys Asp Leu Ile Arg Lys
                245                 250                 255

Ala Gly Val Gly Ser Val Ala Gly Ile Ile His Lys Asp Leu Ile Lys
            260                 265                 270

Lys Pro Thr Ile Ser Thr Ala Val Gly Leu Val Thr Lys Asp Pro Gly
```

```
        275                 280                 285

Lys Lys Pro Val Phe Asn Ala Ala Val Gly Leu Val Asn Lys Asp Ser
    290                 295                 300

Val Lys Lys Leu Gly Thr Gly Thr Thr Ala Val Phe Ile Asn Lys Asn
305                 310                 315                 320

Leu Gly Lys Lys Pro Gly Thr Ile Thr Thr Val Gly Leu Leu Ser Lys
                325                 330                 335

Asp Ser Gly Lys Lys Leu Gly Ile Gly Ile Val Pro Gly Leu Val His
            340                 345                 350

Lys Glu Ser Gly Lys Lys Leu Gly Leu Gly Thr Val Val Gly Leu Val
        355                 360                 365

Asn Lys Asp Leu Gly Lys Lys Leu Gly Ser Thr Val Gly Leu Val Ala
    370                 375                 380

Lys Asp Cys Ala Lys Lys Ile Val Ala Ser Ser Ala Met Gly Leu Val
385                 390                 395                 400

Asn Lys Asp Ile Gly Lys Lys Leu Met Ser Cys Pro Leu Ala Gly Leu
                405                 410                 415

Ile Ser Lys Asp Ala Ile Asn Leu Lys Ala Glu Ala Leu Leu Pro Thr
            420                 425                 430

Gln Glu Pro Leu Lys Ala Ser Cys Ser Thr Asn Ile Asn Asn Gln Glu
        435                 440                 445

Ser Gln Glu Leu Ser Glu Ser Leu Lys Asp Ser Ala Thr Ser Lys Thr
    450                 455                 460

Phe Glu Lys Asn Val Val Arg Gln Asn Lys Glu Ser Ile Leu Glu Lys
465                 470                 475                 480

Phe Ser Val Arg Lys Glu Ile Ile Asn Leu Glu Lys Glu Met Phe Asn
                485                 490                 495

Glu Gly Thr Cys Ile Gln Gln Asp Ser Phe Ser Ser Ser Glu Lys Gly
            500                 505                 510
```

Ser Tyr Glu Thr Ser Lys His Glu Lys Gln Pro Pro Val Tyr Cys Thr
515 520 525

Ser Pro Asp Phe Lys Met Gly Gly Ala Ser Asp Val Ser Thr Ala Lys
530 535 540

Ser Pro Phe Ser Ala Val Gly Glu Ser Asn Leu Pro Ser Pro Ser Pro
545 550 555 560

Thr Val Ser Val Asn Pro Leu Thr Arg Ser Pro Pro Glu Thr Ser Ser
565 570 575

Gln Leu Ala Pro Asn Pro Leu Leu Leu Ser Ser Thr Thr Glu Leu Ile
580 585 590

Glu Glu Ile Ser Glu Ser Val Gly Lys Asn Gln Phe Thr Ser Glu Ser
595 600 605

Thr His Leu Asn Val Gly His Arg Ser Val Gly His Ser Ile Ser Ile
610 615 620

Glu Cys Lys Gly Ile Asp Lys Glu Val Asn Asp Ser Lys Thr Thr His
625 630 635 640

Ile Asp Ile Pro Arg Ile Ser Ser Ser Leu Gly Lys Lys Pro Ser Leu
645 650 655

Thr Ser Glu Ser Ser Ile His Thr Ile Thr Pro Ser Val Val Asn Phe
660 665 670

Thr Ser Leu Phe Ser Asn Lys Pro Phe Leu Lys Leu Gly Ala Val Ser
675 680 685

Ala Ser Asp Lys His Cys Gln Val Ala Glu Ser Leu Ser Thr Ser Leu
690 695 700

Gln Ser Lys Pro Leu Lys Lys Arg Lys Gly Arg Lys Pro Arg Trp Thr
705 710 715 720

Lys Val Val Ala Arg Ser Thr Cys Arg Ser Pro Lys Gly Leu Glu Leu
725 730 735

```
Glu Arg Ser Glu Leu Phe Lys Asn Val Ser Cys Ser Ser Leu Ser Asn
            740                 745                 750

Ser Asn Ser Glu Pro Ala Lys Phe Met Lys Asn Ile Gly Pro Pro Ser
        755                 760                 765

Phe Val Asp His Asp Phe Leu Lys Arg Arg Leu Pro Lys Leu Ser Lys
    770                 775                 780

Ser Thr Ala Pro Ser Leu Ala Leu Leu Ala Asp Ser Glu Lys Pro Ser
785                 790                 795                 800

His Lys Ser Phe Ala Thr His Lys Leu Ser Ser Ser Met Cys Val Ser
                805                 810                 815

Ser Asp Leu Leu Ser Asp Ile Tyr Lys Pro Lys Arg Gly Arg Pro Lys
            820                 825                 830

Ser Lys Glu Met Pro Gln Leu Glu Gly Pro Pro Lys Arg Thr Leu Lys
        835                 840                 845

Ile Pro Ala Ser Lys Val Phe Ser Leu Gln Ser Lys Glu Glu Gln Glu
    850                 855                 860

Pro Pro Ile Leu Gln Pro Glu Ile Glu Ile Pro Ser Phe Lys Gln Gly
865                 870                 875                 880

Leu Ser Val Ser Pro Phe Pro Lys Lys Arg Gly Arg Pro Lys Arg Gln
                885                 890                 895

Met Arg Ser Pro Val Lys Met Lys Pro Pro Val Leu Ser Val Ala Pro
            900                 905                 910

Phe Val Ala Thr Glu Ser Pro Ser Lys Leu Glu Ser Glu Ser Asp Asn
        915                 920                 925

His Arg Ser Ser Ser Asp Phe Phe Glu Ser Glu Asp Gln Leu Gln Asp
    930                 935                 940

Pro Asp Asp Leu Asp Asp Ser His Arg Pro Ser Val Cys Ser Met Ser
945                 950                 955                 960
```

```
Asp Leu Glu Met Glu Pro Asp Lys Lys Ile Thr Lys Arg Asn Asn Gly
                965                 970                 975

Gln Leu Met Lys Thr Ile Ile Arg Lys Ile Asn Lys Met Lys Thr Leu
            980                 985                 990

Lys Arg Lys Lys Leu Leu Asn Gln  Ile Leu Ser Ser Ser  Val Glu
Ser
        995                 1000                1005

Ser Asn  Lys Gly Lys Val Gln  Ser Lys Leu His Asn  Thr Val Ser
    1010                1015                1020

Ser Leu  Ala Ala Thr Phe Gly  Ser Lys Leu Gly Gln  Gln Ile Asn
    1025                1030                1035

Val Ser  Lys Lys Gly Thr Ile  Tyr Ile Gly Lys Arg  Arg Gly Arg
    1040                1045                1050

Lys Pro  Lys Thr Val Leu Asn  Gly Ile Leu Ser Gly  Ser Pro Thr
    1055                1060                1065

Ser Leu  Ala Val Leu Glu Gln  Thr Ala Gln Gln Ala  Ala Gly Ser
    1070                1075                1080

Ala Leu  Gly Gln Ile Leu Pro  Pro Leu Leu Pro Ser  Ser Ala Ser
    1085                1090                1095

Ser Ser  Glu Ile Leu Pro Ser  Pro Ile Cys Ser Gln  Ser Ser Gly
    1100                1105                1110

Thr Ser  Gly Gly Gln Ser Pro  Val Ser Ser Asp Ala  Gly Phe Val
    1115                1120                1125

Glu Pro  Ser Ser Val Pro Tyr  Leu His Leu His Ser  Arg Gln Gly
    1130                1135                1140

Ser Met  Ile Gln Thr Leu Ala  Met Lys Lys Ala Ser  Lys Gly Arg
    1145                1150                1155

Arg Arg  Leu Ser Pro Pro Thr  Leu Leu Pro Asn Ser  Pro Ser His
    1160                1165                1170
```

Leu Ser Glu Leu Thr Ser Leu Lys Glu Ala Thr Pro Ser Pro Ile
1175 1180 1185

Ser Glu Ser His Ser Asp Glu Thr Ile Pro Ser Asp Ser Gly Ile
1190 1195 1200

Gly Thr Asp Asn Asn Ser Thr Ser Asp Arg Ala Glu Lys Phe Cys
1205 1210 1215

Gly Gln Lys Lys Arg Arg His Ser Phe Glu His Val Ser Leu Ile
1220 1225 1230

Pro Pro Glu Thr Ser Thr Val Leu Ser Ser Leu Lys Glu Lys His
1235 1240 1245

Lys His Lys Cys Lys Arg Arg Asn His Asp Tyr Leu Ser Tyr Asp
1250 1255 1260

Lys Met Lys Arg Gln Lys Arg Lys Arg Lys Lys Lys Tyr Pro Gln
1265 1270 1275

Leu Arg Asn Arg Gln Asp Pro Asp Phe Ile Ala Glu Leu Glu Glu
1280 1285 1290

Leu Ile Ser Arg Leu Ser Glu Ile Arg Ile Thr His Arg Ser His
1295 1300 1305

His Phe Ile Pro Arg Asp Leu Leu Pro Thr Ile Phe Arg Ile Asn
1310 1315 1320

Phe Asn Ser Phe Tyr Thr His Pro Ser Phe Pro Leu Asp Pro Leu
1325 1330 1335

His Tyr Ile Arg Lys Pro Asp Leu Lys Lys Lys Arg Gly Arg Pro
1340 1345 1350

Pro Lys Met Arg Glu Ala Met Ala Glu Met Pro Phe Met His Ser
1355 1360 1365

Leu Ser Phe Pro Leu Ser Ser Thr Gly Phe Tyr Pro Ser Tyr Gly
1370 1375 1380

Met Pro Tyr Ser Pro Ser Pro Leu Thr Ala Ala Pro Ile Gly Leu

1385 1390 1395

Gly Tyr Tyr Gly Arg Tyr Pro Pro Thr Leu Tyr Pro Pro Pro Pro
1400 1405 1410

Ser Pro Ser Phe Thr Thr Pro Leu Pro Pro Pro Ser Tyr Met His
1415 1420 1425

Ala Gly His Leu Leu Leu Asn Pro Ala Lys Tyr His Lys Lys Lys
1430 1435 1440

His Lys Leu Leu Arg Gln Glu Ala Phe Leu Thr Thr Ser Arg Thr
1445 1450 1455

Pro Leu Leu Ser Met Ser Thr Tyr Pro Ser Val Pro Pro Glu Met
1460 1465 1470

Ala Tyr Gly Trp Met Val Glu His Lys His Arg His Arg His Lys
1475 1480 1485

His Arg Glu His Arg Ser Ser Glu Gln Pro Gln Val Ser Met Asp
1490 1495 1500

Thr Gly Ser Ser Arg Ser Val Leu Glu Ser Leu Lys Arg Tyr Arg
1505 1510 1515

Phe Gly Lys Asp Ala Val Gly Glu Arg Tyr Lys His Lys Glu Lys
1520 1525 1530

His Arg Cys His Met Ser Cys Pro His Leu Ser Pro Ser Lys Ser
1535 1540 1545

Leu Ile Asn Arg Glu Glu Gln Trp Val His Arg Glu Pro Ser Glu
1550 1555 1560

Ser Ser Pro Leu Ala Leu Gly Leu Gln Thr Pro Leu Gln Ile Asp
1565 1570 1575

Cys Ser Glu Ser Ser Pro Ser Leu Ser Leu Gly Gly Phe Thr Pro
1580 1585 1590

Asn Ser Glu Pro Ala Ser Ser Asp Glu His Thr Asn Leu Phe Thr
1595 1600 1605

```
Ser Ala  Ile Gly Ser Cys Arg  Val Ser Asn Pro Asn  Ser Ser Gly
    1610                 1615                 1620

Arg Lys  Lys Leu Thr Asp Ser  Pro Gly Leu Phe Ser  Ala Gln Asp
    1625                 1630                 1635

Thr Ser  Leu Asn Arg Leu His  Arg Lys Glu Ser Leu  Pro Ser Asn
    1640                 1645                 1650

Glu Arg  Ala Val Gln Thr Leu  Ala Gly Ser Gln Pro  Thr Ser Asp
    1655                 1660                 1665

Lys Pro  Ser Gln Arg Pro Ser  Glu Ser Thr Asn Cys  Ser Pro Thr
    1670                 1675                 1680

Arg Lys  Arg Ser Ser Ser Glu  Ser Thr Ser Ser Thr  Val Asn Gly
    1685                 1690                 1695

Val Pro  Ser Arg Ser Pro Arg  Leu Val Ala Ser Gly  Asp Asp Ser
    1700                 1705                 1710

Val Asp  Ser Leu Leu Gln Arg  Met Val Gln Asn Glu  Asp Gln Glu
    1715                 1720                 1725

Pro Met  Glu Lys Ser Ile Asp  Ala Val Ile Ala Thr  Ala Ser Ala
    1730                 1735                 1740

Pro Pro  Ser Ser Ser Pro Gly  Arg Ser His Ser Lys  Asp Arg Thr
    1745                 1750                 1755

Leu Gly  Lys Pro Asp Ser Leu  Leu Val Pro Ala Val  Thr Ser Asp
    1760                 1765                 1770

Ser Cys  Asn Asn Ser Ile Ser  Leu Leu Ser Glu Lys  Leu Thr Ser
    1775                 1780                 1785

Ser Cys  Ser Pro His His Ile  Lys Arg Ser Val Val  Glu Ala Met
    1790                 1795                 1800

Gln Arg  Gln Ala Arg Lys Met  Cys Asn Tyr Asp Lys  Ile Leu Ala
    1805                 1810                 1815
```

```
Thr Lys  Lys Asn Leu Asp His  Val Asn Lys Ile Leu  Lys Ala Lys
    1820                 1825                 1830

Lys Leu  Gln Arg Gln Ala Arg  Thr Gly Asn Asn Phe  Val Lys Arg
    1835                 1840                 1845

Arg Pro  Gly Arg Pro Arg Lys  Cys Pro Leu Gln Ala  Val Val Ser
    1850                 1855                 1860

Met Gln  Ala Phe Gln Ala Ala  Gln Phe Val Asn Pro  Glu Leu Asn
    1865                 1870                 1875

Arg Asp  Glu Glu Gly Ala Ala  Leu His Leu Ser Pro  Asp Thr Val
    1880                 1885                 1890

Thr Asp  Val Ile Glu Ala Val  Val Gln Ser Val Asn  Leu Asn Pro
    1895                 1900                 1905

Glu His  Lys Lys Gly Leu Lys  Arg Lys Gly Trp Leu  Leu Glu Glu
    1910                 1915                 1920

Gln Thr  Arg Lys Lys Gln Lys  Pro Leu Pro Glu Glu  Glu Glu Gln
    1925                 1930                 1935

Glu Asn  Asn Lys Ser Phe Asn  Glu Ala Pro Val Glu  Ile Pro Ser
    1940                 1945                 1950

Pro Ser  Glu Thr Pro Ala Lys  Pro Ser Glu Pro Glu  Ser Thr Leu
    1955                 1960                 1965

Gln Pro  Val Leu Ser Leu Ile  Pro Arg Glu Lys Lys  Pro Pro Arg
    1970                 1975                 1980

Pro Pro  Lys Lys Lys Tyr Gln  Lys Ala Gly Leu Tyr  Ser Asp Val
    1985                 1990                 1995

Tyr Lys  Thr Thr Asp Pro Lys  Ser Arg Leu Ile Gln  Leu Lys Lys
    2000                 2005                 2010

Glu Lys  Leu Glu Tyr Thr Pro  Gly Glu His Glu Tyr  Gly Leu Phe
    2015                 2020                 2025
```

Pro Ala Pro Ile His Val Gly Lys Tyr Leu Arg Gln Lys Arg Ile
2030 2035 2040

Asp Phe Gln Leu Pro Tyr Asp Ile Leu Trp Gln Trp Lys His Asn
2045 2050 2055

Gln Leu Tyr Lys Lys Pro Asp Val Pro Leu Tyr Lys Lys Ile Arg
2060 2065 2070

Ser Asn Val Tyr Val Asp Val Lys Pro Leu Ser Gly Tyr Glu Ala
2075 2080 2085

Thr Thr Cys Asn Cys Lys Lys Pro Asp Asp Asp Thr Arg Lys Gly
2090 2095 2100

Cys Val Asp Asp Cys Leu Asn Arg Met Ile Phe Ala Glu Cys Ser
2105 2110 2115

Pro Asn Thr Cys Pro Cys Gly Glu Gln Cys Cys Asn Gln Arg Ile
2120 2125 2130

Gln Arg His Glu Trp Val Gln Cys Leu Glu Arg Phe Arg Ala Glu
2135 2140 2145

Glu Lys Gly Trp Gly Ile Arg Thr Lys Glu Pro Leu Lys Ala Gly
2150 2155 2160

Gln Phe Ile Ile Glu Tyr Leu Gly Glu Val Val Ser Glu Gln Glu
2165 2170 2175

Phe Arg Asn Arg Met Ile Glu Gln Tyr His Asn His Ser Asp His
2180 2185 2190

Tyr Cys Leu Asn Leu Asp Ser Gly Met Val Ile Asp Ser Tyr Arg
2195 2200 2205

Met Gly Asn Glu Ala Arg Phe Ile Asn His Ser Cys Asp Pro Asn
2210 2215 2220

Cys Glu Met Gln Lys Trp Ser Val Asn Gly Val Tyr Arg Ile Gly
2225 2230 2235

Leu Tyr Ala Leu Lys Asp Met Pro Ala Gly Thr Glu Leu Thr Tyr

2240 2245 2250

Asp Tyr Asn Phe His Ser Phe Asn Val Glu Lys Gln Gln Leu Cys
2255 2260 2265

Lys Cys Gly Phe Glu Lys Cys Arg Gly Ile Ile Gly Gly Lys Ser
2270 2275 2280

Gln Arg Val Asn Gly Leu Thr Ser Ser Lys Asn Ser Gln Pro Met
2285 2290 2295

Ala Thr His Lys Lys Ser Gly Arg Ser Lys Glu Lys Arg Lys Ser
2300 2305 2310

Lys His Lys Leu Lys Lys Arg Arg Gly His Leu Ser Glu Glu Pro
2315 2320 2325

Ser Glu Asn Ile Asn Thr Pro Thr Arg Leu Thr Pro Gln Leu Gln
2330 2335 2340

Met Lys Pro Met Ser Asn Arg Glu Arg Asn Phe Val Leu Lys His
2345 2350 2355

His Val Phe Leu Val Arg Asn Trp Glu Lys Ile Arg Gln Lys Gln
2360 2365 2370

Glu Glu Val Lys His Thr Ser Asp Asn Ile His Ser Ala Ser Leu
2375 2380 2385

Tyr Thr Arg Trp Asn Gly Ile Cys Arg Asp Asp Gly Asn Ile Lys
2390 2395 2400

Ser Asp Val Phe Met Thr Gln Phe Ser Ala Leu Gln Thr Ala Arg
2405 2410 2415

Ser Val Arg Thr Arg Arg Leu Ala Ala Ala Glu Glu Asn Ile Glu
2420 2425 2430

Val Ala Arg Ala Ala Arg Leu Ala Gln Ile Phe Lys Glu Ile Cys
2435 2440 2445

Asp Gly Ile Ile Ser Tyr Lys Asp Ser Ser Arg Gln Ala Leu Ala
2450 2455 2460

```
Ala Pro  Leu Leu Asn Leu Pro  Pro Lys Lys Lys Asn  Ala Asp Tyr
    2465                 2470                 2475

Tyr Glu  Lys Ile Ser Asp Pro  Leu Asp Leu Ile Thr  Ile Glu Lys
    2480                 2485                 2490

Gln Ile  Leu Thr Gly Tyr Tyr  Lys Thr Val Glu Ala  Phe Asp Ala
    2495                 2500                 2505

Asp Met  Leu Lys Val Phe Arg  Asn Ala Glu Lys Tyr  Tyr Gly Arg
    2510                 2515                 2520

Lys Ser  Pro Val Gly Arg Asp  Val Cys Arg Leu Arg  Lys Ala Tyr
    2525                 2530                 2535

Tyr Asn  Ala Arg His Glu Ala  Ser Ala Gln Ile Asp  Glu Ile Val
    2540                 2545                 2550

Gly Glu  Thr Ala Ser Glu Ala  Asp Ser Ser Glu Thr  Ser Val Ser
    2555                 2560                 2565

Glu Lys  Glu Asn Gly His Glu  Lys Asp Asp Asp Val  Ile Arg Cys
    2570                 2575                 2580

Ile Cys  Gly Leu Tyr Lys Asp  Glu Gly Leu Met Ile  Gln Cys Asp
    2585                 2590                 2595

Lys Cys  Met Val Trp Gln His  Cys Asp Cys Met Gly  Val Asn Ser
    2600                 2605                 2610

Asp Val  Glu His Tyr Leu Cys  Glu Gln Cys Asp Pro  Arg Pro Val
    2615                 2620                 2625

Asp Arg  Glu Val Pro Met Ile  Pro Arg Pro His Tyr  Ala Gln Pro
    2630                 2635                 2640

Gly Cys  Val Tyr Phe Ile Cys  Leu Leu Arg Asp Asp  Leu Leu Leu
    2645                 2650                 2655

Arg Gln  Gly Asp Cys Val Tyr  Leu Met Arg Asp Ser  Arg Arg Thr
    2660                 2665                 2670
```

```
Pro Asp  Gly His Pro Val Arg  Gln Ser Tyr Arg Leu  Leu Ser His
    2675                2680                2685

Ile Asn  Arg Asp Lys Leu Asp  Ile Phe Arg Ile Glu  Lys Leu Trp
    2690                2695                2700

Lys Asn  Glu Lys Glu Glu Arg  Phe Ala Phe Gly His  His Tyr Phe
    2705                2710                2715

Arg Pro  His Glu Thr His His  Ser Pro Ser Arg Arg  Phe Tyr His
    2720                2725                2730

Asn Glu  Leu Phe Arg Val Pro  Leu Tyr Glu Ile Ile  Pro Leu Glu
    2735                2740                2745

Ala Val  Val Gly Thr Cys Cys  Val Leu Asp Leu Tyr  Thr Tyr Cys
    2750                2755                2760

Lys Gly  Arg Pro Lys Gly Val  Lys Glu Gln Asp Val  Tyr Ile Cys
    2765                2770                2775

Asp Tyr  Arg Leu Asp Lys Ser  Ala His Leu Phe Tyr  Lys Ile His
    2780                2785                2790

Arg Asn  Arg Tyr Pro Val Cys  Thr Lys Pro Tyr Ala  Phe Asp His
    2795                2800                2805

Phe Pro  Lys Lys Leu Thr Pro  Lys Lys Asp Phe Ser  Pro His Tyr
    2810                2815                2820

Val Pro  Asp Asn Tyr Lys Arg  Asn Gly Gly Arg Ser  Ser Trp Lys
    2825                2830                2835

Ser Glu  Arg Ser Lys Pro Pro  Leu Lys Asp Leu Gly  Gln Glu Asp
    2840                2845                2850

Asp Ala  Leu Pro Leu Ile Glu  Glu Val Leu Ala Ser  Gln Glu Gln
    2855                2860                2865

Ala Ala  Asn Glu Ile Pro Ser  Leu Glu Glu Pro Glu  Arg Glu Gly
    2870                2875                2880
```

```
Ala Thr  Ala Asn Val Ser Glu  Gly Glu Lys Lys Thr  Glu Glu Ser
    2885                2890                2895


Ser Gln  Glu Pro Gln Ser Thr  Cys Thr Pro Glu Glu  Arg Arg His
    2900                2905                2910


Asn Gln  Arg Glu Arg Leu Asn  Gln Ile Leu Leu Asn  Leu Leu Glu
    2915                2920                2925


Lys Ile  Pro Gly Lys Asn Ala  Ile Asp Val Thr Tyr  Leu Leu Glu
    2930                2935                2940


Glu Gly  Ser Gly Arg Lys Leu  Arg Arg Arg Thr Leu  Phe Ile Pro
    2945                2950                2955


Glu Asn  Ser Phe Arg Lys
    2960


<210> 6635
<211> 154
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1432; "

<220>
<221> source
<223> /note="Gene Symbol: ASH1L; "

<220>
<221> source
<223> /note="Gene Name:
      ash1 (absent, small, or homeotic)-like (Drosophila); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000448820"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6635
Xaa Leu Lys Val Phe Arg Asn Ala Glu Lys Tyr Tyr Gly Arg Lys Ser
1               5                  10                  15
```

```
Pro Val Gly Arg Asp Val Cys Arg Leu Arg Lys Ala Tyr Tyr Asn Ala
            20                  25                  30

Arg His Glu Ala Ser Ala Gln Ile Asp Glu Ile Val Gly Glu Thr Ala
        35                  40                  45

Ser Glu Ala Asp Ser Ser Glu Thr Ser Val Ser Glu Lys Glu Asn Gly
    50                  55                  60

His Glu Lys Asp Asp Asp Val Ile Arg Cys Ile Cys Gly Leu Tyr Lys
65                  70                  75                  80

Asp Glu Gly Leu Met Ile Gln Cys Asp Lys Cys Met Val Trp Gln His
                85                  90                  95

Cys Asp Cys Met Gly Val Asn Ser Asp Val Glu His Tyr Leu Cys Glu
            100                 105                 110

Gln Cys Asp Pro Arg Pro Val Asp Arg Glu Tyr Asp Gln Arg Glu Asn
        115                 120                 125

Lys Ile Leu Arg Asn Leu Trp Lys Glu Trp His Tyr Ile Lys Leu Arg
    130                 135                 140

Phe Leu Ala Gly His Gly Arg Ser Cys Leu
145                 150


<210> 6636
<211> 177
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1432; "

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<220>
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<223> /note="Gene Name:
      ash1 (absent, small, or homeotic)-like (Drosophila); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000449283"
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<400> 6636
Met Asp Pro Arg Asn Thr Ala Met Leu Gly Leu Gly Ser Asp Ser Glu
1 5 10 15

Gly Phe Ser Arg Lys Ser Pro Ser Ala Ile Ser Thr Gly Thr Leu Val
20 25 30

Ser Lys Arg Glu Val Glu Leu Glu Lys Asn Thr Lys Glu Glu Glu Asp
35 40 45

Leu Arg Lys Arg Asn Arg Glu Arg Asn Ile Glu Ala Gly Lys Asp Asp
50 55 60

Gly Leu Thr Asp Ala Gln Gln Gln Phe Ser Val Lys Glu Thr Asn Phe
65 70 75 80

Ser Glu Gly Asn Leu Lys Leu Lys Ile Gly Leu Gln Ala Lys Arg Thr
85 90 95

Lys Lys Pro Pro Lys Asn Leu Glu Asn Tyr Val Cys Arg Pro Ala Ile
100 105 110

Lys Thr Thr Ile Lys His Pro Arg Lys Ala Leu Lys Ser Gly Lys Met
115 120 125

Thr Asp Glu Lys Asn Glu His Cys Pro Ser Lys Arg Met Glu Ser Tyr
130 135 140

Ser Val Ala Gln Thr Gly Val Gln Trp Cys Asp Leu Gly Ser Pro Gln
145 150 155 160

Pro Pro Pro Pro Gly Phe Lys Arg Phe Ser Tyr Ser Pro Ala Ser Ala
165 170 175

Pro

<210> 6637
<211> 628
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1433; "

<220>
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<223> /note="Gene Symbol: ASH2L; "

<220>
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<223> /note="Gene Name:
ash2 (absent, small, or homeotic)-like (Drosophila); "

<220>
<221> source
<223> /note="Uniprot ID: Q9UBL3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000340896"

<400> 6637

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Met Ala Ala Ala Gly Ala Gly Pro Gly Gln Glu Ala Gly Ala Gly Pro
1               5                   10                  15


Gly Pro Gly Ala Val Ala Asn Ala Thr Gly Ala Glu Glu Gly Glu Met
            20                  25                  30


Lys Pro Val Ala Ala Gly Ala Ala Ala Pro Pro Gly Glu Gly Ile Ser
        35                  40                  45


Ala Ala Pro Thr Val Glu Pro Ser Ser Gly Glu Ala Glu Gly Gly Glu
    50                  55                  60


Ala Asn Leu Val Asp Val Ser Gly Gly Leu Glu Thr Glu Ser Ser Asn
65                  70                  75                  80


Gly Lys Asp Thr Leu Glu Gly Ala Gly Asp Thr Ser Glu Val Met Asp
                85                  90                  95


Thr Gln Ala Gly Ser Val Asp Glu Glu Asn Gly Arg Gln Leu Gly Glu
            100                 105                 110


Val Glu Leu Gln Cys Gly Ile Cys Thr Lys Trp Phe Thr Ala Asp Thr
        115                 120                 125


Phe Gly Ile Asp Thr Ser Ser Cys Leu Pro Phe Met Thr Asn Tyr Ser
    130                 135                 140


Phe His Cys Asn Val Cys His His Ser Gly Asn Thr Tyr Phe Leu Arg
```

145 150 155 160

Lys Gln Ala Asn Leu Lys Glu Met Cys Leu Ser Ala Leu Ala Asn Leu
165 170 175

Thr Trp Gln Ser Arg Thr Gln Asp Glu His Pro Lys Thr Met Phe Ser
180 185 190

Lys Asp Lys Asp Ile Ile Pro Phe Ile Asp Lys Tyr Trp Glu Cys Met
195 200 205

Thr Thr Arg Gln Arg Pro Gly Lys Met Thr Trp Pro Asn Asn Ile Val
210 215 220

Lys Thr Met Ser Lys Glu Arg Asp Val Phe Leu Val Lys Glu His Pro
225 230 235 240

Asp Pro Gly Ser Lys Asp Pro Glu Glu Asp Tyr Pro Lys Phe Gly Leu
245 250 255

Leu Asp Gln Asp Leu Ser Asn Ile Gly Pro Ala Tyr Asp Asn Gln Lys
260 265 270

Gln Ser Ser Ala Val Ser Thr Ser Gly Asn Leu Asn Gly Gly Ile Ala
275 280 285

Ala Gly Ser Ser Gly Lys Gly Arg Gly Ala Lys Arg Lys Gln Gln Asp
290 295 300

Gly Gly Thr Thr Gly Thr Thr Lys Lys Ala Arg Ser Asp Pro Leu Phe
305 310 315 320

Ser Ala Gln Arg Leu Pro Pro His Gly Tyr Pro Leu Glu His Pro Phe
325 330 335

Asn Lys Asp Gly Tyr Arg Tyr Ile Leu Ala Glu Pro Asp Pro His Ala
340 345 350

Pro Asp Pro Glu Lys Leu Glu Leu Asp Cys Trp Ala Gly Lys Pro Ile
355 360 365

Pro Gly Asp Leu Tyr Arg Ala Cys Leu Tyr Glu Arg Val Leu Leu Ala
370 375 380

```
Leu His Asp Arg Ala Pro Gln Leu Lys Ile Ser Asp Asp Arg Leu Thr
385                 390                 395                 400

Val Val Gly Glu Lys Gly Tyr Ser Met Val Arg Ala Ser His Gly Val
                405                 410                 415

Arg Lys Gly Ala Trp Tyr Phe Glu Ile Thr Val Asp Glu Met Pro Pro
            420                 425                 430

Asp Thr Ala Ala Arg Leu Gly Trp Ser Gln Pro Leu Gly Asn Leu Gln
        435                 440                 445

Ala Pro Leu Gly Tyr Asp Lys Phe Ser Tyr Ser Trp Arg Ser Lys Lys
    450                 455                 460

Gly Thr Lys Phe His Gln Ser Ile Gly Lys His Tyr Ser Ser Gly Tyr
465                 470                 475                 480

Gly Gln Gly Asp Val Leu Gly Phe Tyr Ile Asn Leu Pro Glu Asp Thr
                485                 490                 495

Glu Thr Ala Lys Ser Leu Pro Asp Thr Tyr Lys Asp Lys Ala Leu Ile
            500                 505                 510

Lys Phe Lys Ser Tyr Leu Tyr Phe Glu Glu Lys Asp Phe Val Asp Lys
        515                 520                 525

Ala Glu Lys Ser Leu Lys Gln Thr Pro His Ser Glu Ile Ile Phe Tyr
    530                 535                 540

Lys Asn Gly Val Asn Gln Gly Val Ala Tyr Lys Asp Ile Phe Glu Gly
545                 550                 555                 560

Val Tyr Phe Pro Ala Ile Ser Leu Tyr Lys Ser Cys Thr Val Ser Ile
                565                 570                 575

Asn Phe Gly Pro Cys Phe Lys Tyr Pro Pro Lys Asp Leu Thr Tyr Arg
            580                 585                 590

Pro Met Ser Asp Met Gly Trp Gly Ala Val Val Glu His Thr Leu Ala
        595                 600                 605
```

Asp Val Leu Tyr His Val Glu Thr Glu Val Asp Gly Arg Arg Ser Pro
610 615 620

Pro Trp Glu Pro
625

<210> 6638
<211> 534
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1433; "

<220>
<221> source
<223> /note="Gene Symbol: ASH2L; "

<220>
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<223> /note="Gene Name:
ash2 (absent, small, or homeotic)-like (Drosophila); "

<220>
<221> source
<223> /note="Uniprot ID: Q9UBL3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000395310"

<400> 6638
Met Asp Thr Gln Ala Gly Ser Val Asp Glu Glu Asn Gly Arg Gln Leu
1 5 10 15

Gly Glu Val Glu Leu Gln Cys Gly Ile Cys Thr Lys Trp Phe Thr Ala
20 25 30

Asp Thr Phe Gly Ile Asp Thr Ser Ser Cys Leu Pro Phe Met Thr Asn
35 40 45

Tyr Ser Phe His Cys Asn Val Cys His His Ser Gly Asn Thr Tyr Phe
50 55 60

Leu Arg Lys Gln Ala Asn Leu Lys Glu Met Cys Leu Ser Ala Leu Ala
65 70 75 80

Asn Leu Thr Trp Gln Ser Arg Thr Gln Asp Glu His Pro Lys Thr Met

```
                85                  90                  95

Phe Ser Lys Asp Lys Asp Ile Ile Pro Phe Ile Asp Lys Tyr Trp Glu
            100                 105                 110

Cys Met Thr Thr Arg Gln Arg Pro Gly Lys Met Thr Trp Pro Asn Asn
        115                 120                 125

Ile Val Lys Thr Met Ser Lys Glu Arg Asp Val Phe Leu Val Lys Glu
    130                 135                 140

His Pro Asp Pro Gly Ser Lys Asp Pro Glu Glu Asp Tyr Pro Lys Phe
145                 150                 155                 160

Gly Leu Leu Asp Gln Asp Leu Ser Asn Ile Gly Pro Ala Tyr Asp Asn
                165                 170                 175

Gln Lys Gln Ser Ser Ala Val Ser Thr Ser Gly Asn Leu Asn Gly Gly
            180                 185                 190

Ile Ala Ala Gly Ser Ser Gly Lys Gly Arg Gly Ala Lys Arg Lys Gln
        195                 200                 205

Gln Asp Gly Gly Thr Thr Gly Thr Thr Lys Lys Ala Arg Ser Asp Pro
    210                 215                 220

Leu Phe Ser Ala Gln Arg Leu Pro Pro His Gly Tyr Pro Leu Glu His
225                 230                 235                 240

Pro Phe Asn Lys Asp Gly Tyr Arg Tyr Ile Leu Ala Glu Pro Asp Pro
                245                 250                 255

His Ala Pro Asp Pro Glu Lys Leu Glu Leu Asp Cys Trp Ala Gly Lys
            260                 265                 270

Pro Ile Pro Gly Asp Leu Tyr Arg Ala Cys Leu Tyr Glu Arg Val Leu
        275                 280                 285

Leu Ala Leu His Asp Arg Ala Pro Gln Leu Lys Ile Ser Asp Asp Arg
    290                 295                 300

Leu Thr Val Val Gly Glu Lys Gly Tyr Ser Met Val Arg Ala Ser His
305                 310                 315                 320
```

```
Gly Val Arg Lys Gly Ala Trp Tyr Phe Glu Ile Thr Val Asp Glu Met
                325                 330                 335

Pro Pro Asp Thr Ala Ala Arg Leu Gly Trp Ser Gln Pro Leu Gly Asn
            340                 345                 350

Leu Gln Ala Pro Leu Gly Tyr Asp Lys Phe Ser Tyr Ser Trp Arg Ser
        355                 360                 365

Lys Lys Gly Thr Lys Phe His Gln Ser Ile Gly Lys His Tyr Ser Ser
    370                 375                 380

Gly Tyr Gly Gln Gly Asp Val Leu Gly Phe Tyr Ile Asn Leu Pro Glu
385                 390                 395                 400

Asp Thr Glu Thr Ala Lys Ser Leu Pro Asp Thr Tyr Lys Asp Lys Ala
                405                 410                 415

Leu Ile Lys Phe Lys Ser Tyr Leu Tyr Phe Glu Glu Lys Asp Phe Val
            420                 425                 430

Asp Lys Ala Glu Lys Ser Leu Lys Gln Thr Pro His Ser Glu Ile Ile
        435                 440                 445

Phe Tyr Lys Asn Gly Val Asn Gln Gly Val Ala Tyr Lys Asp Ile Phe
    450                 455                 460

Glu Gly Val Tyr Phe Pro Ala Ile Ser Leu Tyr Lys Ser Cys Thr Val
465                 470                 475                 480

Ser Ile Asn Phe Gly Pro Cys Phe Lys Tyr Pro Pro Lys Asp Leu Thr
                485                 490                 495

Tyr Arg Pro Met Ser Asp Met Gly Trp Gly Ala Val Val Glu His Thr
            500                 505                 510

Leu Ala Asp Val Leu Tyr His Val Glu Thr Glu Val Asp Gly Arg Arg
        515                 520                 525

Ser Pro Pro Trp Glu Pro
    530
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<210> 6639
<211> 90
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ASH2L; "

<220>
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<223> /note="Gene Name:
ash2 (absent, small, or homeotic)-like (Drosophila); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000427839"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6639
Xaa Gln Ile Ile Phe Tyr Lys Asn Gly Val Asn Gln Gly Val Ala Tyr
1 5 10 15

Lys Asp Ile Phe Glu Gly Val Tyr Phe Pro Ala Ile Ser Leu Tyr Lys
20 25 30

Ser Cys Thr Val Ser Ile Asn Phe Gly Pro Cys Phe Lys Tyr Pro Pro
35 40 45

Lys Asp Leu Thr Tyr Arg Pro Met Ser Asp Met Gly Trp Gly Ala Val
50 55 60

Val Glu His Thr Leu Ala Asp Val Leu Tyr His Val Glu Thr Glu Val
65 70 75 80

Asp Gly Arg Arg Ser Pro Pro Trp Glu Pro
85 90

<210> 6640
<211> 201
<212> PRT

<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1433; "

<220>
<221> source
<223> /note="Gene Symbol: ASH2L; "

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<220>
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<223> /note="ENSP ID: ENSP00000428877"

<400> 6640
Met Ala Ala Ala Gly Ala Gly Pro Gly Gln Glu Ala Gly Ala Gly Pro
1 5 10 15

Gly Pro Gly Ala Val Ala Asn Ala Thr Gly Ala Glu Glu Gly Glu Met
20 25 30

Lys Pro Val Ala Ala Gly Ala Ala Ala Pro Pro Gly Glu Gly Ile Ser
35 40 45

Ala Ala Pro Thr Val Glu Pro Ser Ser Gly Glu Ala Glu Gly Gly Lys
50 55 60

Glu Thr Thr Leu Gln Cys Gln Thr Gly Arg Ser Asn Gly His Ser Glu
65 70 75 80

Asn Arg Val Gly Glu Leu Pro Leu Phe Glu Pro Leu Pro Gly Pro Thr
85 90 95

Leu Thr Gln Glu Gly Ala Gly Asp Thr Ser Glu Val Met Asp Thr Gln
100 105 110

Ala Gly Ser Val Asp Glu Glu Asn Gly Arg Gln Leu Gly Glu Val Glu
115 120 125

Leu Gln Cys Gly Ile Cys Thr Lys Trp Phe Thr Ala Asp Thr Phe Gly
130 135 140

Ile Asp Thr Ser Ser Cys Leu Pro Phe Met Thr Asn Tyr Ser Phe His

```
145                 150                 155                 160

Cys Asn Val Cys His His Ser Gly Asn Thr Tyr Phe Leu Arg Lys Gln
                165                 170                 175

Ala Asn Leu Lys Glu Met Cys Leu Ser Ala Leu Ala Asn Leu Thr Trp
            180                 185                 190

Gln Ser Arg Thr Gln Asp Glu His Pro
        195                 200


<210> 6641
<211> 192
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1433; "

<220>
<221> source
<223> /note="Gene Symbol: ASH2L; "

<220>
<221> source
<223> /note="Gene Name:
      ash2 (absent, small, or homeotic)-like (Drosophila); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429387"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6641
Xaa Gly Tyr Ser Met Val Arg Ala Ser His Gly Val Arg Lys Gly Ala
1               5                   10                  15

Trp Tyr Phe Glu Ile Thr Val Asp Glu Met Pro Pro Asp Thr Ala Ala
            20                  25                  30

Arg Leu Gly Trp Ser Gln Pro Leu Gly Asn Leu Gln Ala Pro Leu Gly
        35                  40                  45

Tyr Asp Lys Phe Ser Tyr Ser Trp Arg Ser Lys Lys Gly Thr Lys Phe
```

```
    50                  55                  60

His Gln Ser Ile Gly Lys His Tyr Ser Ser Gly Tyr Gly Gln Gly Asp
65                  70                  75                  80

Val Leu Gly Phe Tyr Ile Asn Leu Pro Glu Asp Thr Glu Thr Ala Lys
                85                  90                  95

Ser Leu Pro Asp Thr Tyr Lys Asp Lys Ala Leu Ile Lys Phe Lys Ser
            100                 105                 110

Tyr Leu Tyr Phe Glu Glu Lys Asp Phe Val Asp Lys Ala Glu Lys Ser
        115                 120                 125

Leu Lys Gln Thr Pro His Ser Glu Ile Ile Phe Tyr Lys Asn Gly Val
    130                 135                 140

Asn Gln Gly Val Ala Tyr Lys Asp Ile Phe Glu Gly Val Tyr Phe Pro
145                 150                 155                 160

Ala Ile Ser Leu Tyr Lys Ser Cys Thr Val Ser Ile Asn Phe Gly Pro
                165                 170                 175

Cys Phe Lys Tyr Pro Pro Lys Asp Leu Thr Tyr Arg Pro Val Ser Asn
            180                 185                 190


<210> 6642
<211> 501
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1433; "

<220>
<221> source
<223> /note="Gene Symbol: ASH2L; "

<220>
<221> source
<223> /note="Gene Name:
      ash2 (absent, small, or homeotic)-like (Drosophila); "

<220>
<221> source
<223> /note="Uniprot ID:  Q9UBL3; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000430259"

<400> 6642
Met Asp Thr Gln Ala Gly Ser Val Asp Glu Glu Asn Gly Arg Gln Leu
1   5   10   15

Gly Glu Val Glu Leu Gln Cys Gly Ile Cys Thr Lys Trp Phe Thr Ala
            20   25   30

Asp Thr Phe Gly Ile Asp Thr Ser Ser Cys Leu Pro Phe Met Thr Asn
        35   40   45

Tyr Ser Phe His Cys Asn Val Cys His His Ser Gly Asn Thr Tyr Phe
    50   55   60

Leu Arg Lys Gln Ala Asn Leu Lys Glu Met Cys Leu Ser Ala Leu Ala
65   70   75   80

Asn Leu Thr Trp Gln Ser Arg Thr Gln Asp Glu His Pro Lys Thr Met
                85   90   95

Phe Ser Lys Asp Lys Asp Ile Ile Pro Phe Ile Asp Lys Tyr Trp Glu
            100   105   110

Cys Met Thr Thr Arg Gln Arg Pro Gly Lys Met Thr Trp Pro Asn Asn
        115   120   125

Ile Val Lys Thr Met Ser Lys Glu Arg Asp Val Phe Leu Val Lys Glu
    130   135   140

His Pro Asp Pro Gly Ser Lys Asp Pro Glu Glu Asp Tyr Pro Lys Phe
145   150   155   160

Gly Leu Leu Asp Gln Asp Leu Ser Asn Ile Gly Pro Ala Tyr Asp Asn
                165   170   175

Gln Lys Gln Ser Ser Ala Val Ser Thr Ser Gly Asn Leu Asn Gly Gly
            180   185   190

Ile Ala Ala Gly Ser Ser Gly Lys Gly Arg Gly Ala Lys Arg Lys Gln
        195   200   205

```
Gln Asp Gly Gly Thr Thr Gly Thr Thr Lys Lys Ala Arg Ser Asp Pro
    210                 215                 220

Leu Phe Ser Ala Gln Arg Leu Pro Pro His Gly Tyr Pro Leu Glu His
225                 230                 235                 240

Pro Phe Asn Lys Asp Gly Tyr Arg Tyr Ile Leu Ala Glu Pro Asp Pro
                245                 250                 255

His Ala Pro Asp Pro Glu Lys Leu Glu Leu Asp Cys Trp Ala Gly Lys
            260                 265                 270

Pro Ile Pro Gly Asp Leu Tyr Arg Ala Cys Leu Tyr Glu Arg Val Leu
        275                 280                 285

Leu Ala Leu His Asp Arg Ala Pro Gln Leu Lys Ile Ser Asp Asp Arg
    290                 295                 300

Leu Thr Val Val Gly Glu Lys Gly Tyr Ser Met Val Arg Ala Ser His
305                 310                 315                 320

Gly Val Arg Lys Gly Ala Trp Tyr Phe Glu Ile Thr Val Asp Glu Met
                325                 330                 335

Pro Pro Asp Thr Ala Ala Arg Leu Gly Trp Ser Gln Pro Leu Gly Asn
            340                 345                 350

Leu Gln Ala Pro Leu Gly Tyr Asp Lys Phe Ser Tyr Ser Trp Arg Ser
        355                 360                 365

Lys Lys Gly Thr Lys Phe His Gln Ser Ile Gly Lys His Tyr Ser Ser
    370                 375                 380

Gly Tyr Gly Gln Gly Asp Val Leu Gly Phe Tyr Ile Asn Leu Pro Glu
385                 390                 395                 400

Asp Thr Glu Thr Ala Lys Ser Leu Pro Asp Thr Tyr Lys Asp Lys Ala
                405                 410                 415

Leu Ile Lys Phe Lys Ser Tyr Leu Tyr Phe Glu Glu Lys Asp Phe Val
            420                 425                 430

Asp Lys Ala Glu Lys Ser Leu Lys Gln Thr Pro His Ser Glu Val Ser
```

```
        435                 440                 445

Ile Asn Phe Gly Pro Cys Phe Lys Tyr Pro Pro Lys Asp Leu Thr Tyr
    450                 455                 460

Arg Pro Met Ser Asp Met Gly Trp Gly Ala Val Val Glu His Thr Leu
465                 470                 475                 480

Ala Asp Val Leu Tyr His Val Glu Thr Glu Val Asp Gly Arg Arg Ser
                485                 490                 495

Pro Pro Trp Glu Pro
            500


<210> 6643
<211> 121
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1433; "

<220>
<221> source
<223> /note="Gene Symbol: ASH2L; "

<220>
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<223> /note="Gene Name:
      ash2 (absent, small, or homeotic)-like (Drosophila); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430889"

<400> 6643
Met Ala Ala Ala Gly Ala Gly Pro Gly Gln Glu Ala Gly Ala Gly Pro
1               5                   10                  15

Gly Pro Gly Ala Val Ala Asn Ala Thr Gly Ala Glu Glu Gly Glu Met
            20                  25                  30

Lys Pro Val Ala Ala Gly Ala Ala Ala Pro Pro Gly Glu Gly Ile Ser
        35                  40                  45

Ala Ala Pro Thr Val Glu Pro Ser Ser Gly Glu Ala Glu Gly Gly Glu
    50                  55                  60
```

```
Ala Asn Leu Val Asp Val Ser Gly Gly Leu Glu Thr Glu Ser Ser Asn
65                  70                  75                  80


Gly Lys Asp Thr Leu Ile Leu Ser Thr Phe His Asp Gln Leu Gln Phe
                85                  90                  95


Ser Leu Gln Arg Leu Pro Ser Gln Trp Glu Tyr Leu Phe Pro Pro Glu
            100                 105                 110


Ala Ser Lys Leu Glu Gly Asn Val Pro
        115                 120


<210> 6644
<211> 489
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1433; "

<220>
<221> source
<223> /note="Gene Symbol: ASH2L; "

<220>
<221> source
<223> /note="Gene Name:
      ash2 (absent, small, or homeotic)-like (Drosophila); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000443606"

<400> 6644
Met Thr Asn Tyr Ser Phe His Cys Asn Val Cys His His Ser Gly Asn
1               5                   10                  15


Thr Tyr Phe Leu Arg Lys Gln Ala Asn Leu Lys Glu Met Cys Leu Ser
            20                  25                  30


Ala Leu Ala Asn Leu Thr Trp Gln Ser Arg Thr Gln Asp Glu His Pro
        35                  40                  45


Lys Thr Met Phe Ser Lys Asp Lys Asp Ile Ile Pro Phe Ile Asp Lys
    50                  55                  60


Tyr Trp Glu Cys Met Thr Thr Arg Gln Arg Pro Gly Lys Met Thr Trp
```

65 70 75 80

Pro Asn Asn Ile Val Lys Thr Met Ser Lys Glu Arg Asp Val Phe Leu
85 90 95

Val Lys Glu His Pro Asp Pro Gly Ser Lys Asp Pro Glu Glu Asp Tyr
100 105 110

Pro Lys Phe Gly Leu Leu Asp Gln Asp Leu Ser Asn Ile Gly Pro Ala
115 120 125

Tyr Asp Asn Gln Lys Gln Ser Ser Ala Val Ser Thr Ser Gly Asn Leu
130 135 140

Asn Gly Gly Ile Ala Ala Gly Ser Ser Gly Lys Gly Arg Gly Ala Lys
145 150 155 160

Arg Lys Gln Gln Asp Gly Gly Thr Thr Gly Thr Thr Lys Lys Ala Arg
165 170 175

Ser Asp Pro Leu Phe Ser Ala Gln Arg Leu Pro Pro His Gly Tyr Pro
180 185 190

Leu Glu His Pro Phe Asn Lys Asp Gly Tyr Arg Tyr Ile Leu Ala Glu
195 200 205

Pro Asp Pro His Ala Pro Asp Pro Glu Lys Leu Glu Leu Asp Cys Trp
210 215 220

Ala Gly Lys Pro Ile Pro Gly Asp Leu Tyr Arg Ala Cys Leu Tyr Glu
225 230 235 240

Arg Val Leu Leu Ala Leu His Asp Arg Ala Pro Gln Leu Lys Ile Ser
245 250 255

Asp Asp Arg Leu Thr Val Val Gly Glu Lys Gly Tyr Ser Met Val Arg
260 265 270

Ala Ser His Gly Val Arg Lys Gly Ala Trp Tyr Phe Glu Ile Thr Val
275 280 285

Asp Glu Met Pro Pro Asp Thr Ala Ala Arg Leu Gly Trp Ser Gln Pro
290 295 300

```
Leu Gly Asn Leu Gln Ala Pro Leu Gly Tyr Asp Lys Phe Ser Tyr Ser
305                 310                 315                 320

Trp Arg Ser Lys Lys Gly Thr Lys Phe His Gln Ser Ile Gly Lys His
                325                 330                 335

Tyr Ser Ser Gly Tyr Gly Gln Gly Asp Val Leu Gly Phe Tyr Ile Asn
            340                 345                 350

Leu Pro Glu Asp Thr Glu Thr Ala Lys Ser Leu Pro Asp Thr Tyr Lys
        355                 360                 365

Asp Lys Ala Leu Ile Lys Phe Lys Ser Tyr Leu Tyr Phe Glu Glu Lys
    370                 375                 380

Asp Phe Val Asp Lys Ala Glu Lys Ser Leu Lys Gln Thr Pro His Ser
385                 390                 395                 400

Glu Ile Ile Phe Tyr Lys Asn Gly Val Asn Gln Gly Val Ala Tyr Lys
                405                 410                 415

Asp Ile Phe Glu Gly Val Tyr Phe Pro Ala Ile Ser Leu Tyr Lys Ser
            420                 425                 430

Cys Thr Val Ser Ile Asn Phe Gly Pro Cys Phe Lys Tyr Pro Pro Lys
        435                 440                 445

Asp Leu Thr Tyr Arg Pro Met Ser Asp Met Gly Trp Gly Ala Val Val
    450                 455                 460

Glu His Thr Leu Ala Asp Val Leu Tyr His Val Glu Thr Glu Val Asp
465                 470                 475                 480

Gly Arg Arg Ser Pro Pro Trp Glu Pro
                485
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<210> 6645
<211> 291
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1434; "

<220>
<221> source
<223> /note="Gene Symbol: ASGR1; "

<220>
<221> source
<223> /note="Gene Name:
asialoglycoprt receptor 1; "

<220>
<221> source
<223> /note="Uniprot ID: P07306; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000269299"

<400> 6645

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Met Thr Lys Glu Tyr Gln Asp Leu Gln His Leu Asp Asn Glu Glu Ser
1               5                  10                  15

Asp His His Gln Leu Arg Lys Gly Pro Pro Pro Pro Gln Pro Leu Leu
            20                  25                  30

Gln Arg Leu Cys Ser Gly Pro Arg Leu Leu Leu Leu Ser Leu Gly Leu
        35                  40                  45

Ser Leu Leu Leu Leu Val Val Val Cys Val Ile Gly Ser Gln Asn Ser
    50                  55                  60

Gln Leu Gln Glu Glu Leu Arg Gly Leu Arg Glu Thr Phe Ser Asn Phe
65                  70                  75                  80

Thr Ala Ser Thr Glu Ala Gln Val Lys Gly Leu Ser Thr Gln Gly Gly
                85                  90                  95

Asn Val Gly Arg Lys Met Lys Ser Leu Glu Ser Gln Leu Glu Lys Gln
            100                 105                 110

Gln Lys Asp Leu Ser Glu Asp His Ser Ser Leu Leu Leu His Val Lys
        115                 120                 125

Gln Phe Val Ser Asp Leu Arg Ser Leu Ser Cys Gln Met Ala Ala Leu
    130                 135                 140

Gln Gly Asn Gly Ser Glu Arg Thr Cys Cys Pro Val Asn Trp Val Glu
```

```
145                 150                 155                 160

His Glu Arg Ser Cys Tyr Trp Phe Ser Arg Ser Gly Lys Ala Trp Ala
                165                 170                 175

Asp Ala Asp Asn Tyr Cys Arg Leu Glu Asp Ala His Leu Val Val Val
            180                 185                 190

Thr Ser Trp Glu Glu Gln Lys Phe Val Gln His His Ile Gly Pro Val
        195                 200                 205

Asn Thr Trp Met Gly Leu His Asp Gln Asn Gly Pro Trp Lys Trp Val
    210                 215                 220

Asp Gly Thr Asp Tyr Glu Thr Gly Phe Lys Asn Trp Arg Pro Glu Gln
225                 230                 235                 240

Pro Asp Asp Trp Tyr Gly His Gly Leu Gly Gly Gly Glu Asp Cys Ala
                245                 250                 255

His Phe Thr Asp Asp Gly Arg Trp Asn Asp Asp Val Cys Gln Arg Pro
            260                 265                 270

Tyr Arg Trp Val Cys Glu Thr Glu Leu Asp Lys Ala Ser Gln Glu Pro
        275                 280                 285

Pro Leu Leu
    290


<210> 6646
<211> 190
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1434; "

<220>
<221> source
<223> /note="Gene Symbol: ASGR1; "

<220>
<221> source
<223> /note="Gene Name:
      asialoglycoprt receptor 1; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000370307"

<400> 6646
Met Lys Ser Leu Glu Ser Gln Leu Glu Lys Gln Gln Lys Asp Leu Ser
1   5   10   15

Glu Asp His Ser Ser Leu Leu Leu His Val Lys Gln Phe Val Ser Asp
            20   25   30

Leu Arg Ser Leu Ser Cys Gln Met Ala Ala Leu Gln Gly Asn Gly Ser
        35   40   45

Glu Arg Thr Cys Cys Pro Val Asn Trp Val Glu His Glu Arg Ser Cys
    50   55   60

Tyr Trp Phe Ser Arg Ser Gly Lys Ala Trp Ala Asp Ala Asp Asn Tyr
65   70   75   80

Cys Arg Leu Glu Asp Ala His Leu Val Val Val Thr Ser Trp Glu Glu
                85   90   95

Gln Lys Phe Val Gln His His Ile Gly Pro Val Asn Thr Trp Met Gly
            100   105   110

Leu His Asp Gln Asn Gly Pro Trp Lys Trp Val Asp Gly Thr Asp Tyr
        115   120   125

Glu Thr Gly Phe Lys Asn Trp Arg Pro Glu Gln Pro Asp Asp Trp Tyr
    130   135   140

Gly His Gly Leu Gly Gly Gly Glu Asp Cys Ala His Phe Thr Asp Asp
145   150   155   160

Gly Arg Trp Asn Asp Asp Val Cys Gln Arg Pro Tyr Arg Trp Val Cys
                165   170   175

Glu Thr Glu Leu Asp Lys Ala Ser Gln Glu Pro Pro Leu Leu
            180   185   190

<210> 6647
<211> 94
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1434; "

<220>
<221> source
<223> /note="Gene Symbol: ASGR1; "

<220>
<221> source
<223> /note="Gene Name:
asialoglycoprt receptor 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000458530"

<400> 6647
Met Ala Ala Leu Gln Gly Asn Gly Ser Glu Arg Thr Cys Cys Pro Val
1 5 10 15

Asn Trp Val Glu His Glu Arg Ser Cys Tyr Trp Phe Ser Arg Ser Gly
20 25 30

Lys Ala Trp Ala Asp Ala Asp Asn Tyr Cys Arg Leu Glu Asp Ala His
35 40 45

Leu Val Val Val Thr Ser Trp Glu Glu Gln Lys Phe Val Gln His His
50 55 60

Ile Gly Pro Val Asn Thr Trp Met Gly Leu His Asp Gln Asn Gly Pro
65 70 75 80

Trp Lys Trp Val Asp Gly Thr Asp Tyr Glu Thr Gly Phe Lys
85 90

<210> 6648
<211> 29
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1434; "

<220>
<221> source
<223> /note="Gene Symbol: ASGR1; "

<220>

<221> source
<223> /note="Gene Name:
asialoglycoprt receptor 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000458803"

<400> 6648
Met Lys Ser Leu Glu Ser Gln Leu Glu Lys Gln Gln Lys Asp Leu Ser
1 5 10 15

Glu Asp His Ser Ser Leu Leu Leu His Val Lys Gln Phe
20 25

<210> 6649
<211> 252
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1434; "

<220>
<221> source
<223> /note="Gene Symbol: ASGR1; "

<220>
<221> source
<223> /note="Gene Name:
asialoglycoprt receptor 1; "

<220>
<221> source
<223> /note="Uniprot ID: P07306; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000459169"

<400> 6649
Met Thr Lys Glu Tyr Gln Asp Leu Gln His Leu Asp Asn Glu Glu Ser
1 5 10 15

Asp His His Gln Leu Arg Lys Asp Ser Gln Leu Gln Glu Glu Leu Arg
20 25 30

Gly Leu Arg Glu Thr Phe Ser Asn Phe Thr Ala Ser Thr Glu Ala Gln
35 40 45

Val Lys Gly Leu Ser Thr Gln Gly Gly Asn Val Gly Arg Lys Met Lys

```
    50                  55                  60

Ser Leu Glu Ser Gln Leu Glu Lys Gln Gln Lys Asp Leu Ser Glu Asp
65                  70                  75                  80

His Ser Ser Leu Leu Leu His Val Lys Gln Phe Val Ser Asp Leu Arg
                85                  90                  95

Ser Leu Ser Cys Gln Met Ala Ala Leu Gln Gly Asn Gly Ser Glu Arg
            100                 105                 110

Thr Cys Cys Pro Val Asn Trp Val Glu His Glu Arg Ser Cys Tyr Trp
        115                 120                 125

Phe Ser Arg Ser Gly Lys Ala Trp Ala Asp Ala Asp Asn Tyr Cys Arg
    130                 135                 140

Leu Glu Asp Ala His Leu Val Val Val Thr Ser Trp Glu Glu Gln Lys
145                 150                 155                 160

Phe Val Gln His His Ile Gly Pro Val Asn Thr Trp Met Gly Leu His
                165                 170                 175

Asp Gln Asn Gly Pro Trp Lys Trp Val Asp Gly Thr Asp Tyr Glu Thr
            180                 185                 190

Gly Phe Lys Asn Trp Arg Pro Glu Gln Pro Asp Asp Trp Tyr Gly His
        195                 200                 205

Gly Leu Gly Gly Gly Glu Asp Cys Ala His Phe Thr Asp Asp Gly Arg
    210                 215                 220

Trp Asn Asp Asp Val Cys Gln Arg Pro Tyr Arg Trp Val Cys Glu Thr
225                 230                 235                 240

Glu Leu Asp Lys Ala Ser Gln Glu Pro Pro Leu Leu
                245                 250
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<210> 6650
<211> 117
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1434; "

<220>
<221> source
<223> /note="Gene Symbol: ASGR1; "

<220>
<221> source
<223> /note="Gene Name:
asialoglycoprt receptor 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000459896"

<400> 6650
Met Thr Lys Glu Tyr Gln Asp Leu Gln His Leu Asp Asn Glu Glu Ser
1 5 10 15

Asp His His Gln Leu Arg Lys Gly Pro Pro Pro Pro Gln Pro Leu Leu
20 25 30

Gln Arg Leu Cys Ser Gly Pro Arg Leu Leu Leu Leu Ser Leu Gly Leu
35 40 45

Ser Leu Leu Leu Leu Val Val Val Cys Val Ile Gly Ser Gln Asn Ser
50 55 60

Gln Leu Gln Glu Glu Leu Arg Gly Leu Arg Glu Thr Phe Ser Asn Phe
65 70 75 80

Thr Ala Ser Thr Glu Ala Gln Val Lys Gly Leu Ser Thr Gln Gly Gly
85 90 95

Asn Val Gly Arg Lys Met Lys Ser Leu Glu Ser Gln Leu Glu Lys Gln
100 105 110

Gln Lys Asp Leu Ser
115

<210> 6651
<211> 162
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1434; "

<220>
<221> source
<223> /note="Gene Symbol: ASGR1; "

<220>
<221> source
<223> /note="Gene Name:
asialoglycoprt receptor 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467511"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6651
Xaa Arg Glu Thr Phe Ser Asn Phe Thr Ala Ser Thr Glu Ala Gln Val
1 5 10 15

Lys Gly Leu Ser Thr Gln Gly Gly Asn Val Gly Arg Lys Met Lys Ser
20 25 30

Leu Glu Ser Gln Leu Glu Lys Gln Gln Lys Asp Leu Ser Glu Asp His
35 40 45

Ser Ser Leu Leu Leu His Val Lys Gln Phe Val Ser Asp Leu Arg Ser
50 55 60

Leu Ser Cys Gln Met Ala Ala Leu Gln Gly Asn Gly Ser Glu Arg Thr
65 70 75 80

Cys Cys Pro Val Asn Trp Val Glu His Glu Arg Ser Cys Tyr Trp Phe
85 90 95

Ser Arg Ser Gly Lys Ala Trp Ala Asp Ala Asp Asn Tyr Cys Arg Leu
100 105 110

Glu Asp Ala His Leu Val Val Val Thr Ser Trp Glu Glu Gln Lys Phe
115 120 125

Val Gln His His Ile Gly Pro Val Asn Thr Trp Met Gly Leu His Asp
130 135 140

Gln Asn Gly Pro Trp Lys Trp Val Asp Gly Thr Asp Tyr Glu Thr Gly
145 150 155 160

Phe Lys

<210> 6652
<211> 252
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1434; "

<220>
<221> source
<223> /note="Gene Symbol: ASGR1; "

<220>
<221> source
<223> /note="Gene Name:
asialoglycoprt receptor 1; "

<220>
<221> source
<223> /note="Uniprot ID: P07306; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000481182"

<400> 6652
Met Thr Lys Glu Tyr Gln Asp Leu Gln His Leu Asp Asn Glu Glu Ser
1 5 10 15

Asp His His Gln Leu Arg Lys Asp Ser Gln Leu Gln Glu Glu Leu Arg
20 25 30

Gly Leu Arg Glu Thr Phe Ser Asn Phe Thr Ala Ser Thr Glu Ala Gln
35 40 45

Val Lys Gly Leu Ser Thr Gln Gly Gly Asn Val Gly Arg Lys Met Lys
50 55 60

Ser Leu Glu Ser Gln Leu Glu Lys Gln Gln Lys Asp Leu Ser Glu Asp
65 70 75 80

His Ser Ser Leu Leu Leu His Val Lys Gln Phe Val Ser Asp Leu Arg
85 90 95

```
Ser Leu Ser Cys Gln Met Ala Ala Leu Gln Gly Asn Gly Ser Glu Arg
            100                 105                 110

Thr Cys Cys Pro Val Asn Trp Val Glu His Glu Arg Ser Cys Tyr Trp
        115                 120                 125

Phe Ser Arg Ser Gly Lys Ala Trp Ala Asp Ala Asp Asn Tyr Cys Arg
    130                 135                 140

Leu Glu Asp Ala His Leu Val Val Val Thr Ser Trp Glu Glu Gln Lys
145                 150                 155                 160

Phe Val Gln His His Ile Gly Pro Val Asn Thr Trp Met Gly Leu His
                165                 170                 175

Asp Gln Asn Gly Pro Trp Lys Trp Val Asp Gly Thr Asp Tyr Glu Thr
            180                 185                 190

Gly Phe Lys Asn Trp Arg Pro Glu Gln Pro Asp Asp Trp Tyr Gly His
        195                 200                 205

Gly Leu Gly Gly Gly Glu Asp Cys Ala His Phe Thr Asp Asp Gly Arg
    210                 215                 220

Trp Asn Asp Asp Val Cys Gln Arg Pro Tyr Arg Trp Val Cys Glu Thr
225                 230                 235                 240

Glu Leu Asp Lys Ala Ser Gln Glu Pro Pro Leu Leu
                245                 250
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<210> 6653
<211> 287
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1435; "

<220>
<221> source
<223> /note="Gene Symbol: ASGR2; "

<220>
<221> source

<223> /note="Gene Name:
asialoglycoprt receptor 2; "

<220>
<221> source
<223> /note="Uniprot ID: P07307; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000254850"

<400> 6653

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Met Ala Lys Asp Phe Gln Asp Ile Gln Gln Leu Ser Ser Glu Glu Asn
1               5                  10                  15

Asp His Pro Phe His Gln Gly Pro Pro Pro Ala Gln Pro Leu Ala Gln
            20                  25                  30

Arg Leu Cys Ser Met Val Cys Phe Ser Leu Leu Ala Leu Ser Phe Asn
        35                  40                  45

Ile Leu Leu Leu Val Val Ile Cys Val Thr Gly Ser Gln Ser Ala Gln
    50                  55                  60

Leu Gln Ala Glu Leu Arg Ser Leu Lys Glu Ala Phe Ser Asn Phe Ser
65                  70                  75                  80

Ser Ser Thr Leu Thr Glu Val Gln Ala Ile Ser Thr His Gly Gly Ser
                85                  90                  95

Val Gly Asp Lys Ile Thr Ser Leu Gly Ala Lys Leu Glu Lys Gln Gln
            100                 105                 110

Gln Asp Leu Lys Ala Asp His Asp Ala Leu Leu Phe His Leu Lys His
        115                 120                 125

Phe Pro Val Asp Leu Arg Phe Val Ala Cys Gln Met Glu Leu Leu His
    130                 135                 140

Ser Asn Gly Ser Gln Arg Thr Cys Cys Pro Val Asn Trp Val Glu His
145                 150                 155                 160

Gln Gly Ser Cys Tyr Trp Phe Ser His Ser Gly Lys Ala Trp Ala Glu
                165                 170                 175

Ala Glu Lys Tyr Cys Gln Leu Glu Asn Ala His Leu Val Val Ile Asn
```

```
            180                 185                 190

Ser Trp Glu Glu Gln Lys Phe Ile Val Gln His Thr Asn Pro Phe Asn
        195                 200                 205

Thr Trp Ile Gly Leu Thr Asp Ser Asp Gly Ser Trp Lys Trp Val Asp
    210                 215                 220

Gly Thr Asp Tyr Arg His Asn Tyr Lys Asn Trp Ala Val Thr Gln Pro
225                 230                 235                 240

Asp Asn Trp His Gly His Glu Leu Gly Gly Ser Glu Asp Cys Val Glu
                245                 250                 255

Val Gln Pro Asp Gly Arg Trp Asn Asp Asp Phe Cys Leu Gln Val Tyr
            260                 265                 270

Arg Trp Val Cys Glu Lys Arg Arg Asn Ala Thr Gly Glu Val Ala
        275                 280                 285


<210> 6654
<211> 311
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1435; "

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<223> /note="Gene Symbol: ASGR2; "

<220>
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<223> /note="Gene Name:
      asialoglycoprt receptor 2; "

<220>
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<223> /note="Uniprot ID:  P07307; "

<220>
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<223> /note="ENSP ID: ENSP00000347140"

<400> 6654
Met Ala Lys Asp Phe Gln Asp Ile Gln Gln Leu Ser Ser Glu Glu Asn
1               5                   10                  15
```

```
Asp His Pro Phe His Gln Gly Glu Gly Pro Gly Thr Arg Arg Leu Asn
            20                  25                  30

Pro Arg Arg Gly Asn Pro Phe Leu Lys Gly Pro Pro Pro Ala Gln Pro
        35                  40                  45

Leu Ala Gln Arg Leu Cys Ser Met Val Cys Phe Ser Leu Leu Ala Leu
    50                  55                  60

Ser Phe Asn Ile Leu Leu Leu Val Val Ile Cys Val Thr Gly Ser Gln
65                  70                  75                  80

Ser Glu Gly His Gly Gly Ala Gln Leu Gln Ala Glu Leu Arg Ser Leu
                85                  90                  95

Lys Glu Ala Phe Ser Asn Phe Ser Ser Ser Thr Leu Thr Glu Val Gln
            100                 105                 110

Ala Ile Ser Thr His Gly Gly Ser Val Gly Asp Lys Ile Thr Ser Leu
        115                 120                 125

Gly Ala Lys Leu Glu Lys Gln Gln Gln Asp Leu Lys Ala Asp His Asp
    130                 135                 140

Ala Leu Leu Phe His Leu Lys His Phe Pro Val Asp Leu Arg Phe Val
145                 150                 155                 160

Ala Cys Gln Met Glu Leu Leu His Ser Asn Gly Ser Gln Arg Thr Cys
                165                 170                 175

Cys Pro Val Asn Trp Val Glu His Gln Gly Ser Cys Tyr Trp Phe Ser
            180                 185                 190

His Ser Gly Lys Ala Trp Ala Glu Ala Glu Lys Tyr Cys Gln Leu Glu
        195                 200                 205

Asn Ala His Leu Val Val Ile Asn Ser Trp Glu Glu Gln Lys Phe Ile
    210                 215                 220

Val Gln His Thr Asn Pro Phe Asn Thr Trp Ile Gly Leu Thr Asp Ser
225                 230                 235                 240
```

```
Asp Gly Ser Trp Lys Trp Val Asp Gly Thr Asp Tyr Arg His Asn Tyr
                245                 250                 255

Lys Asn Trp Ala Val Thr Gln Pro Asp Asn Trp His Gly His Glu Leu
            260                 265                 270

Gly Gly Ser Glu Asp Cys Val Glu Val Gln Pro Asp Gly Arg Trp Asn
        275                 280                 285

Asp Asp Phe Cys Leu Gln Val Tyr Arg Trp Val Cys Glu Lys Arg Arg
    290                 295                 300

Asn Ala Thr Gly Glu Val Ala
305                 310


<210> 6655
<211> 292
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
      asialoglycoprt receptor 2; "

<220>
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<223> /note="Uniprot ID:  P07307; "

<220>
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<400> 6655
Met Ala Lys Asp Phe Gln Asp Ile Gln Gln Leu Ser Ser Glu Glu Asn
1               5                   10                  15

Asp His Pro Phe His Gln Gly Pro Pro Pro Ala Gln Pro Leu Ala Gln
            20                  25                  30

Arg Leu Cys Ser Met Val Cys Phe Ser Leu Leu Ala Leu Ser Phe Asn
        35                  40                  45
```

```
Ile Leu Leu Leu Val Val Ile Cys Val Thr Gly Ser Gln Ser Glu Gly
    50                  55                  60

His Gly Gly Ala Gln Leu Gln Ala Glu Leu Arg Ser Leu Lys Glu Ala
65                  70                  75                  80

Phe Ser Asn Phe Ser Ser Ser Thr Leu Thr Glu Val Gln Ala Ile Ser
                85                  90                  95

Thr His Gly Gly Ser Val Gly Asp Lys Ile Thr Ser Leu Gly Ala Lys
            100                 105                 110

Leu Glu Lys Gln Gln Gln Asp Leu Lys Ala Asp His Asp Ala Leu Leu
        115                 120                 125

Phe His Leu Lys His Phe Pro Val Asp Leu Arg Phe Val Ala Cys Gln
    130                 135                 140

Met Glu Leu Leu His Ser Asn Gly Ser Gln Arg Thr Cys Cys Pro Val
145                 150                 155                 160

Asn Trp Val Glu His Gln Gly Ser Cys Tyr Trp Phe Ser His Ser Gly
                165                 170                 175

Lys Ala Trp Ala Glu Ala Glu Lys Tyr Cys Gln Leu Glu Asn Ala His
            180                 185                 190

Leu Val Val Ile Asn Ser Trp Glu Glu Gln Lys Phe Ile Val Gln His
        195                 200                 205

Thr Asn Pro Phe Asn Thr Trp Ile Gly Leu Thr Asp Ser Asp Gly Ser
    210                 215                 220

Trp Lys Trp Val Asp Gly Thr Asp Tyr Arg His Asn Tyr Lys Asn Trp
225                 230                 235                 240

Ala Val Thr Gln Pro Asp Asn Trp His Gly His Glu Leu Gly Gly Ser
                245                 250                 255

Glu Asp Cys Val Glu Val Gln Pro Asp Gly Arg Trp Asn Asp Asp Phe
            260                 265                 270
```

```
Cys Leu Gln Val Tyr Arg Trp Val Cys Glu Lys Arg Arg Asn Ala Thr
        275                 280                 285


Gly Glu Val Ala
    290


<210> 6656
<211> 135
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
      asialoglycoprt receptor 2; "

<220>
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<400> 6656
Met Ala Lys Asp Phe Gln Asp Ile Gln Gln Leu Ser Ser Glu Glu Asn
1               5                   10                  15


Asp His Pro Phe His Gln Gly Glu Gly Pro Gly Thr Arg Arg Leu Asn
            20                  25                  30


Pro Arg Arg Gly Asn Pro Phe Leu Lys Gly Pro Pro Pro Ala Gln Pro
        35                  40                  45


Leu Ala Gln Arg Leu Cys Ser Met Val Cys Phe Ser Leu Leu Ala Leu
    50                  55                  60


Ser Phe Asn Ile Leu Leu Leu Val Val Ile Cys Val Thr Gly Ser Gln
65                  70                  75                  80


Ser Ala Gln Leu Gln Ala Glu Leu Arg Ser Leu Lys Glu Ala Phe Ser
                85                  90                  95


Asn Phe Ser Ser Ser Thr Leu Thr Glu Val Gln Ala Ile Ser Thr His
```

```
            100                 105                 110

Gly Gly Ser Val Gly Asp Lys Ile Thr Ser Leu Gly Ala Lys Leu Glu
        115                 120                 125

Lys Gln Gln Gln Asp Leu Lys
    130                 135


<210> 6657
<211> 140
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1436; "

<220>
<221> source
<223> /note="Gene Symbol: ASPG; "

<220>
<221> source
<223> /note="Gene Name:
      asparaginase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000446856"

<400> 6657
Ala Ala Ala Arg Gly Gly His Thr Glu Ala Val Thr Met Leu Leu Gln
1               5                   10                  15

Arg Gly Val Asp Val Asn Thr Arg Asp Thr Asp Gly Phe Ser Pro Leu
            20                  25                  30

Leu Leu Ala Val Arg Gly Arg His Pro Gly Val Ile Gly Leu Leu Arg
        35                  40                  45

Glu Ala Gly Ala Ser Leu Ser Thr Gln Glu Leu Glu Glu Ala Gly Thr
    50                  55                  60

Glu Leu Cys Arg Leu Ala Tyr Arg Ala Asp Leu Glu Gly Leu Gln Val
65                  70                  75                  80

Trp Trp Gln Ala Gly Ala Asp Leu Gly Gln Pro Gly Tyr Asp Gly His
                85                  90                  95
```

```
Ser Ala Leu His Val Ala Glu Ala Ala Gly Asn Leu Ala Val Val Ala
            100                 105                 110


Phe Leu Gln Ser Leu Glu Gly Ala Val Gly Ala Gln Ala Pro Cys Pro
        115                 120                 125


Glu Pro Ser Cys Phe Gln Glu Val Leu Pro Gly Val
    130                 135                 140


<210> 6658
<211> 126
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ASPG; "

<220>
<221> source
<223> /note="Gene Name:
      asparaginase; "

<220>
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<223> /note="ENSP ID: ENSP00000447032"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6658
Xaa Pro Ala Ser Arg Asn Gln Arg Ile Leu Tyr Thr Val Leu Glu Cys
1               5                   10                  15


Gln Pro Leu Phe Asp Ser Ser Asp Met Thr Ile Ala Glu Trp Val Cys
            20                  25                  30


Leu Ala Gln Thr Ile Lys Arg His Tyr Glu Gln Tyr His Gly Phe Val
        35                  40                  45


Val Ile His Gly Thr Asp Thr Met Ala Phe Ala Ala Ser Met Leu Ser
    50                  55                  60
```

```
Phe Met Leu Glu Asn Leu Gln Lys Thr Val Ile Leu Thr Gly Ala Gln
65                  70                  75                  80

Val Pro Ile His Ala Leu Trp Ser Asp Gly Arg Glu Asn Leu Leu Gly
                85                  90                  95

Ala Leu Leu Met Ala Gly Gln Tyr Val Ile Pro Glu Leu Leu Thr Lys
            100                 105                 110

Asp Leu Arg Gly Glu Met Thr Pro Pro Ser Val Glu Glu Arg
        115                 120                 125


<210> 6659
<211> 555
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
<221> source
<223> /note="Gene Name:
      asparaginase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000448911"

<400> 6659
Met Ala Arg Ala Val Gly Pro Glu Arg Arg Leu Leu Ala Val Tyr Thr
1               5                   10                  15

Gly Gly Thr Ile Gly Met Arg Ser Glu Leu Gly Val Leu Val Pro Gly
            20                  25                  30

Thr Gly Leu Ala Ala Ile Leu Arg Thr Leu Pro Met Phe His Asp Glu
        35                  40                  45

Glu His Ala Arg Ala Arg Gly Leu Ser Glu Asp Thr Leu Val Leu Pro
    50                  55                  60

Pro Ala Ser Arg Asn Gln Arg Ile Leu Tyr Thr Val Leu Glu Cys Gln
```

65 70 75 80

Pro Leu Phe Asp Ser Ser Asp Met Thr Ile Ala Glu Trp Val Cys Leu
85 90 95

Ala Gln Thr Ile Lys Arg His Tyr Glu Gln Tyr His Gly Phe Val Val
100 105 110

Ile His Gly Thr Asp Thr Met Ala Phe Ala Ala Ser Met Leu Ser Phe
115 120 125

Met Leu Glu Asn Leu Gln Lys Thr Val Ile Leu Thr Gly Ala Gln Val
130 135 140

Pro Ile His Ala Leu Trp Ser Asp Gly Arg Glu Asn Leu Leu Gly Ala
145 150 155 160

Leu Leu Met Ala Gly Gln Tyr Val Ile Pro Glu Val Cys Leu Phe Phe
165 170 175

Gln Asn Gln Leu Phe Arg Gly Asn Arg Ala Thr Lys Val Asp Ala Arg
180 185 190

Arg Phe Ala Ala Phe Cys Ser Pro Asn Leu Leu Pro Leu Ala Thr Val
195 200 205

Gly Ala Asp Ile Thr Ile Asn Arg Glu Leu Val Arg Lys Val Asp Gly
210 215 220

Lys Ala Gly Leu Val Val His Ser Ser Met Glu Gln Asp Val Gly Leu
225 230 235 240

Leu Arg Leu Tyr Pro Gly Ile Pro Ala Ala Leu Val Arg Ala Phe Leu
245 250 255

Gln Pro Pro Leu Lys Gly Val Val Met Glu Thr Phe Gly Ser Gly Asn
260 265 270

Gly Pro Thr Lys Pro Asp Leu Leu Gln Glu Leu Arg Val Ala Thr Glu
275 280 285

Arg Gly Leu Val Ile Val Asn Cys Thr His Cys Leu Gln Gly Ala Val
290 295 300

```
Thr Thr Asp Tyr Ala Ala Gly Met Ala Met Ala Gly Ala Gly Val Ile
305                 310                 315                 320

Ser Gly Phe Asp Met Thr Ser Glu Ala Ala Leu Ala Lys Leu Ser Tyr
                325                 330                 335

Val Leu Gly Gln Pro Gly Leu Ser Leu Asp Val Arg Lys Glu Leu Leu
            340                 345                 350

Thr Lys Asp Leu Arg Gly Glu Met Thr Pro Pro Ser Val Glu Glu Arg
        355                 360                 365

Arg Pro Ser Leu Gln Gly Asn Thr Leu Gly Gly Gly Val Ser Trp Leu
    370                 375                 380

Leu Ser Leu Ser Gly Ser Gln Glu Ala Asp Ala Leu Arg Asn Ala Leu
385                 390                 395                 400

Val Pro Ser Leu Ala Cys Ala Ala Ala His Ala Gly Asp Val Glu Ala
                405                 410                 415

Leu Gln Ala Leu Val Glu Leu Gly Ser Asp Leu Gly Leu Val Asp Phe
            420                 425                 430

Asn Gly Gln Thr Pro Leu His Ala Ala Ala Arg Gly Gly His Thr Glu
        435                 440                 445

Ala Val Thr Met Leu Leu Gln Arg Gly Val Asp Val Asn Thr Arg Asp
    450                 455                 460

Thr Asp Gly Phe Ser Pro Leu Leu Leu Ala Val Arg Gly Arg His Pro
465                 470                 475                 480

Gly Val Ile Gly Leu Leu Arg Glu Ala Gly Ala Ser Leu Ser Thr Gln
                485                 490                 495

Glu Leu Glu Glu Ala Gly Thr Glu Leu Cys Arg Gln Arg Gln Pro Gly
            500                 505                 510

Thr Trp Gln Trp Trp Pro Phe Tyr Arg Ala Trp Arg Val Arg Leu Val
        515                 520                 525
```

```
Pro Arg Pro His Ala Gln Lys Cys Cys Leu Val Ser Asn Leu Lys Ala
    530                 535                 540

Ser Cys Cys Ser Ile Ser His Ser Phe Leu Pro
545                 550                 555


<210> 6660
<211> 573
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1436; "

<220>
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<220>
<221> source
<223> /note="Gene Name:
      asparaginase; "

<220>
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<223> /note="Uniprot ID:  Q86U10; "

<220>
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<223> /note="ENSP ID: ENSP00000450040"

<400> 6660
Met Ala Arg Ala Val Gly Pro Glu Arg Arg Leu Leu Ala Val Tyr Thr
1               5                   10                  15

Gly Gly Thr Ile Gly Met Arg Ser Glu Leu Gly Val Leu Val Pro Gly
            20                  25                  30

Thr Gly Leu Ala Ala Ile Leu Arg Thr Leu Pro Met Phe His Asp Glu
        35                  40                  45

Glu His Ala Arg Ala Arg Gly Leu Ser Glu Asp Thr Leu Val Leu Pro
    50                  55                  60

Pro Ala Ser Arg Asn Gln Arg Ile Leu Tyr Thr Val Leu Glu Cys Gln
65                  70                  75                  80

Pro Leu Phe Asp Ser Ser Asp Met Thr Ile Ala Glu Trp Val Cys Leu
```

```
                85                  90                  95

Ala Gln Thr Ile Lys Arg His Tyr Glu Gln Tyr His Gly Phe Val Val
            100                 105                 110

Ile His Gly Thr Asp Thr Met Ala Phe Ala Ala Ser Met Leu Ser Phe
        115                 120                 125

Met Leu Glu Asn Leu Gln Lys Thr Val Ile Leu Thr Gly Ala Gln Val
    130                 135                 140

Pro Ile His Ala Leu Trp Ser Asp Gly Arg Glu Asn Leu Leu Gly Ala
145                 150                 155                 160

Leu Leu Met Ala Gly Gln Tyr Val Ile Pro Glu Val Cys Leu Phe Phe
                165                 170                 175

Gln Asn Gln Leu Phe Arg Gly Asn Arg Ala Thr Lys Val Asp Ala Arg
            180                 185                 190

Arg Phe Ala Ala Phe Cys Ser Pro Asn Leu Leu Pro Leu Ala Thr Val
        195                 200                 205

Gly Ala Asp Ile Thr Ile Asn Arg Glu Leu Val Arg Lys Val Asp Gly
    210                 215                 220

Lys Ala Gly Leu Val Val His Ser Ser Met Glu Gln Asp Val Gly Leu
225                 230                 235                 240

Leu Arg Leu Tyr Pro Gly Ile Pro Ala Ala Leu Val Arg Ala Phe Leu
                245                 250                 255

Gln Pro Pro Leu Lys Gly Val Val Met Glu Thr Phe Gly Ser Gly Asn
            260                 265                 270

Gly Pro Thr Lys Pro Asp Leu Leu Gln Glu Leu Arg Val Ala Thr Glu
        275                 280                 285

Arg Gly Leu Val Ile Val Asn Cys Thr His Cys Leu Gln Gly Ala Val
    290                 295                 300

Thr Thr Asp Tyr Ala Ala Gly Met Ala Met Ala Gly Ala Gly Val Ile
305                 310                 315                 320
```

```
Ser Gly Phe Asp Met Thr Ser Glu Ala Ala Leu Ala Lys Leu Ser Tyr
                325                 330                 335

Val Leu Gly Gln Pro Gly Leu Ser Leu Asp Val Arg Lys Glu Leu Leu
            340                 345                 350

Thr Lys Asp Leu Arg Gly Glu Met Thr Pro Pro Ser Val Glu Glu Arg
        355                 360                 365

Arg Pro Ser Leu Gln Gly Asn Thr Leu Gly Gly Gly Val Ser Trp Leu
    370                 375                 380

Leu Ser Leu Ser Gly Ser Gln Glu Ala Asp Ala Leu Arg Asn Ala Leu
385                 390                 395                 400

Val Pro Ser Leu Ala Cys Ala Ala Ala His Ala Gly Asp Val Glu Ala
                405                 410                 415

Leu Gln Ala Leu Val Glu Leu Gly Ser Asp Leu Gly Leu Val Asp Phe
            420                 425                 430

Asn Gly Gln Thr Pro Leu His Ala Ala Ala Arg Gly Gly His Thr Glu
        435                 440                 445

Ala Val Thr Met Leu Leu Gln Arg Gly Val Asp Val Asn Thr Arg Asp
    450                 455                 460

Thr Asp Gly Phe Ser Pro Leu Leu Leu Ala Val Arg Gly Arg His Pro
465                 470                 475                 480

Gly Val Ile Gly Leu Leu Arg Glu Ala Gly Ala Ser Leu Ser Thr Gln
                485                 490                 495

Glu Leu Glu Glu Ala Gly Thr Glu Leu Cys Arg Leu Ala Tyr Arg Ala
            500                 505                 510

Asp Leu Glu Gly Leu Gln Val Trp Trp Gln Ala Gly Ala Asp Leu Gly
        515                 520                 525

Gln Pro Gly Tyr Asp Gly His Ser Ala Leu His Val Ala Glu Ala Ala
    530                 535                 540
```

```
Gly Asn Leu Ala Val Val Ala Phe Leu Gln Ser Leu Glu Gly Ala Val
545                 550                 555                 560


Gly Ala Gln Ala Pro Cys Pro Glu Val Leu Pro Gly Val
                565                 570


<210> 6661
<211> 308
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1437; "

<220>
<221> source
<223> /note="Gene Symbol: ASRGL1; "

<220>
<221> source
<223> /note="Gene Name:
      asparaginase like 1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q7L266; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000301776"

<400> 6661
Met Asn Pro Ile Val Val Val His Gly Gly Gly Ala Gly Pro Ile Ser
1               5                   10                  15


Lys Asp Arg Lys Glu Arg Val His Gln Gly Met Val Arg Ala Ala Thr
            20                  25                  30


Val Gly Tyr Gly Ile Leu Arg Glu Gly Gly Ser Ala Val Asp Ala Val
        35                  40                  45


Glu Gly Ala Val Val Ala Leu Glu Asp Asp Pro Glu Phe Asn Ala Gly
    50                  55                  60


Cys Gly Ser Val Leu Asn Thr Asn Gly Glu Val Glu Met Asp Ala Ser
65                  70                  75                  80


Ile Met Asp Gly Lys Asp Leu Ser Ala Gly Ala Val Ser Ala Val Gln
```

```
                85                  90                  95

Cys Ile Ala Asn Pro Ile Lys Leu Ala Arg Leu Val Met Glu Lys Thr
            100                 105                 110

Pro His Cys Phe Leu Thr Asp Gln Gly Ala Ala Gln Phe Ala Ala Ala
        115                 120                 125

Met Gly Val Pro Glu Ile Pro Gly Glu Lys Leu Val Thr Glu Arg Asn
    130                 135                 140

Lys Lys Arg Leu Glu Lys Glu Lys His Glu Lys Gly Ala Gln Lys Thr
145                 150                 155                 160

Asp Cys Gln Lys Asn Leu Gly Thr Val Gly Ala Val Ala Leu Asp Cys
                165                 170                 175

Lys Gly Asn Val Ala Tyr Ala Thr Ser Thr Gly Gly Ile Val Asn Lys
            180                 185                 190

Met Val Gly Arg Val Gly Asp Ser Pro Cys Leu Gly Ala Gly Gly Tyr
        195                 200                 205

Ala Asp Asn Asp Ile Gly Ala Val Ser Thr Thr Gly His Gly Glu Ser
    210                 215                 220

Ile Leu Lys Val Asn Leu Ala Arg Leu Thr Leu Phe His Ile Glu Gln
225                 230                 235                 240

Gly Lys Thr Val Glu Glu Ala Ala Asp Leu Ser Leu Gly Tyr Met Lys
                245                 250                 255

Ser Arg Val Lys Gly Leu Gly Gly Leu Ile Val Val Ser Lys Thr Gly
            260                 265                 270

Asp Trp Val Ala Lys Trp Thr Ser Thr Ser Met Pro Trp Ala Ala Ala
        275                 280                 285

Lys Asp Gly Lys Leu His Phe Gly Ile Asp Pro Asp Asp Thr Thr Ile
    290                 295                 300

Thr Asp Leu Pro
305
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<210> 6662
<211> 308
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1437; "

<220>
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<223> /note="Gene Symbol: ASRGL1; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID: Q7L266; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000400057"

<400> 6662
Met Asn Pro Ile Val Val Val His Gly Gly Gly Ala Gly Pro Ile Ser
1   5   10   15

Lys Asp Arg Lys Glu Arg Val His Gln Gly Met Val Arg Ala Ala Thr
            20   25   30

Val Gly Tyr Gly Ile Leu Arg Glu Gly Gly Ser Ala Val Asp Ala Val
        35   40   45

Glu Gly Ala Val Val Ala Leu Glu Asp Asp Pro Glu Phe Asn Ala Gly
    50   55   60

Cys Gly Ser Val Leu Asn Thr Asn Gly Glu Val Glu Met Asp Ala Ser
65   70   75   80

Ile Met Asp Gly Lys Asp Leu Ser Ala Gly Ala Val Ser Ala Val Gln
                85   90   95

Cys Ile Ala Asn Pro Ile Lys Leu Ala Arg Leu Val Met Glu Lys Thr
            100   105   110

```
Pro His Cys Phe Leu Thr Asp Gln Gly Ala Ala Gln Phe Ala Ala Ala
        115                 120                 125

Met Gly Val Pro Glu Ile Pro Gly Glu Lys Leu Val Thr Glu Arg Asn
    130                 135                 140

Lys Lys Arg Leu Glu Lys Glu Lys His Glu Lys Gly Ala Gln Lys Thr
145                 150                 155                 160

Asp Cys Gln Lys Asn Leu Gly Thr Val Gly Ala Val Ala Leu Asp Cys
                165                 170                 175

Lys Gly Asn Val Ala Tyr Ala Thr Ser Thr Gly Gly Ile Val Asn Lys
            180                 185                 190

Met Val Gly Arg Val Gly Asp Ser Pro Cys Leu Gly Ala Gly Gly Tyr
        195                 200                 205

Ala Asp Asn Asp Ile Gly Ala Val Ser Thr Thr Gly His Gly Glu Ser
    210                 215                 220

Ile Leu Lys Val Asn Leu Ala Arg Leu Thr Leu Phe His Ile Glu Gln
225                 230                 235                 240

Gly Lys Thr Val Glu Glu Ala Ala Asp Leu Ser Leu Gly Tyr Met Lys
                245                 250                 255

Ser Arg Val Lys Gly Leu Gly Gly Leu Ile Val Val Ser Lys Thr Gly
            260                 265                 270

Asp Trp Val Ala Lys Trp Thr Ser Thr Ser Met Pro Trp Ala Ala Ala
        275                 280                 285

Lys Asp Gly Lys Leu His Phe Gly Ile Asp Pro Asp Asp Thr Thr Ile
    290                 295                 300

Thr Asp Leu Pro
305
```

<210> 6663
<211> 70
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1437; "

<220>
<221> source
<223> /note="Gene Symbol: ASRGL1; "

<220>
<221> source
<223> /note="Gene Name:
asparaginase like 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431772"

<400> 6663
Met Asn Pro Ile Val Val Val His Gly Gly Gly Ala Gly Pro Ile Ser
1 5 10 15

Lys Asp Arg Lys Glu Arg Val His Gln Gly Met Val Arg Ala Ala Thr
20 25 30

Val Gly Tyr Gly Ile Leu Arg Glu Gly Gly Ser Ala Val Asp Ala Val
35 40 45

Glu Gly Ala Val Val Ala Leu Glu Asp Asp Pro Glu Phe Asn Ala Asp
50 55 60

Thr Ser Leu Leu Ser Asp
65 70

<210> 6664
<211> 70
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1437; "

<220>
<221> source
<223> /note="Gene Symbol: ASRGL1; "

<220>
<221> source
<223> /note="Gene Name:
asparaginase like 1; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000433136"

<400> 6664
Met Asn Pro Ile Val Val Val His Gly Gly Gly Ala Gly Pro Ile Ser
1   5   10   15

Lys Asp Arg Lys Glu Arg Val His Gln Gly Met Val Arg Ala Ala Thr
            20   25   30

Val Gly Tyr Gly Ile Leu Arg Glu Gly Gly Ser Ala Val Asp Ala Val
        35   40   45

Glu Gly Ala Val Val Ala Leu Glu Asp Asp Pro Glu Phe Asn Ala Asp
    50   55   60

Thr Ser Leu Leu Ser Asp
65   70

<210> 6665
<211> 164
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<223> /note="Gene Symbol: ASRGL1; "

<220>
<221> source
<223> /note="Gene Name:
      asparaginase like 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000478649"

<400> 6665
Met Asn Pro Ile Val Val Val His Gly Gly Gly Ala Gly Pro Ile Ser
1   5   10   15

Lys Asp Arg Lys Glu Arg Val His Gln Gly Met Val Arg Ala Ala Thr
            20   25   30

Val Gly Tyr Gly Ile Leu Arg Glu Gly Gly Ser Ala Val Asp Ala Val
        35   40   45

```
Glu Gly Ala Val Val Ala Leu Glu Asp Asp Pro Glu Phe Asn Ala Gly
    50                  55                  60

Cys Gly Ser Val Leu Asn Thr Asn Gly Glu Val Glu Met Asp Ala Ser
65                  70                  75                  80

Ile Met Asp Gly Lys Asp Leu Ser Ala Gly Ala Val Ser Ala Val Gln
                85                  90                  95

Cys Ile Ala Asn Pro Ile Lys Leu Ala Arg Leu Val Met Glu Lys Thr
            100                 105                 110

Pro His Cys Phe Leu Thr Asp Gln Gly Ala Ala Gln Phe Ala Ala Ala
        115                 120                 125

Met Gly Val Pro Glu Ile Pro Gly Glu Lys Leu Val Thr Glu Arg Asn
    130                 135                 140

Lys Lys Arg Leu Glu Lys Glu Lys His Glu Lys Gly Ala Gln Lys Thr
145                 150                 155                 160

Asp Cys Gln Lys
```

<210> 6666
<211> 133
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1437; "

<220>
<221> source
<223> /note="Gene Symbol: ASRGL1; "

<220>
<221> source
<223> /note="Gene Name:
asparaginase like 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000482684"

<400> 6666

Met Val Arg Ala Ala Thr Val Gly Tyr Gly Ile Leu Arg Glu Gly Gly
1   5   10   15

Ser Ala Val Asp Ala Val Glu Gly Ala Val Val Ala Leu Glu Asp Asp
            20   25   30

Pro Glu Phe Asn Ala Gly Cys Gly Ser Val Leu Asn Thr Asn Gly Glu
        35   40   45

Val Glu Met Asp Ala Ser Ile Met Asp Gly Lys Asp Leu Ser Ala Gly
    50   55   60

Ala Val Ser Ala Val Gln Cys Ile Ala Asn Pro Ile Lys Leu Ala Arg
65   70   75   80

Leu Val Met Glu Lys Thr Pro His Cys Phe Leu Thr Asp Gln Gly Ala
                85   90   95

Ala Gln Phe Ala Ala Ala Met Gly Val Pro Glu Ile Pro Gly Glu Lys
            100   105   110

Leu Val Thr Glu Arg Asn Lys Lys Arg Leu Glu Lys Glu Lys His Glu
        115   120   125

Lys Gly Ala Gln Lys
    130

<210> 6667
<211> 56
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1437; "

<220>
<221> source
<223> /note="Gene Symbol: ASRGL1; "

<220>
<221> source
<223> /note="Gene Name:
      asparaginase like 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000484457"

<400> 6667
Ile Pro Gly Glu Lys Leu Val Thr Glu Arg Asn Lys Lys Arg Leu Glu
1   5   10   15

Lys Glu Lys His Glu Lys Gly Ala Gln Lys Thr Asp Cys Gln Lys Phe
            20   25   30

Phe Arg Gly His Lys Leu Thr Thr Arg Leu Thr Val Asp Val Leu Gly
        35   40   45

Asn Leu Ser Ser Thr Cys Ser Gln
    50   55

<210> 6668
<211> 70
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000486943"

<400> 6668
Met Asn Pro Ile Val Val Val His Gly Gly Gly Ala Gly Pro Ile Ser
1   5   10   15

Lys Asp Arg Lys Glu Arg Val His Gln Gly Met Val Arg Ala Ala Thr
            20   25   30

Val Gly Tyr Gly Ile Leu Arg Glu Gly Gly Ser Ala Val Asp Ala Val
        35   40   45

Glu Gly Ala Val Val Ala Leu Glu Asp Asp Pro Glu Phe Asn Ala Asp
    50   55   60

Thr Ser Leu Leu Ser Asp
65 70

<210> 6669
<211> 561
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1438; "

<220>
<221> source
<223> /note="Gene Symbol: ASNS; "

<220>
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<223> /note="Gene Name:
asparagine synthetase (glutamine-hydrolyzing); "

<220>
<221> source
<223> /note="Uniprot ID: P08243; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000175506"

<400> 6669
Met Cys Gly Ile Trp Ala Leu Phe Gly Ser Asp Asp Cys Leu Ser Val
1 5 10 15

Gln Cys Leu Ser Ala Met Lys Ile Ala His Arg Gly Pro Asp Ala Phe
20 25 30

Arg Phe Glu Asn Val Asn Gly Tyr Thr Asn Cys Cys Phe Gly Phe His
35 40 45

Arg Leu Ala Val Val Asp Pro Leu Phe Gly Met Gln Pro Ile Arg Val
50 55 60

Lys Lys Tyr Pro Tyr Leu Trp Leu Cys Tyr Asn Gly Glu Ile Tyr Asn
65 70 75 80

His Lys Lys Met Gln Gln His Phe Glu Phe Glu Tyr Gln Thr Lys Val
85 90 95

Asp Gly Glu Ile Ile Leu His Leu Tyr Asp Lys Gly Gly Ile Glu Gln
100 105 110

```
Thr Ile Cys Met Leu Asp Gly Val Phe Ala Phe Val Leu Leu Asp Thr
        115                 120                 125

Ala Asn Lys Lys Val Phe Leu Gly Arg Asp Thr Tyr Gly Val Arg Pro
    130                 135                 140

Leu Phe Lys Ala Met Thr Glu Asp Gly Phe Leu Ala Val Cys Ser Glu
145                 150                 155                 160

Ala Lys Gly Leu Val Thr Leu Lys His Ser Ala Thr Pro Phe Leu Lys
                165                 170                 175

Val Glu Pro Phe Leu Pro Gly His Tyr Glu Val Leu Asp Leu Lys Pro
            180                 185                 190

Asn Gly Lys Val Ala Ser Val Glu Met Val Lys Tyr His His Cys Arg
        195                 200                 205

Asp Val Pro Leu His Ala Leu Tyr Asp Asn Val Glu Lys Leu Phe Pro
    210                 215                 220

Gly Phe Glu Ile Glu Thr Val Lys Asn Asn Leu Arg Ile Leu Phe Asn
225                 230                 235                 240

Asn Ala Val Lys Lys Arg Leu Met Thr Asp Arg Arg Ile Gly Cys Leu
                245                 250                 255

Leu Ser Gly Gly Leu Asp Ser Ser Leu Val Ala Ala Thr Leu Leu Lys
            260                 265                 270

Gln Leu Lys Glu Ala Gln Val Gln Tyr Pro Leu Gln Thr Phe Ala Ile
        275                 280                 285

Gly Met Glu Asp Ser Pro Asp Leu Leu Ala Ala Arg Lys Val Ala Asp
    290                 295                 300

His Ile Gly Ser Glu His Tyr Glu Val Leu Phe Asn Ser Glu Glu Gly
305                 310                 315                 320

Ile Gln Ala Leu Asp Glu Val Ile Phe Ser Leu Glu Thr Tyr Asp Ile
                325                 330                 335
```

```
Thr Thr Val Arg Ala Ser Val Gly Met Tyr Leu Ile Ser Lys Tyr Ile
            340                 345                 350

Arg Lys Asn Thr Asp Ser Val Val Ile Phe Ser Gly Glu Gly Ser Asp
        355                 360                 365

Glu Leu Thr Gln Gly Tyr Ile Tyr Phe His Lys Ala Pro Ser Pro Glu
    370                 375                 380

Lys Ala Glu Glu Glu Ser Glu Arg Leu Leu Arg Glu Leu Tyr Leu Phe
385                 390                 395                 400

Asp Val Leu Arg Ala Asp Arg Thr Thr Ala Ala His Gly Leu Glu Leu
                405                 410                 415

Arg Val Pro Phe Leu Asp His Arg Phe Ser Ser Tyr Tyr Leu Ser Leu
            420                 425                 430

Pro Pro Glu Met Arg Ile Pro Lys Asn Gly Ile Glu Lys His Leu Leu
        435                 440                 445

Arg Glu Thr Phe Glu Asp Ser Asn Leu Ile Pro Lys Glu Ile Leu Trp
    450                 455                 460

Arg Pro Lys Glu Ala Phe Ser Asp Gly Ile Thr Ser Val Lys Asn Ser
465                 470                 475                 480

Trp Phe Lys Ile Leu Gln Glu Tyr Val Glu His Gln Val Asp Asp Ala
                485                 490                 495

Met Met Ala Asn Ala Ala Gln Lys Phe Pro Phe Asn Thr Pro Lys Thr
            500                 505                 510

Lys Glu Gly Tyr Tyr Tyr Arg Gln Val Phe Glu Arg His Tyr Pro Gly
        515                 520                 525

Arg Ala Asp Trp Leu Ser His Tyr Trp Met Pro Lys Trp Ile Asn Ala
    530                 535                 540

Thr Asp Pro Ser Ala Arg Thr Leu Thr His Tyr Lys Ser Ala Val Lys
545                 550                 555                 560
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Ala

<210> 6670
<211> 561
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1438; "

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<223> /note="Gene Symbol: ASNS; "

<220>
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<223> /note="Gene Name:
asparagine synthetase (glutamine-hydrolyzing); "

<220>
<221> source
<223> /note="Uniprot ID: P08243; "

<220>
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<223> /note="ENSP ID: ENSP00000377845"

<400> 6670
Met Cys Gly Ile Trp Ala Leu Phe Gly Ser Asp Asp Cys Leu Ser Val
1 5 10 15

Gln Cys Leu Ser Ala Met Lys Ile Ala His Arg Gly Pro Asp Ala Phe
20 25 30

Arg Phe Glu Asn Val Asn Gly Tyr Thr Asn Cys Cys Phe Gly Phe His
35 40 45

Arg Leu Ala Val Val Asp Pro Leu Phe Gly Met Gln Pro Ile Arg Val
50 55 60

Lys Lys Tyr Pro Tyr Leu Trp Leu Cys Tyr Asn Gly Glu Ile Tyr Asn
65 70 75 80

His Lys Lys Met Gln Gln His Phe Glu Phe Glu Tyr Gln Thr Lys Val
85 90 95

Asp Gly Glu Ile Ile Leu His Leu Tyr Asp Lys Gly Gly Ile Glu Gln
100 105 110

```
Thr Ile Cys Met Leu Asp Gly Val Phe Ala Phe Val Leu Leu Asp Thr
        115                 120                 125

Ala Asn Lys Lys Val Phe Leu Gly Arg Asp Thr Tyr Gly Val Arg Pro
    130                 135                 140

Leu Phe Lys Ala Met Thr Glu Asp Gly Phe Leu Ala Val Cys Ser Glu
145                 150                 155                 160

Ala Lys Gly Leu Val Thr Leu Lys His Ser Ala Thr Pro Phe Leu Lys
                165                 170                 175

Val Glu Pro Phe Leu Pro Gly His Tyr Glu Val Leu Asp Leu Lys Pro
            180                 185                 190

Asn Gly Lys Val Ala Ser Val Glu Met Val Lys Tyr His His Cys Arg
        195                 200                 205

Asp Val Pro Leu His Ala Leu Tyr Asp Asn Val Glu Lys Leu Phe Pro
    210                 215                 220

Gly Phe Glu Ile Glu Thr Val Lys Asn Asn Leu Arg Ile Leu Phe Asn
225                 230                 235                 240

Asn Ala Val Lys Lys Arg Leu Met Thr Asp Arg Arg Ile Gly Cys Leu
                245                 250                 255

Leu Ser Gly Gly Leu Asp Ser Ser Leu Val Ala Ala Thr Leu Leu Lys
            260                 265                 270

Gln Leu Lys Glu Ala Gln Val Gln Tyr Pro Leu Gln Thr Phe Ala Ile
        275                 280                 285

Gly Met Glu Asp Ser Pro Asp Leu Leu Ala Ala Arg Lys Val Ala Asp
    290                 295                 300

His Ile Gly Ser Glu His Tyr Glu Val Leu Phe Asn Ser Glu Glu Gly
305                 310                 315                 320

Ile Gln Ala Leu Asp Glu Val Ile Phe Ser Leu Glu Thr Tyr Asp Ile
                325                 330                 335
```

```
Thr Thr Val Arg Ala Ser Val Gly Met Tyr Leu Ile Ser Lys Tyr Ile
            340                 345                 350

Arg Lys Asn Thr Asp Ser Val Val Ile Phe Ser Gly Glu Gly Ser Asp
        355                 360                 365

Glu Leu Thr Gln Gly Tyr Ile Tyr Phe His Lys Ala Pro Ser Pro Glu
    370                 375                 380

Lys Ala Glu Glu Glu Ser Glu Arg Leu Leu Arg Glu Leu Tyr Leu Phe
385                 390                 395                 400

Asp Val Leu Arg Ala Asp Arg Thr Thr Ala Ala His Gly Leu Glu Leu
                405                 410                 415

Arg Val Pro Phe Leu Asp His Arg Phe Ser Ser Tyr Tyr Leu Ser Leu
            420                 425                 430

Pro Pro Glu Met Arg Ile Pro Lys Asn Gly Ile Glu Lys His Leu Leu
        435                 440                 445

Arg Glu Thr Phe Glu Asp Ser Asn Leu Ile Pro Lys Glu Ile Leu Trp
    450                 455                 460

Arg Pro Lys Glu Ala Phe Ser Asp Gly Ile Thr Ser Val Lys Asn Ser
465                 470                 475                 480

Trp Phe Lys Ile Leu Gln Glu Tyr Val Glu His Gln Val Asp Asp Ala
                485                 490                 495

Met Met Ala Asn Ala Ala Gln Lys Phe Pro Phe Asn Thr Pro Lys Thr
            500                 505                 510

Lys Glu Gly Tyr Tyr Tyr Arg Gln Val Phe Glu Arg His Tyr Pro Gly
        515                 520                 525

Arg Ala Asp Trp Leu Ser His Tyr Trp Met Pro Lys Trp Ile Asn Ala
    530                 535                 540

Thr Asp Pro Ser Ala Arg Thr Leu Thr His Tyr Lys Ser Ala Val Lys
545                 550                 555                 560
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Ala

<210> 6671
<211> 561
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1438; "

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<223> /note="Gene Symbol: ASNS; "

<220>
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<223> /note="Gene Name:
asparagine synthetase (glutamine-hydrolyzing); "

<220>
<221> source
<223> /note="Uniprot ID: P08243; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000377846"

<400> 6671
Met Cys Gly Ile Trp Ala Leu Phe Gly Ser Asp Asp Cys Leu Ser Val
1 5 10 15

Gln Cys Leu Ser Ala Met Lys Ile Ala His Arg Gly Pro Asp Ala Phe
20 25 30

Arg Phe Glu Asn Val Asn Gly Tyr Thr Asn Cys Cys Phe Gly Phe His
35 40 45

Arg Leu Ala Val Val Asp Pro Leu Phe Gly Met Gln Pro Ile Arg Val
50 55 60

Lys Lys Tyr Pro Tyr Leu Trp Leu Cys Tyr Asn Gly Glu Ile Tyr Asn
65 70 75 80

His Lys Lys Met Gln Gln His Phe Glu Phe Glu Tyr Gln Thr Lys Val
85 90 95

Asp Gly Glu Ile Ile Leu His Leu Tyr Asp Lys Gly Gly Ile Glu Gln
100 105 110

```
Thr Ile Cys Met Leu Asp Gly Val Phe Ala Phe Val Leu Leu Asp Thr
        115                 120                 125

Ala Asn Lys Lys Val Phe Leu Gly Arg Asp Thr Tyr Gly Val Arg Pro
    130                 135                 140

Leu Phe Lys Ala Met Thr Glu Asp Gly Phe Leu Ala Val Cys Ser Glu
145                 150                 155                 160

Ala Lys Gly Leu Val Thr Leu Lys His Ser Ala Thr Pro Phe Leu Lys
                165                 170                 175

Val Glu Pro Phe Leu Pro Gly His Tyr Glu Val Leu Asp Leu Lys Pro
            180                 185                 190

Asn Gly Lys Val Ala Ser Val Glu Met Val Lys Tyr His His Cys Arg
        195                 200                 205

Asp Val Pro Leu His Ala Leu Tyr Asp Asn Val Glu Lys Leu Phe Pro
    210                 215                 220

Gly Phe Glu Ile Glu Thr Val Lys Asn Asn Leu Arg Ile Leu Phe Asn
225                 230                 235                 240

Asn Ala Val Lys Lys Arg Leu Met Thr Asp Arg Arg Ile Gly Cys Leu
                245                 250                 255

Leu Ser Gly Gly Leu Asp Ser Ser Leu Val Ala Ala Thr Leu Leu Lys
            260                 265                 270

Gln Leu Lys Glu Ala Gln Val Gln Tyr Pro Leu Gln Thr Phe Ala Ile
        275                 280                 285

Gly Met Glu Asp Ser Pro Asp Leu Leu Ala Ala Arg Lys Val Ala Asp
    290                 295                 300

His Ile Gly Ser Glu His Tyr Glu Val Leu Phe Asn Ser Glu Glu Gly
305                 310                 315                 320

Ile Gln Ala Leu Asp Glu Val Ile Phe Ser Leu Glu Thr Tyr Asp Ile
                325                 330                 335
```

```
Thr Thr Val Arg Ala Ser Val Gly Met Tyr Leu Ile Ser Lys Tyr Ile
            340                 345                 350

Arg Lys Asn Thr Asp Ser Val Val Ile Phe Ser Gly Glu Gly Ser Asp
        355                 360                 365

Glu Leu Thr Gln Gly Tyr Ile Tyr Phe His Lys Ala Pro Ser Pro Glu
    370                 375                 380

Lys Ala Glu Glu Glu Ser Glu Arg Leu Leu Arg Glu Leu Tyr Leu Phe
385                 390                 395                 400

Asp Val Leu Arg Ala Asp Arg Thr Thr Ala Ala His Gly Leu Glu Leu
                405                 410                 415

Arg Val Pro Phe Leu Asp His Arg Phe Ser Ser Tyr Tyr Leu Ser Leu
            420                 425                 430

Pro Pro Glu Met Arg Ile Pro Lys Asn Gly Ile Glu Lys His Leu Leu
        435                 440                 445

Arg Glu Thr Phe Glu Asp Ser Asn Leu Ile Pro Lys Glu Ile Leu Trp
    450                 455                 460

Arg Pro Lys Glu Ala Phe Ser Asp Gly Ile Thr Ser Val Lys Asn Ser
465                 470                 475                 480

Trp Phe Lys Ile Leu Gln Glu Tyr Val Glu His Gln Val Asp Asp Ala
                485                 490                 495

Met Met Ala Asn Ala Ala Gln Lys Phe Pro Phe Asn Thr Pro Lys Thr
            500                 505                 510

Lys Glu Gly Tyr Tyr Tyr Arg Gln Val Phe Glu Arg His Tyr Pro Gly
        515                 520                 525

Arg Ala Asp Trp Leu Ser His Tyr Trp Met Pro Lys Trp Ile Asn Ala
    530                 535                 540

Thr Asp Pro Ser Ala Arg Thr Leu Thr His Tyr Lys Ser Ala Val Lys
545                 550                 555                 560
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Ala

<210> 6672
<211> 162
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1438; "

<220>
<221> source
<223> /note="Gene Symbol: ASNS; "

<220>
<221> source
<223> /note="Gene Name:
asparagine synthetase (glutamine-hydrolyzing); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000394242"

<400> 6672
Met Cys Gly Ile Trp Ala Leu Phe Gly Ser Asp Asp Cys Leu Ser Val
1 5 10 15

Gln Cys Leu Ser Ala Met Lys Ile Ala His Arg Gly Pro Asp Ala Phe
20 25 30

Arg Phe Glu Asn Val Asn Gly Tyr Thr Asn Cys Cys Phe Gly Phe His
35 40 45

Arg Leu Ala Val Val Asp Pro Leu Phe Gly Met Gln Pro Ile Arg Val
50 55 60

Lys Lys Tyr Pro Tyr Leu Trp Leu Cys Tyr Asn Gly Glu Ile Tyr Asn
65 70 75 80

His Lys Lys Met Gln Gln His Phe Glu Phe Glu Tyr Gln Thr Lys Val
85 90 95

Asp Gly Glu Ile Ile Leu His Leu Tyr Asp Lys Gly Gly Ile Glu Gln
100 105 110

Thr Ile Cys Met Leu Asp Gly Val Phe Ala Phe Val Leu Leu Asp Thr
115 120 125

Ala Asn Lys Lys Val Phe Leu Gly Arg Asp Thr Tyr Gly Val Arg Pro
130 135 140

Leu Phe Lys Ala Met Thr Glu Asp Gly Phe Leu Ala Val Cys Ser Glu
145 150 155 160

Ala Lys

<210> 6673
<211> 32
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1438; "

<220>
<221> source
<223> /note="Gene Symbol: ASNS; "

<220>
<221> source
<223> /note="Gene Name:
asparagine synthetase (glutamine-hydrolyzing); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000397802"

<400> 6673
Met Cys Gly Ile Trp Ala Leu Phe Gly Ser Asp Asp Cys Leu Ser Val
1 5 10 15

Gln Cys Leu Ser Ala Met Lys Ile Ala His Arg Gly Pro Asp Ala Phe
20 25 30

<210> 6674
<211> 214
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1438; "

<220>
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<223> /note="Gene Symbol: ASNS; "

<220>
<221> source
<223> /note="Gene Name:
asparagine synthetase (glutamine-hydrolyzing); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000400422"

<400> 6674
Met Cys Gly Ile Trp Ala Leu Phe Gly Ser Asp Asp Cys Leu Ser Val
1 5 10 15

Gln Cys Leu Ser Ala Met Lys Ile Ala His Arg Gly Pro Asp Ala Phe
20 25 30

Arg Phe Glu Asn Val Asn Gly Tyr Thr Asn Cys Cys Phe Gly Phe His
35 40 45

Arg Leu Ala Val Val Asp Pro Leu Phe Gly Met Gln Pro Ile Arg Val
50 55 60

Lys Lys Tyr Pro Tyr Leu Trp Leu Cys Tyr Asn Gly Glu Ile Tyr Asn
65 70 75 80

His Lys Lys Met Gln Gln His Phe Glu Phe Glu Tyr Gln Thr Lys Val
85 90 95

Asp Gly Glu Ile Ile Leu His Leu Tyr Asp Lys Gly Gly Ile Glu Gln
100 105 110

Thr Ile Cys Met Leu Asp Gly Val Phe Ala Phe Val Leu Leu Asp Thr
115 120 125

Ala Asn Lys Lys Val Phe Leu Gly Arg Asp Thr Tyr Gly Val Arg Pro
130 135 140

Leu Phe Lys Ala Met Thr Glu Asp Gly Phe Leu Ala Val Cys Ser Glu
145 150 155 160

Ala Lys Gly Leu Val Thr Leu Lys His Ser Ala Thr Pro Phe Leu Lys
165 170 175

Val Glu Pro Phe Leu Pro Gly His Tyr Glu Val Leu Asp Leu Lys Pro
180 185 190

```
Asn Gly Lys Val Ala Ser Val Glu Met Val Lys Tyr His His Cys Arg
        195                 200                 205


Asp Val Pro Leu His Ala
    210


<210> 6675
<211> 401
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1438; "

<220>
<221> source
<223> /note="Gene Symbol: ASNS; "

<220>
<221> source
<223> /note="Gene Name:
      asparagine synthetase (glutamine-hydrolyzing); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000401651"

<400> 6675
Met Cys Gly Ile Trp Ala Leu Phe Gly Ser Asp Asp Cys Leu Ser Val
1               5                   10                  15


Gln Cys Leu Ser Ala Met Lys Ile Ala His Arg Gly Pro Asp Ala Phe
            20                  25                  30


Arg Phe Glu Asn Val Asn Gly Tyr Thr Asn Cys Cys Phe Gly Phe His
        35                  40                  45


Arg Leu Ala Val Val Asp Pro Leu Phe Gly Met Gln Pro Ile Arg Val
    50                  55                  60


Lys Lys Tyr Pro Tyr Leu Trp Leu Cys Tyr Asn Gly Glu Ile Tyr Asn
65                  70                  75                  80


His Lys Lys Met Gln Gln His Phe Glu Phe Glu Tyr Gln Thr Lys Val
                85                  90                  95
```

```
Asp Gly Glu Ile Ile Leu His Leu Tyr Asp Lys Gly Gly Ile Glu Gln
            100                 105                 110

Thr Ile Cys Met Leu Asp Gly Val Phe Ala Phe Val Leu Leu Asp Thr
        115                 120                 125

Ala Asn Lys Lys Val Phe Leu Gly Arg Asp Thr Tyr Gly Val Arg Pro
    130                 135                 140

Leu Phe Lys Ala Met Thr Glu Asp Gly Phe Leu Ala Val Cys Ser Glu
145                 150                 155                 160

Ala Lys Gly Leu Val Thr Leu Lys His Ser Ala Thr Pro Phe Leu Lys
                165                 170                 175

Val Glu Pro Phe Leu Pro Gly His Tyr Glu Val Leu Asp Leu Lys Pro
            180                 185                 190

Asn Gly Lys Val Ala Ser Val Glu Met Val Lys Tyr His His Cys Arg
        195                 200                 205

Asp Val Pro Leu His Ala Leu Tyr Asp Asn Val Glu Lys Leu Phe Pro
    210                 215                 220

Gly Phe Glu Ile Glu Thr Val Lys Asn Asn Leu Arg Ile Leu Phe Asn
225                 230                 235                 240

Asn Ala Val Lys Lys Arg Leu Met Thr Asp Arg Arg Ile Gly Cys Leu
                245                 250                 255

Leu Ser Gly Gly Leu Asp Ser Ser Leu Val Ala Ala Thr Leu Leu Lys
            260                 265                 270

Gln Leu Lys Glu Ala Gln Val Gln Tyr Pro Leu Gln Thr Phe Ala Ile
        275                 280                 285

Gly Met Glu Asp Ser Pro Asp Leu Leu Ala Ala Arg Lys Val Ala Asp
    290                 295                 300

His Ile Gly Ser Glu His Tyr Glu Val Leu Phe Asn Ser Glu Glu Gly
305                 310                 315                 320

Ile Gln Ala Leu Asp Glu Val Ile Phe Ser Leu Glu Thr Tyr Asp Ile
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325 330 335

Thr Thr Val Arg Ala Ser Val Gly Met Tyr Leu Ile Ser Lys Tyr Ile
340 345 350

Arg Lys Asn Thr Asp Ser Val Val Ile Phe Ser Gly Glu Gly Ser Asp
355 360 365

Glu Leu Thr Gln Gly Tyr Ile Tyr Phe His Lys Asp Trp Arg Gly Arg
370 375 380

Lys Lys Asn Cys Phe Val Cys Gln Lys Gln Asn Ser Trp Cys Phe Cys
385 390 395 400

Leu

<210> 6676
<211> 118
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1438; "

<220>
<221> source
<223> /note="Gene Symbol: ASNS; "

<220>
<221> source
<223> /note="Gene Name:
asparagine synthetase (glutamine-hydrolyzing); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000402350"

<400> 6676
Met Cys Gly Ile Trp Ala Leu Phe Gly Ser Asp Asp Cys Leu Ser Val
1 5 10 15

Gln Cys Leu Ser Ala Met Lys Ile Ala His Arg Gly Pro Asp Ala Phe
20 25 30

Arg Phe Glu Asn Val Asn Gly Tyr Thr Asn Cys Cys Phe Gly Phe His
35 40 45

```
Arg Leu Ala Val Val Asp Pro Leu Phe Gly Met Gln Pro Ile Arg Val
    50                  55                  60

Lys Lys Tyr Pro Tyr Leu Trp Leu Cys Tyr Asn Gly Glu Ile Tyr Asn
65                  70                  75                  80

His Lys Lys Met Gln Gln His Phe Glu Phe Glu Tyr Gln Thr Lys Val
                85                  90                  95

Asp Gly Glu Ile Ile Leu His Leu Tyr Asp Lys Gly Gly Ile Glu Gln
            100                 105                 110

Thr Ile Cys Met Leu Asp
        115


<210> 6677
<211> 540
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1438; "

<220>
<221> source
<223> /note="Gene Symbol: ASNS; "

<220>
<221> source
<223> /note="Gene Name:
      asparagine synthetase (glutamine-hydrolyzing); "

<220>
<221> source
<223> /note="Uniprot ID:  P08243; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406994"

<400> 6677
Met Lys Ile Ala His Arg Gly Pro Asp Ala Phe Arg Phe Glu Asn Val
1               5                   10                  15

Asn Gly Tyr Thr Asn Cys Cys Phe Gly Phe His Arg Leu Ala Val Val
            20                  25                  30

Asp Pro Leu Phe Gly Met Gln Pro Ile Arg Val Lys Lys Tyr Pro Tyr
```

```
        35                  40                  45

Leu Trp Leu Cys Tyr Asn Gly Glu Ile Tyr Asn His Lys Lys Met Gln
    50                  55                  60

Gln His Phe Glu Phe Glu Tyr Gln Thr Lys Val Asp Gly Glu Ile Ile
65                  70                  75                  80

Leu His Leu Tyr Asp Lys Gly Gly Ile Glu Gln Thr Ile Cys Met Leu
                85                  90                  95

Asp Gly Val Phe Ala Phe Val Leu Leu Asp Thr Ala Asn Lys Lys Val
            100                 105                 110

Phe Leu Gly Arg Asp Thr Tyr Gly Val Arg Pro Leu Phe Lys Ala Met
        115                 120                 125

Thr Glu Asp Gly Phe Leu Ala Val Cys Ser Glu Ala Lys Gly Leu Val
    130                 135                 140

Thr Leu Lys His Ser Ala Thr Pro Phe Leu Lys Val Glu Pro Phe Leu
145                 150                 155                 160

Pro Gly His Tyr Glu Val Leu Asp Leu Lys Pro Asn Gly Lys Val Ala
                165                 170                 175

Ser Val Glu Met Val Lys Tyr His His Cys Arg Asp Val Pro Leu His
            180                 185                 190

Ala Leu Tyr Asp Asn Val Glu Lys Leu Phe Pro Gly Phe Glu Ile Glu
        195                 200                 205

Thr Val Lys Asn Asn Leu Arg Ile Leu Phe Asn Asn Ala Val Lys Lys
    210                 215                 220

Arg Leu Met Thr Asp Arg Arg Ile Gly Cys Leu Leu Ser Gly Gly Leu
225                 230                 235                 240

Asp Ser Ser Leu Val Ala Ala Thr Leu Leu Lys Gln Leu Lys Glu Ala
                245                 250                 255

Gln Val Gln Tyr Pro Leu Gln Thr Phe Ala Ile Gly Met Glu Asp Ser
            260                 265                 270
```

```
Pro Asp Leu Leu Ala Ala Arg Lys Val Ala Asp His Ile Gly Ser Glu
        275                 280                 285

His Tyr Glu Val Leu Phe Asn Ser Glu Glu Gly Ile Gln Ala Leu Asp
    290                 295                 300

Glu Val Ile Phe Ser Leu Glu Thr Tyr Asp Ile Thr Thr Val Arg Ala
305                 310                 315                 320

Ser Val Gly Met Tyr Leu Ile Ser Lys Tyr Ile Arg Lys Asn Thr Asp
                325                 330                 335

Ser Val Val Ile Phe Ser Gly Glu Gly Ser Asp Glu Leu Thr Gln Gly
            340                 345                 350

Tyr Ile Tyr Phe His Lys Ala Pro Ser Pro Glu Lys Ala Glu Glu Glu
        355                 360                 365

Ser Glu Arg Leu Leu Arg Glu Leu Tyr Leu Phe Asp Val Leu Arg Ala
    370                 375                 380

Asp Arg Thr Thr Ala Ala His Gly Leu Glu Leu Arg Val Pro Phe Leu
385                 390                 395                 400

Asp His Arg Phe Ser Ser Tyr Tyr Leu Ser Leu Pro Pro Glu Met Arg
                405                 410                 415

Ile Pro Lys Asn Gly Ile Glu Lys His Leu Leu Arg Glu Thr Phe Glu
            420                 425                 430

Asp Ser Asn Leu Ile Pro Lys Glu Ile Leu Trp Arg Pro Lys Glu Ala
        435                 440                 445

Phe Ser Asp Gly Ile Thr Ser Val Lys Asn Ser Trp Phe Lys Ile Leu
    450                 455                 460

Gln Glu Tyr Val Glu His Gln Val Asp Asp Ala Met Met Ala Asn Ala
465                 470                 475                 480

Ala Gln Lys Phe Pro Phe Asn Thr Pro Lys Thr Lys Glu Gly Tyr Tyr
                485                 490                 495
```

```
Tyr Arg Gln Val Phe Glu Arg His Tyr Pro Gly Arg Ala Asp Trp Leu
            500                 505                 510

Ser His Tyr Trp Met Pro Lys Trp Ile Asn Ala Thr Asp Pro Ser Ala
        515                 520                 525

Arg Thr Leu Thr His Tyr Lys Ser Ala Val Lys Ala
    530                 535                 540


<210> 6678
<211> 478
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1438; "

<220>
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<223> /note="Gene Symbol: ASNS; "

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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID:  P08243; "

<220>
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<223> /note="ENSP ID: ENSP00000408472"

<400> 6678
Met Gln Gln His Phe Glu Phe Glu Tyr Gln Thr Lys Val Asp Gly Glu
1               5                   10                  15

Ile Ile Leu His Leu Tyr Asp Lys Gly Gly Ile Glu Gln Thr Ile Cys
            20                  25                  30

Met Leu Asp Gly Val Phe Ala Phe Val Leu Leu Asp Thr Ala Asn Lys
        35                  40                  45

Lys Val Phe Leu Gly Arg Asp Thr Tyr Gly Val Arg Pro Leu Phe Lys
    50                  55                  60

Ala Met Thr Glu Asp Gly Phe Leu Ala Val Cys Ser Glu Ala Lys Gly
```

65 70 75 80

Leu Val Thr Leu Lys His Ser Ala Thr Pro Phe Leu Lys Val Glu Pro
85 90 95

Phe Leu Pro Gly His Tyr Glu Val Leu Asp Leu Lys Pro Asn Gly Lys
100 105 110

Val Ala Ser Val Glu Met Val Lys Tyr His His Cys Arg Asp Val Pro
115 120 125

Leu His Ala Leu Tyr Asp Asn Val Glu Lys Leu Phe Pro Gly Phe Glu
130 135 140

Ile Glu Thr Val Lys Asn Asn Leu Arg Ile Leu Phe Asn Asn Ala Val
145 150 155 160

Lys Lys Arg Leu Met Thr Asp Arg Arg Ile Gly Cys Leu Leu Ser Gly
165 170 175

Gly Leu Asp Ser Ser Leu Val Ala Ala Thr Leu Leu Lys Gln Leu Lys
180 185 190

Glu Ala Gln Val Gln Tyr Pro Leu Gln Thr Phe Ala Ile Gly Met Glu
195 200 205

Asp Ser Pro Asp Leu Leu Ala Ala Arg Lys Val Ala Asp His Ile Gly
210 215 220

Ser Glu His Tyr Glu Val Leu Phe Asn Ser Glu Glu Gly Ile Gln Ala
225 230 235 240

Leu Asp Glu Val Ile Phe Ser Leu Glu Thr Tyr Asp Ile Thr Thr Val
245 250 255

Arg Ala Ser Val Gly Met Tyr Leu Ile Ser Lys Tyr Ile Arg Lys Asn
260 265 270

Thr Asp Ser Val Val Ile Phe Ser Gly Glu Gly Ser Asp Glu Leu Thr
275 280 285

Gln Gly Tyr Ile Tyr Phe His Lys Ala Pro Ser Pro Glu Lys Ala Glu
290 295 300

```
Glu Glu Ser Glu Arg Leu Leu Arg Glu Leu Tyr Leu Phe Asp Val Leu
305                 310                 315                 320

Arg Ala Asp Arg Thr Thr Ala Ala His Gly Leu Glu Leu Arg Val Pro
                325                 330                 335

Phe Leu Asp His Arg Phe Ser Ser Tyr Tyr Leu Ser Leu Pro Pro Glu
            340                 345                 350

Met Arg Ile Pro Lys Asn Gly Ile Glu Lys His Leu Leu Arg Glu Thr
        355                 360                 365

Phe Glu Asp Ser Asn Leu Ile Pro Lys Glu Ile Leu Trp Arg Pro Lys
    370                 375                 380

Glu Ala Phe Ser Asp Gly Ile Thr Ser Val Lys Asn Ser Trp Phe Lys
385                 390                 395                 400

Ile Leu Gln Glu Tyr Val Glu His Gln Val Asp Asp Ala Met Met Ala
                405                 410                 415

Asn Ala Ala Gln Lys Phe Pro Phe Asn Thr Pro Lys Thr Lys Glu Gly
            420                 425                 430

Tyr Tyr Tyr Arg Gln Val Phe Glu Arg His Tyr Pro Gly Arg Ala Asp
        435                 440                 445

Trp Leu Ser His Tyr Trp Met Pro Lys Trp Ile Asn Ala Thr Asp Pro
    450                 455                 460

Ser Ala Arg Thr Leu Thr His Tyr Lys Ser Ala Val Lys Ala
465                 470                 475


<210> 6679
<211> 63
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<220>
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<223> /note="Gene Symbol: ASNS; "

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<220>
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<400> 6679
Met Lys Ile Ala His Arg Gly Pro Asp Ala Phe Arg Phe Glu Asn Val
1 5 10 15

Asn Gly Tyr Thr Asn Cys Cys Phe Gly Phe His Arg Leu Ala Val Val
20 25 30

Asp Pro Leu Phe Gly Met Gln Pro Ile Arg Val Lys Lys Tyr Pro Tyr
35 40 45

Leu Trp Leu Cys Tyr Asn Gly Glu Ile Tyr Asn His Lys Lys Val
50 55 60

<210> 6680
<211> 28
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000413797"

<400> 6680
Met Cys Gly Ile Trp Ala Leu Phe Gly Ser Asp Asp Cys Leu Ser Val
1 5 10 15

Gln Cys Leu Ser Ala Met Lys Ile Ala His Arg Gly
20 25

<210> 6681
<211> 478
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Uniprot ID: P08243; "

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<400> 6681
Met Gln Gln His Phe Glu Phe Glu Tyr Gln Thr Lys Val Asp Gly Glu
1   5   10   15

Ile Ile Leu His Leu Tyr Asp Lys Gly Gly Ile Glu Gln Thr Ile Cys
            20   25   30

Met Leu Asp Gly Val Phe Ala Phe Val Leu Leu Asp Thr Ala Asn Lys
        35   40   45

Lys Val Phe Leu Gly Arg Asp Thr Tyr Gly Val Arg Pro Leu Phe Lys
    50   55   60

Ala Met Thr Glu Asp Gly Phe Leu Ala Val Cys Ser Glu Ala Lys Gly
65   70   75   80

Leu Val Thr Leu Lys His Ser Ala Thr Pro Phe Leu Lys Val Glu Pro
                85   90   95

Phe Leu Pro Gly His Tyr Glu Val Leu Asp Leu Lys Pro Asn Gly Lys
            100   105   110

```
Val Ala Ser Val Glu Met Val Lys Tyr His His Cys Arg Asp Val Pro
        115                 120                 125

Leu His Ala Leu Tyr Asp Asn Val Glu Lys Leu Phe Pro Gly Phe Glu
    130                 135                 140

Ile Glu Thr Val Lys Asn Asn Leu Arg Ile Leu Phe Asn Asn Ala Val
145                 150                 155                 160

Lys Lys Arg Leu Met Thr Asp Arg Arg Ile Gly Cys Leu Leu Ser Gly
                165                 170                 175

Gly Leu Asp Ser Ser Leu Val Ala Ala Thr Leu Leu Lys Gln Leu Lys
            180                 185                 190

Glu Ala Gln Val Gln Tyr Pro Leu Gln Thr Phe Ala Ile Gly Met Glu
        195                 200                 205

Asp Ser Pro Asp Leu Leu Ala Ala Arg Lys Val Ala Asp His Ile Gly
    210                 215                 220

Ser Glu His Tyr Glu Val Leu Phe Asn Ser Glu Glu Gly Ile Gln Ala
225                 230                 235                 240

Leu Asp Glu Val Ile Phe Ser Leu Glu Thr Tyr Asp Ile Thr Thr Val
                245                 250                 255

Arg Ala Ser Val Gly Met Tyr Leu Ile Ser Lys Tyr Ile Arg Lys Asn
            260                 265                 270

Thr Asp Ser Val Val Ile Phe Ser Gly Glu Gly Ser Asp Glu Leu Thr
        275                 280                 285

Gln Gly Tyr Ile Tyr Phe His Lys Ala Pro Ser Pro Glu Lys Ala Glu
    290                 295                 300

Glu Glu Ser Glu Arg Leu Leu Arg Glu Leu Tyr Leu Phe Asp Val Leu
305                 310                 315                 320

Arg Ala Asp Arg Thr Thr Ala Ala His Gly Leu Glu Leu Arg Val Pro
                325                 330                 335

Phe Leu Asp His Arg Phe Ser Ser Tyr Tyr Leu Ser Leu Pro Pro Glu
```

```
            340                 345                 350

Met Arg Ile Pro Lys Asn Gly Ile Glu Lys His Leu Leu Arg Glu Thr
        355                 360                 365

Phe Glu Asp Ser Asn Leu Ile Pro Lys Glu Ile Leu Trp Arg Pro Lys
    370                 375                 380

Glu Ala Phe Ser Asp Gly Ile Thr Ser Val Lys Asn Ser Trp Phe Lys
385                 390                 395                 400

Ile Leu Gln Glu Tyr Val Glu His Gln Val Asp Asp Ala Met Met Ala
                405                 410                 415

Asn Ala Ala Gln Lys Phe Pro Phe Asn Thr Pro Lys Thr Lys Glu Gly
            420                 425                 430

Tyr Tyr Tyr Arg Gln Val Phe Glu Arg His Tyr Pro Gly Arg Ala Asp
        435                 440                 445

Trp Leu Ser His Tyr Trp Met Pro Lys Trp Ile Asn Ala Thr Asp Pro
    450                 455                 460

Ser Ala Arg Thr Leu Thr His Tyr Lys Ser Ala Val Lys Ala
465                 470                 475


<210> 6682
<211> 540
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<400> 6682
Met Lys Ile Ala His Arg Gly Pro Asp Ala Phe Arg Phe Glu Asn Val
1   5   10   15

Asn Gly Tyr Thr Asn Cys Cys Phe Gly Phe His Arg Leu Ala Val Val
            20   25   30

Asp Pro Leu Phe Gly Met Gln Pro Ile Arg Val Lys Lys Tyr Pro Tyr
        35   40   45

Leu Trp Leu Cys Tyr Asn Gly Glu Ile Tyr Asn His Lys Lys Met Gln
    50   55   60

Gln His Phe Glu Phe Glu Tyr Gln Thr Lys Val Asp Gly Glu Ile Ile
65   70   75   80

Leu His Leu Tyr Asp Lys Gly Gly Ile Glu Gln Thr Ile Cys Met Leu
                85   90   95

Asp Gly Val Phe Ala Phe Val Leu Leu Asp Thr Ala Asn Lys Lys Val
            100   105   110

Phe Leu Gly Arg Asp Thr Tyr Gly Val Arg Pro Leu Phe Lys Ala Met
        115   120   125

Thr Glu Asp Gly Phe Leu Ala Val Cys Ser Glu Ala Lys Gly Leu Val
    130   135   140

Thr Leu Lys His Ser Ala Thr Pro Phe Leu Lys Val Glu Pro Phe Leu
145   150   155   160

Pro Gly His Tyr Glu Val Leu Asp Leu Lys Pro Asn Gly Lys Val Ala
                165   170   175

Ser Val Glu Met Val Lys Tyr His His Cys Arg Asp Val Pro Leu His
            180   185   190

Ala Leu Tyr Asp Asn Val Glu Lys Leu Phe Pro Gly Phe Glu Ile Glu
        195   200   205

```
Thr Val Lys Asn Asn Leu Arg Ile Leu Phe Asn Asn Ala Val Lys Lys
    210                 215                 220

Arg Leu Met Thr Asp Arg Arg Ile Gly Cys Leu Leu Ser Gly Gly Leu
225                 230                 235                 240

Asp Ser Ser Leu Val Ala Ala Thr Leu Leu Lys Gln Leu Lys Glu Ala
                245                 250                 255

Gln Val Gln Tyr Pro Leu Gln Thr Phe Ala Ile Gly Met Glu Asp Ser
            260                 265                 270

Pro Asp Leu Leu Ala Ala Arg Lys Val Ala Asp His Ile Gly Ser Glu
        275                 280                 285

His Tyr Glu Val Leu Phe Asn Ser Glu Glu Gly Ile Gln Ala Leu Asp
    290                 295                 300

Glu Val Ile Phe Ser Leu Glu Thr Tyr Asp Ile Thr Thr Val Arg Ala
305                 310                 315                 320

Ser Val Gly Met Tyr Leu Ile Ser Lys Tyr Ile Arg Lys Asn Thr Asp
                325                 330                 335

Ser Val Val Ile Phe Ser Gly Glu Gly Ser Asp Glu Leu Thr Gln Gly
            340                 345                 350

Tyr Ile Tyr Phe His Lys Ala Pro Ser Pro Glu Lys Ala Glu Glu Glu
        355                 360                 365

Ser Glu Arg Leu Leu Arg Glu Leu Tyr Leu Phe Asp Val Leu Arg Ala
    370                 375                 380

Asp Arg Thr Thr Ala Ala His Gly Leu Glu Leu Arg Val Pro Phe Leu
385                 390                 395                 400

Asp His Arg Phe Ser Ser Tyr Tyr Leu Ser Leu Pro Pro Glu Met Arg
                405                 410                 415

Ile Pro Lys Asn Gly Ile Glu Lys His Leu Leu Arg Glu Thr Phe Glu
            420                 425                 430

Asp Ser Asn Leu Ile Pro Lys Glu Ile Leu Trp Arg Pro Lys Glu Ala
```

```
        435                 440                 445

Phe Ser Asp Gly Ile Thr Ser Val Lys Asn Ser Trp Phe Lys Ile Leu
    450                 455                 460

Gln Glu Tyr Val Glu His Gln Val Asp Asp Ala Met Met Ala Asn Ala
465                 470                 475                 480

Ala Gln Lys Phe Pro Phe Asn Thr Pro Lys Thr Lys Glu Gly Tyr Tyr
                485                 490                 495

Tyr Arg Gln Val Phe Glu Arg His Tyr Pro Gly Arg Ala Asp Trp Leu
            500                 505                 510

Ser His Tyr Trp Met Pro Lys Trp Ile Asn Ala Thr Asp Pro Ser Ala
        515                 520                 525

Arg Thr Leu Thr His Tyr Lys Ser Ala Val Lys Ala
    530                 535                 540


<210> 6683
<211> 643
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1439; "

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<220>
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      domain containing 1; "

<220>
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<223> /note="Uniprot ID:  Q9NWL6; "

<220>
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<223> /note="ENSP ID: ENSP00000260952"

<400> 6683
Met Cys Gly Ile Cys Cys Ser Val Asn Phe Ser Ala Glu His Phe Ser
1               5                   10                  15
```

```
Gln Asp Leu Lys Glu Asp Leu Leu Tyr Asn Leu Lys Gln Arg Gly Pro
            20                  25                  30

Asn Ser Ser Lys Gln Leu Leu Lys Ser Asp Val Asn Tyr Gln Cys Leu
        35                  40                  45

Phe Ser Ala His Val Leu His Leu Arg Gly Val Leu Thr Thr Gln Pro
    50                  55                  60

Val Glu Asp Glu Arg Gly Asn Val Phe Leu Trp Asn Gly Glu Ile Phe
65                  70                  75                  80

Ser Gly Ile Lys Val Glu Ala Glu Glu Asn Asp Thr Gln Ile Leu Phe
                85                  90                  95

Asn Tyr Leu Ser Ser Cys Lys Asn Glu Ser Glu Ile Leu Ser Leu Phe
            100                 105                 110

Ser Glu Val Gln Gly Pro Trp Ser Phe Ile Tyr Tyr Gln Ala Ser Ser
        115                 120                 125

His Tyr Leu Trp Phe Gly Arg Asp Phe Phe Gly Arg Arg Ser Leu Leu
    130                 135                 140

Trp His Phe Ser Asn Leu Gly Lys Ser Phe Cys Leu Ser Ser Val Gly
145                 150                 155                 160

Thr Gln Thr Ser Gly Leu Ala Asn Gln Trp Gln Glu Val Pro Ala Ser
                165                 170                 175

Gly Leu Phe Arg Ile Asp Leu Lys Ser Thr Val Ile Ser Gly Cys Ile
            180                 185                 190

Ile Leu Gln Leu Tyr Pro Trp Lys Tyr Ile Ser Arg Glu Asn Ile Ile
        195                 200                 205

Glu Glu Asn Val Asn Ser Leu Ser Gln Ile Ser Ala Asp Leu Pro Ala
    210                 215                 220

Phe Val Ser Val Val Ala Asn Glu Ala Lys Leu Tyr Leu Glu Lys Pro
225                 230                 235                 240
```

```
Val Val Pro Leu Asn Met Met Leu Pro Gln Ala Ala Leu Glu Thr His
                245                 250                 255

Cys Ser Asn Ile Ser Asn Val Pro Pro Thr Arg Glu Ile Leu Gln Val
            260                 265                 270

Phe Leu Thr Asp Val His Met Lys Glu Val Ile Gln Gln Phe Ile Asp
        275                 280                 285

Val Leu Ser Val Ala Val Lys Lys Arg Val Leu Cys Leu Pro Arg Asp
    290                 295                 300

Glu Asn Leu Thr Ala Asn Glu Val Leu Lys Thr Cys Asp Arg Lys Ala
305                 310                 315                 320

Asn Val Ala Ile Leu Phe Ser Gly Gly Ile Asp Ser Met Val Ile Ala
                325                 330                 335

Thr Leu Ala Asp Arg His Ile Pro Leu Asp Glu Pro Ile Asp Leu Leu
            340                 345                 350

Asn Val Ala Phe Ile Ala Glu Glu Lys Thr Met Pro Thr Thr Phe Asn
        355                 360                 365

Arg Glu Gly Asn Lys Gln Lys Asn Lys Cys Glu Ile Pro Ser Glu Glu
    370                 375                 380

Phe Ser Lys Asp Val Ala Ala Ala Ala Ala Asp Ser Pro Asn Lys His
385                 390                 395                 400

Val Ser Val Pro Asp Arg Ile Thr Gly Arg Ala Gly Leu Lys Glu Leu
                405                 410                 415

Gln Ala Val Ser Pro Ser Arg Ile Trp Asn Phe Val Glu Ile Asn Val
            420                 425                 430

Ser Met Glu Glu Leu Gln Lys Leu Arg Arg Thr Arg Ile Cys His Leu
        435                 440                 445

Ile Arg Pro Leu Asp Thr Val Leu Asp Asp Ser Ile Gly Cys Ala Val
    450                 455                 460
```

```
Trp Phe Ala Ser Arg Gly Ile Gly Trp Leu Val Ala Gln Glu Gly Val
465                 470                 475                 480

Lys Ser Tyr Gln Ser Asn Ala Lys Val Val Leu Thr Gly Ile Gly Ala
                485                 490                 495

Asp Glu Gln Leu Ala Gly Tyr Ser Arg His Arg Val Arg Phe Gln Ser
            500                 505                 510

His Gly Leu Glu Gly Leu Asn Lys Glu Ile Met Met Glu Leu Gly Arg
        515                 520                 525

Ile Ser Ser Arg Asn Leu Gly Arg Asp Asp Arg Val Ile Gly Asp His
    530                 535                 540

Gly Lys Glu Ala Arg Phe Pro Phe Leu Asp Glu Asn Val Val Ser Phe
545                 550                 555                 560

Leu Asn Ser Leu Pro Ile Trp Glu Lys Ala Asn Leu Thr Leu Pro Arg
                565                 570                 575

Gly Ile Gly Glu Lys Leu Leu Leu Arg Leu Ala Ala Val Glu Leu Gly
            580                 585                 590

Leu Thr Ala Ser Ala Leu Leu Pro Lys Arg Ala Met Gln Phe Gly Ser
        595                 600                 605

Arg Ile Ala Lys Met Glu Lys Ile Asn Glu Lys Ala Ser Asp Lys Cys
    610                 615                 620

Gly Arg Leu Gln Ile Met Ser Leu Glu Asn Leu Ser Ile Glu Lys Glu
625                 630                 635                 640

Thr Lys Leu
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<210> 6684
<211> 73
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
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domain containing 1; "

<220>
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<400> 6684
Met Cys Gly Ile Cys Cys Ser Val Asn Phe Ser Ala Glu His Phe Ser
1 5 10 15

Gln Asp Leu Lys Glu Asp Leu Leu Tyr Asn Leu Lys Gln Arg Gly Pro
20 25 30

Asn Ser Ser Lys Gln Leu Leu Lys Ser Asp Val Asn Tyr Gln Cys Leu
35 40 45

Phe Ser Ala His Val Leu His Leu Arg Gly Val Leu Thr Thr Gln Pro
50 55 60

Val Glu Asp Glu Arg Gly Asn Val Phe
65 70

<210> 6685
<211> 618
<212> PRT
<213> Homo sapiens

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domain containing 1; "

<220>
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<223> /note="ENSP ID: ENSP00000406790"

<400> 6685
Met Cys Gly Ile Cys Cys Ser Val Asn Phe Ser Ala Glu His Phe Ser
1 5 10 15

Gln Asp Leu Lys Glu Asp Leu Leu Tyr Asn Leu Lys Gln Arg Gly Pro
20 25 30

Asn Ser Ser Lys Gln Leu Leu Lys Ser Asp Val Asn Tyr Gln Cys Leu
35 40 45

Phe Ser Ala His Val Leu His Leu Arg Gly Val Leu Thr Thr Gln Pro
50 55 60

Val Glu Asp Glu Arg Gly Asn Val Phe Leu Trp Asn Gly Glu Ile Phe
65 70 75 80

Ser Gly Ile Lys Val Glu Ala Glu Glu Asn Asp Thr Gln Ile Leu Phe
85 90 95

Asn Tyr Leu Ser Ser Cys Lys Asn Glu Ser Glu Ile Leu Ser Leu Phe
100 105 110

Ser Glu Val Gln Gly Pro Trp Ser Phe Ile Tyr Tyr Gln Ala Ser Ser
115 120 125

His Tyr Leu Trp Phe Gly Arg Asp Phe Phe Gly Arg Arg Ser Leu Leu
130 135 140

Trp His Phe Ser Asn Leu Gly Lys Ser Phe Cys Leu Ser Ser Val Gly
145 150 155 160

Thr Gln Thr Ser Gly Leu Ala Asn Gln Trp Gln Glu Val Pro Ala Ser
165 170 175

Gly Leu Phe Arg Ile Asp Leu Lys Ser Thr Val Ile Ser Gly Cys Ile
180 185 190

Ile Leu Gln Leu Tyr Pro Trp Lys Tyr Ile Ser Arg Glu Asn Ile Ile
195 200 205

Glu Glu Asn Val Asn Ser Leu Ser Gln Ile Ser Ala Asp Leu Pro Ala
210 215 220

```
Phe Val Ser Val Val Ala Asn Glu Ala Lys Leu Tyr Leu Glu Lys Pro
225                 230                 235                 240

Val Val Pro Leu Asn Met Met Leu Pro Gln Ala Ala Leu Glu Thr His
                245                 250                 255

Cys Ser Asn Ile Ser Asn Val Pro Pro Thr Arg Glu Ile Leu Gln Val
            260                 265                 270

Phe Leu Thr Asp Val His Met Lys Glu Val Ile Gln Gln Phe Ile Asp
        275                 280                 285

Val Leu Ser Val Ala Val Lys Lys Arg Val Leu Cys Leu Pro Arg Asp
    290                 295                 300

Glu Asn Leu Thr Ala Asn Glu Val Leu Lys Thr Cys Asp Arg Lys Ala
305                 310                 315                 320

Asn Val Ala Ile Leu Phe Ser Gly Gly Ile Asp Ser Met Val Ile Ala
                325                 330                 335

Thr Leu Ala Asp Arg His Ile Pro Leu Asp Glu Pro Ile Asp Leu Leu
            340                 345                 350

Asn Val Ala Phe Ile Ala Glu Glu Lys Thr Met Pro Thr Thr Phe Asn
        355                 360                 365

Arg Glu Gly Asn Lys Gln Lys Asn Lys Cys Glu Ile Pro Ser Glu Glu
    370                 375                 380

Phe Ser Lys Asp Val Ala Ala Ala Ala Ala Asp Ser Pro Asn Lys His
385                 390                 395                 400

Val Ser Val Pro Asp Arg Ile Thr Gly Arg Ala Gly Leu Lys Glu Leu
                405                 410                 415

Gln Ala Val Ser Pro Ser Arg Ile Trp Asn Phe Val Glu Ile Asn Val
            420                 425                 430

Ser Met Glu Glu Leu Gln Lys Leu Arg Arg Thr Arg Ile Cys His Leu
        435                 440                 445
```

```
Ile Arg Pro Leu Asp Thr Val Leu Asp Asp Ser Ile Gly Cys Ala Val
    450                 455                 460

Trp Phe Ala Ser Arg Gly Ile Gly Trp Leu Val Ala Gln Glu Gly Val
465                 470                 475                 480

Lys Ser Tyr Gln Ser Asn Ala Lys Val Val Leu Thr Gly Ile Gly Ala
                485                 490                 495

Asp Glu Gln Leu Ala Gly Tyr Ser Arg His Arg Val Arg Phe Gln Ser
            500                 505                 510

His Gly Leu Glu Gly Leu Asn Lys Glu Ile Met Met Glu Leu Gly Arg
        515                 520                 525

Ile Ser Ser Arg Asn Leu Gly Arg Asp Asp Arg Val Ile Gly Asp His
    530                 535                 540

Gly Lys Glu Ala Arg Phe Pro Phe Leu Asp Glu Asn Val Val Ser Phe
545                 550                 555                 560

Leu Asn Ser Leu Pro Ile Trp Glu Lys Ala Asn Leu Thr Leu Pro Arg
                565                 570                 575

Gly Ile Gly Glu Lys Leu Leu Leu Arg Leu Ala Ala Val Glu Leu Gly
            580                 585                 590

Leu Thr Ala Ser Ala Leu Leu Pro Lys Arg Ala Met Gln Phe Gly Ser
        595                 600                 605

Arg Ile Ala Lys Met Glu Lys Ile Asn Glu
    610                 615


<210> 6686
<211> 96
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1439; "

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<221> source
<223> /note="Gene Symbol: ASNSD1; "
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<223> /note="Gene Name:
asparagine synthetase
domain containing 1; "

<220>
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<223> /note="ENSP ID: ENSP00000475224"

<400> 6686
Met Pro Ser Arg Gly Thr Arg Pro Glu Asp Ser Ser Val Leu Ile Pro
1 5 10 15

Thr Asp Asn Ser Thr Pro His Lys Glu Asp Leu Ser Ser Lys Ile Lys
20 25 30

Glu Gln Lys Ile Val Val Asp Glu Leu Ser Asn Leu Lys Lys Asn Arg
35 40 45

Lys Val Tyr Arg Gln Gln Gln Asn Ser Asn Ile Phe Phe Leu Ala Asp
50 55 60

Arg Thr Glu Met Leu Ser Glu Ser Lys Asn Ile Leu Asp Glu Leu Lys
65 70 75 80

Lys Glu Tyr Gln Glu Ile Glu Asn Leu Asp Lys Thr Lys Ile Lys Lys
85 90 95

<210> 6687
<211> 63
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ASNSD1; "

<220>
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<223> /note="Gene Name:
asparagine synthetase
domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000475546"

<400> 6687
Met Pro Ser Arg Gly Thr Arg Pro Glu Asp Ser Ser Val Leu Ile Pro
1   5   10   15

Thr Asp Asn Ser Thr Pro His Lys Glu Asp Leu Ser Ser Lys Ile Lys
            20   25   30

Glu Gln Lys Ile Val Val Asp Glu Leu Ser Asn Leu Lys Lys Asn Arg
        35   40   45

Thr Glu Gln Lys Cys Cys Leu Arg Ala Arg Ile Tyr Trp Met Asn
    50   55   60

<210> 6688
<211> 45
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
asparagine synthetase
domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000475805"

<400> 6688
Met Pro Ser Arg Gly Thr Arg Pro Glu Asp Ser Ser Val Leu Ile Pro
1   5   10   15

Thr Asp Asn Ser Thr Pro His Lys Glu Asp Leu Ser Ser Lys Thr Glu
            20   25   30

Gln Lys Cys Cys Leu Arg Ala Arg Ile Tyr Trp Met Asn
        35   40   45

<210> 6689
<211> 162
<212> PRT

<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ASNSD1; "

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<223> /note="Gene Name:
asparagine synthetase
domain containing 1; "

<220>
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<223> /note="ENSP ID: ENSP00000475970"

<400> 6689

```
Met Cys Gly Ile Cys Cys Ser Val Val Leu Thr Gly Ile Gly Ala Asp
1               5                  10                  15


Glu Gln Leu Ala Gly Tyr Ser Arg His Arg Val Arg Phe Gln Ser His
            20                  25                  30


Gly Leu Glu Gly Leu Asn Lys Glu Ile Met Met Glu Leu Gly Arg Ile
        35                  40                  45


Ser Ser Arg Asn Leu Gly Arg Asp Asp Arg Val Ile Gly Asp His Gly
    50                  55                  60


Lys Glu Ala Arg Phe Pro Phe Leu Asp Glu Asn Val Val Ser Phe Leu
65                  70                  75                  80


Asn Ser Leu Pro Ile Trp Glu Lys Ala Asn Leu Thr Leu Pro Arg Gly
                85                  90                  95


Ile Gly Glu Lys Leu Leu Leu Arg Leu Ala Ala Val Glu Leu Gly Leu
            100                 105                 110


Thr Ala Ser Ala Leu Leu Pro Lys Arg Ala Met Gln Phe Gly Ser Arg
        115                 120                 125


Ile Ala Lys Met Glu Lys Ile Asn Glu Lys Ala Ser Asp Lys Cys Gly
    130                 135                 140
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Arg Leu Gln Ile Met Ser Leu Glu Asn Leu Ser Ile Glu Lys Glu Thr
145 150 155 160

Lys Leu

<210> 6690
<211> 246
<212> PRT
<213> Homo sapiens

<220>
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domain containing 1; "

<220>
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<400> 6690
Met Pro Ser Arg Gly Thr Arg Pro Glu Asp Ser Ser Val Leu Ile Pro
1 5 10 15

Thr Asp Asn Ser Thr Pro His Lys Glu Asp Leu Ser Ser Lys Ile Lys
20 25 30

Glu Gln Lys Ile Val Val Asp Glu Leu Ser Asn Leu Lys Lys Asn Arg
35 40 45

Lys Val Tyr Arg Gln Gln Gln Asn Ser Asn Ile Phe Phe Leu Ala Asp
50 55 60

Arg Thr Glu Met Leu Ser Glu Ser Lys Thr Phe Ile Ala Glu Glu Lys
65 70 75 80

Thr Met Pro Thr Thr Phe Asn Arg Glu Gly Asn Lys Gln Lys Asn Lys
85 90 95

Cys Glu Ile Pro Ser Glu Glu Phe Ser Lys Asp Val Ala Ala Ala Ala

```
            100                 105                 110

Ala Asp Ser Pro Asn Lys His Val Ser Val Pro Asp Arg Ile Thr Gly
        115                 120                 125

Arg Ala Gly Leu Lys Glu Leu Gln Ala Val Ser Pro Ser Arg Ile Trp
    130                 135                 140

Asn Phe Val Glu Ile Asn Val Ser Met Glu Glu Leu Gln Lys Leu Arg
145                 150                 155                 160

Arg Thr Arg Ile Cys His Leu Ile Arg Pro Leu Asp Thr Val Leu Asp
                165                 170                 175

Asp Ser Ile Gly Cys Ala Val Trp Phe Ala Ser Arg Gly Ile Gly Trp
            180                 185                 190

Leu Val Ala Gln Glu Gly Val Lys Ser Tyr Gln Ser Asn Ala Lys Val
        195                 200                 205

Val Leu Thr Gly Ile Gly Ala Asp Glu Gln Leu Ala Gly Tyr Ser Arg
    210                 215                 220

His Arg Val Arg Phe Gln Ser His Gly Leu Glu Gly Leu Asn Lys Glu
225                 230                 235                 240

Ile Met Met Glu Leu Gly
                245
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<210> 6691
<211> 57
<212> PRT
<213> Homo sapiens

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asparagine synthetase
domain containing 1; "

<220>
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<223> /note="ENSP ID: ENSP00000476099"

<400> 6691
Met Pro Ser Arg Gly Thr Arg Pro Glu Asp Ser Ser Val Leu Ile Pro
1   5   10   15

Thr Asp Asn Ser Thr Pro His Lys Glu Asp Leu Ser Ser Lys Ile Lys
            20   25   30

Glu Gln Lys Ile Val Val Asp Glu Leu Ser Asn Leu Lys Lys Asn Arg
        35   40   45

Pro Lys Leu Cys Phe Pro Glu Ser Ile
    50   55

<210> 6692
<211> 548
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1440; "

<220>
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<223> /note="Gene Symbol: NARS; "

<220>
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<223> /note="Gene Name:
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<220>
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<220>
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<223> /note="ENSP ID: ENSP00000256854"

<400> 6692
Met Val Leu Ala Glu Leu Tyr Val Ser Asp Arg Glu Gly Ser Asp Ala
1   5   10   15

Thr Gly Asp Gly Thr Lys Glu Lys Pro Phe Lys Thr Gly Leu Lys Ala
            20   25   30

```
Leu Met Thr Val Gly Lys Glu Pro Phe Pro Thr Ile Tyr Val Asp Ser
        35                  40                  45

Gln Lys Glu Asn Glu Arg Trp Asn Val Ile Ser Lys Ser Gln Leu Lys
    50                  55                  60

Asn Ile Lys Lys Met Trp His Arg Glu Gln Met Lys Ser Glu Ser Arg
65                  70                  75                  80

Glu Lys Lys Glu Ala Glu Asp Ser Leu Arg Arg Glu Lys Asn Leu Glu
                85                  90                  95

Glu Ala Lys Lys Ile Thr Ile Lys Asn Asp Pro Ser Leu Pro Glu Pro
            100                 105                 110

Lys Cys Val Lys Ile Gly Ala Leu Glu Gly Tyr Arg Gly Gln Arg Val
        115                 120                 125

Lys Val Phe Gly Trp Val His Arg Leu Arg Arg Gln Gly Lys Asn Leu
    130                 135                 140

Met Phe Leu Val Leu Arg Asp Gly Thr Gly Tyr Leu Gln Cys Val Leu
145                 150                 155                 160

Ala Asp Glu Leu Cys Gln Cys Tyr Asn Gly Val Leu Leu Ser Thr Glu
                165                 170                 175

Ser Ser Val Ala Val Tyr Gly Met Leu Asn Leu Thr Pro Lys Gly Lys
            180                 185                 190

Gln Ala Pro Gly Gly His Glu Leu Ser Cys Asp Phe Trp Glu Leu Ile
        195                 200                 205

Gly Leu Ala Pro Ala Gly Gly Ala Asp Asn Leu Ile Asn Glu Glu Ser
    210                 215                 220

Asp Val Asp Val Gln Leu Asn Asn Arg His Met Met Ile Arg Gly Glu
225                 230                 235                 240

Asn Met Ser Lys Ile Leu Lys Ala Arg Ser Met Val Thr Arg Cys Phe
                245                 250                 255
```

```
Arg Asp His Phe Phe Asp Arg Gly Tyr Tyr Glu Val Thr Pro Pro Thr
            260                 265                 270

Leu Val Gln Thr Gln Val Glu Gly Gly Ala Thr Leu Phe Lys Leu Asp
        275                 280                 285

Tyr Phe Gly Glu Glu Ala Phe Leu Thr Gln Ser Ser Gln Leu Tyr Leu
    290                 295                 300

Glu Thr Cys Leu Pro Ala Leu Gly Asp Val Phe Cys Ile Ala Gln Ser
305                 310                 315                 320

Tyr Arg Ala Glu Gln Ser Arg Thr Arg Arg His Leu Ala Glu Tyr Thr
                325                 330                 335

His Val Glu Ala Glu Cys Pro Phe Leu Thr Phe Asp Asp Leu Leu Asn
            340                 345                 350

Arg Leu Glu Asp Leu Val Cys Asp Val Val Asp Arg Ile Leu Lys Ser
        355                 360                 365

Pro Ala Gly Ser Ile Val His Glu Leu Asn Pro Asn Phe Gln Pro Pro
    370                 375                 380

Lys Arg Pro Phe Lys Arg Met Asn Tyr Ser Asp Ala Ile Val Trp Leu
385                 390                 395                 400

Lys Glu His Asp Val Lys Lys Glu Asp Gly Thr Phe Tyr Glu Phe Gly
                405                 410                 415

Glu Asp Ile Pro Glu Ala Pro Glu Arg Leu Met Thr Asp Thr Ile Asn
            420                 425                 430

Glu Pro Ile Leu Leu Cys Arg Phe Pro Val Glu Ile Lys Ser Phe Tyr
        435                 440                 445

Met Gln Arg Cys Pro Glu Asp Ser Arg Leu Thr Glu Ser Val Asp Val
    450                 455                 460

Leu Met Pro Asn Val Gly Glu Ile Val Gly Gly Ser Met Arg Ile Phe
465                 470                 475                 480

Asp Ser Glu Glu Ile Leu Ala Gly Tyr Lys Arg Glu Gly Ile Asp Pro
```

485 490 495

Thr Pro Tyr Tyr Trp Tyr Thr Asp Gln Arg Lys Tyr Gly Thr Cys Pro
500 505 510

His Gly Gly Tyr Gly Leu Gly Leu Glu Arg Phe Leu Thr Trp Ile Leu
515 520 525

Asn Arg Tyr His Ile Arg Asp Val Cys Leu Tyr Pro Arg Phe Val Gln
530 535 540

Arg Cys Thr Pro
545

<210> 6693
<211> 174
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
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synthetase; "

<220>
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<223> /note="Uniprot ID: O43776; "

<220>
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<223> /note="ENSP ID: ENSP00000442496"

<400> 6693
Met Val Leu Ala Glu Leu Tyr Val Ser Asp Arg Glu Gly Ser Asp Ala
1 5 10 15

Thr Gly Asp Gly Thr Lys Glu Lys Pro Phe Lys Thr Gly Leu Lys Ala
20 25 30

Leu Met Thr Val Gly Lys Glu Pro Phe Pro Thr Ile Tyr Val Asp Ser
35 40 45

```
Gln Lys Glu Asn Glu Arg Trp Asn Val Ile Ser Lys Ser Gln Leu Lys
    50                  55                  60

Asn Ile Lys Lys Met Trp His Arg Glu Gln Met Lys Ser Glu Ser Arg
65                  70                  75                  80

Glu Lys Lys Glu Ala Glu Asp Ser Leu Arg Arg Glu Lys Asn Leu Glu
                85                  90                  95

Glu Ala Lys Lys Ile Thr Ile Lys Asn Asp Pro Ser Leu Pro Glu Pro
            100                 105                 110

Lys Cys Val Lys Ile Gly Ala Leu Glu Gly Tyr Arg Gly Gln Arg Val
        115                 120                 125

Lys Val Phe Gly Trp Val His Arg Leu Arg Arg Gln Val Ser Val Leu
    130                 135                 140

Gln Trp Ser Ser Leu Val His Gly Glu Gln Cys Cys Ser Val Trp Asn
145                 150                 155                 160

Ala Lys Ser Tyr Pro Lys Gly Gln Ala Gly Ser Arg Trp Pro
                165                 170


<210> 6694
<211> 162
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: NARS; "

<220>
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      synthetase; "

<220>
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<223> /note="ENSP ID: ENSP00000464899"
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<400> 6694
Met Val Leu Ala Glu Leu Tyr Val Ser Asp Arg Glu Gly Ser Asp Ala
1 5 10 15

Thr Gly Asp Gly Thr Lys Glu Lys Pro Phe Lys Thr Gly Leu Lys Ala
20 25 30

Leu Met Thr Val Gly Lys Glu Pro Phe Pro Thr Ile Tyr Val Asp Ser
35 40 45

Gln Lys Glu Asn Glu Arg Trp Asn Val Ile Ser Lys Ser Gln Leu Lys
50 55 60

Asn Ile Lys Lys Met Trp His Arg Glu Gln Met Lys Ser Glu Ser Arg
65 70 75 80

Glu Lys Lys Glu Ala Glu Asp Ser Leu Arg Arg Glu Lys Asn Leu Glu
85 90 95

Glu Ala Lys Lys Ile Thr Ile Lys Asn Asp Pro Ser Leu Pro Glu Pro
100 105 110

Lys Cys Val Lys Ile Gly Ala Leu Glu Gly Tyr Arg Gly Gln Arg Val
115 120 125

Lys Val Phe Gly Trp Val His Arg Leu Arg Arg Gln Val Ser Val Leu
130 135 140

Gln Trp Ser Ser Leu Val His Gly Glu Gln Cys Cys Ser Val Trp Asn
145 150 155 160

Ala Lys

<210> 6695
<211> 136
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: NARS; "

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<223> /note="Gene Name:
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synthetase; "

<220>
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<223> /note="ENSP ID: ENSP00000464988"

<400> 6695
Met Val Leu Ala Glu Leu Tyr Val Ser Asp Arg Glu Gly Ser Asp Ala
1 5 10 15

Thr Gly Asp Gly Thr Lys Glu Lys Pro Phe Lys Thr Gly Leu Lys Ala
20 25 30

Leu Met Thr Val Gly Lys Glu Pro Phe Pro Thr Ile Tyr Val Asp Ser
35 40 45

Gln Lys Glu Asn Glu Arg Trp Asn Val Ile Ser Lys Ser Gln Leu Lys
50 55 60

Asn Ile Lys Lys Met Trp His Arg Glu Gln Met Lys Ser Glu Ser Arg
65 70 75 80

Glu Lys Lys Glu Ala Glu Asp Ser Leu Arg Arg Glu Lys Asn Leu Glu
85 90 95

Glu Ala Lys Lys Ile Thr Ile Lys Asn Asp Pro Ser Leu Pro Glu Pro
100 105 110

Lys Cys Val Lys Ile Gly Ala Leu Glu Ile Thr Ser Leu Ile Gly Gly
115 120 125

Thr Met Lys Leu Leu Leu Gln His
130 135

<210> 6696
<211> 128
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1440; "

<220>
<221> source
<223> /note="Gene Symbol: NARS; "

<220>
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<223> /note="Gene Name:
asparaginyl-tRNA
synthetase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466606"

<400> 6696
Met Trp His Arg Glu Gln Met Lys Ser Glu Ser Arg Glu Lys Lys Glu
1 5 10 15

Ala Glu Asp Ser Leu Arg Arg Glu Lys Asn Leu Glu Glu Ala Lys Lys
20 25 30

Ile Thr Ile Lys Asn Asp Pro Ser Leu Pro Glu Pro Lys Cys Val Lys
35 40 45

Ile Gly Ala Leu Glu Gly Tyr Arg Gly Gln Arg Val Lys Val Phe Gly
50 55 60

Trp Val His Arg Leu Arg Arg Gln Gly Lys Asn Leu Met Phe Leu Val
65 70 75 80

Leu Arg Asp Gly Thr Gly Tyr Leu Gln Cys Val Leu Ala Asp Glu Leu
85 90 95

Cys Gln Cys Tyr Asn Gly Val Leu Leu Ser Thr Glu Ser Ser Val Ala
100 105 110

Val Tyr Gly Met Leu Asn Leu Thr Pro Lys Gly Lys Gln Ala Pro Gly
115 120 125

<210> 6697
<211> 47
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1440; "

<220>

<221> source
<223> /note="Gene Symbol: NARS; "

<220>
<221> source
<223> /note="Gene Name:
asparaginyl-tRNA
synthetase; "

<220>
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<223> /note="ENSP ID: ENSP00000466919"

<400> 6697
Met Val Leu Glu Leu Tyr Val Ser Asp Arg Glu Gly Ser Asp Ala Thr
1 5 10 15

Gly Asp Gly Thr Lys Glu Lys Pro Phe Lys Thr Gly Leu Lys Tyr Cys
20 25 30

Thr Met Phe Lys Asn Cys Leu Phe Ser Pro Pro Tyr Pro Arg Leu
35 40 45

<210> 6698
<211> 163
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
asparaginyl-tRNA
synthetase; "

<220>
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<223> /note="ENSP ID: ENSP00000467421"

<400> 6698
Met Thr Val Gly Lys Glu Pro Phe Pro Thr Ile Tyr Val Asp Ser Gln
1 5 10 15

Lys Glu Asn Glu Arg Trp Asn Val Ile Ser Lys Ser Gln Leu Lys Asn
20 25 30

```
Ile Lys Lys Met Trp His Arg Glu Gln Met Lys Ser Glu Ser Arg Glu
        35                  40                  45

Lys Lys Glu Ala Glu Asp Ser Leu Arg Arg Glu Lys Asn Leu Glu Glu
    50                  55                  60

Ala Lys Lys Ile Thr Ile Lys Asn Asp Pro Ser Leu Pro Glu Pro Lys
65                  70                  75                  80

Cys Val Lys Ile Gly Ala Leu Glu Gly Tyr Arg Gly Gln Arg Val Lys
                85                  90                  95

Val Phe Gly Trp Val His Arg Leu Arg Arg Gln Gly Lys Asn Leu Met
            100                 105                 110

Phe Leu Val Leu Arg Asp Gly Thr Gly Tyr Leu Gln Cys Val Leu Ala
        115                 120                 125

Asp Glu Leu Cys Gln Cys Tyr Asn Gly Val Leu Leu Ser Thr Glu Ser
    130                 135                 140

Ser Val Ala Val Tyr Gly Met Leu Asn Leu Thr Pro Lys Gly Lys Gln
145                 150                 155                 160

Ala Pro Gly
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<210> 6699
<211> 167
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1440; "

<220>
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<223> /note="Gene Symbol: NARS; "

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<223> /note="Gene Name:
asparaginyl-tRNA
synthetase; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000467651"

<400> 6699
Met Val Leu Ala Glu Leu Tyr Val Ser Asp Arg Glu Gly Ser Asp Ala
1 5 10 15

Thr Gly Asp Gly Thr Lys Glu Lys Pro Phe Lys Thr Gly Leu Lys Ala
20 25 30

Leu Met Thr Val Gly Lys Glu Pro Phe Pro Thr Ile Tyr Val Asp Ser
35 40 45

Gln Lys Glu Asn Glu Arg Trp Asn Val Ile Ser Lys Ser Gln Leu Lys
50 55 60

Asn Ile Lys Lys Met Trp His Arg Glu Gln Met Lys Ser Glu Ser Arg
65 70 75 80

Glu Lys Lys Glu Val Lys Ile Gly Ala Leu Glu Gly Tyr Arg Gly Gln
85 90 95

Arg Val Lys Val Phe Gly Trp Val His Arg Leu Arg Arg Gln Gly Lys
100 105 110

Asn Leu Met Phe Leu Val Leu Arg Asp Gly Thr Gly Tyr Leu Gln Cys
115 120 125

Val Leu Ala Asp Glu Leu Cys Gln Cys Tyr Asn Gly Val Leu Leu Ser
130 135 140

Thr Glu Ser Ser Val Ala Val Tyr Gly Met Leu Asn Leu Thr Pro Lys
145 150 155 160

Gly Lys Gln Ala Pro Gly Gly
165

<210> 6700
<211> 477
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1441; "

<220>
<221> source
<223> /note="Gene Symbol: NARS2; "

<220>
<221> source
<223> /note="Gene Name:
asparaginyl-tRNA synthetase 2, mitochondrial
(putative); "

<220>
<221> source
<223> /note="Uniprot ID: Q96I59; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000281038"

<400> 6700

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Met Leu Gly Val Arg Cys Leu Leu Arg Ser Val Arg Phe Cys Ser Ser
1               5                  10                  15

Ala Pro Phe Pro Lys His Lys Pro Ser Ala Lys Leu Ser Val Arg Asp
            20                  25                  30

Ala Leu Gly Ala Gln Asn Ala Ser Gly Glu Arg Ile Lys Ile Gln Gly
        35                  40                  45

Trp Ile Arg Ser Val Arg Ser Gln Lys Glu Val Leu Phe Leu His Val
    50                  55                  60

Asn Asp Gly Ser Ser Leu Glu Ser Leu Gln Val Val Ala Asp Ser Gly
65                  70                  75                  80

Leu Asp Ser Arg Glu Leu Asn Phe Gly Ser Ser Val Glu Val Gln Gly
                85                  90                  95

Gln Leu Ile Lys Ser Pro Ser Lys Arg Gln Asn Val Glu Leu Lys Ala
            100                 105                 110

Glu Lys Ile Lys Val Ile Gly Asn Cys Asp Ala Lys Asp Phe Pro Ile
        115                 120                 125

Lys Tyr Lys Glu Arg His Pro Leu Glu Tyr Leu Arg Gln Tyr Pro His
    130                 135                 140

Phe Arg Cys Arg Thr Asn Val Leu Gly Ser Ile Leu Arg Ile Arg Ser
145                 150                 155                 160
```

```
Glu Ala Thr Ala Ala Ile His Ser Phe Phe Lys Asp Ser Gly Phe Val
                165                 170                 175

His Ile His Thr Pro Ile Ile Thr Ser Asn Asp Ser Glu Gly Ala Gly
            180                 185                 190

Glu Leu Phe Gln Leu Glu Pro Ser Gly Lys Leu Lys Val Pro Glu Glu
        195                 200                 205

Asn Phe Phe Asn Val Pro Ala Phe Leu Thr Val Ser Gly Gln Leu His
    210                 215                 220

Leu Glu Val Met Ser Gly Ala Phe Thr Gln Val Phe Thr Phe Gly Pro
225                 230                 235                 240

Thr Phe Arg Ala Glu Asn Ser Gln Ser Arg Arg His Leu Ala Glu Phe
                245                 250                 255

Tyr Met Ile Glu Ala Glu Ile Ser Phe Val Asp Ser Leu Gln Asp Leu
            260                 265                 270

Met Gln Val Ile Glu Glu Leu Phe Lys Ala Thr Thr Met Met Val Leu
        275                 280                 285

Ser Lys Cys Pro Glu Asp Val Glu Leu Cys His Lys Phe Ile Ala Pro
    290                 295                 300

Gly Gln Lys Asp Arg Leu Glu His Met Leu Lys Asn Asn Phe Leu Ile
305                 310                 315                 320

Ile Ser Tyr Thr Glu Ala Val Glu Ile Leu Lys Gln Ala Ser Gln Asn
                325                 330                 335

Phe Thr Phe Thr Pro Glu Trp Gly Ala Asp Leu Arg Thr Glu His Glu
            340                 345                 350

Lys Tyr Leu Val Lys His Cys Gly Asn Ile Pro Val Phe Val Ile Asn
        355                 360                 365

Tyr Pro Leu Thr Leu Lys Pro Phe Tyr Met Arg Asp Asn Glu Asp Gly
    370                 375                 380
```

```
Pro Gln His Thr Val Ala Ala Val Asp Leu Leu Val Pro Gly Val Gly
385                 390                 395                 400

Glu Leu Phe Gly Gly Gly Leu Arg Glu Glu Arg Tyr His Phe Leu Glu
                405                 410                 415

Glu Arg Leu Ala Arg Ser Gly Leu Thr Glu Val Tyr Gln Trp Tyr Leu
            420                 425                 430

Asp Leu Arg Arg Phe Gly Ser Val Pro His Gly Gly Phe Gly Met Gly
        435                 440                 445

Phe Glu Arg Tyr Leu Gln Cys Ile Leu Gly Val Asp Asn Ile Lys Asp
    450                 455                 460

Val Ile Pro Phe Pro Arg Phe Pro His Ser Cys Leu Leu
465                 470                 475


<210> 6701
<211> 241
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1441; "

<220>
<221> source
<223> /note="Gene Symbol: NARS2; "

<220>
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<223> /note="Gene Name:
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      (putative); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000432240"

<400> 6701
Met Leu Gly Val Arg Cys Leu Leu Arg Ser Val Arg Phe Cys Ser Ser
1               5                   10                  15

Ala Pro Phe Pro Lys His Lys Pro Ser Ala Lys Leu Ser Val Arg Asp
            20                  25                  30
```

```
Ala Leu Gly Ala Gln Asn Ala Ser Gly Glu Arg Ile Lys Ile Gln Gly
        35                  40                  45

Trp Ile Arg Ser Val Arg Ser Gln Lys Glu Val Leu Phe Leu His Val
    50                  55                  60

Asn Asp Gly Ser Ser Leu Glu Ser Leu Gln Val Val Ala Asp Ser Gly
65                  70                  75                  80

Leu Asp Ser Arg Glu Leu Asn Phe Gly Ser Ser Val Glu Val Gln Gly
                85                  90                  95

Gln Leu Ile Lys Ser Pro Ser Lys Arg Gln Asn Val Glu Leu Lys Ala
            100                 105                 110

Glu Lys Ile Lys Val Ile Gly Asn Cys Asp Ala Lys Asp Phe Pro Ile
        115                 120                 125

Lys Tyr Lys Glu Arg His Pro Leu Glu Tyr Leu Arg Gln Tyr Pro His
    130                 135                 140

Phe Arg Cys Arg Thr Asn Val Leu Gly Ser Ile Leu Arg Ile Arg Ser
145                 150                 155                 160

Glu Ala Thr Ala Ala Ile His Ser Phe Phe Lys Asp Ser Gly Phe Val
                165                 170                 175

His Ile His Thr Pro Ile Ile Thr Ser Asn Asp Ser Glu Gly Ala Gly
            180                 185                 190

Glu Leu Phe Gln Leu Glu Trp Gly Ala Asp Leu Arg Thr Glu His Glu
        195                 200                 205

Lys Tyr Leu Val Lys His Cys Gly Asn Ile Pro Val Phe Val Ile Asn
    210                 215                 220

Tyr Pro Leu Thr Leu Lys Pro Phe Tyr Met Arg Asp Asn Glu Asp Gly
225                 230                 235                 240

Pro
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<210> 6702

<211> 250
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1441; "

<220>
<221> source
<223> /note="Gene Symbol: NARS2; "

<220>
<221> source
<223> /note="Gene Name:
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(putative); "

<220>
<221> source
<223> /note="Uniprot ID: Q96I59; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000432635"

<400> 6702

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Met Ser Gly Ala Phe Thr Gln Val Phe Thr Phe Gly Pro Thr Phe Arg
1               5                  10                  15

Ala Glu Asn Ser Gln Ser Arg Arg His Leu Ala Glu Phe Tyr Met Ile
            20                  25                  30

Glu Ala Glu Ile Ser Phe Val Asp Ser Leu Gln Asp Leu Met Gln Val
        35                  40                  45

Ile Glu Glu Leu Phe Lys Ala Thr Thr Met Met Val Leu Ser Lys Cys
    50                  55                  60

Pro Glu Asp Val Glu Leu Cys His Lys Phe Ile Ala Pro Gly Gln Lys
65                  70                  75                  80

Asp Arg Leu Glu His Met Leu Lys Asn Asn Phe Leu Ile Ile Ser Tyr
                85                  90                  95

Thr Glu Ala Val Glu Ile Leu Lys Gln Ala Ser Gln Asn Phe Thr Phe
            100                 105                 110

Thr Pro Glu Trp Gly Ala Asp Leu Arg Thr Glu His Glu Lys Tyr Leu
        115                 120                 125
```

```
Val Lys His Cys Gly Asn Ile Pro Val Phe Val Ile Asn Tyr Pro Leu
    130                 135                 140

Thr Leu Lys Pro Phe Tyr Met Arg Asp Asn Glu Asp Gly Pro Gln His
145                 150                 155                 160

Thr Val Ala Ala Val Asp Leu Leu Val Pro Gly Val Gly Glu Leu Phe
                165                 170                 175

Gly Gly Gly Leu Arg Glu Glu Arg Tyr His Phe Leu Glu Glu Arg Leu
            180                 185                 190

Ala Arg Ser Gly Leu Thr Glu Val Tyr Gln Trp Tyr Leu Asp Leu Arg
        195                 200                 205

Arg Phe Gly Ser Val Pro His Gly Gly Phe Gly Met Gly Phe Glu Arg
    210                 215                 220

Tyr Leu Gln Cys Ile Leu Gly Val Asp Asn Ile Lys Asp Val Ile Pro
225                 230                 235                 240

Phe Pro Arg Phe Pro His Ser Cys Leu Leu
                245                 250


<210> 6703
<211> 2
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1441; "

<220>
<221> source
<223> /note="Gene Symbol: NARS2; "

<220>
<221> source
<223> /note="Gene Name:
      asparaginyl-tRNA synthetase 2, mitochondrial
      (putative); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000433478"
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<400> 6703
Met Ser
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<210> 6704
<211> 81
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1441; "

<220>
<221> source
<223> /note="Gene Symbol: NARS2; "

<220>
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<223> /note="Gene Name:
asparaginyl-tRNA synthetase 2, mitochondrial
(putative); "

<220>
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<223> /note="ENSP ID: ENSP00000435298"

<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 6704
Xaa Val Ala Ala Val Asp Leu Leu Val Pro Gly Val Gly Glu Leu Phe
1 5 10 15

Gly Gly Gly Leu Arg Glu Glu Arg Tyr His Phe Leu Glu Glu Arg Leu
20 25 30

Ala Arg Tyr Leu Asp Leu Arg Arg Phe Gly Ser Val Pro His Gly Gly
35 40 45

Phe Gly Met Gly Phe Glu Arg Tyr Leu Gln Cys Ile Leu Gly Val Asp
50 55 60

Asn Ile Lys Asp Val Ile Pro Phe Pro Arg Phe Pro His Ser Cys Leu
65 70 75 80

Leu

<210> 6705
<211> 106
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: NARS2; "

<220>
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<223> /note="Gene Name:
asparaginyl-tRNA synthetase 2, mitochondrial
(putative); "

<220>
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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 6705
Xaa Pro Ile Lys Tyr Lys Glu Arg His Pro Leu Glu Tyr Leu Arg Gln
1 5 10 15

Tyr Pro His Phe Arg Cys Arg Thr Asn Val Leu Gly Ser Ile Leu Arg
20 25 30

Ile Arg Ser Glu Ala Thr Ala Ala Ile His Ser Phe Phe Lys Asp Ser
35 40 45

Gly Phe Val His Ile His Thr Pro Ile Ile Thr Ser Asn Asp Ser Glu
50 55 60

Gly Ala Gly Glu Leu Phe Gln Leu Glu Pro Ser Gly Lys Leu Lys Val
65 70 75 80

Pro Glu Glu Asn Phe Phe Asn Val Pro Ala Phe Leu Thr Val Ser Gly
85 90 95

Gln Leu His Leu Glu Val Met Ser Gly Leu

100 105

<210> 6706
<211> 313
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1442; "

<220>
<221> source
<223> /note="Gene Symbol: ASPH; "

<220>
<221> source
<223> /note="Gene Name:
aspartate beta-hydroxylase; "

<220>
<221> source
<223> /note="Uniprot ID: Q12797; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000348841"

<400> 6706
Met Ala Gln Arg Lys Asn Ala Lys Ser Ser Gly Asn Ser Ser Ser Ser
1 5 10 15

Gly Ser Gly Ser Gly Ser Thr Ser Ala Gly Ser Ser Ser Pro Gly Ala
20 25 30

Arg Arg Glu Thr Lys His Gly Gly His Lys Asn Gly Arg Lys Gly Gly
35 40 45

Leu Ser Gly Thr Ser Phe Phe Thr Trp Phe Met Val Ile Ala Leu Leu
50 55 60

Gly Val Trp Thr Ser Val Ala Val Val Trp Phe Asp Leu Val Asp Tyr
65 70 75 80

Glu Glu Val Leu Gly Lys Leu Gly Ile Tyr Asp Ala Asp Gly Asp Gly
85 90 95

Asp Phe Asp Val Asp Asp Ala Lys Val Leu Leu Gly Leu Lys Glu Arg
100 105 110

```
Ser Thr Ser Glu Pro Ala Val Pro Pro Glu Glu Ala Glu Pro His Thr
        115                 120                 125

Glu Pro Glu Glu Gln Val Pro Val Glu Ala Glu Pro Gln Asn Ile Glu
    130                 135                 140

Asp Glu Ala Lys Glu Gln Ile Gln Ser Leu Leu His Glu Met Val His
145                 150                 155                 160

Ala Glu His Val Glu Gly Glu Asp Leu Gln Gln Glu Asp Gly Pro Thr
                165                 170                 175

Gly Glu Pro Gln Gln Glu Asp Asp Glu Phe Leu Met Ala Thr Asp Val
            180                 185                 190

Asp Asp Arg Phe Glu Thr Leu Glu Pro Glu Val Ser His Glu Glu Thr
        195                 200                 205

Glu His Ser Tyr His Val Glu Glu Thr Val Ser Gln Asp Cys Asn Gln
    210                 215                 220

Asp Met Glu Glu Met Met Ser Glu Gln Glu Asn Pro Asp Ser Ser Glu
225                 230                 235                 240

Pro Val Val Glu Asp Glu Arg Leu His His Asp Thr Asp Asp Val Thr
                245                 250                 255

Tyr Gln Val Tyr Glu Glu Gln Ala Val Tyr Glu Pro Leu Glu Asn Glu
            260                 265                 270

Gly Ile Glu Ile Thr Glu Val Thr Ala Pro Pro Glu Asp Asn Pro Val
        275                 280                 285

Glu Asp Ser Gln Val Ile Val Glu Glu Val Ser Ile Phe Pro Val Glu
    290                 295                 300

Glu Gln Gln Glu Val Pro Pro Asp Thr
305                 310
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<210> 6707
<211> 203
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ASPH; "

<220>
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<223> /note="Gene Name:
aspartate beta-hydroxylase; "

<220>
<221> source
<223> /note="Uniprot ID: Q12797; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000368762"

<400> 6707
Met Ala Gln Arg Lys Asn Ala Lys Ser Ser Gly Asn Ser Ser Ser Ser
1   5   10   15

Gly Ser Gly Ser Gly Ser Thr Ser Ala Gly Ser Ser Ser Pro Gly Ala
            20   25   30

Arg Arg Glu Thr Lys His Gly Gly His Lys Asn Gly Arg Lys Gly Gly
        35   40   45

Leu Ser Gly Thr Ser Phe Phe Thr Trp Phe Met Val Ile Ala Leu Leu
    50   55   60

Gly Val Trp Thr Ser Val Ala Val Val Trp Phe Asp Leu Val Asp Tyr
65   70   75   80

Glu Glu Val Leu Ala Lys Ala Lys Asp Phe Arg Tyr Asn Leu Ser Glu
                85   90   95

Val Leu Gln Gly Lys Leu Gly Ile Tyr Asp Ala Asp Gly Asp Gly Asp
            100   105   110

Phe Asp Val Asp Asp Ala Lys Val Leu Leu Gly Leu Thr Lys Asp Gly
        115   120   125

Ser Asn Glu Asn Ile Asp Ser Leu Glu Glu Val Leu Asn Ile Leu Ala
    130   135   140

```
Glu Glu Ser Ser Asp Trp Phe Tyr Gly Phe Leu Ser Phe Leu Tyr Asp
145                 150                 155                 160


Ile Met Thr Pro Phe Glu Met Leu Glu Glu Glu Glu Glu Glu Ser Glu
                165                 170                 175


Thr Ala Asp Gly Val Asp Gly Thr Ser Gln Asn Glu Gly Val Gln Gly
            180                 185                 190


Lys Thr Cys Val Ile Leu Asp Leu His Asn Gln
        195                 200


<210> 6708
<211> 758
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1442; "

<220>
<221> source
<223> /note="Gene Symbol: ASPH; "

<220>
<221> source
<223> /note="Gene Name:
      aspartate beta-hydroxylase; "

<220>
<221> source
<223> /note="Uniprot ID:  Q12797; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000368767"

<400> 6708
Met Ala Gln Arg Lys Asn Ala Lys Ser Ser Gly Asn Ser Ser Ser Ser
1               5                   10                  15


Gly Ser Gly Ser Gly Ser Thr Ser Ala Gly Ser Ser Ser Pro Gly Ala
            20                  25                  30


Arg Arg Glu Thr Lys His Gly Gly His Lys Asn Gly Arg Lys Gly Gly
        35                  40                  45
```

```
Leu Ser Gly Thr Ser Phe Phe Thr Trp Phe Met Val Ile Ala Leu Leu
    50                  55                  60

Gly Val Trp Thr Ser Val Ala Val Val Trp Phe Asp Leu Val Asp Tyr
65                  70                  75                  80

Glu Glu Val Leu Gly Lys Leu Gly Ile Tyr Asp Ala Asp Gly Asp Gly
                85                  90                  95

Asp Phe Asp Val Asp Asp Ala Lys Val Leu Leu Gly Leu Lys Glu Arg
            100                 105                 110

Ser Thr Ser Glu Pro Ala Val Pro Pro Glu Glu Ala Glu Pro His Thr
        115                 120                 125

Glu Pro Glu Glu Gln Val Pro Val Glu Ala Glu Pro Gln Asn Ile Glu
    130                 135                 140

Asp Glu Ala Lys Glu Gln Ile Gln Ser Leu Leu His Glu Met Val His
145                 150                 155                 160

Ala Glu His Val Glu Gly Glu Asp Leu Gln Gln Glu Asp Gly Pro Thr
                165                 170                 175

Gly Glu Pro Gln Gln Glu Asp Asp Glu Phe Leu Met Ala Thr Asp Val
            180                 185                 190

Asp Asp Arg Phe Glu Thr Leu Glu Pro Glu Val Ser His Glu Glu Thr
        195                 200                 205

Glu His Ser Tyr His Val Glu Glu Thr Val Ser Gln Asp Cys Asn Gln
    210                 215                 220

Asp Met Glu Glu Met Met Ser Glu Gln Glu Asn Pro Asp Ser Ser Glu
225                 230                 235                 240

Pro Val Val Glu Asp Glu Arg Leu His His Asp Thr Asp Asp Val Thr
                245                 250                 255

Tyr Gln Val Tyr Glu Glu Gln Ala Val Tyr Glu Pro Leu Glu Asn Glu
            260                 265                 270

Gly Ile Glu Ile Thr Glu Val Thr Ala Pro Pro Glu Asp Asn Pro Val
```

```
        275                 280                 285

Glu Asp Ser Gln Val Ile Val Glu Glu Val Ser Ile Phe Pro Val Glu
    290                 295                 300

Glu Gln Gln Glu Val Pro Pro Glu Thr Asn Arg Lys Thr Asp Asp Pro
305                 310                 315                 320

Glu Gln Lys Ala Lys Val Lys Lys Lys Lys Pro Lys Leu Leu Asn Lys
                325                 330                 335

Phe Asp Lys Thr Ile Lys Ala Glu Leu Asp Ala Ala Glu Lys Leu Arg
            340                 345                 350

Lys Arg Gly Lys Ile Glu Glu Ala Val Asn Ala Phe Lys Glu Leu Val
        355                 360                 365

Arg Lys Tyr Pro Gln Ser Pro Arg Ala Arg Tyr Gly Lys Ala Gln Cys
    370                 375                 380

Glu Asp Asp Leu Ala Glu Lys Arg Arg Ser Asn Glu Val Leu Arg Gly
385                 390                 395                 400

Ala Ile Glu Thr Tyr Gln Glu Val Ala Ser Leu Pro Asp Val Pro Ala
                405                 410                 415

Asp Leu Leu Lys Leu Ser Leu Lys Arg Arg Ser Asp Arg Gln Gln Phe
            420                 425                 430

Leu Gly His Met Arg Gly Ser Leu Leu Thr Leu Gln Arg Leu Val Gln
        435                 440                 445

Leu Phe Pro Asn Asp Thr Ser Leu Lys Asn Asp Leu Gly Val Gly Tyr
    450                 455                 460

Leu Leu Ile Gly Asp Asn Asp Asn Ala Lys Lys Val Tyr Glu Glu Val
465                 470                 475                 480

Leu Ser Val Thr Pro Asn Asp Gly Phe Ala Lys Val His Tyr Gly Phe
                485                 490                 495

Ile Leu Lys Ala Gln Asn Lys Ile Ala Glu Ser Ile Pro Tyr Leu Lys
            500                 505                 510
```

```
Glu Gly Ile Glu Ser Gly Asp Pro Gly Thr Asp Asp Gly Arg Phe Tyr
        515                 520                 525

Phe His Leu Gly Asp Ala Met Gln Arg Val Gly Asn Lys Glu Ala Tyr
    530                 535                 540

Lys Trp Tyr Glu Leu Gly His Lys Arg Gly His Phe Ala Ser Val Trp
545                 550                 555                 560

Gln Arg Ser Leu Tyr Asn Val Asn Gly Leu Lys Ala Gln Pro Trp Trp
                565                 570                 575

Thr Pro Lys Glu Thr Gly Tyr Thr Glu Leu Val Lys Ser Leu Glu Arg
            580                 585                 590

Asn Trp Lys Leu Ile Arg Asp Glu Gly Leu Ala Val Met Asp Lys Ala
        595                 600                 605

Lys Gly Leu Phe Leu Pro Glu Asp Glu Asn Leu Arg Glu Lys Gly Asp
    610                 615                 620

Trp Ser Gln Phe Thr Leu Trp Gln Gln Gly Arg Arg Asn Glu Asn Ala
625                 630                 635                 640

Cys Lys Gly Ala Pro Lys Thr Cys Thr Leu Leu Glu Lys Phe Pro Glu
                645                 650                 655

Thr Thr Gly Cys Arg Arg Gly Gln Ile Lys Tyr Ser Ile Met His Pro
            660                 665                 670

Gly Thr His Val Trp Pro His Thr Gly Pro Thr Asn Cys Arg Leu Arg
        675                 680                 685

Met His Leu Gly Leu Val Ile Pro Lys Glu Gly Cys Lys Ile Arg Cys
    690                 695                 700

Ala Asn Glu Thr Lys Thr Trp Glu Glu Gly Lys Val Leu Ile Phe Asp
705                 710                 715                 720

Asp Ser Phe Glu His Glu Val Trp Gln Asp Ala Ser Ser Phe Arg Leu
                725                 730                 735
```

```
Ile Phe Ile Val Asp Val Trp His Pro Glu Leu Thr Pro Gln Gln Arg
            740                 745                 750

Arg Ser Leu Pro Ala Ile
        755

<210> 6709
<211> 225
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1442; "

<220>
<221> source
<223> /note="Gene Symbol: ASPH; "

<220>
<221> source
<223> /note="Gene Name:
      aspartate beta-hydroxylase; "

<220>
<221> source
<223> /note="Uniprot ID:  Q12797; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000373856"

<400> 6709
Met Ala Glu Asp Lys Glu Thr Lys His Gly Gly His Lys Asn Gly Arg
1               5                  10                  15

Lys Gly Gly Leu Ser Gly Thr Ser Phe Phe Thr Trp Phe Met Val Ile
            20                  25                  30

Ala Leu Leu Gly Val Trp Thr Ser Val Ala Val Val Trp Phe Asp Leu
        35                  40                  45

Val Asp Tyr Glu Glu Val Leu Ala Lys Ala Lys Asp Phe Arg Tyr Asn
    50                  55                  60

Leu Ser Glu Val Leu Gln Gly Lys Leu Gly Ile Tyr Asp Ala Asp Gly
65                  70                  75                  80

Asp Gly Asp Phe Asp Val Asp Asp Ala Lys Val Leu Leu Glu Gly Pro
```

```
                85                  90                  95

Ser Gly Val Ala Lys Arg Lys Thr Lys Ala Lys Val Lys Glu Leu Thr
            100                 105                 110

Lys Glu Glu Leu Lys Lys Glu Lys Glu Lys Pro Glu Ser Arg Lys Glu
        115                 120                 125

Ser Lys Asn Glu Glu Arg Lys Lys Gly Lys Lys Glu Asp Val Arg Lys
    130                 135                 140

Asp Lys Lys Ile Ala Asp Ala Asp Leu Ser Arg Lys Glu Ser Pro Lys
145                 150                 155                 160

Gly Lys Lys Asp Arg Glu Lys Glu Lys Val Asp Leu Glu Lys Ser Ala
                165                 170                 175

Lys Thr Lys Glu Asn Arg Lys Lys Ser Thr Asn Met Lys Asp Val Ser
            180                 185                 190

Ser Lys Met Ala Ser Arg Asp Lys Asp Asp Arg Lys Glu Ser Arg Ser
        195                 200                 205

Ser Thr Arg Tyr Ala His Leu Thr Lys Gly Asn Thr Gln Lys Arg Asn
    210                 215                 220

Gly
225


<210> 6710
<211> 294
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1442; "

<220>
<221> source
<223> /note="Gene Symbol: ASPH; "

<220>
<221> source
<223> /note="Gene Name:
      aspartate beta-hydroxylase; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000394013"

<400> 6710
Met Ala Gln Arg Lys Asn Ala Lys Ser Ser Gly Asn Ser Ser Ser Ser
1   5   10   15

Gly Ser Gly Ser Gly Ser Thr Ser Ala Gly Ser Ser Ser Pro Gly Ala
            20   25   30

Arg Arg Glu Thr Lys His Gly Gly His Lys Asn Gly Arg Lys Gly Gly
        35   40   45

Leu Ser Gly Thr Ser Phe Phe Thr Trp Phe Met Val Ile Ala Leu Leu
    50   55   60

Gly Val Trp Thr Ser Val Ala Val Val Trp Phe Asp Leu Val Asp Tyr
65   70   75   80

Glu Glu Val Leu Gly Lys Leu Gly Ile Tyr Asp Ala Asp Gly Asp Gly
                85   90   95

Asp Phe Asp Val Asp Asp Ala Lys Val Leu Leu Gly Leu Lys Glu Arg
            100   105   110

Ser Thr Ser Glu Pro Ala Val Pro Pro Glu Glu Ala Glu Pro His Thr
        115   120   125

Glu Pro Glu Glu Gln Val Pro Val Glu Ala Glu Pro Gln Asn Ile Glu
    130   135   140

Asp Glu Ala Lys Glu Gln Ile Gln Ser Leu Leu His Glu Met Val His
145   150   155   160

Ala Glu His Val Glu Gly Glu Asp Leu Gln Gln Glu Asp Gly Pro Thr
                165   170   175

Gly Glu Pro Gln Gln Glu Asp Asp Glu Phe Leu Met Ala Thr Asp Val
            180   185   190

Asp Asp Arg Phe Glu Thr Leu Glu Pro Glu Val Ser His Glu Glu Thr
        195   200   205

```
Glu His Ser Tyr His Val Glu Glu Thr Asp Ser Ser Glu Pro Val Val
    210                 215                 220

Glu Asp Glu Arg Leu His His Asp Thr Asp Asp Val Thr Tyr Gln Val
225                 230                 235                 240

Tyr Glu Glu Gln Ala Val Tyr Glu Pro Leu Glu Asn Glu Gly Ile Glu
                245                 250                 255

Ile Thr Glu Val Thr Ala Pro Pro Glu Asp Asn Pro Val Glu Asp Ser
            260                 265                 270

Gln Val Ile Val Glu Glu Val Ser Ile Phe Pro Val Glu Glu Gln Gln
        275                 280                 285

Glu Val Pro Pro Asp Thr
    290


<210> 6711
<211> 327
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1442; "

<220>
<221> source
<223> /note="Gene Symbol: ASPH; "

<220>
<221> source
<223> /note="Gene Name:
      aspartate beta-hydroxylase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000427823"

<400> 6711
Met Ala Gln Arg Lys Asn Ala Lys Ser Ser Gly Asn Ser Ser Ser Ser
1               5                   10                  15

Gly Ser Gly Ser Gly Ser Thr Ser Ala Gly Ser Ser Ser Pro Gly Ala
            20                  25                  30

Arg Arg Glu Thr Lys His Gly Gly His Lys Asn Gly Arg Lys Gly Gly
        35                  40                  45
```

```
Leu Ser Gly Thr Ser Phe Phe Thr Trp Phe Met Val Ile Ala Leu Leu
    50                  55                  60

Gly Val Trp Thr Ser Val Ala Val Val Trp Phe Asp Leu Val Asp Tyr
65                  70                  75                  80

Glu Glu Val Leu Ala Lys Ala Lys Asp Phe Arg Tyr Asn Leu Ser Glu
                85                  90                  95

Val Leu Gln Gly Lys Leu Gly Ile Tyr Asp Ala Asp Gly Asp Gly Asp
            100                 105                 110

Phe Asp Val Asp Asp Ala Lys Val Leu Leu Gly Leu Lys Glu Arg Ser
        115                 120                 125

Thr Ser Glu Pro Ala Val Pro Pro Glu Glu Ala Glu Pro His Thr Glu
    130                 135                 140

Pro Glu Glu Gln Val Pro Val Glu Ala Glu Pro Gln Asn Ile Glu Asp
145                 150                 155                 160

Glu Ala Lys Glu Gln Ile Gln Ser Leu Leu His Glu Met Val His Ala
                165                 170                 175

Glu His Val Glu Gly Glu Asp Leu Gln Gln Glu Asp Gly Pro Thr Gly
            180                 185                 190

Glu Pro Gln Gln Glu Asp Asp Glu Phe Leu Met Ala Thr Asp Val Asp
        195                 200                 205

Asp Arg Phe Glu Thr Leu Glu Pro Glu Val Ser His Glu Glu Thr Glu
    210                 215                 220

His Ser Tyr His Val Glu Glu Thr Val Ser Gln Asp Cys Asn Gln Asp
225                 230                 235                 240

Met Glu Glu Met Met Ser Glu Gln Glu Asn Pro Asp Ser Ser Glu Pro
                245                 250                 255

Val Val Glu Asp Glu Arg Leu His His Asp Thr Asp Asp Val Thr Tyr
            260                 265                 270
```

```
Gln Val Tyr Glu Glu Gln Val Tyr Glu Pro Leu Glu Asn Glu Gly Ile
        275                 280                 285

Glu Ile Thr Glu Val Thr Ala Pro Pro Glu Asp Asn Pro Val Glu Asp
    290                 295                 300

Ser Gln Val Ile Val Glu Glu Val Ser Ile Phe Pro Val Glu Glu Gln
305                 310                 315                 320

Gln Glu Val Pro Pro Asp Thr
                325
```

<210> 6712
<211> 198
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1442; "

<220>
<221> source
<223> /note="Gene Symbol: ASPH; "

<220>
<221> source
<223> /note="Gene Name:
aspartate beta-hydroxylase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000427877"

<400> 6712

```
Met Ala Glu Asp Lys Glu Thr Lys His Gly Gly His Lys Asn Gly Arg
1               5                   10                  15

Lys Gly Gly Leu Ser Gly Thr Ser Phe Phe Thr Trp Phe Met Val Ile
            20                  25                  30

Ala Leu Leu Gly Val Trp Thr Ser Val Ala Val Val Trp Phe Asp Leu
        35                  40                  45

Val Asp Tyr Glu Glu Val Leu Gly Lys Leu Gly Ile Tyr Asp Ala Asp
    50                  55                  60

Gly Asp Gly Asp Phe Asp Val Asp Asp Ala Lys Val Leu Leu Gly Leu
```

65 70 75 80

Lys Glu Arg Ser Thr Ser Glu Pro Ala Val Pro Pro Glu Glu Ala Glu
85 90 95

Pro His Thr Glu Pro Glu Glu Gln Val Pro Val Glu Ala Glu Pro Gln
100 105 110

Asn Ile Glu Asp Glu Ala Lys Glu Gln Ile Gln Ser Leu Leu His Glu
115 120 125

Met Val His Ala Glu His Glu Thr Glu His Ser Tyr His Val Glu Glu
130 135 140

Thr Asp Ser Ser Glu Pro Val Val Glu Asp Glu Arg Leu His His Asp
145 150 155 160

Thr Asp Asp Val Thr Tyr Gln Val Tyr Glu Glu Gln Ala Val Tyr Glu
165 170 175

Pro Leu Glu Asn Glu Gly Ile Glu Ile Thr Glu Val Thr Ala Pro Pro
180 185 190

Glu Asp Asn Pro Val Glu
195

<210> 6713
<211> 174
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1442; "

<220>
<221> source
<223> /note="Gene Symbol: ASPH; "

<220>
<221> source
<223> /note="Gene Name:
aspartate beta-hydroxylase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000428060"

<400> 6713
Met Ala Glu Asp Lys Glu Thr Lys His Gly Gly His Lys Asn Gly Arg
1 5 10 15

Lys Gly Gly Leu Ser Gly Thr Ser Phe Phe Thr Trp Phe Met Val Ile
20 25 30

Ala Leu Leu Gly Val Trp Thr Ser Val Ala Val Val Trp Phe Asp Leu
35 40 45

Val Asp Tyr Glu Glu Val Leu Ala Lys Ala Lys Asp Phe Arg Tyr Asn
50 55 60

Leu Ser Glu Val Leu Gln Gly Lys Leu Gly Ile Tyr Asp Ala Asp Gly
65 70 75 80

Asp Gly Asp Phe Asp Val Asp Asp Ala Lys Val Leu Leu Gly Leu Thr
85 90 95

Lys Asp Gly Ser Asn Glu Asn Ile Asp Ser Leu Glu Glu Val Leu Asn
100 105 110

Ile Leu Ala Glu Glu Ser Ser Asp Trp Phe Tyr Gly Phe Leu Ser Phe
115 120 125

Leu Tyr Asp Ile Met Thr Pro Phe Glu Met Leu Glu Glu Glu Glu Glu
130 135 140

Glu Ser Glu Thr Ala Asp Gly Val Asp Gly Thr Ser Gln Asn Glu Gly
145 150 155 160

Val Gln Gly Lys Thr Cys Val Ile Leu Asp Leu His Asn Gln
165 170

<210> 6714
<211> 256
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<223> /note="Gene Symbol: ASPH; "

<220>
<221> source
<223> /note="Gene Name:
aspartate beta-hydroxylase; "

<220>
<221> source
<223> /note="Uniprot ID: Q12797; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429160"

<400> 6714
Met Ala Glu Asp Lys Glu Thr Lys His Gly Gly His Lys Asn Gly Arg
1 5 10 15

Lys Gly Gly Leu Ser Gly Thr Ser Phe Phe Thr Trp Phe Met Val Ile
20 25 30

Ala Leu Leu Gly Val Trp Thr Ser Val Ala Val Val Trp Phe Asp Leu
35 40 45

Val Asp Tyr Glu Glu Val Leu Ala Lys Ala Lys Asp Phe Arg Tyr Asn
50 55 60

Leu Ser Glu Val Leu Gln Gly Lys Leu Gly Ile Tyr Asp Ala Asp Gly
65 70 75 80

Asp Gly Asp Phe Asp Val Asp Asp Ala Lys Val Leu Leu Gly Leu Lys
85 90 95

Glu Arg Ser Thr Ser Glu Pro Ala Val Pro Pro Glu Glu Ala Glu Pro
100 105 110

His Thr Glu Pro Glu Glu Gln Val Pro Val Glu Ala Glu Pro Gln Asn
115 120 125

Ile Glu Asp Glu Ala Lys Glu Gln Ile Gln Ser Leu Leu His Glu Met
130 135 140

Val His Ala Glu His Glu Thr Glu His Ser Tyr His Val Glu Glu Thr
145 150 155 160

Val Ser Gln Asp Cys Asn Gln Asp Met Glu Glu Met Met Ser Glu Gln
165 170 175

```
Glu Asn Pro Asp Ser Ser Glu Pro Val Val Glu Asp Glu Arg Leu His
            180                 185                 190

His Asp Thr Asp Asp Val Thr Tyr Gln Val Tyr Glu Glu Gln Ala Val
        195                 200                 205

Tyr Glu Pro Leu Glu Asn Glu Gly Ile Glu Ile Thr Glu Val Thr Ala
    210                 215                 220

Pro Pro Glu Asp Asn Pro Val Glu Asp Ser Gln Val Ile Val Glu Glu
225                 230                 235                 240

Val Ser Ile Phe Pro Val Glu Glu Gln Gln Glu Val Pro Pro Asp Thr
                245                 250                 255


<210> 6715
<211> 270
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1442; "

<220>
<221> source
<223> /note="Gene Symbol: ASPH; "

<220>
<221> source
<223> /note="Gene Name:
      aspartate beta-hydroxylase; "

<220>
<221> source
<223> /note="Uniprot ID:  Q12797; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429286"

<400> 6715
Met Ala Gln Arg Lys Asn Ala Lys Ser Ser Gly Asn Ser Ser Ser Ser
1               5                   10                  15

Gly Ser Gly Ser Gly Ser Thr Ser Ala Gly Ser Ser Ser Pro Gly Ala
            20                  25                  30
```

```
Arg Arg Glu Thr Lys His Gly Gly His Lys Asn Gly Arg Lys Gly Gly
        35                  40                  45

Leu Ser Gly Thr Ser Phe Phe Thr Trp Phe Met Val Ile Ala Leu Leu
    50                  55                  60

Gly Val Trp Thr Ser Val Ala Val Val Trp Phe Asp Leu Val Asp Tyr
65                  70                  75                  80

Glu Glu Val Leu Gly Lys Leu Gly Ile Tyr Asp Ala Asp Gly Asp Gly
                85                  90                  95

Asp Phe Asp Val Asp Asp Ala Lys Val Leu Leu Gly Leu Lys Glu Arg
            100                 105                 110

Ser Thr Ser Glu Pro Ala Val Pro Pro Glu Glu Ala Glu Pro His Thr
        115                 120                 125

Glu Pro Glu Glu Gln Val Pro Val Glu Ala Glu Pro Gln Asn Ile Glu
    130                 135                 140

Asp Glu Ala Lys Glu Gln Ile Gln Ser Leu Leu His Glu Met Val His
145                 150                 155                 160

Ala Glu His Glu Thr Glu His Ser Tyr His Val Glu Glu Thr Val Ser
                165                 170                 175

Gln Asp Cys Asn Gln Asp Met Glu Glu Met Met Ser Glu Gln Glu Asn
            180                 185                 190

Pro Asp Ser Ser Glu Pro Val Val Glu Asp Glu Arg Leu His His Asp
        195                 200                 205

Thr Asp Asp Val Thr Tyr Gln Val Tyr Glu Glu Gln Ala Val Tyr Glu
    210                 215                 220

Pro Leu Glu Asn Glu Gly Ile Glu Ile Thr Glu Val Thr Ala Pro Pro
225                 230                 235                 240

Glu Asp Asn Pro Val Glu Asp Ser Gln Val Ile Val Glu Glu Val Ser
                245                 250                 255

Ile Phe Pro Val Glu Glu Gln Gln Glu Val Pro Pro Asp Thr
```

260 265 270

<210> 6716
<211> 136
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1442; "

<220>
<221> source
<223> /note="Gene Symbol: ASPH; "

<220>
<221> source
<223> /note="Gene Name:
aspartate beta-hydroxylase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429718"

<400> 6716
Met Ala Glu Asp Lys Glu Thr Lys His Gly Gly His Lys Asn Gly Arg
1 5 10 15

Lys Gly Gly Leu Ser Gly Thr Ser Phe Phe Thr Trp Phe Met Val Ile
20 25 30

Ala Leu Leu Gly Val Trp Thr Ser Val Ala Val Val Trp Phe Asp Leu
35 40 45

Val Asp Tyr Glu Glu Val Leu Gly Lys Leu Gly Ile Tyr Asp Ala Asp
50 55 60

Gly Asp Gly Asp Phe Asp Val Asp Asp Ala Lys Val Leu Leu Val Lys
65 70 75 80

Lys Lys Lys Pro Lys Leu Leu Asn Lys Phe Asp Lys Thr Ile Lys Ala
85 90 95

Glu Leu Asp Ala Ala Glu Lys Leu Arg Lys Arg Gly Lys Ile Glu Glu
100 105 110

Ala Val Asn Ala Phe Lys Glu Leu Val Arg Lys Tyr Pro Gln Ser Pro
115 120 125

```
Arg Ala Arg Tyr Gly Lys Ala Gln
    130                 135


<210> 6717
<211> 113
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1442; "

<220>
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<223> /note="Gene Symbol: ASPH; "

<220>
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<223> /note="Gene Name:
      aspartate beta-hydroxylase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429743"

<400> 6717
Met Ala Gln Arg Lys Asn Ala Lys Ser Ser Gly Asn Ser Ser Ser Ser
1               5                   10                  15


Gly Ser Gly Ser Gly Ser Thr Ser Ala Gly Ser Ser Ser Pro Gly Ala
            20                  25                  30


Arg Arg Glu Thr Lys His Gly Gly His Lys Asn Gly Arg Lys Gly Gly
        35                  40                  45


Leu Ser Gly Thr Ser Phe Phe Thr Trp Phe Met Val Ile Ala Leu Leu
    50                  55                  60


Gly Val Trp Thr Ser Val Ala Val Val Trp Phe Asp Leu Val Asp Tyr
65                  70                  75                  80


Glu Glu Val Leu Gly Lys Leu Gly Ile Tyr Asp Ala Asp Gly Asp Gly
                85                  90                  95


Asp Phe Asp Val Asp Asp Ala Lys Val Leu Leu Gly Asn Leu His Cys
            100                 105                 110


Ile
```

<210> 6718
<211> 299
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1442; "

<220>
<221> source
<223> /note="Gene Symbol: ASPH; "

<220>
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<223> /note="Gene Name:
aspartate beta-hydroxylase; "

<220>
<221> source
<223> /note="Uniprot ID: Q12797; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429954"

<400> 6718
Met Ala Glu Asp Lys Glu Thr Lys His Gly Gly His Lys Asn Gly Arg
1   5   10   15

Lys Gly Gly Leu Ser Gly Thr Ser Phe Phe Thr Trp Phe Met Val Ile
            20   25   30

Ala Leu Leu Gly Val Trp Thr Ser Val Ala Val Val Trp Phe Asp Leu
        35   40   45

Val Asp Tyr Glu Glu Val Leu Ala Lys Ala Lys Asp Phe Arg Tyr Asn
    50   55   60

Leu Ser Glu Val Leu Gln Gly Lys Leu Gly Ile Tyr Asp Ala Asp Gly
65   70   75   80

Asp Gly Asp Phe Asp Val Asp Asp Ala Lys Val Leu Leu Gly Leu Lys
                85   90   95

Glu Arg Ser Thr Ser Glu Pro Ala Val Pro Pro Glu Glu Ala Glu Pro
            100   105   110

```
His Thr Glu Pro Glu Glu Gln Val Pro Val Glu Ala Glu Pro Gln Asn
        115                 120                 125

Ile Glu Asp Glu Ala Lys Glu Gln Ile Gln Ser Leu Leu His Glu Met
    130                 135                 140

Val His Ala Glu His Val Glu Gly Glu Asp Leu Gln Gln Glu Asp Gly
145                 150                 155                 160

Pro Thr Gly Glu Pro Gln Gln Glu Asp Asp Glu Phe Leu Met Ala Thr
                165                 170                 175

Asp Val Asp Asp Arg Phe Glu Thr Leu Glu Pro Glu Val Ser His Glu
            180                 185                 190

Glu Thr Glu His Ser Tyr His Val Glu Glu Thr Val Ser Gln Asp Cys
        195                 200                 205

Asn Gln Asp Met Glu Glu Met Met Ser Glu Gln Glu Asn Pro Asp Ser
    210                 215                 220

Ser Glu Pro Val Val Glu Asp Glu Arg Leu His His Asp Thr Asp Asp
225                 230                 235                 240

Val Thr Tyr Gln Val Tyr Glu Glu Gln Ala Val Tyr Glu Pro Leu Glu
                245                 250                 255

Asn Glu Gly Ile Glu Ile Thr Glu Val Thr Ala Pro Pro Glu Asp Asn
            260                 265                 270

Pro Val Glu Asp Ser Gln Val Ile Val Glu Glu Val Ser Ile Phe Pro
        275                 280                 285

Val Glu Glu Gln Gln Glu Val Pro Pro Asp Thr
    290                 295
```

<210> 6719
<211> 298
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1442; "

<220>
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<223> /note="Gene Symbol: ASPH; "

<220>
<221> source
<223> /note="Gene Name:
aspartate beta-hydroxylase; "

<220>
<221> source
<223> /note="Uniprot ID: Q12797; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430245"

<400> 6719
Met Ala Glu Asp Lys Glu Thr Lys His Gly Gly His Lys Asn Gly Arg
1 5 10 15

Lys Gly Gly Leu Ser Gly Thr Ser Phe Phe Thr Trp Phe Met Val Ile
20 25 30

Ala Leu Leu Gly Val Trp Thr Ser Val Ala Val Val Trp Phe Asp Leu
35 40 45

Val Asp Tyr Glu Glu Val Leu Ala Lys Ala Lys Asp Phe Arg Tyr Asn
50 55 60

Leu Ser Glu Val Leu Gln Gly Lys Leu Gly Ile Tyr Asp Ala Asp Gly
65 70 75 80

Asp Gly Asp Phe Asp Val Asp Asp Ala Lys Val Leu Leu Gly Leu Lys
85 90 95

Glu Arg Ser Thr Ser Glu Pro Ala Val Pro Pro Glu Glu Ala Glu Pro
100 105 110

His Thr Glu Pro Glu Glu Gln Val Pro Val Glu Ala Glu Pro Gln Asn
115 120 125

Ile Glu Asp Glu Ala Lys Glu Gln Ile Gln Ser Leu Leu His Glu Met
130 135 140

Val His Ala Glu His Val Glu Gly Glu Asp Leu Gln Gln Glu Asp Gly
145 150 155 160

```
Pro Thr Gly Glu Pro Gln Gln Glu Asp Asp Glu Phe Leu Met Ala Thr
                165                 170                 175

Asp Val Asp Asp Arg Phe Glu Thr Leu Glu Pro Glu Val Ser His Glu
            180                 185                 190

Glu Thr Glu His Ser Tyr His Val Glu Glu Thr Val Ser Gln Asp Cys
        195                 200                 205

Asn Gln Asp Met Glu Glu Met Met Ser Glu Gln Glu Asn Pro Asp Ser
    210                 215                 220

Ser Glu Pro Val Val Glu Asp Glu Arg Leu His His Asp Thr Asp Asp
225                 230                 235                 240

Val Thr Tyr Gln Val Tyr Glu Glu Gln Val Tyr Glu Pro Leu Glu Asn
                245                 250                 255

Glu Gly Ile Glu Ile Thr Glu Val Thr Ala Pro Pro Glu Asp Asn Pro
            260                 265                 270

Val Glu Asp Ser Gln Val Ile Val Glu Glu Val Ser Ile Phe Pro Val
        275                 280                 285

Glu Glu Gln Gln Glu Val Pro Pro Asp Thr
    290                 295


<210> 6720
<211> 163
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1442; "

<220>
<221> source
<223> /note="Gene Symbol: ASPH; "

<220>
<221> source
<223> /note="Gene Name:
      aspartate beta-hydroxylase; "

<220>
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<221> source
<223> /note="ENSP ID: ENSP00000430516"

<400> 6720
Met Ala Thr Asp Val Asp Asp Arg Phe Glu Thr Leu Glu Pro Glu Val
1   5   10   15

Ser His Glu Glu Thr Glu His Ser Tyr His Val Glu Glu Thr Val Ser
            20   25   30

Gln Asp Cys Asn Gln Asp Met Glu Glu Met Met Ser Glu Gln Glu Asn
        35   40   45

Pro Asp Ser Ser Glu Pro Val Val Glu Asp Glu Arg Leu His His Asp
    50   55   60

Thr Asp Asp Val Thr Tyr Gln Val Tyr Glu Glu Gln Ala Val Tyr Glu
65   70   75   80

Pro Leu Glu Asn Glu Gly Ile Glu Ile Thr Glu Val Thr Ala Pro Pro
                85   90   95

Glu Asp Asn Pro Val Glu Asp Ser Gln Val Ile Val Glu Glu Val Ser
            100   105   110

Ile Phe Pro Val Glu Glu Gln Gln Glu Val Pro Pro Glu Thr Asn Arg
        115   120   125

Lys Thr Asp Asp Pro Glu Gln Lys Ala Lys Glu Asp Ser Phe Ala Ser
    130   135   140

Gly Glu Ser Gln Ala Ala Cys Thr Met Ser Trp Asp Phe Ser His Pro
145   150   155   160

Phe Met Cys

<210> 6721
<211> 210
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1442; "

<220>
<221> source
<223> /note="Gene Symbol: ASPH; "

<220>
<221> source
<223> /note="Gene Name:
aspartate beta-hydroxylase; "

<220>
<221> source
<223> /note="Uniprot ID: Q12797; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436188"

<400> 6721
Met Ala Glu Asp Lys Glu Thr Lys His Gly Gly His Lys Asn Gly Arg
1 5 10 15

Lys Gly Gly Leu Ser Gly Thr Ser Phe Phe Thr Trp Phe Met Val Ile
20 25 30

Ala Leu Leu Gly Val Trp Thr Ser Val Ala Val Val Trp Phe Asp Leu
35 40 45

Val Asp Tyr Glu Glu Val Leu Gly Lys Leu Gly Ile Tyr Asp Ala Asp
50 55 60

Gly Asp Gly Asp Phe Asp Val Asp Asp Ala Lys Val Leu Leu Glu Gly
65 70 75 80

Pro Ser Gly Val Ala Lys Arg Lys Thr Lys Ala Lys Val Lys Glu Leu
85 90 95

Thr Lys Glu Glu Leu Lys Lys Glu Lys Glu Lys Pro Glu Ser Arg Lys
100 105 110

Glu Ser Lys Asn Glu Glu Arg Lys Lys Gly Lys Lys Glu Asp Val Arg
115 120 125

Lys Asp Lys Lys Ile Ala Asp Ala Asp Leu Ser Arg Lys Glu Ser Pro
130 135 140

Lys Gly Lys Lys Asp Arg Glu Lys Glu Lys Val Asp Leu Glu Lys Ser
145 150 155 160

```
Ala Lys Thr Lys Glu Asn Arg Lys Lys Ser Thr Asn Met Lys Asp Val
                165                 170                 175

Ser Ser Lys Met Ala Ser Arg Asp Lys Asp Asp Arg Lys Glu Ser Arg
            180                 185                 190

Ser Ser Thr Arg Tyr Ala His Leu Thr Lys Gly Asn Thr Gln Lys Arg
        195                 200                 205

Asn Gly
    210
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<210> 6722
<211> 729
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1442; "

<220>
<221> source
<223> /note="Gene Symbol: ASPH; "

<220>
<221> source
<223> /note="Gene Name:
aspartate beta-hydroxylase; "

<220>
<221> source
<223> /note="Uniprot ID: Q12797; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000437864"

<400> 6722

```
Met Ala Glu Asp Lys Glu Thr Lys His Gly Gly His Lys Asn Gly Arg
1               5                   10                  15

Lys Gly Gly Leu Ser Gly Thr Ser Phe Phe Thr Trp Phe Met Val Ile
            20                  25                  30

Ala Leu Leu Gly Val Trp Thr Ser Val Ala Val Val Trp Phe Asp Leu
        35                  40                  45

Val Asp Tyr Glu Glu Val Leu Gly Lys Leu Gly Ile Tyr Asp Ala Asp
```

```
    50                  55                  60

Gly Asp Gly Asp Phe Asp Val Asp Asp Ala Lys Val Leu Leu Gly Leu
65                  70                  75                  80

Lys Glu Arg Ser Thr Ser Glu Pro Ala Val Pro Pro Glu Glu Ala Glu
                85                  90                  95

Pro His Thr Glu Pro Glu Glu Gln Val Pro Val Glu Ala Glu Pro Gln
            100                 105                 110

Asn Ile Glu Asp Glu Ala Lys Glu Gln Ile Gln Ser Leu Leu His Glu
        115                 120                 125

Met Val His Ala Glu His Val Glu Gly Glu Asp Leu Gln Gln Glu Asp
    130                 135                 140

Gly Pro Thr Gly Glu Pro Gln Gln Glu Asp Asp Glu Phe Leu Met Ala
145                 150                 155                 160

Thr Asp Val Asp Asp Arg Phe Glu Thr Leu Glu Pro Glu Val Ser His
                165                 170                 175

Glu Glu Thr Glu His Ser Tyr His Val Glu Glu Thr Val Ser Gln Asp
            180                 185                 190

Cys Asn Gln Asp Met Glu Glu Met Met Ser Glu Gln Glu Asn Pro Asp
        195                 200                 205

Ser Ser Glu Pro Val Val Glu Asp Glu Arg Leu His His Asp Thr Asp
    210                 215                 220

Asp Val Thr Tyr Gln Val Tyr Glu Glu Gln Ala Val Tyr Glu Pro Leu
225                 230                 235                 240

Glu Asn Glu Gly Ile Glu Ile Thr Glu Val Thr Ala Pro Pro Glu Asp
                245                 250                 255

Asn Pro Val Glu Asp Ser Gln Val Ile Val Glu Glu Val Ser Ile Phe
            260                 265                 270

Pro Val Glu Glu Gln Gln Glu Val Pro Pro Glu Thr Asn Arg Lys Thr
        275                 280                 285
```

```
Asp Asp Pro Glu Gln Lys Ala Lys Val Lys Lys Lys Lys Pro Lys Leu
    290                 295                 300

Leu Asn Lys Phe Asp Lys Thr Ile Lys Ala Glu Leu Asp Ala Ala Glu
305                 310                 315                 320

Lys Leu Arg Lys Arg Gly Lys Ile Glu Glu Ala Val Asn Ala Phe Lys
                325                 330                 335

Glu Leu Val Arg Lys Tyr Pro Gln Ser Pro Arg Ala Arg Tyr Gly Lys
            340                 345                 350

Ala Gln Cys Glu Asp Asp Leu Ala Glu Lys Arg Arg Ser Asn Glu Val
        355                 360                 365

Leu Arg Gly Ala Ile Glu Thr Tyr Gln Glu Val Ala Ser Leu Pro Asp
    370                 375                 380

Val Pro Ala Asp Leu Leu Lys Leu Ser Leu Lys Arg Arg Ser Asp Arg
385                 390                 395                 400

Gln Gln Phe Leu Gly His Met Arg Gly Ser Leu Leu Thr Leu Gln Arg
                405                 410                 415

Leu Val Gln Leu Phe Pro Asn Asp Thr Ser Leu Lys Asn Asp Leu Gly
            420                 425                 430

Val Gly Tyr Leu Leu Ile Gly Asp Asn Asp Asn Ala Lys Lys Val Tyr
        435                 440                 445

Glu Glu Val Leu Ser Val Thr Pro Asn Asp Gly Phe Ala Lys Val His
    450                 455                 460

Tyr Gly Phe Ile Leu Lys Ala Gln Asn Lys Ile Ala Glu Ser Ile Pro
465                 470                 475                 480

Tyr Leu Lys Glu Gly Ile Glu Ser Gly Asp Pro Gly Thr Asp Asp Gly
                485                 490                 495

Arg Phe Tyr Phe His Leu Gly Asp Ala Met Gln Arg Val Gly Asn Lys
            500                 505                 510
```

```
Glu Ala Tyr Lys Trp Tyr Glu Leu Gly His Lys Arg Gly His Phe Ala
        515                 520                 525

Ser Val Trp Gln Arg Ser Leu Tyr Asn Val Asn Gly Leu Lys Ala Gln
    530                 535                 540

Pro Trp Trp Thr Pro Lys Glu Thr Gly Tyr Thr Glu Leu Val Lys Ser
545                 550                 555                 560

Leu Glu Arg Asn Trp Lys Leu Ile Arg Asp Glu Gly Leu Ala Val Met
                565                 570                 575

Asp Lys Ala Lys Gly Leu Phe Leu Pro Glu Asp Glu Asn Leu Arg Glu
            580                 585                 590

Lys Gly Asp Trp Ser Gln Phe Thr Leu Trp Gln Gln Gly Arg Arg Asn
        595                 600                 605

Glu Asn Ala Cys Lys Gly Ala Pro Lys Thr Cys Thr Leu Leu Glu Lys
    610                 615                 620

Phe Pro Glu Thr Thr Gly Cys Arg Arg Gly Gln Ile Lys Tyr Ser Ile
625                 630                 635                 640

Met His Pro Gly Thr His Val Trp Pro His Thr Gly Pro Thr Asn Cys
                645                 650                 655

Arg Leu Arg Met His Leu Gly Leu Val Ile Pro Lys Glu Gly Cys Lys
            660                 665                 670

Ile Arg Cys Ala Asn Glu Thr Lys Thr Trp Glu Glu Gly Lys Val Leu
        675                 680                 685

Ile Phe Asp Asp Ser Phe Glu His Glu Val Trp Gln Asp Ala Ser Ser
    690                 695                 700

Phe Arg Leu Ile Phe Ile Val Asp Val Trp His Pro Glu Leu Thr Pro
705                 710                 715                 720

Gln Gln Arg Arg Ser Leu Pro Ala Ile
                725
```

<210> 6723
<211> 186
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1442; "

<220>
<221> source
<223> /note="Gene Symbol: ASPH; "

<220>
<221> source
<223> /note="Gene Name:
aspartate beta-hydroxylase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000478706"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6723
Xaa Phe Asp Val Asp Asp Ala Lys Val Leu Leu Gly Leu Lys Glu Arg
1 5 10 15

Ser Thr Ser Glu Pro Ala Val Pro Pro Glu Glu Ala Glu Pro His Thr
20 25 30

Glu Pro Glu Glu Gln Val Pro Val Glu Ala Glu Pro Gln Asn Ile Glu
35 40 45

Asp Glu Ala Lys Glu Gln Ile Gln Ser Leu Leu His Glu Met Val His
50 55 60

Ala Glu His Glu Thr Glu His Ser Tyr His Val Glu Glu Thr Val Ser
65 70 75 80

Gln Asp Cys Asn Gln Asp Met Glu Glu Met Met Ser Glu Gln Glu Asn
85 90 95

Pro Asp Ser Ser Glu Pro Val Val Glu Asp Glu Arg Leu His His Asp
100 105 110

```
Thr Asp Asp Val Thr Tyr Gln Val Tyr Glu Glu Gln Ala Val Tyr Glu
        115                 120                 125

Pro Leu Glu Asn Glu Gly Ile Glu Ile Thr Glu Val Thr Ala Pro Pro
    130                 135                 140

Glu Asp Asn Pro Val Glu Asp Ser Gln Val Ile Val Glu Val Lys Lys
145                 150                 155                 160

Lys Lys Pro Lys Leu Leu Asn Lys Phe Asp Lys Thr Ile Lys Ala Glu
                165                 170                 175

Leu Asp Ala Ala Glu Lys Leu Arg Lys Arg
            180                 185


<210> 6724
<211> 44
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1442; "

<220>
<221> source
<223> /note="Gene Symbol: ASPH; "

<220>
<221> source
<223> /note="Gene Name:
      aspartate beta-hydroxylase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000479830"

<400> 6724
Glu Asp Asn Pro Val Glu Asp Ser Gln Val Ile Val Glu Glu Val Ser
1               5                   10                  15

Ile Phe Pro Val Glu Glu Gln Gln Glu Val Pro Pro Gly Tyr Leu Met
            20                  25                  30

Glu Asn Met Glu Ser Glu Leu Pro Trp Asp Glu Ser
        35                  40


<210> 6725
<211> 195
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<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1442; "

<220>
<221> source
<223> /note="Gene Symbol: ASPH; "

<220>
<221> source
<223> /note="Gene Name:
aspartate beta-hydroxylase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000479945"

<400> 6725
Gln Ser Leu Leu His Glu Met Val His Ala Glu His Glu Thr Glu His
1 5 10 15

Ser Tyr His Val Glu Glu Thr Val Ser Gln Asp Cys Asn Gln Asp Met
20 25 30

Glu Glu Met Met Ser Glu Gln Glu Asn Pro Asp Ser Ser Glu Pro Val
35 40 45

Val Glu Asp Glu Arg Leu His His Asp Thr Asp Asp Val Thr Tyr Gln
50 55 60

Val Tyr Glu Glu Gln Ala Val Tyr Glu Pro Leu Glu Asn Glu Gly Ile
65 70 75 80

Glu Ile Thr Glu Val Thr Ala Pro Pro Glu Asp Asn Pro Val Glu Asp
85 90 95

Ser Gln Val Ile Val Glu Glu Val Ser Ile Phe Pro Val Glu Glu Gln
100 105 110

Gln Glu Val Pro Pro Val Lys Lys Lys Lys Pro Lys Leu Leu Asn Lys
115 120 125

Phe Asp Lys Thr Ile Lys Ala Glu Leu Asp Ala Ala Glu Lys Leu Arg
130 135 140

```
Lys Arg Gly Lys Ile Glu Glu Ala Val Asn Ala Phe Lys Glu Leu Val
145                 150                 155                 160


Arg Lys Tyr Pro Gln Ser Pro Arg Ala Arg Tyr Gly Lys Ala Gln Cys
                165                 170                 175


Glu Asp Asp Leu Ala Glu Lys Arg Arg Ser Asn Glu Val Leu Arg Gly
            180                 185                 190


Ala Ile Glu
        195


<210> 6726
<211> 134
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1442; "

<220>
<221> source
<223> /note="Gene Symbol: ASPH; "

<220>
<221> source
<223> /note="Gene Name:
      aspartate beta-hydroxylase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000483443"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6726
Xaa Glu Asp Leu Gln Gln Glu Asp Gly Pro Thr Gly Glu Pro Gln Gln
1               5                   10                  15


Glu Asp Asp Glu Phe Leu Met Ala Thr Asp Val Asp Asp Arg Phe Glu
            20                  25                  30


Thr Leu Glu Pro Glu Val Ser His Glu Glu Thr Glu His Ser Tyr His
        35                  40                  45
```

```
Val Glu Glu Thr Val Ser Gln Asp Cys Asn Gln Asp Met Glu Glu Met
    50                  55                  60

Met Ser Glu Gln Glu Asn Pro Asp Ser Ser Glu Pro Val Val Glu Asp
65                  70                  75                  80

Glu Arg Leu His His Asp Thr Asp Asp Val Thr Tyr Gln Val Tyr Glu
                85                  90                  95

Glu Gln Glu Val Thr Ala Pro Pro Glu Asp Asn Pro Val Glu Asp Ser
            100                 105                 110

Gln Val Ile Val Glu Glu Val Ser Ile Phe Pro Val Glu Glu Gln Gln
        115                 120                 125

Glu Val Pro Pro Asp Thr
    130
```

<210> 6727
<211> 390
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1443; "

<220>
<221> source
<223> /note="Gene Symbol: ASPHD1; "

<220>
<221> source
<223> /note="Gene Name:
aspartate beta-hydroxylase
domain containing 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q5U4P2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000311447"

<400> 6727

```
Met Lys Glu Gly Arg Gly Ser Phe Ser Val Glu Arg Gly Pro Arg Lys
1               5                   10                  15

Glu Arg Glu Thr Ala Gln Ser Gly Met Trp Lys Gly Asn Ser Pro Ala
```

```
            20                  25                  30

Gly Ser Gln Gly Ala Ala Met Glu Gly Thr Gly Gly Glu Leu Gly Gly
        35                  40                  45

Gln Gly Asn Trp Gly Pro Glu Asp Ala Pro Gly Leu Leu Ala Arg Ala
    50                  55                  60

Ser Leu Ile Met Leu Pro Trp Pro Leu Pro Leu Ala Ser Ser Ala Leu
65                  70                  75                  80

Thr Leu Leu Phe Gly Ala Leu Thr Ser Leu Phe Leu Trp Tyr Cys Tyr
                85                  90                  95

Arg Leu Gly Ser Gln Asp Met Gln Ala Leu Gly Ala Gly Ser Arg Ala
            100                 105                 110

Gly Gly Val Arg Gly Gly Pro Val Gly Cys Ser Glu Ala Gly Gly Pro
        115                 120                 125

Ser Pro Gly Gly Pro Gly Asp Pro Gly Glu Gly Pro Arg Thr Glu Gly
    130                 135                 140

Leu Val Ser Arg Arg Leu Arg Ala Tyr Ala Arg Arg Tyr Ser Trp Ala
145                 150                 155                 160

Gly Met Gly Arg Val Arg Arg Ala Ala Gln Gly Gly Pro Gly Pro Gly
                165                 170                 175

Arg Gly Pro Gly Val Leu Gly Ile Gln Arg Pro Gly Leu Leu Phe Leu
            180                 185                 190

Pro Asp Leu Pro Ser Ala Pro Phe Val Pro Arg Asp Ala Gln Arg His
        195                 200                 205

Asp Val Glu Leu Leu Glu Ser Ser Phe Pro Ala Ile Leu Arg Asp Phe
    210                 215                 220

Gly Ala Val Ser Trp Asp Phe Ser Gly Thr Thr Pro Pro Pro Arg Gly
225                 230                 235                 240

Trp Ser Pro Pro Leu Ala Pro Gly Cys Tyr Gln Leu Leu Leu Tyr Gln
                245                 250                 255
```

```
Ala Gly Arg Cys Gln Pro Ser Asn Cys Arg Arg Cys Pro Gly Ala Tyr
            260                 265                 270

Arg Ala Leu Arg Gly Leu Arg Ser Phe Met Ser Ala Asn Thr Phe Gly
        275                 280                 285

Asn Ala Gly Phe Ser Val Leu Leu Pro Gly Ala Arg Leu Glu Gly Arg
    290                 295                 300

Cys Gly Pro Thr Asn Ala Arg Val Arg Cys His Leu Gly Leu Lys Ile
305                 310                 315                 320

Pro Pro Gly Cys Glu Leu Val Val Gly Gly Glu Pro Gln Cys Trp Ala
                325                 330                 335

Glu Gly His Cys Leu Leu Val Asp Asp Ser Phe Leu His Thr Val Ala
            340                 345                 350

His Asn Gly Ser Pro Glu Asp Gly Pro Arg Val Val Phe Ile Val Asp
        355                 360                 365

Leu Trp His Pro Asn Val Ala Gly Ala Glu Arg Gln Ala Leu Asp Phe
    370                 375                 380

Val Phe Ala Pro Asp Pro
385                 390
```

<210> 6728
<211> 390
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1443; "

<220>
<221> source
<223> /note="Gene Symbol: ASPHD1; "

<220>
<221> source
<223> /note="Gene Name:
aspartate beta-hydroxylase
domain containing 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q5U4P2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000388036"

<400> 6728
Met Lys Glu Gly Arg Gly Ser Phe Ser Val Glu Arg Gly Pro Arg Lys
1   5   10   15

Glu Arg Glu Thr Ala Gln Ser Gly Met Trp Lys Gly Asn Ser Pro Ala
            20   25   30

Gly Ser Gln Gly Ala Ala Met Glu Gly Thr Gly Gly Glu Leu Gly Gly
        35   40   45

Gln Gly Asn Trp Gly Pro Glu Asp Ala Pro Gly Leu Leu Ala Arg Ala
    50   55   60

Ser Leu Ile Met Leu Pro Trp Pro Leu Pro Leu Ala Ser Ser Ala Leu
65   70   75   80

Thr Leu Leu Phe Gly Ala Leu Thr Ser Leu Phe Leu Trp Tyr Cys Tyr
                85   90   95

Arg Leu Gly Ser Gln Asp Met Gln Ala Leu Gly Ala Gly Ser Arg Ala
            100   105   110

Gly Gly Val Arg Gly Gly Pro Val Gly Cys Ser Glu Ala Gly Gly Pro
        115   120   125

Ser Pro Gly Gly Pro Gly Asp Pro Gly Glu Gly Pro Arg Thr Glu Gly
    130   135   140

Leu Val Ser Arg Arg Leu Arg Ala Tyr Ala Arg Arg Tyr Ser Trp Ala
145   150   155   160

Gly Met Gly Arg Val Arg Arg Ala Ala Gln Gly Gly Pro Gly Pro Gly
                165   170   175

Arg Gly Pro Gly Val Leu Gly Ile Gln Arg Pro Gly Leu Leu Phe Leu
            180   185   190

```
Pro Asp Leu Pro Ser Ala Pro Phe Val Pro Arg Asp Ala Gln Arg His
        195                 200                 205

Asp Val Glu Leu Leu Glu Ser Ser Phe Pro Ala Ile Leu Arg Asp Phe
    210                 215                 220

Gly Ala Val Ser Trp Asp Phe Ser Gly Thr Thr Pro Pro Pro Arg Gly
225                 230                 235                 240

Trp Ser Pro Pro Leu Ala Pro Gly Cys Tyr Gln Leu Leu Leu Tyr Gln
                245                 250                 255

Ala Gly Arg Cys Gln Pro Ser Asn Cys Arg Arg Cys Pro Gly Ala Tyr
            260                 265                 270

Arg Ala Leu Arg Gly Leu Arg Ser Phe Met Ser Ala Asn Thr Phe Gly
        275                 280                 285

Asn Ala Gly Phe Ser Val Leu Leu Pro Gly Ala Arg Leu Glu Gly Arg
    290                 295                 300

Cys Gly Pro Thr Asn Ala Arg Val Arg Cys His Leu Gly Leu Lys Ile
305                 310                 315                 320

Pro Pro Gly Cys Glu Leu Val Val Gly Gly Glu Pro Gln Cys Trp Ala
                325                 330                 335

Glu Gly His Cys Leu Leu Val Asp Asp Ser Phe Leu His Thr Val Ala
            340                 345                 350

His Asn Gly Ser Pro Glu Asp Gly Pro Arg Val Val Phe Ile Val Asp
        355                 360                 365

Leu Trp His Pro Asn Val Ala Gly Ala Glu Arg Gln Ala Leu Asp Phe
    370                 375                 380

Val Phe Ala Pro Asp Pro
385                 390
```

<210> 6729
<211> 390
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1443; "

<220>
<221> source
<223> /note="Gene Symbol: ASPHD1; "

<220>
<221> source
<223> /note="Gene Name:
aspartate beta-hydroxylase
domain containing 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q5U4P2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000456801"

<400> 6729

```
Met Lys Glu Gly Arg Gly Ser Phe Ser Val Glu Arg Gly Pro Arg Lys
1               5                   10                  15

Glu Arg Glu Thr Ala Gln Ser Gly Met Trp Lys Gly Asn Ser Pro Ala
            20                  25                  30

Gly Ser Gln Gly Ala Ala Met Glu Gly Thr Gly Gly Glu Leu Gly Gly
        35                  40                  45

Gln Gly Asn Trp Gly Pro Glu Asp Ala Pro Gly Leu Leu Ala Arg Ala
    50                  55                  60

Ser Leu Ile Met Leu Pro Trp Pro Leu Pro Leu Ala Ser Ser Ala Leu
65                  70                  75                  80

Thr Leu Leu Phe Gly Ala Leu Thr Ser Leu Phe Leu Trp Tyr Cys Tyr
                85                  90                  95

Arg Leu Gly Ser Gln Asp Met Gln Ala Leu Gly Ala Gly Ser Arg Ala
            100                 105                 110

Gly Gly Val Arg Gly Gly Pro Val Gly Cys Ser Glu Ala Gly Gly Pro
        115                 120                 125

Ser Pro Gly Gly Pro Gly Asp Pro Gly Glu Gly Pro Arg Thr Glu Gly
    130                 135                 140
```

```
Leu Val Ser Arg Arg Leu Arg Ala Tyr Ala Arg Arg Tyr Ser Trp Ala
145                 150                 155                 160

Gly Met Gly Arg Val Arg Arg Ala Ala Gln Gly Gly Pro Gly Pro Gly
                165                 170                 175

Arg Gly Pro Gly Val Leu Gly Ile Gln Arg Pro Gly Leu Leu Phe Leu
            180                 185                 190

Pro Asp Leu Pro Ser Ala Pro Phe Val Pro Arg Asp Ala Gln Arg His
        195                 200                 205

Asp Val Glu Leu Leu Glu Ser Ser Phe Pro Ala Ile Leu Arg Asp Phe
    210                 215                 220

Gly Ala Val Ser Trp Asp Phe Ser Gly Thr Thr Pro Pro Pro Arg Gly
225                 230                 235                 240

Trp Ser Pro Pro Leu Ala Pro Gly Cys Tyr Gln Leu Leu Leu Tyr Gln
                245                 250                 255

Ala Gly Arg Cys Gln Pro Ser Asn Cys Arg Arg Cys Pro Gly Ala Tyr
            260                 265                 270

Arg Ala Leu Arg Gly Leu Arg Ser Phe Met Ser Ala Asn Thr Phe Gly
        275                 280                 285

Asn Ala Gly Phe Ser Val Leu Leu Pro Gly Ala Arg Leu Glu Gly Arg
    290                 295                 300

Cys Gly Pro Thr Asn Ala Arg Val Arg Cys His Leu Gly Leu Lys Ile
305                 310                 315                 320

Pro Pro Gly Cys Glu Leu Val Val Gly Gly Glu Pro Gln Cys Trp Ala
                325                 330                 335

Glu Gly His Cys Leu Leu Val Asp Asp Ser Phe Leu His Thr Val Ala
            340                 345                 350

His Asn Gly Ser Pro Glu Asp Gly Pro Arg Val Val Phe Ile Val Asp
        355                 360                 365
```

```
Leu Trp His Pro Asn Val Ala Gly Ala Glu Arg Gln Ala Leu Asp Phe
    370                 375                 380

Val Phe Ala Pro Asp Pro
385                 390


<210> 6730
<211> 109
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1443; "

<220>
<221> source
<223> /note="Gene Symbol: ASPHD1; "

<220>
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<223> /note="Gene Name:
      aspartate beta-hydroxylase
      domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000459527"

<400> 6730
Met Ser Ala Asn Thr Phe Gly Asn Ala Gly Phe Ser Val Leu Leu Pro
1               5                   10                  15

Gly Ala Arg Leu Glu Gly Arg Cys Gly Pro Thr Asn Ala Arg Val Arg
            20                  25                  30

Cys His Leu Gly Leu Lys Ile Pro Pro Gly Cys Glu Leu Val Val Gly
        35                  40                  45

Gly Glu Pro Gln Cys Trp Ala Glu Gly His Cys Leu Leu Val Asp Asp
    50                  55                  60

Ser Phe Leu His Thr Val Ala His Asn Gly Ser Pro Glu Asp Gly Pro
65                  70                  75                  80

Arg Val Val Phe Ile Val Asp Leu Trp His Pro Asn Val Ala Gly Ala
                85                  90                  95
```

Glu Arg Gln Ala Leu Asp Phe Val Phe Ala Pro Asp Pro
100 105

<210> 6731
<211> 106
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1443; "

<220>
<221> source
<223> /note="Gene Symbol: ASPHD1; "

<220>
<221> source
<223> /note="Gene Name:
aspartate beta-hydroxylase
domain containing 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000460020"

<400> 6731
Met Ser Ala Asn Thr Phe Gly Asn Ala Gly Phe Ser Val Leu Leu Pro
1 5 10 15

Gly Ala Arg Leu Glu Gly Arg Cys Gly Pro Thr Asn Ala Arg Val Arg
20 25 30

Cys His Leu Gly Leu Lys Ile Pro Pro Gly Cys Glu Leu Val Val Gly
35 40 45

Gly Glu Pro Gln Cys Trp Ala Glu Gly His Cys Leu Leu Val Asp Asp
50 55 60

Ser Phe Leu His Thr Val Ala His Asn Gly Ser Pro Glu Asp Gly Pro
65 70 75 80

Arg Val Val Phe Ile Val Asp Leu Trp His Pro Asn Val Ala Gly Ala
85 90 95

Glu Arg Gln Ala Leu Asp Phe Val Phe Ala
100 105

<210> 6732

<211> 369
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1444; "

<220>
<221> source
<223> /note="Gene Symbol: ASPHD2; "

<220>
<221> source
<223> /note="Gene Name:
aspartate beta-hydroxylase
domain containing 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q6ICH7; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000215906"

<400> 6732
Met Val Trp Ala Pro Leu Gly Pro Pro Arg Thr Asp Cys Leu Thr Leu
1   5   10   15

Leu His Thr Pro Ser Lys Asp Ser Pro Lys Met Ser Leu Glu Trp Leu
            20   25   30

Val Ala Trp Ser Trp Ser Leu Asp Gly Leu Arg Asp Cys Ile Ala Thr
        35   40   45

Gly Ile Gln Ser Val Arg Asp Cys Asp Thr Thr Ala Val Ile Thr Val
    50   55   60

Ala Cys Leu Leu Val Leu Phe Val Trp Tyr Cys Tyr His Val Gly Arg
65   70   75   80

Glu Gln Pro Arg Pro Tyr Val Ser Val Asn Ser Leu Met Gln Ala Ala
                85   90   95

Asp Ala Asn Gly Leu Gln Asn Gly Tyr Val Tyr Cys Gln Ser Pro Glu
            100   105   110

Cys Val Arg Cys Thr His Asn Glu Gly Leu Asn Gln Lys Leu Tyr His
        115   120   125

```
Asn Leu Gln Glu Tyr Ala Lys Arg Tyr Ser Trp Ser Gly Met Gly Arg
    130                 135                 140

Ile His Lys Gly Ile Arg Glu Gln Gly Arg Tyr Leu Asn Ser Arg Pro
145                 150                 155                 160

Ser Ile Gln Lys Pro Glu Val Phe Phe Leu Pro Asp Leu Pro Thr Thr
                165                 170                 175

Pro Tyr Phe Ser Arg Asp Ala Gln Lys His Asp Val Glu Val Leu Glu
            180                 185                 190

Arg Asn Phe Gln Thr Ile Leu Cys Glu Phe Glu Thr Leu Tyr Lys Ala
        195                 200                 205

Phe Ser Asn Cys Ser Leu Pro Gln Gly Trp Lys Met Asn Ser Thr Pro
    210                 215                 220

Ser Gly Glu Trp Phe Thr Phe Tyr Leu Val Asn Gln Gly Val Cys Val
225                 230                 235                 240

Pro Arg Asn Cys Arg Lys Cys Pro Arg Thr Tyr Arg Leu Leu Gly Ser
                245                 250                 255

Leu Arg Thr Cys Ile Gly Asn Asn Val Phe Gly Asn Ala Cys Ile Ser
            260                 265                 270

Val Leu Ser Pro Gly Thr Val Ile Thr Glu His Tyr Gly Pro Thr Asn
        275                 280                 285

Ile Arg Ile Arg Cys His Leu Gly Leu Lys Thr Pro Asn Gly Cys Glu
    290                 295                 300

Leu Val Val Gly Gly Glu Pro Gln Cys Trp Ala Glu Gly Arg Cys Leu
305                 310                 315                 320

Leu Phe Asp Asp Ser Phe Leu His Ala Ala Phe His Glu Gly Ser Ala
                325                 330                 335

Glu Asp Gly Pro Arg Val Val Phe Met Val Asp Leu Trp His Pro Asn
            340                 345                 350
```

Val Ala Ala Ala Glu Arg Gln Ala Leu Asp Phe Ile Phe Ala Pro Gly
        355   360   365

Arg

<210> 6733
<211> 178
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1445; "

<220>
<221> source
<223> /note="Gene Symbol: ASPDH; "

<220>
<221> source
<223> /note="Gene Name:
      aspartate dehydrogenase domain containing; "

<220>
<221> source
<223> /note="Uniprot ID: A6ND91; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000366114"

<400> 6733
Met Gly Asp Arg Val Lys Gly Ser Lys Ser Arg Arg Pro Asp Leu Val
1   5   10   15

Val Glu Val Ala His Pro Lys Ile Ile His Glu Ser Gly Ala Gln Ile
            20   25   30

Leu Arg His Ala Asn Leu Leu Ser Leu Arg Val Thr Met Ala Thr His
        35   40   45

Pro Asp Gly Phe Arg Leu Glu Gly Pro Leu Ala Ala Ala His Ser Pro
    50   55   60

Gly Pro Cys Thr Val Leu Tyr Glu Gly Pro Val Arg Gly Leu Cys Pro
65   70   75   80

Phe Ala Pro Arg Asn Ser Asn Thr Met Ala Ala Ala Ala Leu Ala Ala

```
                85                  90                  95

Pro Ser Leu Gly Phe Asp Gly Val Ile Gly Val Leu Val Ala Asp Thr
            100                 105                 110

Ser Leu Thr Asp Met His Val Val Asp Val Glu Leu Ser Gly Pro Arg
        115                 120                 125

Gly Pro Thr Gly Arg Ser Phe Ala Val His Thr Arg Arg Glu Asn Pro
    130                 135                 140

Ala Glu Pro Gly Ala Val Thr Gly Ser Ala Thr Val Thr Ala Phe Trp
145                 150                 155                 160

Gln Ser Leu Leu Ala Cys Cys Gln Leu Pro Ser Arg Pro Gly Ile His
                165                 170                 175

Leu Cys
```

<210> 6734
<211> 283
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1445; "

<220>
<221> source
<223> /note="Gene Symbol: ASPDH; "

<220>
<221> source
<223> /note="Gene Name:
aspartate dehydrogenase domain containing; "

<220>
<221> source
<223> /note="Uniprot ID: A6ND91; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000373860"

<400> 6734

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Met Ala Asp Arg Gly Pro Trp Arg Val Gly Val Val Gly Tyr Gly Arg
1               5                   10                  15
```

```
Leu Gly Gln Ser Leu Val Ser Arg Leu Leu Ala Gln Gly Pro Glu Leu
            20                  25                  30

Gly Leu Glu Leu Val Phe Val Trp Asn Arg Asp Pro Gly Arg Met Ala
        35                  40                  45

Gly Ser Val Pro Pro Ser Leu Gln Leu Gln Asn Leu Ala Ala Leu Gly
    50                  55                  60

Glu Arg Arg Pro Asp Leu Val Val Glu Val Ala His Pro Lys Ile Ile
65                  70                  75                  80

His Glu Ser Gly Ala Gln Ile Leu Arg His Ala Asn Leu Leu Val Gly
                85                  90                  95

Ser Pro Ser Ala Leu Ser Asp Gln Thr Thr Glu Arg Gln Leu Leu Glu
            100                 105                 110

Ala Ser Gln His Trp Asp His Ala Val Phe Val Ala Arg Gly Ala Leu
        115                 120                 125

Trp Gly Ala Glu Asp Ile Arg Arg Leu Asp Ala Ala Gly Gly Leu Arg
    130                 135                 140

Ser Leu Arg Val Thr Met Ala Thr His Pro Asp Gly Phe Arg Leu Glu
145                 150                 155                 160

Gly Pro Leu Ala Ala Ala His Ser Pro Gly Pro Cys Thr Val Leu Tyr
                165                 170                 175

Glu Gly Pro Val Arg Gly Leu Cys Pro Phe Ala Pro Arg Asn Ser Asn
            180                 185                 190

Thr Met Ala Ala Ala Ala Leu Ala Ala Pro Ser Leu Gly Phe Asp Gly
        195                 200                 205

Val Ile Gly Val Leu Val Ala Asp Thr Ser Leu Thr Asp Met His Val
    210                 215                 220

Val Asp Val Glu Leu Ser Gly Pro Arg Gly Pro Thr Gly Arg Ser Phe
225                 230                 235                 240
```

```
Ala Val His Thr Arg Arg Glu Asn Pro Ala Glu Pro Gly Ala Val Thr
                245                 250                 255

Gly Ser Ala Thr Val Thr Ala Phe Trp Gln Ser Leu Leu Ala Cys Cys
            260                 265                 270

Gln Leu Pro Ser Arg Pro Gly Ile His Leu Cys
        275                 280


<210> 6735
<211> 51
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1445; "

<220>
<221> source
<223> /note="Gene Symbol: ASPDH; "

<220>
<221> source
<223> /note="Gene Name:
      aspartate dehydrogenase domain containing; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000469754"

<400> 6735
Met Gly Asp Arg Val Lys Gly Ser Lys Ser Arg Arg Pro Asp Leu Val
1               5                   10                  15

Val Glu Val Ala His Pro Lys Ile Ile His Glu Ser Gly Ala Gln Ile
            20                  25                  30

Leu Arg His Ala Asn Leu Leu Val Gly Ser Pro Ser Ala Leu Ser Asp
        35                  40                  45

Gln Thr Thr
    50


<210> 6736
<211> 134
<212> PRT
<213> Homo sapiens

<220>
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<221> source
<223> /note="Payload ID: 1445; "

<220>
<221> source
<223> /note="Gene Symbol: ASPDH; "

<220>
<221> source
<223> /note="Gene Name:
aspartate dehydrogenase domain containing; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000470360"

<400> 6736
Met Ala Thr His Pro Asp Gly Phe Arg Leu Glu Gly Pro Leu Ala Ala
1 5 10 15

Ala His Ser Pro Gly Pro Cys Thr Val Leu Tyr Glu Gly Pro Val Arg
20 25 30

Gly Leu Cys Pro Phe Ala Pro Arg Asn Ser Asn Thr Met Ala Ala Ala
35 40 45

Ala Leu Ala Ala Pro Ser Leu Gly Phe Asp Gly Val Ile Gly Val Leu
50 55 60

Val Ala Asp Thr Ser Leu Thr Asp Met His Val Val Asp Val Glu Leu
65 70 75 80

Ser Gly Pro Arg Gly Pro Thr Gly Arg Ser Phe Ala Val His Thr Arg
85 90 95

Arg Glu Asn Pro Ala Glu Pro Gly Ala Val Thr Gly Ser Ala Thr Val
100 105 110

Thr Ala Phe Trp Gln Ser Leu Leu Ala Cys Cys Gln Leu Pro Ser Arg
115 120 125

Pro Gly Ile His Leu Cys
130

<210> 6737
<211> 229
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1446; "

<220>
<221> source
<223> /note="Gene Symbol: DRICH1; "

<220>
<221> source
<223> /note="Gene Name:
aspartate-rich 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q6PGQ1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000316137"

<400> 6737
Met Gly Asn Ile Leu Thr Cys Cys Ile Asn Ser His Cys Gly Trp Pro
1   5   10   15

Arg Gly Lys Asp Ala Pro Cys Tyr Glu Ser Asp Thr Asp Ile Tyr Glu
            20   25   30

Thr Val Ala Ala Ala Thr Ser Glu Ser Thr Thr Val Glu Pro Gly Lys
        35   40   45

Leu Asp Val Gly Ala Thr Glu Gly Gln Asp Leu Gln His Ile Ser Asn
    50   55   60

Gln Lys Met Pro Thr Gly Pro Pro Glu Asp Arg Leu Ser Leu Lys Phe
65   70   75   80

Leu Pro Ser Ser Glu Glu Asp Asn Asp Asp Ala Lys Ile Leu Pro Ser
                85   90   95

Pro Val Gln Gly Ser Ser Glu Asp Asn Leu Ser Leu Val Cys Leu Pro
            100   105   110

Arg Ser Glu Asp Asp Asp Cys Asp Asp Asp Asp Asp Asp Asp Ala Gln
        115   120   125

Ile Leu Pro Ser Arg Val Gln Gly Gly Cys Tyr Arg Phe Asp Ser Ser
    130   135   140

```
Ser Cys Ser Ser Glu Asp Asn Leu Ser Leu Val Cys Leu Pro Arg Ser
145                 150                 155                 160

Glu Asp Asp Asp Cys Asp Asp Asp Asp Asp Asp Ala Gln Ile Leu Pro
                165                 170                 175

Ser Pro Val Gln Ala Cys Ser Glu Asp Ser Leu Phe Leu Arg Cys Ser
            180                 185                 190

Leu Arg His Lys Asp Glu Glu Glu Glu Asp Asp Asp Asp Ile His Ile
        195                 200                 205

Thr Ala Arg Ile Glu Ser Asp Leu Thr Leu Glu Ser Leu Ser Asp Glu
    210                 215                 220

Glu Ile His Pro Gly
225
```

<210> 6738
<211> 229
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1446; "

<220>
<221> source
<223> /note="Gene Symbol: DRICH1; "

<220>
<221> source
<223> /note="Gene Name:
aspartate-rich 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q6PGQ1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000483208"

<400> 6738

```
Met Gly Asn Ile Leu Thr Cys Cys Ile Asn Ser His Cys Gly Trp Pro
1               5                   10                  15
```

Arg Gly Lys Asp Ala Pro Cys Tyr Glu Ser Asp Thr Asp Ile Tyr Glu
20 25 30

Thr Val Ala Ala Ala Thr Ser Glu Ser Thr Thr Val Glu Pro Gly Lys
35 40 45

Leu Asp Val Gly Ala Thr Glu Gly Gln Asp Leu Gln His Ile Ser Asn
50 55 60

Gln Lys Met Pro Thr Gly Pro Pro Glu Asp Arg Leu Ser Leu Lys Phe
65 70 75 80

Leu Pro Ser Ser Glu Glu Asp Asn Asp Asp Ala Lys Ile Leu Pro Ser
85 90 95

Pro Val Gln Gly Ser Ser Glu Asp Asn Leu Ser Leu Val Cys Leu Pro
100 105 110

Arg Ser Glu Asp Asp Asp Cys Asp Asp Asp Asp Asp Asp Asp Ala Gln
115 120 125

Ile Leu Pro Ser Arg Val Gln Gly Gly Cys Tyr Arg Phe Asp Ser Ser
130 135 140

Ser Cys Ser Ser Glu Asp Asn Leu Ser Leu Val Cys Leu Pro Arg Ser
145 150 155 160

Glu Asp Asp Asp Cys Asp Asp Asp Asp Asp Asp Ala Gln Ile Leu Pro
165 170 175

Ser Pro Val Gln Ala Cys Ser Glu Asp Ser Leu Phe Leu Arg Cys Ser
180 185 190

Leu Arg His Lys Asp Glu Glu Glu Glu Asp Asp Asp Asp Ile His Ile
195 200 205

Thr Ala Arg Ile Glu Ser Asp Leu Thr Leu Glu Ser Leu Ser Asp Glu
210 215 220

Glu Ile His Pro Gly
225

<210> 6739

<211> 343
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1447; "

<220>
<221> source
<223> /note="Gene Symbol: ASPRV1; "

<220>
<221> source
<223> /note="Gene Name:
aspartic peptidase, retroviral-like 1; "

<220>
<221> source
<223> /note="Uniprot ID: Q53RT3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000315383"

<400> 6739
Met Gly Ser Pro Gly Ala Ser Leu Gly Ile Lys Lys Ala Leu Gln Ser
1   5   10   15

Glu Gln Ala Thr Ala Leu Pro Ala Ser Ala Pro Ala Val Ser Gln Pro
            20   25   30

Thr Ala Pro Ala Pro Ser Cys Leu Pro Lys Ala Gly Gln Val Ile Pro
        35   40   45

Thr Leu Leu Arg Glu Ala Pro Phe Ser Ser Val Ile Ala Pro Thr Leu
    50   55   60

Leu Cys Gly Phe Leu Phe Leu Ala Trp Val Ala Ala Glu Val Pro Glu
65   70   75   80

Glu Ser Ser Arg Met Ala Gly Ser Gly Ala Arg Ser Glu Glu Gly Arg
                85   90   95

Arg Gln His Ala Phe Val Pro Glu Pro Phe Asp Gly Ala Asn Val Val
            100   105   110

Pro Asn Leu Trp Leu His Ser Phe Glu Val Ile Asn Asp Leu Asn His
        115   120   125

```
Trp Asp His Ile Thr Lys Leu Arg Phe Leu Lys Glu Ser Leu Arg Gly
    130                 135                 140

Glu Ala Leu Gly Val Tyr Asn Arg Leu Ser Pro Gln Asp Gln Gly Asp
145                 150                 155                 160

Tyr Gly Thr Val Lys Glu Ala Leu Leu Lys Ala Phe Gly Val Pro Gly
                165                 170                 175

Ala Ala Pro Ser His Leu Pro Lys Glu Ile Val Phe Ala Asn Ser Met
            180                 185                 190

Gly Lys Gly Tyr Tyr Leu Lys Gly Lys Ile Gly Lys Val Pro Val Arg
        195                 200                 205

Phe Leu Val Asp Ser Gly Ala Gln Val Ser Val Val His Pro Asn Leu
    210                 215                 220

Trp Glu Glu Val Thr Asp Gly Asp Leu Asp Thr Leu Gln Pro Phe Glu
225                 230                 235                 240

Asn Val Val Lys Val Ala Asn Gly Ala Glu Met Lys Ile Leu Gly Val
                245                 250                 255

Trp Asp Thr Ala Val Ser Leu Gly Lys Leu Lys Leu Lys Ala Gln Phe
            260                 265                 270

Leu Val Ala Asn Ala Ser Ala Glu Glu Ala Ile Ile Gly Thr Asp Val
        275                 280                 285

Leu Gln Asp His Asn Ala Ile Leu Asp Phe Glu His Arg Thr Cys Thr
    290                 295                 300

Leu Lys Gly Lys Lys Phe Arg Leu Leu Pro Val Gly Gly Ser Leu Glu
305                 310                 315                 320

Asp Glu Phe Asp Leu Glu Leu Ile Glu Glu Asp Pro Ser Ser Glu Glu
                325                 330                 335

Gly Arg Gln Glu Leu Ser His
            340
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<210> 6740
<211> 313
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1448; "

<220>
<221> source
<223> /note="Gene Symbol: ASPA; "

<220>
<221> source
<223> /note="Gene Name:
aspartoacylase; "

<220>
<221> source
<223> /note="Uniprot ID: P45381; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000263080"

<400> 6740

Met	Thr	Ser	Cys	His	Ile	Ala	Glu	Glu	His	Ile	Gln	Lys	Val	Ala	Ile
1				5					10					15	

Phe	Gly	Gly	Thr	His	Gly	Asn	Glu	Leu	Thr	Gly	Val	Phe	Leu	Val	Lys
			20					25					30		

His	Trp	Leu	Glu	Asn	Gly	Ala	Glu	Ile	Gln	Arg	Thr	Gly	Leu	Glu	Val
		35					40					45			

Lys	Pro	Phe	Ile	Thr	Asn	Pro	Arg	Ala	Val	Lys	Lys	Cys	Thr	Arg	Tyr
	50					55					60				

Ile	Asp	Cys	Asp	Leu	Asn	Arg	Ile	Phe	Asp	Leu	Glu	Asn	Leu	Gly	Lys
65				70					75					80	

Lys	Met	Ser	Glu	Asp	Leu	Pro	Tyr	Glu	Val	Arg	Arg	Ala	Gln	Glu	Ile
			85					90					95		

Asn	His	Leu	Phe	Gly	Pro	Lys	Asp	Ser	Glu	Asp	Ser	Tyr	Asp	Ile	Ile
			100					105					110		

Phe	Asp	Leu	His	Asn	Thr	Thr	Ser	Asn	Met	Gly	Cys	Thr	Leu	Ile	Leu
		115					120					125			

```
Glu Asp Ser Arg Asn Asn Phe Leu Ile Gln Met Phe His Tyr Ile Lys
    130                 135                 140

Thr Ser Leu Ala Pro Leu Pro Cys Tyr Val Tyr Leu Ile Glu His Pro
145                 150                 155                 160

Ser Leu Lys Tyr Ala Thr Thr Arg Ser Ile Ala Lys Tyr Pro Val Gly
                165                 170                 175

Ile Glu Val Gly Pro Gln Pro Gln Gly Val Leu Arg Ala Asp Ile Leu
            180                 185                 190

Asp Gln Met Arg Lys Met Ile Lys His Ala Leu Asp Phe Ile His His
        195                 200                 205

Phe Asn Glu Gly Lys Glu Phe Pro Pro Cys Ala Ile Glu Val Tyr Lys
    210                 215                 220

Ile Ile Glu Lys Val Asp Tyr Pro Arg Asp Glu Asn Gly Glu Ile Ala
225                 230                 235                 240

Ala Ile Ile His Pro Asn Leu Gln Asp Gln Asp Trp Lys Pro Leu His
                245                 250                 255

Pro Gly Asp Pro Met Phe Leu Thr Leu Asp Gly Lys Thr Ile Pro Leu
            260                 265                 270

Gly Gly Asp Cys Thr Val Tyr Pro Val Phe Val Asn Glu Ala Ala Tyr
        275                 280                 285

Tyr Glu Lys Lys Glu Ala Phe Ala Lys Thr Thr Lys Leu Thr Leu Asn
    290                 295                 300

Ala Lys Ser Ile Arg Cys Cys Leu His
305                 310
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<210> 6741
<211> 313
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1448; "

<220>
<221> source
<223> /note="Gene Symbol: ASPA; "

<220>
<221> source
<223> /note="Gene Name:
aspartoacylase; "

<220>
<221> source
<223> /note="Uniprot ID: P45381; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000409976"

<400> 6741

```
Met Thr Ser Cys His Ile Ala Glu Glu His Ile Gln Lys Val Ala Ile
1               5                  10                  15

Phe Gly Gly Thr His Gly Asn Glu Leu Thr Gly Val Phe Leu Val Lys
            20                  25                  30

His Trp Leu Glu Asn Gly Ala Glu Ile Gln Arg Thr Gly Leu Glu Val
        35                  40                  45

Lys Pro Phe Ile Thr Asn Pro Arg Ala Val Lys Lys Cys Thr Arg Tyr
    50                  55                  60

Ile Asp Cys Asp Leu Asn Arg Ile Phe Asp Leu Glu Asn Leu Gly Lys
65                  70                  75                  80

Lys Met Ser Glu Asp Leu Pro Tyr Glu Val Arg Arg Ala Gln Glu Ile
                85                  90                  95

Asn His Leu Phe Gly Pro Lys Asp Ser Glu Asp Ser Tyr Asp Ile Ile
            100                 105                 110

Phe Asp Leu His Asn Thr Thr Ser Asn Met Gly Cys Thr Leu Ile Leu
        115                 120                 125

Glu Asp Ser Arg Asn Asn Phe Leu Ile Gln Met Phe His Tyr Ile Lys
    130                 135                 140

Thr Ser Leu Ala Pro Leu Pro Cys Tyr Val Tyr Leu Ile Glu His Pro
```

```
145                 150                 155                 160

Ser Leu Lys Tyr Ala Thr Thr Arg Ser Ile Ala Lys Tyr Pro Val Gly
                165                 170                 175

Ile Glu Val Gly Pro Gln Pro Gln Gly Val Leu Arg Ala Asp Ile Leu
            180                 185                 190

Asp Gln Met Arg Lys Met Ile Lys His Ala Leu Asp Phe Ile His His
        195                 200                 205

Phe Asn Glu Gly Lys Glu Phe Pro Pro Cys Ala Ile Glu Val Tyr Lys
    210                 215                 220

Ile Ile Glu Lys Val Asp Tyr Pro Arg Asp Glu Asn Gly Glu Ile Ala
225                 230                 235                 240

Ala Ile Ile His Pro Asn Leu Gln Asp Gln Asp Trp Lys Pro Leu His
                245                 250                 255

Pro Gly Asp Pro Met Phe Leu Thr Leu Asp Gly Lys Thr Ile Pro Leu
            260                 265                 270

Gly Gly Asp Cys Thr Val Tyr Pro Val Phe Val Asn Glu Ala Ala Tyr
        275                 280                 285

Tyr Glu Lys Lys Glu Ala Phe Ala Lys Thr Thr Lys Leu Thr Leu Asn
    290                 295                 300

Ala Lys Ser Ile Arg Cys Cys Leu His
305                 310


<210> 6742
<211> 78
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ASPA; "

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<221> source
<223> /note="Gene Name:
aspartoacylase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000458324"

<400> 6742
Met Thr Ser Cys His Ile Ala Glu Glu His Ile Gln Lys Val Ala Ile
1 5 10 15

Phe Gly Gly Thr His Gly Asn Glu Leu Thr Gly Val Phe Leu Val Lys
20 25 30

His Trp Leu Glu Asn Gly Ala Glu Ile Gln Arg Thr Gly Leu Glu Val
35 40 45

Lys Pro Phe Ile Thr Asn Pro Arg Ala Val Lys Lys Cys Thr Arg Tyr
50 55 60

Ile Asp Cys Asp Leu Asn Arg Ile Phe Asp Leu Glu Asn Leu
65 70 75

<210> 6743
<211> 56
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ASPA; "

<220>
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<223> /note="Gene Name:
aspartoacylase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000461358"

<400> 6743
Met Thr Ser Cys His Ile Ala Glu Glu His Ile Gln Lys Val Ala Ile
1 5 10 15

Phe Gly Gly Thr His Gly Asn Glu Leu Thr Gly Val Phe Leu Val Lys

```
            20                  25                  30

His Trp Leu Glu Asn Gly Ala Glu Ile Gln Arg Thr Gly Leu Glu Gln
        35                  40                  45

Lys Asn Val Arg Arg Phe Ala Ile
    50                  55


<210> 6744
<211> 485
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1449; "

<220>
<221> source
<223> /note="Gene Symbol: DNPEP; "

<220>
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<223> /note="Gene Name:
      aspartyl aminopeptidase; "

<220>
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<223> /note="Uniprot ID:  Q9ULA0; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000273075"

<400> 6744
Met Ser Gly His Ser Pro Thr Arg Gly Ala Met Gln Val Ala Met Asn
1               5                   10                  15

Gly Lys Ala Arg Lys Glu Ala Val Gln Thr Ala Ala Lys Glu Leu Leu
            20                  25                  30

Lys Phe Val Asn Arg Ser Pro Ser Pro Phe His Ala Val Ala Glu Cys
        35                  40                  45

Arg Asn Arg Leu Leu Gln Ala Gly Phe Ser Glu Leu Lys Glu Thr Glu
    50                  55                  60

Lys Trp Asn Ile Lys Pro Glu Ser Lys Tyr Phe Met Thr Arg Asn Ser
65                  70                  75                  80
```

```
Ser Thr Ile Ile Ala Phe Ala Val Gly Gly Gln Tyr Val Pro Gly Asn
                85                  90                  95

Gly Phe Ser Leu Ile Gly Ala His Thr Asp Ser Pro Cys Leu Arg Val
            100                 105                 110

Lys Arg Arg Ser Arg Arg Ser Gln Val Gly Phe Gln Gln Val Gly Val
        115                 120                 125

Glu Thr Tyr Gly Gly Gly Ile Trp Ser Thr Trp Phe Asp Arg Asp Leu
    130                 135                 140

Thr Leu Ala Gly Arg Val Ile Val Lys Cys Pro Thr Ser Gly Arg Leu
145                 150                 155                 160

Glu Gln Gln Leu Val His Val Glu Arg Pro Ile Leu Arg Ile Pro His
                165                 170                 175

Leu Ala Ile His Leu Gln Arg Asn Ile Asn Glu Asn Phe Gly Pro Asn
            180                 185                 190

Thr Glu Met His Leu Val Pro Ile Leu Ala Thr Ala Ile Gln Glu Glu
        195                 200                 205

Leu Glu Lys Gly Thr Pro Glu Pro Gly Pro Leu Asn Ala Val Asp Glu
    210                 215                 220

Arg His His Ser Val Leu Met Ser Leu Leu Cys Ala His Leu Gly Leu
225                 230                 235                 240

Ser Pro Lys Asp Ile Val Glu Met Glu Leu Cys Leu Ala Asp Thr Gln
                245                 250                 255

Pro Ala Val Leu Gly Gly Ala Tyr Asp Glu Phe Ile Phe Ala Pro Arg
            260                 265                 270

Leu Asp Asn Leu His Ser Cys Phe Cys Ala Leu Gln Ala Leu Ile Asp
        275                 280                 285

Ser Cys Ala Gly Pro Gly Ser Leu Ala Thr Glu Pro His Val Arg Met
    290                 295                 300
```

```
Val Thr Leu Tyr Asp Asn Glu Glu Val Gly Ser Glu Ser Ala Gln Gly
305                 310                 315                 320

Ala Gln Ser Leu Leu Thr Glu Leu Val Leu Arg Arg Ile Ser Ala Ser
                325                 330                 335

Cys Gln His Pro Thr Ala Phe Glu Glu Ala Ile Pro Lys Ser Phe Met
            340                 345                 350

Ile Ser Ala Asp Met Ala His Ala Val His Pro Asn Tyr Leu Asp Lys
        355                 360                 365

His Glu Glu Asn His Arg Pro Leu Phe His Lys Gly Pro Val Ile Lys
    370                 375                 380

Val Asn Ser Lys Gln Arg Tyr Ala Ser Asn Ala Val Ser Glu Ala Leu
385                 390                 395                 400

Ile Arg Glu Val Ala Asn Lys Val Lys Val Pro Leu Gln Asp Leu Met
                405                 410                 415

Val Arg Asn Asp Thr Pro Cys Gly Thr Thr Ile Gly Pro Ile Leu Ala
            420                 425                 430

Ser Arg Leu Gly Leu Arg Val Leu Asp Leu Gly Ser Pro Gln Leu Ala
        435                 440                 445

Met His Ser Ile Arg Glu Met Ala Cys Thr Thr Gly Val Leu Gln Thr
    450                 455                 460

Leu Thr Leu Phe Lys Gly Phe Phe Glu Leu Phe Pro Ser Leu Ser His
465                 470                 475                 480

Asn Leu Leu Val Asp
                485


<210> 6745
<211> 270
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1449; "
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<220>
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<223> /note="Gene Symbol: DNPEP; "

<220>
<221> source
<223> /note="Gene Name:
aspartyl aminopeptidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000317252"

<400> 6745
Met Ser Gly His Ser Pro Thr Arg Gly Ala Met Gln Val Ala Met Asn
1 5 10 15

Gly Lys Ala Arg Lys Glu Ala Val Gln Thr Ala Ala Lys Glu Leu Leu
20 25 30

Lys Phe Val Asn Arg Ser Pro Ser Pro Phe His Ala Val Ala Glu Cys
35 40 45

Arg Asn Arg Leu Leu Gln Ala Gly Phe Ser Glu Leu Lys Glu Thr Glu
50 55 60

Lys Trp Asn Ile Lys Pro Glu Ser Lys Tyr Phe Met Thr Arg Asn Ser
65 70 75 80

Ser Thr Ile Ile Ala Phe Ala Val Gly Gly Gln Tyr Val Pro Gly Asn
85 90 95

Gly Phe Ser Leu Ile Gly Ala His Thr Asp Ser Pro Cys Leu Arg Val
100 105 110

Lys Arg Arg Ser Arg Arg Ser Gln Val Gly Phe Gln Gln Val Gly Val
115 120 125

Glu Thr Tyr Gly Gly Gly Ile Trp Ser Thr Trp Phe Asp Arg Asp Leu
130 135 140

Thr Leu Ala Gly Arg Val Ile Val Lys Cys Pro Thr Ser Gly Arg Leu
145 150 155 160

Glu Gln Gln Leu Val His Val Glu Arg Pro Ile Leu Arg Ile Pro His
165 170 175

```
Leu Ala Ile His Leu Gln Arg Asn Ile Asn Glu Asn Phe Gly Pro Asn
            180                 185                 190

Thr Glu Met His Leu Cys Ala Leu Leu Ala Ile Pro Pro Gln Pro Thr
        195                 200                 205

Ser Pro His Arg Val Pro Ile Leu Ala Thr Ala Ile Gln Glu Glu Leu
    210                 215                 220

Glu Lys Gly Thr Pro Glu Pro Gly Pro Leu Asn Ala Val Asp Glu Arg
225                 230                 235                 240

His His Ser Val Leu Met Ser Leu Leu Cys Ala His Leu Gly Leu Ser
                245                 250                 255

Pro Lys Asp Ile Val Glu Met Glu Leu Cys Leu Ala Asp Thr
            260                 265                 270


<210> 6746
<211> 47
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1449; "

<220>
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<223> /note="Gene Symbol: DNPEP; "

<220>
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<223> /note="Gene Name:
      aspartyl aminopeptidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000363074"

<400> 6746
Met Ser Gly His Ser Pro Thr Arg Gly Ala Met Gln Val Ala Met Asn
1               5                   10                  15

Gly Lys Ala Arg Lys Glu Ala Val Gln Thr Ala Ala Lys Glu Leu Leu
            20                  25                  30

Lys Phe Val Asn Arg Ser Pro Ser Pro Phe His Gly Trp Leu Gln
```

35 40 45

<210> 6747
<211> 36
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1449; "

<220>
<221> source
<223> /note="Gene Symbol: DNPEP; "

<220>
<221> source
<223> /note="Gene Name:
aspartyl aminopeptidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000363077"

<400> 6747
Met Ser Gly His Ser Pro Thr Arg Gly Ala Met Gln Val Ser Gly Ser
1 5 10 15

Arg Arg Pro His Leu Asn Phe Asp Pro Arg Pro Gly Pro Ala Pro Ser
20 25 30

Gly Ala Gln Ala
35

<210> 6748
<211> 410
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1449; "

<220>
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<223> /note="Gene Symbol: DNPEP; "

<220>
<221> source
<223> /note="Gene Name:
aspartyl aminopeptidase; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000363083"

<400> 6748
Met Thr Arg Asn Ser Ser Thr Ile Ile Ala Phe Ala Val Gly Gly Gln
1 5 10 15

Tyr Val Pro Gly Asn Gly Phe Ser Leu Ile Gly Ala His Thr Asp Ser
20 25 30

Pro Cys Leu Arg Val Lys Arg Arg Ser Arg Arg Ser Gln Val Gly Phe
35 40 45

Gln Gln Val Gly Val Glu Thr Tyr Gly Gly Gly Ile Trp Ser Thr Trp
50 55 60

Phe Asp Arg Asp Leu Thr Leu Ala Gly Arg Val Ile Val Lys Cys Pro
65 70 75 80

Thr Ser Gly Arg Leu Glu Gln Gln Leu Val His Val Glu Arg Pro Ile
85 90 95

Leu Arg Ile Pro His Leu Ala Ile His Leu Gln Arg Asn Ile Asn Glu
100 105 110

Asn Phe Gly Pro Asn Thr Glu Met His Leu Val Pro Ile Leu Ala Thr
115 120 125

Ala Ile Gln Glu Glu Leu Glu Lys Gly Thr Pro Glu Pro Gly Pro Leu
130 135 140

Asn Ala Val Asp Glu Arg His His Ser Val Leu Met Ser Leu Leu Cys
145 150 155 160

Ala His Leu Gly Leu Ser Pro Lys Asp Ile Val Glu Met Glu Leu Cys
165 170 175

Leu Ala Asp Thr Gln Pro Ala Val Leu Gly Gly Ala Tyr Asp Glu Phe
180 185 190

Ile Phe Ala Pro Arg Leu Asp Asn Leu His Ser Cys Phe Cys Ala Leu
195 200 205

Gln Ala Leu Ile Asp Ser Cys Ala Gly Pro Gly Ser Leu Ala Thr Glu

```
    210                 215                 220

Pro His Val Arg Met Val Thr Leu Tyr Asp Asn Glu Glu Val Gly Ser
225                 230                 235                 240

Glu Ser Ala Gln Gly Ala Gln Ser Leu Leu Thr Glu Leu Val Leu Arg
                245                 250                 255

Arg Ile Ser Ala Ser Cys Gln His Pro Thr Ala Phe Glu Glu Ala Ile
            260                 265                 270

Pro Lys Ser Phe Met Ile Ser Ala Asp Met Ala His Ala Val His Pro
        275                 280                 285

Asn Tyr Leu Asp Lys His Glu Glu Asn His Arg Pro Leu Phe His Lys
    290                 295                 300

Gly Pro Val Ile Lys Val Asn Ser Lys Gln Arg Tyr Ala Ser Asn Ala
305                 310                 315                 320

Val Ser Glu Ala Leu Ile Arg Glu Val Ala Asn Lys Val Lys Val Pro
                325                 330                 335

Leu Gln Asp Leu Met Val Arg Asn Asp Thr Pro Cys Gly Thr Thr Ile
            340                 345                 350

Gly Pro Ile Leu Ala Ser Arg Leu Gly Leu Arg Val Leu Asp Leu Gly
        355                 360                 365

Ser Pro Gln Leu Ala Met His Ser Ile Arg Glu Met Ala Cys Thr Thr
    370                 375                 380

Gly Val Leu Gln Thr Leu Thr Leu Phe Lys Gly Phe Phe Glu Leu Phe
385                 390                 395                 400

Pro Ser Leu Ser His Asn Leu Leu Val Asp
                405                 410
```

<210> 6749
<211> 273
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1449; "

<220>
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<223> /note="Gene Symbol: DNPEP; "

<220>
<221> source
<223> /note="Gene Name:
aspartyl aminopeptidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000400944"

<400> 6749

```
Met Asn Gly Lys Ala Arg Lys Glu Ala Val Gln Thr Ala Ala Lys Glu
1               5                  10                  15

Leu Leu Lys Phe Val Asn Arg Ser Pro Ser Pro Phe His Ala Val Ala
            20                  25                  30

Glu Cys Arg Asn Arg Leu Leu Gln Ala Gly Phe Ser Glu Leu Lys Glu
        35                  40                  45

Thr Glu Lys Trp Asn Ile Lys Pro Glu Ser Lys Tyr Phe Met Thr Arg
    50                  55                  60

Asn Ser Ser Thr Ile Ile Ala Phe Ala Val Gly Gly Gln Tyr Val Pro
65                  70                  75                  80

Gly Asn Gly Phe Ser Leu Ile Gly Ala His Thr Asp Ser Pro Cys Leu
                85                  90                  95

Arg Val Lys Arg Arg Ser Arg Arg Ser Gln Val Gly Phe Gln Gln Val
            100                 105                 110

Gly Val Glu Thr Tyr Gly Gly Gly Ile Trp Ser Thr Trp Phe Asp Arg
        115                 120                 125

Asp Leu Thr Leu Ala Gly Arg Val Ile Val Lys Cys Pro Thr Ser Gly
    130                 135                 140

Arg Leu Glu Gln Gln Leu Val His Val Glu Arg Pro Ile Leu Arg Ile
145                 150                 155                 160
```

```
Pro His Leu Ala Ile His Leu Gln Arg Asn Ile Asn Glu Asn Phe Gly
                165                 170                 175

Pro Asn Thr Glu Met His Leu Val Pro Ile Leu Ala Thr Ala Ile Gln
            180                 185                 190

Glu Glu Leu Glu Lys Gly Thr Pro Glu Pro Gly Pro Leu Asn Ala Val
        195                 200                 205

Asp Glu Arg His His Ser Val Leu Met Ser Leu Leu Cys Ala His Leu
    210                 215                 220

Gly Leu Ser Pro Lys Asp Ile Val Glu Met Glu Leu Cys Leu Ala Asp
225                 230                 235                 240

Thr Gln Pro Ala Val Leu Gly Gly Ala Tyr Asp Glu Phe Ile Phe Ala
                245                 250                 255

Pro Arg Leu Asp Asn Leu His Ser Cys Phe Cys Ala Leu Gln Ala Leu
            260                 265                 270

Ile
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<210> 6750
<211> 331
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1449; "

<220>
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<223> /note="Gene Symbol: DNPEP; "

<220>
<221> source
<223> /note="Gene Name:
aspartyl aminopeptidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000410684"

<400> 6750

```
Met Ala Arg Ser Leu Ser Ile Met Phe Val Pro Asn Ser Trp Leu Asn
1               5                   10                  15
```

```
Gly Tyr His Lys Val Ala Met Asn Gly Lys Ala Arg Lys Glu Ala Val
            20                  25                  30

Gln Thr Ala Ala Lys Glu Leu Leu Lys Phe Val Asn Arg Ser Pro Ser
        35                  40                  45

Pro Phe His Ala Val Ala Glu Cys Arg Asn Arg Leu Leu Gln Ala Gly
    50                  55                  60

Phe Ser Glu Leu Lys Glu Thr Glu Lys Trp Asn Ile Lys Pro Glu Ser
65                  70                  75                  80

Lys Tyr Phe Met Thr Arg Asn Ser Ser Thr Ile Ile Ala Phe Ala Val
                85                  90                  95

Gly Gly Gln Tyr Val Pro Gly Asn Gly Phe Ser Leu Ile Gly Ala His
            100                 105                 110

Thr Asp Ser Pro Cys Leu Arg Val Lys Arg Arg Ser Arg Arg Ser Gln
        115                 120                 125

Val Gly Phe Gln Gln Val Gly Val Glu Thr Tyr Gly Gly Gly Ile Trp
    130                 135                 140

Ser Thr Trp Phe Asp Arg Asp Leu Thr Leu Ala Gly Arg Val Ile Val
145                 150                 155                 160

Lys Cys Pro Thr Ser Gly Arg Leu Glu Gln Gln Leu Val His Val Glu
                165                 170                 175

Arg Pro Ile Leu Arg Ile Pro His Leu Ala Ile His Leu Gln Arg Asn
            180                 185                 190

Ile Asn Glu Asn Phe Gly Pro Asn Thr Glu Met His Leu Val Pro Ile
        195                 200                 205

Leu Ala Thr Ala Ile Gln Glu Glu Leu Glu Lys Gly Thr Pro Glu Pro
    210                 215                 220

Gly Pro Leu Asn Ala Val Val Leu Gly Gly Ala Tyr Asp Glu Phe Ile
225                 230                 235                 240
```

```
Phe Ala Pro Arg Leu Asp Asn Leu His Ser Cys Phe Cys Ala Leu Gln
                245                 250                 255

Ala Leu Ile Asp Ser Cys Ala Gly Pro Gly Ser Leu Ala Thr Glu Pro
            260                 265                 270

His Val Arg Met Val Thr Leu Tyr Asp Asn Glu Glu Val Gly Ser Glu
        275                 280                 285

Ser Ala Gln Gly Ala Gln Ser Leu Leu Thr Glu Leu Val Leu Arg Arg
    290                 295                 300

Ile Ser Ala Ser Cys Gln His Pro Thr Ala Phe Glu Glu Ala Ile Pro
305                 310                 315                 320

Lys Ser Phe Met Ile Ser Ala Asp Met Ala His
                325                 330


<210> 6751
<211> 137
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1449; "

<220>
<221> source
<223> /note="Gene Symbol: DNPEP; "

<220>
<221> source
<223> /note="Gene Name:
      aspartyl aminopeptidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000412003"

<400> 6751
Met Thr Arg Asn Ser Ser Thr Ile Ile Ala Phe Ala Val Gly Gly Gln
1               5                   10                  15

Tyr Val Pro Gly Asn Gly Phe Ser Leu Ile Gly Ala His Thr Asp Ser
            20                  25                  30

Pro Cys Leu Arg Val Lys Arg Arg Ser Arg Arg Ser Gln Val Gly Phe
```

```
        35                  40                  45

Gln Gln Val Gly Val Glu Thr Tyr Gly Gly Gly Ile Trp Ser Thr Trp
    50                  55                  60

Phe Asp Arg Asp Leu Thr Leu Ala Gly Arg Val Ile Val Lys Cys Pro
65                  70                  75                  80

Thr Ser Gly Arg Leu Glu Gln Gln Leu Val His Val Glu Arg Pro Ile
                85                  90                  95

Leu Arg Ile Pro His Leu Ala Ile His Leu Gln Arg Asn Ile Asn Glu
            100                 105                 110

Asn Phe Gly Pro Asn Thr Glu Met His Leu Val Pro Ile Leu Ala Thr
        115                 120                 125

Ala Ile Gln Glu Glu Leu Glu Lys Gly
    130                 135


<210> 6752
<211> 117
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1449; "

<220>
<221> source
<223> /note="Gene Symbol: DNPEP; "

<220>
<221> source
<223> /note="Gene Name:
      aspartyl aminopeptidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000414739"

<400> 6752
Met Thr Arg Asn Ser Ser Thr Ile Ile Ala Phe Ala Val Gly Gly Gln
1               5                   10                  15

Tyr Val Pro Gly Asn Gly Phe Ser Leu Ile Gly Ala His Thr Asp Ser
            20                  25                  30
```

```
Pro Cys Leu Arg Val Lys Arg Arg Ser Arg Arg Ser Gln Val Gly Phe
        35                  40                  45

Gln Gln Val Gly Val Glu Thr Tyr Gly Gly Gly Ile Trp Ser Thr Trp
    50                  55                  60

Phe Asp Arg Asp Leu Thr Leu Ala Gly Arg Val Ile Val Lys Cys Pro
65                  70                  75                  80

Thr Ser Gly Arg Leu Glu Gln Gln Leu Val His Val Glu Arg Pro Ile
                85                  90                  95

Leu Arg Ile Pro His Leu Ala Ile His Leu Gln Arg Asn Ile Asn Glu
            100                 105                 110

Asn Phe Gly Pro Asn
        115


<210> 6753
<211> 45
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1449; "

<220>
<221> source
<223> /note="Gene Symbol: DNPEP; "

<220>
<221> source
<223> /note="Gene Name:
      aspartyl aminopeptidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000428531"

<400> 6753
Met Ala Arg Ser Leu Ser Ile Met Phe Val Pro Asn Ser Trp Leu Asn
1               5                   10                  15

Gly Tyr His Lys His Leu Leu Lys Val Glu Ile Pro Gly Pro Gln Pro
            20                  25                  30

Lys Ser Ser Lys Ser Gly Val Ser Gly Gly His Glu Arg
```

35 40 45

<210> 6754
<211> 36
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1449; "

<220>
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<223> /note="Gene Symbol: DNPEP; "

<220>
<221> source
<223> /note="Gene Name:
aspartyl aminopeptidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000429468"

<400> 6754
Met Ser Gly His Ser Pro Thr Arg Gly Ala Met Gln Val Ser Gly Ser
1 5 10 15

Arg Arg Pro His Leu Asn Phe Asp Pro Arg Pro Gly Pro Ala Pro Ser
20 25 30

Gly Ala Gln Ala
35

<210> 6755
<211> 224
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1449; "

<220>
<221> source
<223> /note="Gene Symbol: DNPEP; "

<220>
<221> source
<223> /note="Gene Name:
aspartyl aminopeptidase; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000429960"

<400> 6755
Met Ser Gly His Ser Pro Thr Arg Gly Ala Met Gln Val Ala Met Asn
1 5 10 15

Gly Lys Ala Arg Lys Glu Ala Val Gln Thr Ala Ala Lys Glu Leu Leu
20 25 30

Lys Phe Val Asn Arg Ser Pro Ser Pro Phe His Ala Val Ala Glu Cys
35 40 45

Arg Asn Arg Leu Leu Gln Ala Gly Phe Ser Glu Leu Lys Glu Thr Glu
50 55 60

Lys Trp Asn Ile Lys Pro Glu Ser Lys Tyr Phe Met Thr Arg Asn Ser
65 70 75 80

Ser Thr Ile Ile Ala Phe Ala Val Gly Gly Gln Tyr Val Pro Gly Asn
85 90 95

Gly Phe Ser Leu Ile Gly Ala His Thr Asp Ser Pro Cys Leu Arg Val
100 105 110

Lys Arg Arg Ser Arg Arg Ser Gln Val Gly Phe Gln Gln Val Gly Val
115 120 125

Glu Thr Tyr Gly Gly Gly Ile Trp Ser Thr Trp Phe Asp Arg Asp Leu
130 135 140

Thr Leu Ala Gly Arg Val Ile Val Lys Cys Pro Thr Ser Gly Arg Leu
145 150 155 160

Glu Gln Gln Leu Val His Val Glu Arg Pro Ile Leu Arg Ile Pro His
165 170 175

Leu Ala Ile His Leu Gln Arg Asn Ile Asn Glu Asn Phe Gly Pro Asn
180 185 190

Thr Glu Met His Leu Ser Trp Val Val Pro Met Met Ser Ser Ser Leu
195 200 205

Leu Leu Gly Trp Thr Ile Cys Thr Ala Ala Ser Val Pro Cys Arg Pro

210 215 220

<210> 6756
<211> 89
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1449; "

<220>
<221> source
<223> /note="Gene Symbol: DNPEP; "

<220>
<221> source
<223> /note="Gene Name:
aspartyl aminopeptidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430630"

<400> 6756
Met Asn Gly Lys Ala Arg Lys Glu Ala Val Gln Thr Ala Ala Lys Glu
1 5 10 15

Leu Leu Lys Phe Val Asn Arg Ser Pro Ser Pro Phe His Ala Val Ala
20 25 30

Glu Cys Arg Asn Arg Leu Leu Gln Ala Gly Phe Ser Glu Leu Lys Glu
35 40 45

Thr Glu Lys Trp Asn Ile Lys Pro Glu Ser Lys Tyr Phe Met Thr Arg
50 55 60

Asn Ser Ser Thr Ile Ile Ala Phe Ala Val Gly Gly Gln Tyr Val Pro
65 70 75 80

Gly Asn Gly Phe Ser Leu Ile Gly Ala
85

<210> 6757
<211> 493
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1449; "

<220>
<221> source
<223> /note="Gene Symbol: DNPEP; "

<220>
<221> source
<223> /note="Gene Name:
aspartyl aminopeptidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431076"

<400> 6757

```
Met Ala Arg Ser Leu Ser Ile Met Phe Val Pro Asn Ser Trp Leu Asn
1               5                   10                  15


Gly Tyr His Lys Val Ala Met Asn Gly Lys Ala Arg Lys Glu Ala Val
            20                  25                  30


Gln Thr Ala Ala Lys Glu Leu Leu Lys Phe Val Asn Arg Ser Pro Ser
        35                  40                  45


Pro Phe His Ala Val Ala Glu Cys Arg Asn Arg Leu Leu Gln Ala Gly
    50                  55                  60


Phe Ser Glu Leu Lys Glu Thr Glu Lys Trp Asn Ile Lys Pro Glu Ser
65                  70                  75                  80


Lys Tyr Phe Met Thr Arg Asn Ser Ser Thr Ile Ile Ala Phe Ala Val
                85                  90                  95


Gly Gly Gln Tyr Val Pro Gly Asn Gly Phe Ser Leu Ile Gly Ala His
            100                 105                 110


Thr Asp Ser Pro Cys Leu Arg Val Lys Arg Arg Ser Arg Arg Ser Gln
        115                 120                 125


Val Gly Phe Gln Gln Val Gly Val Glu Thr Tyr Gly Gly Gly Ile Trp
    130                 135                 140


Ser Thr Trp Phe Asp Arg Asp Leu Thr Leu Ala Gly Arg Val Ile Val
145                 150                 155                 160


Lys Cys Pro Thr Ser Gly Arg Leu Glu Gln Gln Leu Val His Val Glu
```

```
                165                 170                 175

Arg Pro Ile Leu Arg Ile Pro His Leu Ala Ile His Leu Gln Arg Asn
            180                 185                 190

Ile Asn Glu Asn Phe Gly Pro Asn Thr Glu Met His Leu Val Pro Ile
        195                 200                 205

Leu Ala Thr Ala Ile Gln Glu Glu Leu Glu Lys Gly Thr Pro Glu Pro
    210                 215                 220

Gly Pro Leu Asn Ala Val Asp Glu Arg His His Ser Val Leu Met Ser
225                 230                 235                 240

Leu Leu Cys Ala His Leu Gly Leu Ser Pro Lys Asp Ile Val Glu Met
                245                 250                 255

Glu Leu Cys Leu Ala Asp Thr Gln Pro Ala Val Leu Gly Gly Ala Tyr
            260                 265                 270

Asp Glu Phe Ile Phe Ala Pro Arg Leu Asp Asn Leu His Ser Cys Phe
        275                 280                 285

Cys Ala Leu Gln Ala Leu Ile Asp Ser Cys Ala Gly Pro Gly Ser Leu
    290                 295                 300

Ala Thr Glu Pro His Val Arg Met Val Thr Leu Tyr Asp Asn Glu Glu
305                 310                 315                 320

Val Gly Ser Glu Ser Ala Gln Gly Ala Gln Ser Leu Leu Thr Glu Leu
                325                 330                 335

Val Leu Arg Arg Ile Ser Ala Ser Cys Gln His Pro Thr Ala Phe Glu
            340                 345                 350

Glu Ala Ile Pro Lys Ser Phe Met Ile Ser Ala Asp Met Ala His Ala
        355                 360                 365

Val His Pro Asn Tyr Leu Asp Lys His Glu Glu Asn His Arg Pro Leu
    370                 375                 380

Phe His Lys Gly Pro Val Ile Lys Val Asn Ser Lys Gln Arg Tyr Ala
385                 390                 395                 400
```

```
Ser Asn Ala Val Ser Glu Ala Leu Ile Arg Glu Val Ala Asn Lys Val
                405                 410                 415

Lys Val Pro Leu Gln Asp Leu Met Val Arg Asn Asp Thr Pro Cys Gly
            420                 425                 430

Thr Thr Ile Gly Pro Ile Leu Ala Ser Arg Leu Gly Leu Arg Val Leu
        435                 440                 445

Asp Leu Gly Ser Pro Gln Leu Ala Met His Ser Ile Arg Glu Met Ala
    450                 455                 460

Cys Thr Thr Gly Val Leu Gln Thr Leu Thr Leu Phe Lys Gly Phe Phe
465                 470                 475                 480

Glu Leu Phe Pro Ser Leu Ser His Asn Leu Leu Val Asp
                485                 490


<210> 6758
<211> 346
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1450; "

<220>
<221> source
<223> /note="Gene Symbol: AGA; "

<220>
<221> source
<223> /note="Gene Name:
      aspartylglucosaminidase; "

<220>
<221> source
<223> /note="Uniprot ID:  P20933; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000264595"

<400> 6758
Met Ala Arg Lys Ser Asn Leu Pro Val Leu Leu Val Pro Phe Leu Leu
1               5                   10                  15
```

```
Cys Gln Ala Leu Val Arg Cys Ser Ser Pro Leu Pro Leu Val Val Asn
            20                  25                  30

Thr Trp Pro Phe Lys Asn Ala Thr Glu Ala Ala Trp Arg Ala Leu Ala
        35                  40                  45

Ser Gly Gly Ser Ala Leu Asp Ala Val Glu Ser Gly Cys Ala Met Cys
    50                  55                  60

Glu Arg Glu Gln Cys Asp Gly Ser Val Gly Phe Gly Gly Ser Pro Asp
65                  70                  75                  80

Glu Leu Gly Glu Thr Thr Leu Asp Ala Met Ile Met Asp Gly Thr Thr
                85                  90                  95

Met Asp Val Gly Ala Val Gly Asp Leu Arg Arg Ile Lys Asn Ala Ile
            100                 105                 110

Gly Val Ala Arg Lys Val Leu Glu His Thr Thr His Thr Leu Leu Val
        115                 120                 125

Gly Glu Ser Ala Thr Thr Phe Ala Gln Ser Met Gly Phe Ile Asn Glu
    130                 135                 140

Asp Leu Ser Thr Thr Ala Ser Gln Ala Leu His Ser Asp Trp Leu Ala
145                 150                 155                 160

Arg Asn Cys Gln Pro Asn Tyr Trp Arg Asn Val Ile Pro Asp Pro Ser
                165                 170                 175

Lys Tyr Cys Gly Pro Tyr Lys Pro Pro Gly Ile Leu Lys Gln Asp Ile
            180                 185                 190

Pro Ile His Lys Glu Thr Glu Asp Asp Arg Gly His Asp Thr Ile Gly
        195                 200                 205

Met Val Val Ile His Lys Thr Gly His Ile Ala Ala Gly Thr Ser Thr
    210                 215                 220

Asn Gly Ile Lys Phe Lys Ile His Gly Arg Val Gly Asp Ser Pro Ile
225                 230                 235                 240

Pro Gly Ala Gly Ala Tyr Ala Asp Asp Thr Ala Gly Ala Ala Ala Ala
```

```
                245                 250                 255

Thr Gly Asn Gly Asp Ile Leu Met Arg Phe Leu Pro Ser Tyr Gln Ala
            260                 265                 270

Val Glu Tyr Met Arg Arg Gly Glu Asp Pro Thr Ile Ala Cys Gln Lys
        275                 280                 285

Val Ile Ser Arg Ile Gln Lys His Phe Pro Glu Phe Phe Gly Ala Val
    290                 295                 300

Ile Cys Ala Asn Val Thr Gly Ser Tyr Gly Ala Ala Cys Asn Lys Leu
305                 310                 315                 320

Ser Thr Phe Thr Gln Phe Ser Phe Met Val Tyr Asn Ser Glu Lys Asn
                325                 330                 335

Gln Pro Thr Glu Glu Lys Val Asp Cys Ile
            340                 345


<210> 6759
<211> 138
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1450; "

<220>
<221> source
<223> /note="Gene Symbol: AGA; "

<220>
<221> source
<223> /note="Gene Name:
      aspartylglucosaminidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000421471"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6759
Xaa Gly Asp Leu Arg Arg Ile Lys Asn Ala Ile Gly Val Ala Arg Lys
```

```
1               5                   10                  15

Val Leu Glu His Thr Thr His Thr Leu Leu Val Gly Glu Ser Ala Thr
            20                  25                  30

Thr Phe Ala Gln Ser Met Gly Phe Ile Asn Glu Asp Leu Ser Thr Thr
        35                  40                  45

Ala Ser Gln Ala Leu His Ser Asp Trp Leu Ala Arg Asn Cys Gln Pro
    50                  55                  60

Asn Tyr Trp Arg Asn Val Ile Pro Asp Pro Ser Lys Tyr Cys Gly Pro
65                  70                  75                  80

Tyr Lys Pro Pro Gly Ile Leu Lys Gln Asp Ile Pro Ile His Lys Glu
                85                  90                  95

Thr Glu Asp Asp Arg Gly His Asp Thr Ile Gly Met Val Val Ile His
            100                 105                 110

Lys Thr Gly His Ile Ala Ala Gly Thr Ser Thr Asn Gly Asp Ser Pro
        115                 120                 125

Ile Pro Gly Ala Gly Ala Tyr Ala Asp Asp
    130                 135


<210> 6760
<211> 154
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1450; "

<220>
<221> source
<223> /note="Gene Symbol: AGA; "

<220>
<221> source
<223> /note="Gene Name:
      aspartylglucosaminidase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000423798"
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<400> 6760
Arg Lys Val Leu Glu His Thr Thr His Thr Leu Leu Val Gly Glu Ser
1   5   10   15

Ala Thr Thr Phe Ala Gln Ser Met Gly Phe Ile Asn Glu Asp Leu Ser
            20   25   30

Thr Thr Ala Ser Gln Ala Leu His Ser Asp Trp Leu Ala Arg Asn Cys
        35   40   45

Gln Pro Asn Tyr Trp Arg Asn Val Ile Pro Asp Pro Ser Lys Tyr Cys
    50   55   60

Gly Pro Tyr Lys Pro Pro Gly Ile Leu Lys Gln Asp Ile Pro Ile His
65   70   75   80

Lys Glu Thr Glu Asp Asp Arg Gly His Asp Thr Ile Gly Asp Ser Pro
                85   90   95

Ile Pro Gly Ala Gly Ala Tyr Ala Asp Asp Thr Ala Gly Ala Ala Ala
            100   105   110

Ala Thr Gly Asn Gly Asp Ile Leu Met Arg Phe Leu Pro Ser Tyr Gln
        115   120   125

Ala Val Glu Tyr Met Arg Arg Gly Glu Asp Pro Thr Ile Ala Cys Gln
    130   135   140

Lys Val Ile Ser Arg Ile Gln Lys His Phe
145   150

<210> 6761
<211> 501
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1451; "

<220>
<221> source
<223> /note="Gene Symbol: DARS; "

<220>
<221> source
<223> /note="Gene Name:

aspartyl-tRNA
synthetase; "

<220>
<221> source
<223> /note="Uniprot ID: P14868; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000264161"

<400> 6761

```
Met Pro Ser Ala Ser Ala Ser Arg Lys Ser Gln Glu Lys Pro Arg Glu
1               5                   10                  15

Ile Met Asp Ala Ala Glu Asp Tyr Ala Lys Glu Arg Tyr Gly Ile Ser
            20                  25                  30

Ser Met Ile Gln Ser Gln Glu Lys Pro Asp Arg Val Leu Val Arg Val
        35                  40                  45

Arg Asp Leu Thr Ile Gln Lys Ala Asp Glu Val Val Trp Val Arg Ala
    50                  55                  60

Arg Val His Thr Ser Arg Ala Lys Gly Lys Gln Cys Phe Leu Val Leu
65                  70                  75                  80

Arg Gln Gln Gln Phe Asn Val Gln Ala Leu Val Ala Val Gly Asp His
                85                  90                  95

Ala Ser Lys Gln Met Val Lys Phe Ala Ala Asn Ile Asn Lys Glu Ser
            100                 105                 110

Ile Val Asp Val Glu Gly Val Val Arg Lys Val Asn Gln Lys Ile Gly
        115                 120                 125

Ser Cys Thr Gln Gln Asp Val Glu Leu His Val Gln Lys Ile Tyr Val
    130                 135                 140

Ile Ser Leu Ala Glu Pro Arg Leu Pro Leu Gln Leu Asp Asp Ala Val
145                 150                 155                 160

Arg Pro Glu Ala Glu Gly Glu Glu Glu Gly Arg Ala Thr Val Asn Gln
                165                 170                 175

Asp Thr Arg Leu Asp Asn Arg Val Ile Asp Leu Arg Thr Ser Thr Ser
```

```
            180                 185                 190

Gln Ala Val Phe Arg Leu Gln Ser Gly Ile Cys His Leu Phe Arg Glu
        195                 200                 205

Thr Leu Ile Asn Lys Gly Phe Val Glu Ile Gln Thr Pro Lys Ile Ile
    210                 215                 220

Ser Ala Ala Ser Glu Gly Gly Ala Asn Val Phe Thr Val Ser Tyr Phe
225                 230                 235                 240

Lys Asn Asn Ala Tyr Leu Ala Gln Ser Pro Gln Leu Tyr Lys Gln Met
                245                 250                 255

Cys Ile Cys Ala Asp Phe Glu Lys Val Phe Ser Ile Gly Pro Val Phe
            260                 265                 270

Arg Ala Glu Asp Ser Asn Thr His Arg His Leu Thr Glu Phe Val Gly
        275                 280                 285

Leu Asp Ile Glu Met Ala Phe Asn Tyr His Tyr His Glu Val Met Glu
    290                 295                 300

Glu Ile Ala Asp Thr Met Val Gln Ile Phe Lys Gly Leu Gln Glu Arg
305                 310                 315                 320

Phe Gln Thr Glu Ile Gln Thr Val Asn Lys Gln Phe Pro Cys Glu Pro
                325                 330                 335

Phe Lys Phe Leu Glu Pro Thr Leu Arg Leu Glu Tyr Cys Glu Ala Leu
            340                 345                 350

Ala Met Leu Arg Glu Ala Gly Val Glu Met Gly Asp Glu Asp Asp Leu
        355                 360                 365

Ser Thr Pro Asn Glu Lys Leu Leu Gly His Leu Val Lys Glu Lys Tyr
    370                 375                 380

Asp Thr Asp Phe Tyr Ile Leu Asp Lys Tyr Pro Leu Ala Val Arg Pro
385                 390                 395                 400

Phe Tyr Thr Met Pro Asp Pro Arg Asn Pro Lys Gln Ser Asn Ser Tyr
                405                 410                 415
```

```
Asp Met Phe Met Arg Gly Glu Glu Ile Leu Ser Gly Ala Gln Arg Ile
            420                 425                 430

His Asp Pro Gln Leu Leu Thr Glu Arg Ala Leu His His Gly Ile Asp
        435                 440                 445

Leu Glu Lys Ile Lys Ala Tyr Ile Asp Ser Phe Arg Phe Gly Ala Pro
    450                 455                 460

Pro His Ala Gly Gly Gly Ile Gly Leu Glu Arg Val Thr Met Leu Phe
465                 470                 475                 480

Leu Gly Leu His Asn Val Arg Gln Thr Ser Met Phe Pro Arg Asp Pro
                485                 490                 495

Lys Arg Leu Thr Pro
            500
```

<210> 6762
<211> 188
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1451; "

<220>
<221> source
<223> /note="Gene Symbol: DARS; "

<220>
<221> source
<223> /note="Gene Name:
aspartyl-tRNA
synthetase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000387508"

<400> 6762

```
Val Gly Leu Asp Ile Glu Met Ala Phe Asn Tyr His Tyr His Glu Val
1               5                   10                  15

Met Glu Glu Ile Ala Asp Thr Met Val Gln Ile Phe Lys Gly Leu Gln
            20                  25                  30
```

```
Glu Arg Phe Gln Thr Glu Ile Gln Thr Val Asn Lys Gln Phe Pro Cys
        35                  40                  45

Glu Pro Phe Lys Phe Leu Glu Pro Thr Leu Arg Leu Glu Tyr Cys Glu
    50                  55                  60

Ala Leu Ala Met Leu Arg Glu Ala Gly Val Glu Met Gly Asp Glu Asp
65                  70                  75                  80

Asp Leu Ser Thr Pro Asn Glu Lys Leu Leu Gly His Leu Val Lys Glu
                85                  90                  95

Lys Lys Gln Ser Asn Ser Tyr Asp Met Phe Met Arg Gly Glu Glu Ile
            100                 105                 110

Leu Ser Gly Ala Gln Arg Ile His Asp Pro Gln Leu Leu Thr Glu Arg
        115                 120                 125

Ala Leu His His Gly Ile Asp Leu Glu Lys Ile Lys Ala Tyr Ile Asp
    130                 135                 140

Ser Phe Arg Phe Gly Ala Pro Pro His Ala Gly Gly Gly Ile Gly Leu
145                 150                 155                 160

Glu Arg Val Thr Met Leu Phe Leu Gly Leu His Asn Val Arg Gln Thr
                165                 170                 175

Ser Met Phe Pro Arg Asp Pro Lys Arg Leu Thr Pro
            180                 185


<210> 6763
<211> 135
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1451; "

<220>
<221> source
<223> /note="Gene Symbol: DARS; "

<220>
<221> source
<223> /note="Gene Name:
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aspartyl-tRNA
synthetase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000388801"

<400> 6763
Met Ile Gln Ser Gln Glu Lys Pro Asp Arg Val Leu Val Arg Val Arg
1 5 10 15

Asp Leu Thr Ile Gln Lys Ala Asp Glu Val Val Trp Val Arg Ala Arg
20 25 30

Val His Thr Ser Arg Ala Lys Gly Lys Gln Cys Phe Leu Val Leu Arg
35 40 45

Gln Gln Gln Phe Asn Val Gln Ala Leu Val Ala Val Gly Asp His Ala
50 55 60

Ser Lys Gln Met Val Lys Phe Ala Ala Asn Ile Asn Lys Glu Ser Ile
65 70 75 80

Val Asp Val Glu Gly Val Val Arg Lys Val Asn Gln Lys Ile Gly Ser
85 90 95

Cys Thr Gln Gln Asp Val Glu Leu His Val Gln Lys Ile Tyr Val Ile
100 105 110

Ser Leu Ala Glu Pro Arg Leu Pro Leu Gln Leu Asp Asp Ala Val Arg
115 120 125

Pro Glu Ala Glu Gly Glu Glu
130 135

<210> 6764
<211> 182
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1451; "

<220>
<221> source
<223> /note="Gene Symbol: DARS; "

<220>
<221> source
<223> /note="Gene Name:
aspartyl-tRNA
synthetase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000389867"

<400> 6764

```
Met Ile Gln Ser Gln Glu Lys Pro Asp Arg Val Leu Val Arg Val Arg
1               5                  10                  15

Asp Leu Thr Ile Gln Lys Ala Asp Glu Val Val Trp Val Arg Ala Arg
            20                  25                  30

Val His Thr Ser Arg Ala Lys Gly Lys Gln Cys Phe Leu Val Leu Arg
        35                  40                  45

Gln Gln Gln Phe Asn Val Gln Ala Leu Val Ala Val Gly Asp His Ala
    50                  55                  60

Ser Lys Gln Met Val Lys Phe Ala Ala Asn Ile Asn Lys Glu Ser Ile
65                  70                  75                  80

Val Asp Val Glu Gly Val Val Arg Lys Val Asn Gln Lys Ile Gly Ser
                85                  90                  95

Cys Thr Gln Gln Asp Val Glu Leu His Val Gln Lys Ile Tyr Val Ile
            100                 105                 110

Ser Leu Ala Glu Pro Arg Leu Pro Leu Gln Leu Asp Asp Ala Val Arg
        115                 120                 125

Pro Glu Ala Glu Gly Glu Glu Glu Gly Arg Ala Thr Val Asn Gln Asp
    130                 135                 140

Thr Arg Leu Asp Asn Arg Val Ile Asp Leu Arg Thr Ser Thr Ser Gln
145                 150                 155                 160

Ala Val Phe Arg Leu Gln Ser Gly Ile Cys His Leu Phe Arg Glu Thr
                165                 170                 175

Leu Ile Asn Lys Gly Phe
            180
```

<210> 6765
<211> 175
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1451; "

<220>
<221> source
<223> /note="Gene Symbol: DARS; "

<220>
<221> source
<223> /note="Gene Name:
aspartyl-tRNA
synthetase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000397616"

<400> 6765
Met Ile Gln Ser Gln Glu Lys Pro Asp Arg Val Leu Val Arg Val Arg
1 5 10 15

Asp Leu Thr Ile Gln Lys Ala Asp Glu Val Val Trp Val Arg Ala Arg
20 25 30

Val His Thr Ser Arg Ala Lys Gly Lys Gln Cys Phe Leu Val Leu Arg
35 40 45

Gln Gln Gln Phe Asn Val Gln Ala Leu Val Ala Val Gly Asp His Ala
50 55 60

Ser Lys Gln Met Val Lys Phe Ala Ala Asn Ile Asn Lys Glu Ser Ile
65 70 75 80

Val Asp Val Glu Gly Val Val Arg Lys Val Asn Gln Lys Ile Gly Ser
85 90 95

Cys Thr Gln Gln Asp Val Glu Leu His Val Gln Lys Ile Tyr Val Ile
100 105 110

Ser Leu Ala Glu Pro Arg Leu Pro Leu Gln Leu Asp Asp Ala Val Arg
115 120 125

```
Pro Glu Ala Glu Gly Glu Glu Glu Gly Arg Ala Thr Val Asn Gln Asp
    130                 135                 140

Thr Arg Leu Asp Asn Arg Val Ile Asp Leu Arg Thr Ser Thr Ser Gln
145                 150                 155                 160

Ala Val Phe Arg Leu Gln Ser Gly Ile Cys His Leu Phe Arg Glu
                165                 170                 175

<210> 6766
<211> 179
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1451; "

<220>
<221> source
<223> /note="Gene Symbol: DARS; "

<220>
<221> source
<223> /note="Gene Name:
      aspartyl-tRNA
      synthetase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000404445"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6766
Xaa Gly Gly Asp Trp Glu Gly Gly Arg Ser Pro Phe Gly Leu Pro Tyr
1               5                   10                  15

Gly Ser Leu Arg Gly Arg Val Val Ser Thr Ala Gln Phe Arg Val Pro
            20                  25                  30

Met Pro Ser Ala Ser Ala Ser Arg Lys Ser Gln Glu Lys Pro Arg Glu
        35                  40                  45

Ile Met Asp Ala Ala Glu Asp Tyr Ala Lys Glu Arg Tyr Gly Ile Ser
    50                  55                  60
```

```
Ser Met Ile Gln Ser Gln Glu Lys Pro Asp Arg Val Leu Val Arg Val
65                  70                  75                  80

Arg Asp Leu Thr Ile Gln Lys Ala Asp Glu Val Val Trp Val Arg Ala
                85                  90                  95

Arg Val His Thr Ser Arg Ala Lys Gly Lys Gln Cys Phe Leu Val Leu
            100                 105                 110

Arg Gln Gln Gln Phe Asn Val Gln Ala Leu Val Ala Val Gly Asp His
        115                 120                 125

Ala Ser Lys Gln Met Val Lys Phe Ala Ala Asn Ile Asn Lys Glu Ser
    130                 135                 140

Ile Val Asp Val Glu Gly Val Val Arg Lys Val Asn Gln Lys Ile Gly
145                 150                 155                 160

Ser Cys Thr Gln Gln Asp Val Glu Leu His Val Gln Lys Val Ser Phe
                165                 170                 175

Phe Lys Ile
```

<210> 6767
<211> 645
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1452; "

<220>
<221> source
<223> /note="Gene Symbol: DARS2; "

<220>
<221> source
<223> /note="Gene Name:
aspartyl-tRNA synthetase 2,
mitochondrial; "

<220>
<221> source
<223> /note="Uniprot ID: Q6PI48; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000355086"

<400> 6767
Met Tyr Phe Pro Ser Trp Leu Ser Gln Leu Tyr Arg Gly Leu Ser Arg
1 5 10 15

Pro Ile Arg Arg Thr Thr Gln Pro Ile Trp Gly Ser Leu Tyr Arg Ser
20 25 30

Leu Leu Gln Ser Ser Gln Arg Arg Ile Pro Glu Phe Ser Ser Phe Val
35 40 45

Val Arg Thr Asn Thr Cys Gly Glu Leu Arg Ser Ser His Leu Gly Gln
50 55 60

Glu Val Thr Leu Cys Gly Trp Ile Gln Tyr Arg Arg Gln Asn Thr Phe
65 70 75 80

Leu Val Leu Arg Asp Phe Asp Gly Leu Val Gln Val Ile Ile Pro Gln
85 90 95

Asp Glu Ser Ala Ala Ser Val Lys Lys Ile Leu Cys Glu Ala Pro Val
100 105 110

Glu Ser Val Val Gln Val Ser Gly Thr Val Ile Ser Arg Pro Ala Gly
115 120 125

Gln Glu Asn Pro Lys Met Pro Thr Gly Glu Ile Glu Ile Lys Val Lys
130 135 140

Thr Ala Glu Leu Leu Asn Ala Cys Lys Lys Leu Pro Phe Glu Ile Lys
145 150 155 160

Asn Phe Val Lys Lys Thr Glu Ala Leu Arg Leu Gln Tyr Arg Tyr Leu
165 170 175

Asp Leu Arg Ser Phe Gln Met Gln Tyr Asn Leu Arg Leu Arg Ser Gln
180 185 190

Met Val Met Lys Met Arg Glu Tyr Leu Cys Asn Leu His Gly Phe Val
195 200 205

```
Asp Ile Glu Thr Pro Thr Leu Phe Lys Arg Thr Pro Gly Gly Ala Lys
    210                 215                 220

Glu Phe Leu Val Pro Ser Arg Glu Pro Gly Lys Phe Tyr Ser Leu Pro
225                 230                 235                 240

Gln Ser Pro Gln Gln Phe Lys Gln Leu Leu Met Val Gly Gly Leu Asp
                245                 250                 255

Arg Tyr Phe Gln Val Ala Arg Cys Tyr Arg Asp Glu Gly Ser Arg Pro
            260                 265                 270

Asp Arg Gln Pro Glu Phe Thr Gln Ile Asp Ile Glu Met Ser Phe Val
        275                 280                 285

Asp Gln Thr Gly Ile Gln Ser Leu Ile Glu Gly Leu Leu Gln Tyr Ser
    290                 295                 300

Trp Pro Asn Asp Lys Asp Pro Val Val Val Pro Phe Pro Thr Met Thr
305                 310                 315                 320

Phe Ala Glu Val Leu Ala Thr Tyr Gly Thr Asp Lys Pro Asp Thr Arg
                325                 330                 335

Phe Gly Met Lys Ile Ile Asp Ile Ser Asp Val Phe Arg Asn Thr Glu
            340                 345                 350

Ile Gly Phe Leu Gln Asp Ala Leu Ser Lys Pro His Gly Thr Val Lys
        355                 360                 365

Ala Ile Cys Ile Pro Glu Gly Ala Lys Tyr Leu Lys Arg Lys Asp Ile
    370                 375                 380

Glu Ser Ile Arg Asn Phe Ala Ala Asp His Phe Asn Gln Glu Ile Leu
385                 390                 395                 400

Pro Val Phe Leu Asn Ala Asn Arg Asn Trp Asn Ser Pro Val Ala Asn
                405                 410                 415

Phe Ile Met Glu Ser Gln Arg Leu Glu Leu Ile Arg Leu Met Glu Thr
            420                 425                 430

Gln Glu Glu Asp Val Val Leu Leu Thr Ala Gly Glu His Asn Lys Ala
```

435 440 445

Cys Ser Leu Leu Gly Lys Leu Arg Leu Glu Cys Ala Asp Leu Leu Glu
450 455 460

Thr Arg Gly Val Val Leu Arg Asp Pro Thr Leu Phe Ser Phe Leu Trp
465 470 475 480

Val Val Asp Phe Pro Leu Phe Leu Pro Lys Glu Glu Asn Pro Arg Glu
485 490 495

Leu Glu Ser Ala His His Pro Phe Thr Ala Pro His Pro Ser Asp Ile
500 505 510

His Leu Leu Tyr Thr Glu Pro Lys Lys Ala Arg Ser Gln His Tyr Asp
515 520 525

Leu Val Leu Asn Gly Asn Glu Ile Gly Gly Gly Ser Ile Arg Ile His
530 535 540

Asn Ala Glu Leu Gln Arg Tyr Ile Leu Ala Thr Leu Leu Lys Glu Asp
545 550 555 560

Val Lys Met Leu Ser His Leu Leu Gln Ala Leu Asp Tyr Gly Ala Pro
565 570 575

Pro His Gly Gly Ile Ala Leu Gly Leu Asp Arg Leu Ile Cys Leu Val
580 585 590

Thr Gly Ser Pro Ser Ile Arg Asp Val Ile Ala Phe Pro Lys Ser Phe
595 600 605

Arg Gly His Asp Leu Met Ser Asn Thr Pro Asp Ser Val Pro Pro Glu
610 615 620

Glu Leu Lys Pro Tyr His Ile Arg Val Ser Lys Pro Thr Asp Ser Lys
625 630 635 640

Ala Glu Arg Ala His
645

<210> 6768
<211> 243

<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1453; "

<220>
<221> source
<223> /note="Gene Symbol: ASPN; "

<220>
<221> source
<223> /note="Gene Name:
asporin; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000364693"

<400> 6768
Met Lys Glu Tyr Val Leu Leu Leu Phe Leu Ala Leu Cys Ser Ala Lys
1 5 10 15

Pro Phe Phe Ser Pro Ser His Ile Ala Leu Lys Asn Met Met Leu Lys
20 25 30

Asp Met Glu Asp Thr Asp Asp Asp Asp Asp Asp Asp Asp Asp Asp Asp
35 40 45

Asp Asp Asp Glu Asp Asn Ser Leu Phe Pro Thr Arg Glu Pro Arg Ser
50 55 60

His Phe Phe Pro Phe Asp Leu Phe Pro Met Cys Pro Phe Gly Cys Gln
65 70 75 80

Cys Tyr Ser Arg Val Val His Cys Ser Asp Leu Gly Leu Thr Ser Val
85 90 95

Pro Thr Asn Ile Pro Phe Asp Thr Arg Met Leu Asp Leu Gln Asn Asn
100 105 110

Lys Ile Lys Glu Ile Lys Glu Asn Asp Phe Lys Gly Leu Thr Ser Leu
115 120 125

Tyr Gly Leu Ile Leu Asn Asn Asn Lys Leu Thr Lys Ile His Pro Lys
130 135 140

```
Ala Phe Leu Thr Thr Lys Lys Leu Arg Arg Leu Tyr Leu Ser His Asn
145                 150                 155                 160

Gln Leu Ser Glu Ile Pro Leu Asn Leu Pro Lys Ser Leu Ala Glu Leu
                165                 170                 175

Arg Ile His Glu Asn Lys Val Lys Lys Ile Gln Lys Asp Thr Phe Lys
            180                 185                 190

Gly Met Asn Ala Leu His Val Leu Glu Met Ser Ala Asn Pro Leu Asp
        195                 200                 205

Asn Asn Gly Ile Glu Pro Gly Ala Phe Glu Gly Val Thr Val Phe His
    210                 215                 220

Ile Arg Ile Ala Glu Ala Lys Leu Thr Ser Val Pro Lys Asp Asn Leu
225                 230                 235                 240

Pro Ser Phe
```

<210> 6769
<211> 380
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1453; "

<220>
<221> source
<223> /note="Gene Symbol: ASPN; "

<220>
<221> source
<223> /note="Gene Name:
asporin; "

<220>
<221> source
<223> /note="Uniprot ID: Q9BXN1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000364694"

<400> 6769

```
Met Lys Glu Tyr Val Leu Leu Leu Phe Leu Ala Leu Cys Ser Ala Lys
1               5                   10                  15
```

```
Pro Phe Phe Ser Pro Ser His Ile Ala Leu Lys Asn Met Met Leu Lys
            20                  25                  30

Asp Met Glu Asp Thr Asp Asp Asp Asp Asp Asp Asp Asp Asp Asp Asp
        35                  40                  45

Asp Asp Asp Glu Asp Asn Ser Leu Phe Pro Thr Arg Glu Pro Arg Ser
    50                  55                  60

His Phe Phe Pro Phe Asp Leu Phe Pro Met Cys Pro Phe Gly Cys Gln
65                  70                  75                  80

Cys Tyr Ser Arg Val Val His Cys Ser Asp Leu Gly Leu Thr Ser Val
                85                  90                  95

Pro Thr Asn Ile Pro Phe Asp Thr Arg Met Leu Asp Leu Gln Asn Asn
            100                 105                 110

Lys Ile Lys Glu Ile Lys Glu Asn Asp Phe Lys Gly Leu Thr Ser Leu
        115                 120                 125

Tyr Gly Leu Ile Leu Asn Asn Asn Lys Leu Thr Lys Ile His Pro Lys
    130                 135                 140

Ala Phe Leu Thr Thr Lys Lys Leu Arg Arg Leu Tyr Leu Ser His Asn
145                 150                 155                 160

Gln Leu Ser Glu Ile Pro Leu Asn Leu Pro Lys Ser Leu Ala Glu Leu
                165                 170                 175

Arg Ile His Glu Asn Lys Val Lys Lys Ile Gln Lys Asp Thr Phe Lys
            180                 185                 190

Gly Met Asn Ala Leu His Val Leu Glu Met Ser Ala Asn Pro Leu Asp
        195                 200                 205

Asn Asn Gly Ile Glu Pro Gly Ala Phe Glu Gly Val Thr Val Phe His
    210                 215                 220

Ile Arg Ile Ala Glu Ala Lys Leu Thr Ser Val Pro Lys Gly Leu Pro
225                 230                 235                 240
```

```
Pro Thr Leu Leu Glu Leu His Leu Asp Tyr Asn Lys Ile Ser Thr Val
                245                 250                 255

Glu Leu Glu Asp Phe Lys Arg Tyr Lys Glu Leu Gln Arg Leu Gly Leu
            260                 265                 270

Gly Asn Asn Lys Ile Thr Asp Ile Glu Asn Gly Ser Leu Ala Asn Ile
        275                 280                 285

Pro Arg Val Arg Glu Ile His Leu Glu Asn Asn Lys Leu Lys Lys Ile
    290                 295                 300

Pro Ser Gly Leu Pro Glu Leu Lys Tyr Leu Gln Ile Ile Phe Leu His
305                 310                 315                 320

Ser Asn Ser Ile Ala Arg Val Gly Val Asn Asp Phe Cys Pro Thr Val
                325                 330                 335

Pro Lys Met Lys Lys Ser Leu Tyr Ser Ala Ile Ser Leu Phe Asn Asn
            340                 345                 350

Pro Val Lys Tyr Trp Glu Met Gln Pro Ala Thr Phe Arg Cys Val Leu
        355                 360                 365

Ser Arg Met Ser Val Gln Leu Gly Asn Phe Gly Met
    370                 375                 380


<210> 6770
<211> 431
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1454; "

<220>
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<223> /note="Gene Symbol: ASTL; "

<220>
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<223> /note="Gene Name:
      astacin-like metallo-endopeptidase (M12
      family); "

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<221> source
<223> /note="Uniprot ID: Q6HA08; "

<220>
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Met Glu Gly Val Gly Gly Leu Trp Pro Trp Val Leu Gly Leu Leu Ser
1   5   10   15

Leu Pro Gly Val Ile Leu Gly Ala Pro Leu Ala Ser Ser Cys Ala Gly
            20   25   30

Ala Cys Gly Thr Ser Phe Pro Asp Gly Leu Thr Pro Glu Gly Thr Gln
        35   40   45

Ala Ser Gly Asp Lys Asp Ile Pro Ala Ile Asn Gln Gly Leu Ile Leu
    50   55   60

Glu Glu Thr Pro Glu Ser Ser Phe Leu Ile Glu Gly Asp Ile Ile Arg
65   70   75   80

Pro Ser Pro Phe Arg Leu Leu Ser Ala Thr Ser Asn Lys Trp Pro Met
                85   90   95

Gly Gly Ser Gly Val Val Glu Val Pro Phe Leu Leu Ser Ser Lys Tyr
            100   105   110

Asp Glu Pro Ser Arg Gln Val Ile Leu Glu Ala Leu Ala Glu Phe Glu
        115   120   125

Arg Ser Thr Cys Ile Arg Phe Val Thr Tyr Gln Asp Gln Arg Asp Phe
    130   135   140

Ile Ser Ile Ile Pro Met Tyr Gly Cys Phe Ser Ser Val Gly Arg Ser
145   150   155   160

Gly Gly Met Gln Val Val Ser Leu Ala Pro Thr Cys Leu Gln Lys Gly
                165   170   175

Arg Gly Ile Val Leu His Glu Leu Met His Val Leu Gly Phe Trp His
            180   185   190

Glu His Thr Arg Ala Asp Arg Asp Arg Tyr Ile Arg Val Asn Trp Asn

```
        195                 200                 205

Glu Ile Leu Pro Gly Phe Glu Ile Asn Phe Ile Lys Ser Gln Ser Ser
    210                 215                 220

Asn Met Leu Thr Pro Tyr Asp Tyr Ser Ser Val Met His Tyr Gly Arg
225                 230                 235                 240

Leu Ala Phe Ser Arg Arg Gly Leu Pro Thr Ile Thr Pro Leu Trp Ala
                245                 250                 255

Pro Ser Val His Ile Gly Gln Arg Trp Asn Leu Ser Ala Ser Asp Ile
            260                 265                 270

Thr Arg Val Leu Lys Leu Tyr Gly Cys Ser Pro Ser Gly Pro Arg Pro
        275                 280                 285

Arg Gly Arg Gly Ser His Ala His Ser Thr Gly Arg Ser Pro Ala Pro
    290                 295                 300

Ala Ser Leu Ser Leu Gln Arg Leu Leu Glu Ala Leu Ser Ala Glu Ser
305                 310                 315                 320

Arg Ser Pro Asp Pro Ser Gly Ser Ser Ala Gly Gly Gln Pro Val Pro
                325                 330                 335

Ala Gly Pro Gly Glu Ser Pro His Gly Trp Glu Ser Pro Ala Leu Lys
            340                 345                 350

Lys Leu Ser Ala Glu Ala Ser Ala Arg Gln Pro Gln Thr Leu Ala Ser
        355                 360                 365

Ser Pro Arg Ser Arg Pro Gly Ala Gly Ala Pro Gly Val Ala Gln Glu
    370                 375                 380

Gln Ser Trp Leu Ala Gly Val Ser Thr Lys Pro Thr Val Pro Ser Ser
385                 390                 395                 400

Glu Ala Gly Ile Gln Pro Val Pro Val Gln Gly Ser Pro Ala Leu Pro
                405                 410                 415

Gly Gly Cys Val Pro Arg Asn His Phe Lys Gly Met Ser Glu Asp
            420                 425                 430
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<210> 6771
<211> 679
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1455; "

<220>
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<223> /note="Gene Symbol: ASTE1; "

<220>
<221> source
<223> /note="Gene Name:
asteroid homolog 1 (Drosophila); "

<220>
<221> source
<223> /note="Uniprot ID: Q2TB18; "

<220>
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<223> /note="ENSP ID: ENSP00000264992"

<400> 6771

Met	Gly	Ile	Arg	Gly	Leu	Met	Ser	Phe	Val	Glu	Asp	His	Ser	Asn	Glu
1				5				10						15	

Phe	Phe	Thr	Asp	Leu	Lys	Leu	Arg	Asp	Thr	Lys	Ile	Val	Ile	Asp	Gly
			20					25					30		

Tyr	Ala	Leu	Phe	His	Arg	Leu	Cys	Phe	Ser	Ser	Asn	Leu	Asp	Leu	Arg
		35					40					45			

Tyr	Gly	Gly	Asp	Tyr	Asp	Ser	Phe	Ala	Asp	Val	Val	Gln	Lys	Phe	Phe
	50					55					60				

Glu	Ser	Leu	Phe	Ala	Cys	Asn	Ile	Cys	Pro	Tyr	Val	Val	Leu	Asp	Gly
65					70					75					80

Gly	Cys	Asp	Ile	Ser	Asp	Lys	Lys	Leu	Thr	Thr	Leu	Lys	Asp	Arg	Ala
				85					90					95	

Arg	Glu	Lys	Ile	Gln	Met	Ala	His	Ser	Leu	Ser	Val	Gly	Gly	Ser	Gly
			100					105					110		

```
Tyr Val Cys Pro Leu Leu Ile Arg Glu Val Phe Ile Gln Val Leu Ile
        115                 120                 125

Lys Leu Arg Val Cys Phe Val Gln Cys Phe Ser Glu Ala Asp Arg Asp
    130                 135                 140

Ile Met Thr Leu Ala Asn His Trp Asn Cys Pro Val Leu Ser Ser Asp
145                 150                 155                 160

Ser Asp Phe Cys Ile Phe Asp Leu Lys Thr Gly Phe Cys Pro Leu Asn
                165                 170                 175

Ser Phe Gln Trp Arg Asn Met Asn Thr Ile Lys Gly Thr Gln Asn Tyr
            180                 185                 190

Ile Pro Ala Lys Cys Phe Ser Leu Asp Ala Phe Cys His His Phe Ser
        195                 200                 205

Asn Met Asn Lys Ala Leu Leu Pro Leu Phe Ala Val Leu Cys Gly Asn
    210                 215                 220

Asp His Val Asn Leu Pro Ile Met Glu Thr Phe Leu Ser Lys Ala Arg
225                 230                 235                 240

Leu Pro Leu Gly Ala Thr Ser Ser Lys Gly Arg Arg His His Arg Ile
                245                 250                 255

Leu Gly Leu Leu Asn Trp Leu Ser His Phe Ala Asn Pro Thr Glu Ala
            260                 265                 270

Leu Asp Asn Val Leu Lys Tyr Leu Pro Lys Lys Asp Arg Glu Asn Val
        275                 280                 285

Lys Glu Leu Leu Cys Cys Ser Met Glu Glu Tyr Gln Gln Ser Gln Val
    290                 295                 300

Lys Leu Gln Asp Phe Phe Gln Cys Gly Thr Tyr Val Cys Pro Asp Ala
305                 310                 315                 320

Leu Asn Leu Gly Leu Pro Glu Trp Val Leu Val Ala Leu Ala Lys Gly
                325                 330                 335

Gln Leu Ser Pro Phe Ile Ser Asp Ala Leu Val Leu Arg Arg Thr Ile
```

```
            340                 345                 350

Leu Pro Thr Gln Val Glu Asn Met Gln Gln Pro Asn Ala His Arg Ile
        355                 360                 365

Ser Gln Pro Ile Arg Gln Ile Ile Tyr Gly Leu Leu Leu Asn Ala Ser
    370                 375                 380

Pro His Leu Asp Lys Thr Ser Trp Asn Ala Leu Pro Pro Gln Pro Leu
385                 390                 395                 400

Ala Phe Ser Glu Val Glu Arg Ile Asn Lys Asn Ile Arg Thr Ser Ile
                405                 410                 415

Ile Asp Ala Val Glu Leu Ala Lys Asp His Ser Asp Leu Ser Arg Leu
            420                 425                 430

Thr Glu Leu Ser Leu Arg Arg Arg Gln Met Leu Leu Leu Glu Thr Leu
        435                 440                 445

Lys Val Lys Gln Thr Ile Leu Glu Pro Ile Pro Thr Ser Leu Lys Leu
    450                 455                 460

Pro Ile Ala Val Ser Cys Tyr Trp Leu Gln His Thr Glu Thr Lys Ala
465                 470                 475                 480

Lys Leu His His Leu Gln Ser Leu Leu Leu Thr Met Leu Val Gly Pro
                485                 490                 495

Leu Ile Ala Ile Ile Asn Ser Pro Gly Lys Glu Glu Leu Gln Glu Asp
            500                 505                 510

Gly Ala Lys Met Leu Tyr Ala Glu Phe Gln Arg Val Lys Ala Gln Thr
        515                 520                 525

Arg Leu Gly Thr Arg Leu Asp Leu Asp Thr Ala His Ile Phe Cys Gln
    530                 535                 540

Trp Gln Ser Cys Leu Gln Met Gly Met Tyr Leu Asn Gln Leu Leu Ser
545                 550                 555                 560

Thr Pro Leu Pro Glu Pro Asp Leu Thr Arg Leu Tyr Ser Gly Ser Leu
                565                 570                 575
```

```
Val His Gly Leu Cys Gln Gln Leu Leu Ala Ser Thr Ser Val Glu Ser
            580                 585                 590

Leu Leu Ser Ile Cys Pro Glu Ala Lys Gln Leu Tyr Glu Tyr Leu Phe
        595                 600                 605

Asn Ala Thr Arg Ser Tyr Ala Pro Ala Glu Ile Phe Leu Pro Lys Gly
    610                 615                 620

Arg Ser Asn Ser Lys Lys Lys Arg Gln Lys Lys Gln Asn Thr Ser Cys
625                 630                 635                 640

Ser Lys Asn Arg Gly Arg Thr Thr Ala His Thr Lys Cys Trp Tyr Glu
                645                 650                 655

Gly Asn Asn Arg Phe Gly Leu Leu Met Val Glu Asn Leu Glu Glu His
            660                 665                 670

Ser Glu Ala Ser Asn Ile Glu
        675


<210> 6772
<211> 520
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1455; "

<220>
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<223> /note="Gene Symbol: ASTE1; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID:  Q2TB18; "

<220>
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<223> /note="ENSP ID: ENSP00000421019"

<400> 6772
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Met Gly Ile Arg Gly Leu Met Ser Phe Val Glu Asp His Ser Asn Glu
1               5                  10                  15

Phe Phe Thr Asp Leu Lys Leu Arg Asp Thr Lys Ile Val Ile Asp Gly
            20                  25                  30

Tyr Ala Leu Phe His Arg Leu Cys Phe Ser Ser Asn Leu Asp Leu Arg
        35                  40                  45

Tyr Gly Gly Asp Tyr Asp Ser Phe Ala Asp Val Val Gln Lys Phe Phe
    50                  55                  60

Glu Ser Leu Phe Ala Cys Asn Ile Cys Pro Tyr Val Val Leu Asp Gly
65                  70                  75                  80

Gly Cys Asp Ile Ser Asp Lys Lys Leu Thr Thr Leu Lys Asp Arg Ala
                85                  90                  95

Arg Glu Lys Ile Gln Met Ala His Ser Leu Ser Val Gly Gly Ser Gly
            100                 105                 110

Tyr Val Cys Pro Leu Leu Ile Arg Glu Val Phe Ile Gln Val Leu Ile
        115                 120                 125

Lys Leu Arg Val Cys Phe Val Gln Cys Phe Ser Glu Ala Asp Arg Asp
    130                 135                 140

Ile Met Thr Leu Ala Asn His Trp Asn Cys Pro Val Leu Ser Ser Asp
145                 150                 155                 160

Ser Asp Phe Cys Ile Phe Asp Leu Lys Thr Gly Phe Cys Pro Leu Asn
                165                 170                 175

Ser Phe Gln Trp Arg Asn Met Asn Thr Ile Lys Gly Thr Gln Asn Tyr
            180                 185                 190

Ile Pro Ala Lys Cys Phe Ser Leu Asp Ala Phe Cys His His Phe Ser
        195                 200                 205

Asn Met Asn Lys Ala Leu Leu Pro Leu Phe Ala Val Leu Cys Gly Asn
    210                 215                 220

Asp His Val Asn Leu Pro Ile Met Glu Thr Phe Leu Ser Lys Ala Arg
```

225 230 235 240

Leu Pro Leu Gly Ala Thr Ser Ser Lys Gly Arg Arg His His Arg Ile
245 250 255

Leu Gly Leu Leu Asn Trp Leu Ser His Phe Ala Asn Pro Thr Glu Ala
260 265 270

Leu Asp Asn Val Leu Lys Tyr Leu Pro Lys Lys Asp Arg Glu Asn Val
275 280 285

Lys Glu Leu Leu Cys Cys Ser Met Glu Glu Tyr Gln Gln Ser Gln Val
290 295 300

Lys Leu Gln Asp Phe Phe Gln Cys Gly Thr Tyr Val Cys Pro Asp Ala
305 310 315 320

Leu Asn Leu Gly Leu Pro Glu Trp Val Leu Val Ala Leu Ala Lys Gly
325 330 335

Gln Leu Ser Pro Phe Ile Ser Asp Ala Leu Val Leu Arg Arg Thr Ile
340 345 350

Leu Pro Thr Gln Val Glu Asn Met Gln Gln Pro Asn Ala His Arg Ile
355 360 365

Ser Gln Pro Ile Arg Gln Ile Ile Tyr Gly Leu Leu Leu Asn Ala Ser
370 375 380

Pro His Leu Asp Lys Thr Ser Trp Asn Ala Leu Pro Pro Gln Pro Leu
385 390 395 400

Ala Phe Ser Glu Val Glu Arg Ile Asn Lys Asn Ile Arg Thr Ser Ile
405 410 415

Ile Asp Ala Val Glu Leu Ala Lys Asp His Ser Asp Leu Ser Arg Leu
420 425 430

Thr Glu Leu Ser Leu Arg Arg Arg Gln Met Leu Leu Leu Glu Thr Leu
435 440 445

Lys Val Lys Gln Thr Ile Leu Glu Pro Ile Pro Thr Ser Leu Lys Leu
450 455 460

```
Pro Ile Ala Val Ser Cys Tyr Trp Leu Gln His Thr Glu Thr Lys Ala
465                 470                 475                 480

Lys Leu His His Leu Gln Ser Leu Leu Leu Thr Met Leu Val Gly Pro
                485                 490                 495

Leu Ile Ala Ile Ile Asn Ser Pro Gly Asn Val Asp Pro Val Pro Arg
            500                 505                 510

Gln Ala Gln Cys Leu Ala Pro Arg
        515                 520


<210> 6773
<211> 48
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1455; "

<220>
<221> source
<223> /note="Gene Symbol: ASTE1; "

<220>
<221> source
<223> /note="Gene Name:
      asteroid homolog 1 (Drosophila); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000422851"

<400> 6773
Met Gly Ile Arg Gly Leu Met Ser Phe Val Glu Asp His Ser Asn Glu
1               5                   10                  15

Phe Phe Thr Asp Leu Lys Leu Arg Asp Thr Lys Ile Val Ile Asp Gly
            20                  25                  30

Tyr Ala Leu Phe His Arg Leu Cys Phe Ser Ser Asn Leu Asp Leu Arg
        35                  40                  45


<210> 6774
<211> 97
<212> PRT
<213> Homo sapiens
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<220>
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<220>
<221> source
<223> /note="Gene Symbol: ASTE1; "

<220>
<221> source
<223> /note="Gene Name:
asteroid homolog 1 (Drosophila); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000423347"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6774
Xaa Asn Val Lys Glu Leu Leu Cys Cys Ser Met Glu Glu Tyr Gln Gln
1 5 10 15

Ser Gln Met Leu Leu Leu Glu Thr Leu Lys Val Lys Gln Thr Ile Leu
20 25 30

Glu Pro Ile Pro Thr Ser Leu Lys Leu Pro Ile Ala Val Ser Cys Tyr
35 40 45

Trp Leu Gln His Thr Glu Thr Lys Ala Lys Leu His His Leu Gln Ser
50 55 60

Leu Leu Leu Thr Met Leu Val Gly Pro Leu Ile Ala Ile Ile Asn Ser
65 70 75 80

Pro Gly Lys Glu Glu Leu Gln Glu Asp Gly Ala Lys Met Leu Tyr Ala
85 90 95

Glu

<210> 6775
<211> 49
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ASTE1; "

<220>
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<223> /note="Gene Name:
asteroid homolog 1 (Drosophila); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000425683"

<400> 6775
Met Gly Ile Arg Gly Leu Met Ser Phe Val Glu Asp His Ser Asn Glu
1 5 10 15

Phe Phe Thr Asp Leu Lys Leu Arg Asp Thr Lys Ile Val Ile Asp Gly
20 25 30

Tyr Ala Leu Phe His Arg Leu Cys Phe Ser Ser Asn Leu Asp Leu Arg
35 40 45

Tyr

<210> 6776
<211> 72
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ASTE1; "

<220>
<221> source
<223> /note="Gene Name:
asteroid homolog 1 (Drosophila); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000426363"

<400> 6776
Met Gly Ile Arg Gly Leu Met Ser Phe Val Glu Asp His Ser Asn Glu
1   5   10   15

Phe Phe Thr Asp Leu Lys Leu Arg Asp Thr Lys Ile Val Ile Asp Gly
            20   25   30

Tyr Ala Leu Phe His Arg Leu Cys Phe Ser Ser Asn Leu Asp Leu Arg
        35   40   45

Trp Lys Thr Cys Ser Asn Gln Met Pro Thr Glu Tyr Leu Ser Pro Ser
    50   55   60

Gly Lys Ser Ser Met Gly Phe Phe
65   70

<210> 6777
<211> 704
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ASTE1; "

<220>
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<223> /note="Gene Name:
      asteroid homolog 1 (Drosophila); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000426421"

<400> 6777
Met Gly Ile Arg Gly Leu Met Ser Phe Val Glu Asp His Ser Asn Glu
1   5   10   15

Phe Phe Thr Asp Leu Lys Leu Arg Asp Thr Lys Ile Val Ile Asp Gly
            20   25   30

Tyr Ala Leu Phe His Arg Leu Cys Phe Ser Ser Asn Leu Asp Leu Arg
        35   40   45

Tyr Gly Gly Asp Tyr Asp Ser Phe Ala Asp Val Val Gln Lys Phe Phe

```
    50                  55                  60

Glu Ser Leu Phe Ala Cys Asn Ile Cys Pro Tyr Val Val Leu Asp Gly
65                  70                  75                  80

Gly Cys Asp Ile Ser Asp Lys Lys Leu Thr Thr Leu Lys Asp Arg Ala
                85                  90                  95

Arg Glu Lys Ile Gln Met Ala His Ser Leu Ser Val Gly Gly Ser Gly
            100                 105                 110

Tyr Val Cys Pro Leu Leu Ile Arg Glu Val Phe Ile Gln Val Leu Ile
        115                 120                 125

Lys Leu Arg Val Cys Phe Val Gln Cys Phe Ser Glu Ala Asp Arg Asp
    130                 135                 140

Ile Met Thr Leu Ala Asn His Trp Asn Cys Pro Val Leu Ser Ser Asp
145                 150                 155                 160

Ser Asp Phe Cys Ile Phe Asp Leu Lys Thr Gly Phe Cys Pro Leu Asn
                165                 170                 175

Ser Phe Gln Trp Arg Asn Met Asn Thr Ile Lys Gly Thr Gln Asn Tyr
            180                 185                 190

Ile Pro Ala Lys Cys Phe Ser Leu Asp Ala Phe Cys His His Phe Ser
        195                 200                 205

Asn Met Asn Lys Ala Leu Leu Pro Leu Phe Ala Val Leu Cys Gly Asn
    210                 215                 220

Asp His Val Asn Leu Pro Ile Met Glu Thr Phe Leu Ser Lys Ala Arg
225                 230                 235                 240

Leu Pro Leu Gly Ala Thr Ser Ser Lys Gly Arg Arg His His Arg Ile
                245                 250                 255

Leu Gly Leu Leu Asn Trp Leu Ser His Phe Ala Asn Pro Thr Glu Ala
            260                 265                 270

Leu Asp Asn Val Leu Lys Tyr Leu Pro Lys Lys Asp Arg Glu Asn Val
        275                 280                 285
```

```
Lys Glu Leu Leu Cys Cys Ser Met Glu Glu Tyr Gln Gln Ser Gln Val
    290                 295                 300

Lys Leu Gln Asp Phe Phe Gln Cys Gly Thr Tyr Val Cys Pro Asp Ala
305                 310                 315                 320

Leu Asn Leu Gly Leu Pro Glu Trp Val Leu Val Ala Leu Ala Lys Gly
                325                 330                 335

Gln Leu Ser Pro Phe Ile Ser Asp Ala Leu Val Leu Arg Arg Thr Ile
            340                 345                 350

Leu Pro Thr Gln Val Glu Asn Met Gln Gln Pro Asn Ala His Arg Ile
        355                 360                 365

Ser Gln Pro Ile Arg Gln Ile Ile Tyr Gly Leu Leu Leu Asn Ala Ser
    370                 375                 380

Pro His Leu Asp Lys Thr Ser Trp Asn Ala Leu Pro Pro Gln Pro Leu
385                 390                 395                 400

Ala Phe Ser Glu Val Glu Arg Ile Asn Lys Asn Ile Arg Thr Ser Ile
                405                 410                 415

Ile Asp Ala Val Glu Leu Ala Lys Asp His Ser Asp Leu Ser Arg Leu
            420                 425                 430

Thr Glu Leu Ser Leu Arg Arg Arg Gln Met Leu Leu Leu Glu Thr Leu
        435                 440                 445

Lys Val Lys Gln Thr Ile Leu Glu Pro Ile Pro Thr Ser Leu Lys Leu
    450                 455                 460

Pro Ile Ala Val Ser Cys Tyr Trp Leu Gln His Thr Glu Thr Lys Ala
465                 470                 475                 480

Lys Leu His His Leu Gln Ser Leu Leu Leu Thr Met Leu Val Gly Pro
                485                 490                 495

Leu Ile Ala Ile Ile Asn Ser Pro Gly Lys Glu Glu Leu Gln Glu Asp
            500                 505                 510
```

```
Gly Ala Lys Met Leu Tyr Ala Glu Phe Gln Arg Val Lys Ala Gln Thr
        515                 520                 525

Arg Leu Gly Thr Arg Leu Asp Leu Asp Thr Ala His Ile Phe Cys Gln
    530                 535                 540

Trp Gln Ser Cys Leu Gln Met Gly Met Tyr Leu Asn Gln Leu Leu Ser
545                 550                 555                 560

Thr Pro Leu Pro Glu Pro Asp Leu Thr Arg Pro Ser Ala Phe Asn Thr
                565                 570                 575

Leu Asn Glu Asp Ile Trp Thr His Thr Lys Tyr Gly Gly Thr Leu His
            580                 585                 590

Val Ser Arg Leu Tyr Ser Gly Ser Leu Val His Gly Leu Cys Gln Gln
        595                 600                 605

Leu Leu Ala Ser Thr Ser Val Glu Ser Leu Leu Ser Ile Cys Pro Glu
    610                 615                 620

Ala Lys Gln Leu Tyr Glu Tyr Leu Phe Asn Ala Thr Arg Ser Tyr Ala
625                 630                 635                 640

Pro Ala Glu Ile Phe Leu Pro Lys Gly Arg Ser Asn Ser Lys Lys Lys
                645                 650                 655

Arg Gln Lys Lys Gln Asn Thr Ser Cys Ser Lys Asn Arg Gly Arg Thr
            660                 665                 670

Thr Ala His Thr Lys Cys Trp Tyr Glu Gly Asn Asn Arg Phe Gly Leu
        675                 680                 685

Leu Met Val Glu Asn Leu Glu Glu His Ser Glu Ala Ser Asn Ile Glu
    690                 695                 700


<210> 6778
<211> 7
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1455; "
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<220>
<221> source
<223> /note="Gene Symbol: ASTE1; "

<220>
<221> source
<223> /note="Gene Name:
asteroid homolog 1 (Drosophila); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000427303"

<400> 6778
Met Gly Ile Arg Gly Leu Met
1 5

<210> 6779
<211> 1294
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1456; "

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Name:
astrotactin 1; "

<220>
<221> source
<223> /note="Uniprot ID: O14525; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000354536"

<400> 6779
Met Ala Leu Ala Gly Leu Cys Ala Leu Leu Ala Cys Cys Trp Gly Pro
1 5 10 15

Ala Ala Val Leu Ala Thr Ala Ala Gly Asp Val Asp Pro Ser Lys Glu
20 25 30

Leu Glu Cys Lys Leu Lys Ser Ile Thr Val Ser Ala Leu Pro Phe Leu
35 40 45

```
Arg Glu Asn Asp Leu Ser Ile Met His Ser Pro Ser Ala Ser Glu Pro
    50                  55                  60

Lys Leu Leu Phe Ser Val Arg Asn Asp Phe Pro Gly Glu Met Val Val
65                  70                  75                  80

Val Asp Asp Leu Glu Asn Thr Glu Leu Pro Tyr Phe Val Leu Glu Ile
                85                  90                  95

Ser Gly Asn Thr Glu Asp Ile Pro Leu Val Arg Trp Arg Gln Gln Trp
            100                 105                 110

Leu Glu Asn Gly Thr Leu Leu Phe His Ile His His Gln Asp Gly Ala
        115                 120                 125

Pro Ser Leu Pro Gly Gln Asp Pro Thr Glu Glu Pro Gln His Glu Ser
    130                 135                 140

Ala Glu Glu Glu Leu Arg Ile Leu His Ile Ser Val Met Gly Gly Met
145                 150                 155                 160

Ile Ala Leu Leu Leu Ser Ile Leu Cys Leu Val Met Ile Leu Tyr Thr
                165                 170                 175

Arg Arg Arg Trp Cys Lys Arg Arg Arg Val Pro Gln Pro Gln Lys Ser
            180                 185                 190

Ala Ser Ala Glu Ala Ala Asn Glu Ile His Tyr Ile Pro Ser Val Leu
        195                 200                 205

Ile Gly Gly His Gly Arg Glu Ser Leu Arg Asn Ala Arg Val Gln Gly
    210                 215                 220

His Asn Ser Ser Gly Thr Leu Ser Ile Arg Glu Thr Pro Ile Leu Asp
225                 230                 235                 240

Gly Tyr Glu Tyr Asp Ile Thr Asp Leu Arg His His Leu Gln Arg Glu
                245                 250                 255

Cys Met Asn Gly Gly Glu Asp Phe Ala Ser Gln Val Thr Arg Thr Leu
            260                 265                 270
```

```
Asp Ser Leu Gln Gly Cys Asn Glu Lys Ser Gly Met Asp Leu Thr Pro
        275                 280                 285

Gly Ser Asp Asn Ala Lys Leu Ser Leu Met Asn Lys Tyr Lys Asp Asn
    290                 295                 300

Ile Ile Ala Thr Ser Pro Val Asp Ser Asn His Gln Gln Ala Thr Leu
305                 310                 315                 320

Leu Ser His Thr Ser Ser Ser Gln Arg Lys Arg Ile Asn Asn Lys Ala
                325                 330                 335

Arg Ala Gly Ser Ala Phe Leu Asn Pro Glu Gly Asp Ser Gly Thr Glu
            340                 345                 350

Ala Glu Asn Asp Pro Gln Leu Thr Phe Tyr Thr Asp Pro Ser Arg Ser
        355                 360                 365

Arg Arg Arg Ser Arg Val Gly Ser Pro Arg Ser Pro Val Asn Lys Thr
    370                 375                 380

Thr Leu Thr Leu Ile Ser Ile Thr Ser Cys Val Ile Gly Leu Val Cys
385                 390                 395                 400

Ser Ser His Val Asn Cys Pro Leu Val Val Lys Ile Thr Leu His Val
                405                 410                 415

Pro Glu His Leu Ile Ala Asp Gly Ser Arg Phe Ile Leu Leu Glu Gly
            420                 425                 430

Ser Gln Leu Asp Ala Ser Asp Trp Leu Asn Pro Ala Gln Val Val Leu
        435                 440                 445

Phe Ser Gln Gln Asn Ser Ser Gly Pro Trp Ala Met Asp Leu Cys Ala
    450                 455                 460

Arg Arg Leu Leu Asp Pro Cys Glu His Gln Cys Asp Pro Glu Thr Gly
465                 470                 475                 480

Glu Cys Leu Cys Tyr Glu Gly Tyr Met Lys Asp Pro Val His Lys His
                485                 490                 495

Leu Cys Ile Arg Asn Glu Trp Gly Thr Asn Gln Gly Pro Trp Pro Tyr
```

```
            500                 505                 510

Thr Ile Phe Gln Arg Gly Phe Asp Leu Val Leu Gly Glu Gln Pro Ser
        515                 520                 525

Asp Lys Ile Phe Arg Phe Thr Tyr Thr Leu Gly Glu Gly Met Trp Leu
    530                 535                 540

Pro Leu Ser Lys Ser Phe Val Ile Pro Pro Ala Glu Leu Ala Ile Asn
545                 550                 555                 560

Pro Ser Ala Lys Cys Lys Thr Asp Met Thr Val Met Glu Asp Ala Val
                565                 570                 575

Glu Val Arg Glu Glu Leu Met Thr Ser Ser Ser Phe Asp Ser Leu Glu
            580                 585                 590

Val Leu Leu Asp Ser Phe Gly Pro Val Arg Asp Cys Ser Lys Asp Asn
        595                 600                 605

Gly Gly Cys Ser Lys Asn Phe Arg Cys Ile Ser Asp Arg Lys Leu Asp
    610                 615                 620

Ser Thr Gly Cys Val Cys Pro Ser Gly Leu Ser Pro Met Lys Asp Ser
625                 630                 635                 640

Ser Gly Cys Tyr Asp Arg His Ile Gly Val Asp Cys Ser Asp Gly Phe
                645                 650                 655

Asn Gly Gly Cys Glu Gln Leu Cys Leu Gln Gln Met Ala Pro Phe Pro
            660                 665                 670

Asp Asp Pro Thr Leu Tyr Asn Ile Leu Met Phe Cys Gly Cys Ile Glu
        675                 680                 685

Asp Tyr Lys Leu Gly Val Asp Gly Arg Ser Cys Gln Leu Ile Thr Glu
    690                 695                 700

Thr Cys Pro Glu Gly Ser Asp Cys Gly Glu Ser Arg Glu Leu Pro Met
705                 710                 715                 720

Asn Gln Thr Leu Phe Gly Glu Met Phe Phe Gly Tyr Asn Asn His Ser
                725                 730                 735
```

```
Lys Glu Val Ala Ala Gly Gln Val Leu Lys Gly Thr Phe Arg Gln Asn
            740                 745                 750

Asn Phe Ala Arg Gly Leu Asp Gln Gln Leu Pro Asp Gly Leu Val Val
        755                 760                 765

Ala Thr Val Pro Leu Glu Asn Gln Cys Leu Glu Glu Ile Ser Glu Pro
    770                 775                 780

Thr Pro Asp Pro Asp Phe Leu Thr Gly Met Val Asn Phe Ser Glu Val
785                 790                 795                 800

Ser Gly Tyr Pro Val Leu Gln His Trp Lys Val Arg Ser Val Met Tyr
                805                 810                 815

His Ile Lys Leu Asn Gln Val Ala Ile Ser Gln Ala Leu Ser Asn Ala
            820                 825                 830

Leu His Ser Leu Asp Gly Ala Thr Ser Arg Ala Asp Phe Val Ala Leu
        835                 840                 845

Leu Asp Gln Phe Gly Asn His Tyr Ile Gln Glu Ala Ile Tyr Gly Phe
    850                 855                 860

Glu Glu Ser Cys Ser Ile Trp Tyr Pro Asn Lys Gln Val Gln Arg Arg
865                 870                 875                 880

Leu Trp Leu Glu Tyr Glu Asp Ile Ser Lys Gly Asn Ser Pro Ser Asp
                885                 890                 895

Glu Ser Glu Glu Arg Glu Arg Asp Pro Lys Val Leu Thr Phe Pro Glu
            900                 905                 910

Tyr Ile Thr Ser Leu Ser Asp Ser Gly Thr Lys His Met Ala Ala Gly
        915                 920                 925

Val Arg Met Glu Cys His Ser Lys Gly Arg Cys Pro Ser Ser Cys Pro
    930                 935                 940

Leu Cys His Val Thr Ser Ser Pro Asp Thr Pro Ala Glu Pro Val Leu
945                 950                 955                 960
```

```
Leu Glu Val Thr Lys Ala Ala Pro Ile Tyr Glu Leu Val Thr Asn Asn
               965                 970                 975

Gln Thr Gln Arg Leu Leu Gln Glu Ala Thr Met Ser Ser Leu Trp Cys
           980                 985                 990

Ser Gly Thr Gly Asp Val Ile Glu  Asp Trp Cys Arg Cys  Asp Ser
Thr
        995                 1000                1005

Ala Phe  Gly Ala Asp Gly Leu  Pro Thr Cys Ala Pro  Leu Pro Gln
    1010                1015                1020

Pro Val  Leu Arg Leu Ser Thr  Val His Glu Pro Ser  Ser Thr Leu
    1025                1030                1035

Val Val  Leu Glu Trp Glu His  Ser Glu Pro Pro Ile  Gly Val Gln
    1040                1045                1050

Ile Val  Asp Tyr Leu Leu Arg  Gln Glu Lys Val Thr  Asp Arg Met
    1055                1060                1065

Asp His  Ser Lys Val Glu Thr  Glu Thr Val Leu Ser  Phe Val Asp
    1070                1075                1080

Asp Ile  Ile Ser Gly Ala Lys  Ser Pro Cys Ala Met  Pro Ser Gln
    1085                1090                1095

Val Pro  Asp Lys Gln Leu Thr  Thr Ile Ser Leu Ile  Ile Arg Cys
    1100                1105                1110

Leu Glu  Pro Asp Thr Ile Tyr  Met Phe Thr Leu Trp  Gly Val Asp
    1115                1120                1125

Asn Thr  Gly Arg Arg Ser Arg  Pro Ser Asp Val Ile  Val Lys Thr
    1130                1135                1140

Pro Cys  Pro Val Val Asp Asp  Val Lys Ala Gln Glu  Ile Ala Asp
    1145                1150                1155

Lys Ile  Tyr Asn Leu Phe Asn  Gly Tyr Thr Ser Gly  Lys Glu Gln
    1160                1165                1170
```

```
Gln Thr  Ala Tyr Asn Thr Leu  Leu Asp Leu Gly Ser  Pro Thr Leu
    1175                1180                1185

His Arg  Val Leu Tyr His Tyr  Asn Gln His Tyr Glu  Ser Phe Gly
    1190                1195                1200

Glu Phe  Thr Trp Arg Cys Glu  Asp Glu Leu Gly Pro  Arg Lys Ala
    1205                1210                1215

Gly Leu  Ile Leu Ser Gln Leu  Gly Asp Leu Ser Ser  Trp Cys Asn
    1220                1225                1230

Gly Leu  Leu Gln Glu Pro Lys  Ile Ser Leu Arg Arg  Ser Ser Leu
    1235                1240                1245

Lys Tyr  Leu Gly Cys Arg Tyr  Ser Glu Ile Lys Pro  Tyr Gly Leu
    1250                1255                1260

Asp Trp  Ala Glu Leu Ser Arg  Asp Leu Arg Lys Thr  Cys Glu Glu
    1265                1270                1275

Gln Thr  Leu Ser Ile Pro Tyr  Asn Asp Tyr Gly Asp  Ser Lys Glu
    1280                1285                1290

Ile
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<210> 6780
<211> 1228
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<400> 6780

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Met Ala Leu Ala Gly Leu Cys Ala Leu Leu Ala Cys Cys Trp Gly Pro
1               5                  10                  15

Ala Ala Val Leu Ala Thr Ala Ala Gly Asp Val Asp Pro Ser Lys Glu
            20                  25                  30

Leu Glu Cys Lys Leu Lys Ser Ile Thr Val Ser Ala Leu Pro Phe Leu
        35                  40                  45

Arg Glu Asn Asp Leu Ser Ile Met His Ser Pro Ser Ala Ser Glu Pro
    50                  55                  60

Lys Leu Leu Phe Ser Val Arg Asn Asp Phe Pro Gly Glu Met Val Val
65                  70                  75                  80

Val Asp Asp Leu Glu Asn Thr Glu Leu Pro Tyr Phe Val Leu Glu Ile
                85                  90                  95

Ser Gly Asn Thr Glu Asp Ile Pro Leu Val Arg Trp Arg Gln Gln Trp
            100                 105                 110

Leu Glu Asn Gly Thr Leu Leu Phe His Ile His His Gln Asp Gly Ala
        115                 120                 125

Pro Ser Leu Pro Gly Gln Asp Pro Thr Glu Glu Pro Gln His Glu Ser
    130                 135                 140

Ala Glu Glu Glu Leu Arg Ile Leu His Ile Ser Val Met Gly Gly Met
145                 150                 155                 160

Ile Ala Leu Leu Leu Ser Ile Leu Cys Leu Val Met Ile Leu Tyr Thr
                165                 170                 175

Arg Arg Arg Trp Cys Lys Arg Arg Arg Val Pro Gln Pro Gln Lys Ser
            180                 185                 190

Ala Ser Ala Glu Ala Ala Asn Glu Ile His Tyr Ile Pro Ser Val Leu
        195                 200                 205

Ile Gly Gly His Gly Arg Glu Ser Leu Arg Asn Ala Arg Val Gln Gly
    210                 215                 220
```

```
His Asn Ser Ser Gly Thr Leu Ser Ile Arg Glu Thr Pro Ile Leu Asp
225                 230                 235                 240

Gly Tyr Glu Tyr Asp Ile Thr Asp Leu Arg His His Leu Gln Arg Glu
                245                 250                 255

Cys Met Asn Gly Gly Glu Asp Phe Ala Ser Gln Val Thr Arg Thr Leu
            260                 265                 270

Asp Ser Leu Gln Gly Cys Asn Glu Lys Ser Gly Met Asp Leu Thr Pro
        275                 280                 285

Gly Ser Asp Asn Ala Lys Leu Ser Leu Met Asn Lys Tyr Lys Asp Asn
    290                 295                 300

Ile Ile Ala Thr Ser Pro Val Asp Ser Asn His Gln Gln Ala Thr Leu
305                 310                 315                 320

Leu Ser His Thr Ser Ser Ser Gln Arg Lys Arg Ile Asn Asn Lys Ala
                325                 330                 335

Arg Ala Gly Ser Ala Phe Leu Asn Pro Glu Gly Asp Ser Gly Thr Glu
            340                 345                 350

Ala Glu Asn Asp Pro Gln Leu Thr Phe Tyr Thr Asp Pro Ser Arg Ser
        355                 360                 365

Arg Arg Arg Ser Arg Val Gly Ser Pro Arg Ser Pro Val Asn Lys Thr
    370                 375                 380

Thr Leu Thr Leu Ile Ser Ile Thr Ser Cys Val Ile Gly Leu Val Cys
385                 390                 395                 400

Ser Ser His Val Asn Cys Pro Leu Val Val Lys Ile Thr Leu His Val
                405                 410                 415

Pro Glu His Leu Ile Ala Asp Gly Ser Arg Phe Ile Leu Leu Glu Gly
            420                 425                 430

Ser Gln Leu Asp Ala Ser Asp Trp Leu Asn Pro Ala Gln Val Val Leu
        435                 440                 445
```

```
Phe Ser Gln Gln Asn Ser Ser Gly Pro Trp Ala Met Asp Leu Cys Ala
    450                 455                 460

Arg Arg Leu Leu Asp Pro Cys Glu His Gln Cys Asp Pro Glu Thr Gly
465                 470                 475                 480

Glu Cys Leu Cys Tyr Glu Gly Tyr Met Lys Asp Pro Val His Lys His
                485                 490                 495

Leu Cys Ile Arg Asn Glu Trp Gly Thr Asn Gln Gly Pro Trp Pro Tyr
            500                 505                 510

Thr Ile Phe Gln Arg Gly Phe Asp Leu Val Leu Gly Glu Gln Pro Ser
        515                 520                 525

Asp Lys Ile Phe Arg Phe Thr Tyr Thr Leu Gly Glu Gly Met Trp Leu
    530                 535                 540

Pro Leu Ser Lys Ser Phe Val Ile Pro Pro Ala Glu Leu Ala Ile Asn
545                 550                 555                 560

Pro Ser Ala Lys Cys Lys Thr Asp Met Thr Val Met Glu Asp Ala Val
                565                 570                 575

Glu Val Arg Glu Glu Leu Met Thr Ser Ser Ser Phe Asp Ser Leu Glu
            580                 585                 590

Val Leu Leu Asp Ser Phe Gly Pro Val Arg Asp Cys Ser Lys Asp Asn
        595                 600                 605

Gly Gly Cys Ser Lys Asn Phe Arg Cys Ile Ser Asp Arg Lys Leu Asp
    610                 615                 620

Ser Thr Gly Cys Val Cys Pro Ser Gly Leu Ser Pro Met Lys Asp Ser
625                 630                 635                 640

Ser Gly Cys Tyr Asp Arg His Ile Gly Val Asp Cys Ser Asp Gly Phe
                645                 650                 655

Asn Gly Gly Cys Glu Gln Leu Cys Leu Gln Gln Met Ala Pro Phe Pro
            660                 665                 670
```

```
Asp Asp Pro Thr Leu Tyr Asn Ile Leu Met Phe Cys Gly Cys Ile Glu
        675                 680                 685

Asp Tyr Lys Leu Gly Val Asp Gly Arg Ser Cys Gln Leu Ile Thr Glu
    690                 695                 700

Thr Cys Pro Glu Gly Ser Asp Cys Gly Glu Ser Arg Glu Leu Pro Met
705                 710                 715                 720

Asn Gln Thr Leu Phe Gly Glu Met Phe Phe Gly Tyr Asn Asn His Ser
                725                 730                 735

Lys Glu Val Ala Ala Gly Gln Val Leu Lys Gly Thr Phe Arg Gln Asn
            740                 745                 750

Asn Phe Ala Arg Gly Leu Asp Gln Gln Leu Pro Asp Gly Leu Val Val
        755                 760                 765

Ala Thr Val Pro Leu Glu Asn Gln Cys Leu Glu Glu Ile Ser Glu Pro
    770                 775                 780

Thr Pro Asp Pro Asp Phe Leu Thr Gly Met Val Asn Phe Ser Glu Val
785                 790                 795                 800

Ser Gly Tyr Pro Val Leu Gln His Trp Lys Val Arg Ser Val Met Tyr
                805                 810                 815

His Ile Lys Leu Asn Gln Val Ala Ile Ser Gln Ala Leu Ser Asn Ala
            820                 825                 830

Leu His Ser Leu Asp Gly Ala Thr Ser Arg Ala Asp Phe Val Ala Leu
        835                 840                 845

Leu Asp Gln Phe Gly Asn His Tyr Ile Gln Glu Ala Ile Tyr Gly Phe
    850                 855                 860

Glu Glu Ser Cys Ser Ile Trp Tyr Pro Asn Lys Gln Val Gln Arg Arg
865                 870                 875                 880

Leu Trp Leu Glu Tyr Glu Asp Ile Ser Lys Gly Asn Ser Pro Ser Asp
                885                 890                 895

Glu Ser Glu Glu Arg Glu Arg Asp Pro Lys Val Leu Thr Phe Pro Glu
```

```
            900                 905                 910

Tyr Ile Thr Ser Leu Ser Asp Ser Gly Thr Lys His Met Ala Ala Gly
        915                 920                 925

Val Arg Met Glu Cys His Ser Lys Gly Arg Cys Pro Ser Ser Cys Pro
    930                 935                 940

Leu Cys His Val Thr Ser Ser Pro Asp Thr Pro Ala Glu Pro Val Leu
945                 950                 955                 960

Leu Glu Val Thr Lys Ala Ala Pro Ile Tyr Glu Leu Val Thr Asn Asn
                965                 970                 975

Gln Thr Gln Arg Leu Leu Gln Glu Ala Thr Met Ser Ser Leu Trp Cys
            980                 985                 990

Ser Gly Thr Gly Asp Val Ile Glu  Asp Trp Cys Arg Cys  Asp Ser
Thr
        995                 1000                1005

Ala Phe  Gly Ala Asp Gly Leu  Pro Thr Cys Ala Pro  Leu Pro Gln
    1010                1015                1020

Pro Val  Leu Arg Leu Ser Thr  Val His Glu Pro Ser  Ser Thr Leu
    1025                1030                1035

Val Val  Leu Glu Trp Glu His  Ser Glu Pro Pro Ile  Gly Val Gln
    1040                1045                1050

Ile Val  Asp Tyr Leu Leu Arg  Gln Glu Lys Val Thr  Asp Arg Met
    1055                1060                1065

Asp His  Ser Lys Val Glu Thr  Glu Thr Val Leu Ser  Phe Val Asp
    1070                1075                1080

Asp Ile  Ile Ser Gly Ala Lys  Ser Pro Cys Ala Met  Pro Ser Gln
    1085                1090                1095

Val Pro  Asp Lys Gln Leu Thr  Thr Ile Ser Leu Ile  Ile Arg Cys
    1100                1105                1110

Leu Glu  Pro Asp Thr Ile Tyr  Met Phe Thr Leu Trp  Gly Val Asp
```

```
    1115                1120                1125

Asn Thr  Gly Arg Arg Ser Arg  Pro Ser Asp Val Ile  Val Lys Thr
    1130                1135                1140

Pro Cys  Pro Val Val Asp Asp  Val Lys Ala Gln Glu  Ile Ala Asp
    1145                1150                1155

Lys Ile  Tyr Asn Leu Phe Asn  Gly Tyr Thr Ser Gly  Lys Glu Gln
    1160                1165                1170

Gln Thr  Ala Tyr Asn Thr Leu  Leu Asp Leu Gly Ser  Pro Thr Leu
    1175                1180                1185

His Arg  Val Leu Tyr His Tyr  Asn Gln His Tyr Glu  Ser Phe Gly
    1190                1195                1200

Glu Phe  Thr Trp Arg Cys Glu  Asp Glu Leu Gly Pro  Arg Leu Pro
    1205                1210                1215

Ala Cys  Trp Asp Ser Gln Arg  Ser Cys Arg
    1220                1225


<210> 6781
<211> 1216
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<400> 6781
Met Ala Leu Ala Gly Leu Cys Ala Leu Leu Ala Cys Cys Trp Gly Pro
1 5 10 15

Ala Ala Val Leu Ala Thr Ala Ala Gly Asp Val Asp Pro Ser Lys Glu
20 25 30

Leu Glu Cys Lys Leu Lys Ser Ile Thr Val Ser Ala Leu Pro Phe Leu
35 40 45

Arg Glu Asn Asp Leu Ser Ile Met His Ser Pro Ser Ala Ser Glu Pro
50 55 60

Lys Leu Leu Phe Ser Val Arg Asn Asp Phe Pro Gly Glu Met Val Val
65 70 75 80

Val Asp Asp Leu Glu Asn Thr Glu Leu Pro Tyr Phe Val Leu Glu Ile
85 90 95

Ser Gly Asn Thr Glu Asp Ile Pro Leu Val Arg Trp Arg Gln Gln Trp
100 105 110

Leu Glu Asn Gly Thr Leu Leu Phe His Ile His His Gln Asp Gly Ala
115 120 125

Pro Ser Leu Pro Gly Gln Asp Pro Thr Glu Glu Pro Gln His Glu Ser
130 135 140

Ala Glu Glu Glu Leu Arg Ile Leu His Ile Ser Val Met Gly Gly Met
145 150 155 160

Ile Ala Leu Leu Leu Ser Ile Leu Cys Leu Val Met Ile Leu Tyr Thr
165 170 175

Arg Arg Arg Trp Cys Lys Arg Arg Arg Val Pro Gln Pro Gln Lys Ser
180 185 190

Ala Ser Ala Glu Ala Ala Asn Glu Ile His Tyr Ile Pro Ser Val Leu
195 200 205

Ile Gly Gly His Gly Arg Glu Ser Leu Arg Asn Ala Arg Val Gln Gly
210 215 220

```
His Asn Ser Ser Gly Thr Leu Ser Ile Arg Glu Thr Pro Ile Leu Asp
225                 230                 235                 240

Gly Tyr Glu Tyr Asp Ile Thr Asp Leu Arg His His Leu Gln Arg Glu
                245                 250                 255

Cys Met Asn Gly Gly Glu Asp Phe Ala Ser Gln Val Thr Arg Thr Leu
            260                 265                 270

Asp Ser Leu Gln Gly Cys Asn Glu Lys Ser Gly Met Asp Leu Thr Pro
        275                 280                 285

Gly Ser Asp Asn Ala Lys Leu Ser Leu Met Asn Lys Tyr Lys Asp Asn
    290                 295                 300

Ile Ile Ala Thr Ser Pro Val Asp Ser Asn His Gln Gln Ala Thr Leu
305                 310                 315                 320

Leu Ser His Thr Ser Ser Ser Gln Arg Lys Arg Ile Asn Asn Lys Ala
                325                 330                 335

Arg Ala Gly Ser Ala Phe Leu Asn Pro Glu Gly Asp Ser Gly Thr Glu
            340                 345                 350

Ala Glu Asn Asp Pro Gln Leu Thr Phe Tyr Thr Asp Pro Ser Arg Ser
        355                 360                 365

Arg Arg Arg Ser Arg Val Gly Ser Pro Arg Ser Pro Val Asn Lys Thr
    370                 375                 380

Thr Leu Thr Leu Ile Ser Ile Thr Ser Cys Val Ile Gly Leu Val Cys
385                 390                 395                 400

Ser Ser His Val Asn Cys Pro Leu Val Val Lys Ile Thr Leu His Val
                405                 410                 415

Pro Glu His Leu Ile Ala Asp Gly Ser Arg Phe Ile Leu Leu Glu Gly
            420                 425                 430

Ser Gln Leu Asp Ala Ser Asp Trp Leu Asn Pro Ala Gln Val Val Leu
        435                 440                 445

Phe Ser Gln Gln Asn Ser Ser Gly Pro Trp Ala Met Asp Leu Cys Ala
```

```
    450                 455                 460

Arg Arg Leu Leu Asp Pro Cys Glu His Gln Cys Asp Pro Glu Thr Gly
465                 470                 475                 480

Glu Cys Leu Cys Tyr Glu Gly Tyr Met Lys Asp Pro Val His Lys His
                485                 490                 495

Leu Cys Ile Arg Asn Glu Trp Gly Thr Asn Gln Gly Pro Trp Pro Tyr
            500                 505                 510

Thr Ile Phe Gln Arg Gly Phe Asp Leu Val Leu Gly Glu Gln Pro Ser
        515                 520                 525

Asp Lys Ile Phe Arg Phe Thr Tyr Thr Leu Gly Glu Gly Met Trp Leu
    530                 535                 540

Pro Leu Ser Lys Ser Phe Val Ile Pro Pro Ala Glu Leu Ala Ile Asn
545                 550                 555                 560

Pro Ser Ala Lys Cys Lys Thr Asp Met Thr Val Met Glu Asp Ala Val
                565                 570                 575

Glu Val Arg Glu Glu Leu Met Thr Ser Ser Ser Phe Asp Ser Leu Glu
            580                 585                 590

Val Leu Leu Asp Ser Phe Gly Pro Val Arg Asp Cys Ser Lys Asp Asn
        595                 600                 605

Gly Gly Cys Ser Lys Asn Phe Arg Cys Ile Ser Asp Arg Lys Leu Asp
    610                 615                 620

Ser Thr Gly Cys Val Cys Pro Ser Gly Leu Ser Pro Met Lys Asp Ser
625                 630                 635                 640

Ser Gly Cys Tyr Asp Arg His Ile Gly Val Asp Cys Ser Asp Gly Phe
                645                 650                 655

Asn Gly Gly Cys Glu Gln Leu Cys Leu Gln Gln Met Ala Pro Phe Pro
            660                 665                 670

Asp Asp Pro Thr Leu Tyr Asn Ile Leu Met Phe Cys Gly Cys Ile Glu
        675                 680                 685
```

```
Asp Tyr Lys Leu Gly Val Asp Gly Arg Ser Cys Gln Leu Ile Thr Glu
    690                 695                 700

Thr Cys Pro Glu Gly Ser Asp Cys Gly Glu Ser Arg Glu Leu Pro Met
705                 710                 715                 720

Asn Gln Thr Leu Phe Gly Glu Met Phe Phe Gly Tyr Asn Asn His Ser
                725                 730                 735

Lys Glu Val Ala Ala Gly Gln Val Leu Lys Gly Thr Phe Arg Gln Asn
            740                 745                 750

Asn Phe Ala Arg Gly Leu Asp Gln Gln Leu Pro Asp Gly Leu Val Val
        755                 760                 765

Ala Thr Val Pro Leu Glu Asn Gln Cys Leu Glu Glu Ile Ser Glu Pro
    770                 775                 780

Thr Pro Asp Pro Asp Phe Leu Thr Gly Met Val Asn Phe Ser Glu Val
785                 790                 795                 800

Ser Gly Tyr Pro Val Leu Gln His Trp Lys Val Arg Ser Val Met Tyr
                805                 810                 815

His Ile Lys Leu Asn Gln Val Ala Ile Ser Gln Ala Leu Ser Asn Ala
            820                 825                 830

Leu His Ser Leu Asp Gly Ala Thr Ser Arg Ala Asp Phe Val Ala Leu
        835                 840                 845

Leu Asp Gln Phe Gly Asn His Tyr Ile Gln Glu Ala Ile Tyr Gly Phe
    850                 855                 860

Glu Glu Ser Cys Ser Ile Trp Tyr Pro Asn Lys Gln Val Gln Arg Arg
865                 870                 875                 880

Leu Trp Leu Glu Tyr Glu Asp Ile Ser Lys Gly Asn Ser Pro Ser Asp
                885                 890                 895

Glu Ser Glu Glu Arg Glu Arg Asp Pro Lys Val Leu Thr Phe Pro Glu
            900                 905                 910
```

```
Tyr Ile Thr Ser Leu Ser Asp Ser Gly Thr Lys His Met Ala Ala Gly
        915                 920                 925

Val Arg Met Glu Cys His Ser Lys Gly Arg Cys Pro Ser Ser Cys Pro
    930                 935                 940

Leu Cys His Val Thr Ser Ser Pro Asp Thr Pro Ala Glu Pro Val Leu
945                 950                 955                 960

Leu Glu Val Thr Lys Ala Ala Pro Ile Tyr Glu Leu Val Thr Asn Asn
                965                 970                 975

Gln Thr Gln Arg Leu Leu Gln Glu Ala Thr Met Ser Ser Leu Trp Cys
            980                 985                 990

Ser Gly Thr Gly Asp Val Ile Glu  Asp Trp Cys Arg Cys  Asp Ser
Thr
        995                 1000                1005

Ala Phe  Gly Ala Asp Gly Leu  Pro Thr Cys Ala Pro  Leu Pro Gln
    1010                1015                1020

Pro Val  Leu Arg Leu Ser Thr  Val His Glu Pro Ser  Ser Thr Leu
    1025                1030                1035

Val Val  Leu Glu Trp Glu His  Ser Glu Pro Pro Ile  Gly Val Gln
    1040                1045                1050

Ile Val  Asp Tyr Leu Leu Arg  Gln Glu Lys Val Thr  Asp Arg Met
    1055                1060                1065

Asp His  Ser Lys Val Glu Thr  Glu Thr Val Leu Ser  Phe Val Asp
    1070                1075                1080

Asp Ile  Ile Ser Gly Ala Lys  Ser Pro Cys Ala Met  Pro Ser Gln
    1085                1090                1095

Val Pro  Asp Lys Gln Leu Thr  Thr Ile Ser Leu Ile  Ile Arg Cys
    1100                1105                1110

Leu Glu  Pro Asp Thr Ile Tyr  Met Phe Thr Leu Trp  Gly Val Asp
    1115                1120                1125
```

```
Asn Thr  Gly Arg Arg Ser Arg  Pro Ser Asp Val Ile  Val Lys Thr
    1130                1135                1140


Pro Cys  Pro Val Val Asp Asp  Val Lys Ala Gln Glu  Ile Ala Asp
    1145                1150                1155


Lys Ile  Tyr Asn Leu Phe Asn  Gly Tyr Thr Ser Gly  Lys Glu Gln
    1160                1165                1170


Gln Thr  Ala Tyr Asn Thr Leu  Leu Asp Leu Gly Ser  Pro Thr Leu
    1175                1180                1185


His Arg  Val Leu Tyr His Tyr  Asn Gln His Tyr Glu  Ser Phe Gly
    1190                1195                1200


Glu Phe  Thr Trp Arg Cys Glu  Asp Glu Leu Gly Pro  Arg
    1205                1210                1215


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Met Asn Thr Leu Leu Cys Lys Gly Met Phe Cys Leu Leu Ser Trp Glu
1               5                  10                  15


Ala Asp Ser Arg Gly Arg Leu Gly Glu Tyr Thr Leu Gln Pro Leu Ser
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```
            20                  25                  30

Leu Gln Thr Glu Glu Thr Thr Glu Leu Gly Ser Lys Lys Glu Leu Lys
        35                  40                  45

Ser Met Pro Phe Ile Thr Tyr Leu Ser Gly Leu Leu Thr Ala Gln Met
    50                  55                  60

Leu Ser Asp Asp Gln Leu Ile Ser Gly Val Glu Ile Arg Cys Glu Glu
65                  70                  75                  80

Lys Gly Arg Cys Pro Ser Thr Cys His Leu Cys Arg Arg Pro Gly Lys
                85                  90                  95

Glu Gln Leu Ser Pro Thr Pro Val Leu Leu Glu Ile Asn Arg Val Val
            100                 105                 110

Pro Leu Tyr Thr Leu Ile Gln Asp Asn Gly Thr Lys Glu Ala Phe Lys
        115                 120                 125

Ser Ala Leu Met Ser Ser Tyr Trp Cys Ser Gly Lys Gly Asp Val Ile
    130                 135                 140

Asp Asp Trp Cys Arg Cys Asp Leu Ser Ala Phe Asp Ala Asn Gly Leu
145                 150                 155                 160

Pro Asn Cys Ser Pro Leu Leu Gln Pro Val Leu Arg Leu Ser Pro Thr
                165                 170                 175

Val Glu Pro Ser Ser Thr Val Val Ser Leu Glu Trp Val Asp Val Gln
            180                 185                 190

Pro Ala Ile Gly Thr Lys Val Ser Asp Tyr Ile Leu Gln His Lys Lys
        195                 200                 205

Val Asp Glu Tyr Thr Asp Thr Asp Leu Tyr Thr Gly Glu Phe Leu Ser
    210                 215                 220

Phe Ala Asp Asp Leu Leu Ser Gly Leu Gly Thr Ser Cys Val Ala Ala
225                 230                 235                 240

Gly Arg Ser His Gly Glu Val Pro Glu Val Ser Ile Tyr Ser Val Ile
                245                 250                 255
```

```
Phe Lys Cys Leu Glu Pro Asp Gly Leu Tyr Lys Phe Thr Leu Tyr Ala
            260                 265                 270

Val Asp Thr Arg Gly Arg His Ser Glu Leu Ser Thr Val Thr Leu Arg
        275                 280                 285

Thr Ala Cys Pro Leu Val Asp Asp Asn Lys Ala Glu Glu Ile Ala Asp
    290                 295                 300

Lys Ile Tyr Asn Leu Tyr Asn Gly Tyr Thr Ser Gly Lys Glu Gln Gln
305                 310                 315                 320

Met Ala Tyr Asn Thr Leu Met Glu Val Ser Ala Ser Met Leu Phe Arg
                325                 330                 335

Val Gln His His Tyr Asn Ser His Tyr Glu Lys Phe Gly Asp Phe Val
            340                 345                 350

Trp Arg Ser Glu Asp Glu Leu Gly Pro Arg Lys Ala His Leu Ile Leu
        355                 360                 365

Arg Arg Leu Glu Arg Val Ser Ser His Cys Ser Ser Leu Leu Arg Ser
    370                 375                 380

Ala Tyr Ile Gln Ser Arg Val Glu Thr Val Pro Tyr Leu Phe Cys Arg
385                 390                 395                 400

Ser Glu Glu Val Arg Pro Ala Gly Met Val Trp Tyr Ser Ile Leu Lys
                405                 410                 415

Asp Thr Lys Ile Thr Cys Glu Glu Lys Met Val Ser Met Ala Arg Asn
            420                 425                 430

Thr Tyr Gly Glu Ser Lys Gly Arg
        435                 440
```

<210> 6783
<211> 1339
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1457; "

<220>
<221> source
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<220>
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<223> /note="Gene Name:
astrotactin 2; "

<220>
<221> source
<223> /note="Uniprot ID: O75129; "

<220>
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<223> /note="ENSP ID: ENSP00000314038"

<400> 6783

```
Met Ala Ala Ala Gly Ala Arg Leu Ser Pro Gly Pro Gly Ser Gly Leu
1               5                   10                  15


Arg Gly Arg Pro Arg Leu Cys Phe His Pro Gly Pro Pro Pro Leu Leu
            20                  25                  30


Pro Leu Leu Leu Leu Phe Leu Leu Leu Leu Pro Pro Pro Pro Leu Leu
        35                  40                  45


Ala Gly Ala Thr Ala Ala Ala Ser Arg Glu Pro Asp Ser Pro Cys Arg
    50                  55                  60


Leu Lys Thr Val Thr Val Ser Thr Leu Pro Ala Leu Arg Glu Ser Asp
65                  70                  75                  80


Ile Gly Trp Ser Gly Ala Arg Ala Gly Ala Gly Ala Gly Thr Gly Ala
                85                  90                  95


Gly Ala Ala Ala Ala Ala Ala Ala Ser Pro Gly Ser Pro Gly Ser Ala Gly
            100                 105                 110


Thr Ala Ala Glu Ser Arg Leu Leu Leu Phe Val Arg Asn Glu Leu Pro
        115                 120                 125


Gly Arg Ile Ala Val Gln Asp Asp Leu Asp Asn Thr Glu Leu Pro Phe
    130                 135                 140


Phe Thr Leu Glu Met Ser Gly Thr Ala Ala Asp Ile Ser Leu Val His
```

145 150 155 160

Trp Arg Gln Gln Trp Leu Glu Asn Gly Thr Leu Tyr Phe His Val Ser
165 170 175

Met Ser Ser Ser Gly Gln Leu Ala Gln Ala Thr Ala Pro Thr Leu Gln
180 185 190

Glu Pro Ser Glu Ile Val Glu Glu Gln Met His Ile Leu His Ile Ser
195 200 205

Val Met Gly Gly Leu Ile Ala Leu Leu Leu Leu Leu Leu Leu Val Phe Thr
210 215 220

Val Ala Leu Tyr Ala Gln Arg Arg Trp Gln Lys Arg Arg Arg Ile Pro
225 230 235 240

Gln Lys Ser Ala Ser Thr Glu Ala Thr His Glu Ile His Tyr Ile Pro
245 250 255

Ser Val Leu Leu Gly Pro Gln Ala Arg Glu Ser Phe Arg Ser Ser Arg
260 265 270

Leu Gln Thr His Asn Ser Val Ile Gly Val Pro Ile Arg Glu Thr Pro
275 280 285

Ile Leu Asp Asp Tyr Asp Cys Glu Glu Asp Glu Glu Pro Pro Arg Arg
290 295 300

Ala Asn His Val Ser Arg Glu Asp Glu Phe Gly Ser Gln Val Thr His
305 310 315 320

Thr Leu Asp Ser Leu Gly His Pro Gly Glu Glu Lys Val Asp Phe Glu
325 330 335

Lys Lys Ala Ala Ala Glu Ala Thr Gln Glu Thr Val Glu Ser Leu Met
340 345 350

Gln Lys Phe Lys Glu Ser Phe Arg Ala Asn Thr Pro Ile Glu Ile Gly
355 360 365

Gln Leu Gln Pro Pro Leu Arg Ser Thr Ser Ala Gly Lys Arg Lys Arg
370 375 380

```
Arg Ser Lys Ser Arg Gly Gly Ile Ser Phe Gly Arg Ala Lys Gly Thr
385                 390                 395                 400

Ser Gly Ser Glu Ala Asp Asp Glu Thr Gln Leu Thr Phe Tyr Thr Glu
                405                 410                 415

Gln Tyr Arg Ser Arg Arg Arg Ser Lys Gly Leu Leu Lys Ser Pro Val
            420                 425                 430

Asn Lys Thr Ala Leu Thr Leu Ile Ala Val Ser Ser Cys Ile Leu Ala
        435                 440                 445

Met Val Cys Gly Ser Gln Met Ser Cys Pro Leu Thr Val Lys Val Thr
    450                 455                 460

Leu His Val Pro Glu His Phe Ile Ala Asp Gly Ser Ser Phe Val Val
465                 470                 475                 480

Ser Glu Gly Ser Tyr Leu Asp Ile Ser Asp Trp Leu Asn Pro Ala Lys
                485                 490                 495

Leu Ser Leu Tyr Tyr Gln Ile Asn Ala Thr Ser Pro Trp Val Arg Asp
            500                 505                 510

Leu Cys Gly Gln Arg Thr Thr Asp Ala Cys Glu Gln Leu Cys Asp Pro
        515                 520                 525

Glu Thr Gly Glu Cys Ser Cys His Glu Gly Tyr Ala Pro Asp Pro Val
    530                 535                 540

His Arg His Leu Cys Val Arg Ser Asp Trp Gly Gln Ser Glu Gly Pro
545                 550                 555                 560

Trp Pro Tyr Thr Thr Leu Glu Arg Gly Tyr Asp Leu Val Thr Gly Glu
                565                 570                 575

Gln Ala Pro Glu Lys Ile Leu Arg Ser Thr Phe Ser Leu Gly Gln Gly
            580                 585                 590

Leu Trp Leu Pro Val Ser Lys Ser Phe Val Val Pro Pro Val Glu Leu
        595                 600                 605
```

```
Ser Ile Asn Pro Leu Ala Ser Cys Lys Thr Asp Val Leu Val Thr Glu
    610                 615                 620

Asp Pro Ala Asp Val Arg Glu Glu Ala Met Leu Ser Thr Tyr Phe Glu
625                 630                 635                 640

Thr Ile Asn Asp Leu Leu Ser Ser Phe Gly Pro Val Arg Asp Cys Ser
                645                 650                 655

Arg Asn Asn Gly Gly Cys Thr Arg Asn Phe Lys Cys Val Ser Asp Arg
            660                 665                 670

Gln Val Asp Ser Ser Gly Cys Val Cys Pro Glu Glu Leu Lys Pro Met
        675                 680                 685

Lys Asp Gly Ser Gly Cys Tyr Asp His Ser Lys Gly Ile Asp Cys Ser
    690                 695                 700

Asp Gly Phe Asn Gly Gly Cys Glu Gln Leu Cys Leu Gln Gln Thr Leu
705                 710                 715                 720

Pro Leu Pro Tyr Asp Ala Thr Ser Ser Thr Ile Phe Met Phe Cys Gly
                725                 730                 735

Cys Val Glu Glu Tyr Lys Leu Ala Pro Asp Gly Lys Ser Cys Leu Met
            740                 745                 750

Leu Ser Asp Val Cys Glu Gly Pro Lys Cys Leu Lys Pro Asp Ser Lys
        755                 760                 765

Phe Asn Asp Thr Leu Phe Gly Glu Met Leu His Gly Tyr Asn Asn Arg
    770                 775                 780

Thr Gln His Val Asn Gln Gly Gln Val Phe Gln Met Thr Phe Arg Glu
785                 790                 795                 800

Asn Asn Phe Ile Lys Asp Phe Pro Gln Leu Ala Asp Gly Leu Leu Val
                805                 810                 815

Ile Pro Leu Pro Val Glu Glu Gln Cys Arg Gly Val Leu Ser Glu Pro
            820                 825                 830
```

```
Leu Pro Asp Leu Gln Leu Leu Thr Gly Asp Ile Arg Tyr Asp Glu Ala
        835                 840                 845

Met Gly Tyr Pro Met Val Gln Gln Trp Arg Val Arg Ser Asn Leu Tyr
    850                 855                 860

Arg Val Lys Leu Ser Thr Ile Thr Leu Ala Ala Gly Phe Thr Asn Val
865                 870                 875                 880

Leu Lys Ile Leu Thr Lys Glu Ser Ser Arg Glu Glu Leu Leu Ser Phe
                885                 890                 895

Ile Gln His Tyr Gly Ser His Tyr Ile Ala Glu Ala Leu Tyr Gly Ser
            900                 905                 910

Glu Leu Thr Cys Ile Ile His Phe Pro Ser Lys Lys Val Gln Gln Gln
        915                 920                 925

Leu Trp Leu Gln Tyr Gln Lys Glu Thr Thr Glu Leu Gly Ser Lys Lys
    930                 935                 940

Glu Leu Lys Ser Met Pro Phe Ile Thr Tyr Leu Ser Gly Leu Leu Thr
945                 950                 955                 960

Ala Gln Met Leu Ser Asp Asp Gln Leu Ile Ser Gly Val Glu Ile Arg
                965                 970                 975

Cys Glu Glu Lys Gly Arg Cys Pro Ser Thr Cys His Leu Cys Arg Arg
            980                 985                 990

Pro Gly Lys Glu Gln Leu Ser Pro  Thr Pro Val Leu Leu  Glu Ile
Asn
        995                 1000                1005

Arg Val  Val Pro Leu Tyr Thr  Leu Ile Gln Asp Asn  Gly Thr Lys
    1010                1015                1020

Glu Ala  Phe Lys Ser Ala Leu  Met Ser Ser Tyr Trp  Cys Ser Gly
    1025                1030                1035

Lys Gly  Asp Val Ile Asp Asp  Trp Cys Arg Cys Asp  Leu Ser Ala
    1040                1045                1050
```

```
Phe Asp  Ala Asn Gly Leu Pro  Asn Cys Ser Pro Leu  Leu Gln Pro
    1055                1060                1065

Val Leu  Arg Leu Ser Pro Thr  Val Glu Pro Ser Ser  Thr Val Val
    1070                1075                1080

Ser Leu  Glu Trp Val Asp Val  Gln Pro Ala Ile Gly  Thr Lys Val
    1085                1090                1095

Ser Asp  Tyr Ile Leu Gln His  Lys Lys Val Asp Glu  Tyr Thr Asp
    1100                1105                1110

Thr Asp  Leu Tyr Thr Gly Glu  Phe Leu Ser Phe Ala  Asp Asp Leu
    1115                1120                1125

Leu Ser  Gly Leu Gly Thr Ser  Cys Val Ala Ala Gly  Arg Ser His
    1130                1135                1140

Gly Glu  Val Pro Glu Val Ser  Ile Tyr Ser Val Ile  Phe Lys Cys
    1145                1150                1155

Leu Glu  Pro Asp Gly Leu Tyr  Lys Phe Thr Leu Tyr  Ala Val Asp
    1160                1165                1170

Thr Arg  Gly Arg His Ser Glu  Leu Ser Thr Val Thr  Leu Arg Thr
    1175                1180                1185

Ala Cys  Pro Leu Val Asp Asp  Asn Lys Ala Glu Glu  Ile Ala Asp
    1190                1195                1200

Lys Ile  Tyr Asn Leu Tyr Asn  Gly Tyr Thr Ser Gly  Lys Glu Gln
    1205                1210                1215

Gln Met  Ala Tyr Asn Thr Leu  Met Glu Val Ser Ala  Ser Met Leu
    1220                1225                1230

Phe Arg  Val Gln His His Tyr  Asn Ser His Tyr Glu  Lys Phe Gly
    1235                1240                1245

Asp Phe  Val Trp Arg Ser Glu  Asp Glu Leu Gly Pro  Arg Lys Ala
    1250                1255                1260

His Leu  Ile Leu Arg Arg Leu  Glu Arg Val Ser Ser  His Cys Ser
```

```
    1265                1270                1275

Ser Leu  Leu Arg Ser Ala Tyr  Ile Gln Ser Arg Val  Glu Thr Val
    1280                1285                1290

Pro Tyr  Leu Phe Cys Arg Ser  Glu Glu Val Arg Pro  Ala Gly Met
    1295                1300                1305

Val Trp  Tyr Ser Ile Leu Lys  Asp Thr Lys Ile Thr  Cys Glu Glu
    1310                1315                1320

Lys Met  Val Ser Met Ala Arg  Asn Thr Tyr Gly Glu  Ser Lys Gly
    1325                1330                1335

Arg
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<210> 6784
<211> 395
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1457; "

<220>
<221> source
<223> /note="Gene Symbol: ASTN2; "

<220>
<221> source
<223> /note="Gene Name:
astrotactin 2; "

<220>
<221> source
<223> /note="Uniprot ID: O75129; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000339925"

<400> 6784

```
Met Pro Phe Ile Thr Tyr Leu Ser Gly Leu Leu Thr Ala Gln Met Leu
1               5                  10                  15

Ser Asp Asp Gln Leu Ile Ser Gly Val Glu Ile Arg Cys Glu Glu Lys
            20                  25                  30
```

```
Gly Arg Cys Pro Ser Thr Cys His Leu Cys Arg Arg Pro Gly Lys Glu
        35                  40                  45

Gln Leu Ser Pro Thr Pro Val Leu Leu Glu Ile Asn Arg Val Val Pro
    50                  55                  60

Leu Tyr Thr Leu Ile Gln Asp Asn Gly Thr Lys Glu Ala Phe Lys Ser
65                  70                  75                  80

Ala Leu Met Ser Ser Tyr Trp Cys Ser Gly Lys Gly Asp Val Ile Asp
                85                  90                  95

Asp Trp Cys Arg Cys Asp Leu Ser Ala Phe Asp Ala Asn Gly Leu Pro
            100                 105                 110

Asn Cys Ser Pro Leu Leu Gln Pro Val Leu Arg Leu Ser Pro Thr Val
        115                 120                 125

Glu Pro Ser Ser Thr Val Val Ser Leu Glu Trp Val Asp Val Gln Pro
    130                 135                 140

Ala Ile Gly Thr Lys Val Ser Asp Tyr Ile Leu Gln His Lys Lys Val
145                 150                 155                 160

Asp Glu Tyr Thr Asp Thr Asp Leu Tyr Thr Gly Glu Phe Leu Ser Phe
                165                 170                 175

Ala Asp Asp Leu Leu Ser Gly Leu Gly Thr Ser Cys Val Ala Ala Gly
            180                 185                 190

Arg Ser His Gly Glu Val Pro Glu Val Ser Ile Tyr Ser Val Ile Phe
        195                 200                 205

Lys Cys Leu Glu Pro Asp Gly Leu Tyr Lys Phe Thr Leu Tyr Ala Val
    210                 215                 220

Asp Thr Arg Gly Arg His Ser Glu Leu Ser Thr Val Thr Leu Arg Thr
225                 230                 235                 240

Ala Cys Pro Leu Val Asp Asp Asn Lys Ala Glu Glu Ile Ala Asp Lys
                245                 250                 255
```

```
Ile Tyr Asn Leu Tyr Asn Gly Tyr Thr Ser Gly Lys Glu Gln Gln Met
            260                 265                 270

Ala Tyr Asn Thr Leu Met Glu Val Ser Ala Ser Met Leu Phe Arg Val
        275                 280                 285

Gln His His Tyr Asn Ser His Tyr Glu Lys Phe Gly Asp Phe Val Trp
    290                 295                 300

Arg Ser Glu Asp Glu Leu Gly Pro Arg Lys Ala His Leu Ile Leu Arg
305                 310                 315                 320

Arg Leu Glu Arg Val Ser Ser His Cys Ser Ser Leu Leu Arg Ser Ala
                325                 330                 335

Tyr Ile Gln Ser Arg Val Glu Thr Val Pro Tyr Leu Phe Cys Arg Ser
            340                 345                 350

Glu Glu Val Arg Pro Ala Gly Met Val Trp Tyr Ser Ile Leu Lys Asp
        355                 360                 365

Thr Lys Ile Thr Cys Glu Glu Lys Met Val Ser Met Ala Arg Asn Thr
    370                 375                 380

Tyr Tyr Leu Thr Leu Ser Lys Val Ser Pro Phe
385                 390                 395


<210> 6785
<211> 194
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1457; "

<220>
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<220>
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<223> /note="Gene Name:
      astrotactin 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000351460"
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<400> 6785
Met Pro Phe Ile Thr Tyr Leu Ser Gly Leu Leu Thr Ala Gln Met Leu
1 5 10 15

Ser Asp Asp Gln Leu Ile Ser Gly Val Glu Ile Arg Cys Glu Glu Lys
20 25 30

Gly Arg Cys Pro Ser Thr Cys His Leu Cys Arg Arg Pro Gly Lys Glu
35 40 45

Gln Leu Ser Pro Thr Pro Val Leu Leu Glu Ile Asn Arg Val Val Pro
50 55 60

Leu Tyr Thr Leu Ile Gln Asp Asn Gly Thr Lys Glu Ala Phe Lys Ser
65 70 75 80

Ala Leu Met Ser Ser Tyr Trp Cys Ser Gly Lys Gly Asp Val Ile Asp
85 90 95

Asp Trp Cys Arg Cys Asp Leu Ser Ala Phe Asp Ala Asn Gly Leu Pro
100 105 110

Asn Cys Ser Pro Leu Leu Gln Pro Val Leu Arg Leu Ser Pro Thr Val
115 120 125

Glu Pro Ser Ser Thr Val Val Ser Leu Glu Trp Val Asp Val Gln Pro
130 135 140

Ala Ile Gly Thr Lys Val Ser Asp Tyr Ile Leu Gln His Lys Lys Val
145 150 155 160

Asp Glu Tyr Thr Asp Thr Asp Leu Tyr Thr Val Tyr Cys Trp Ile Thr
165 170 175

Phe Ile Asp Leu Arg Ile Leu Asn Gln Pro Cys Ile Pro Gly Met Lys
180 185 190

Pro Thr

<210> 6786
<211> 1288
<212> PRT

<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ASTN2; "

<220>
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<223> /note="Gene Name:
astrotactin 2; "

<220>
<221> source
<223> /note="Uniprot ID: O75129; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000354504"

<400> 6786

```
Met Ala Ala Ala Gly Ala Arg Leu Ser Pro Gly Pro Gly Ser Gly Leu
1               5                  10                  15


Arg Gly Arg Pro Arg Leu Cys Phe His Pro Gly Pro Pro Pro Leu Leu
            20                  25                  30


Pro Leu Leu Leu Leu Phe Leu Leu Leu Leu Pro Pro Pro Pro Leu Leu
        35                  40                  45


Ala Gly Ala Thr Ala Ala Ala Ser Arg Glu Pro Asp Ser Pro Cys Arg
    50                  55                  60


Leu Lys Thr Val Thr Val Ser Thr Leu Pro Ala Leu Arg Glu Ser Asp
65                  70                  75                  80


Ile Gly Trp Ser Gly Ala Arg Ala Gly Ala Gly Ala Gly Thr Gly Ala
                85                  90                  95


Gly Ala Ala Ala Ala Ala Ala Ala Ser Pro Gly Ser Pro Gly Ser Ala Gly
            100                 105                 110


Thr Ala Ala Glu Ser Arg Leu Leu Leu Phe Val Arg Asn Glu Leu Pro
        115                 120                 125


Gly Arg Ile Ala Val Gln Asp Asp Leu Asp Asn Thr Glu Leu Pro Phe
```

```
    130                 135                 140

Phe Thr Leu Glu Met Ser Gly Thr Ala Ala Asp Ile Ser Leu Val His
145                 150                 155                 160

Trp Arg Gln Gln Trp Leu Glu Asn Gly Thr Leu Tyr Phe His Val Ser
                165                 170                 175

Met Ser Ser Ser Gly Gln Leu Ala Gln Ala Thr Ala Pro Thr Leu Gln
            180                 185                 190

Glu Pro Ser Glu Ile Val Glu Glu Gln Met His Ile Leu His Ile Ser
        195                 200                 205

Val Met Gly Gly Leu Ile Ala Leu Leu Leu Leu Leu Leu Leu Val Phe Thr
    210                 215                 220

Val Ala Leu Tyr Ala Gln Arg Arg Trp Gln Lys Arg Arg Arg Ile Pro
225                 230                 235                 240

Gln Lys Ser Ala Ser Thr Glu Ala Thr His Glu Ile His Tyr Ile Pro
                245                 250                 255

Ser Val Leu Leu Gly Pro Gln Ala Arg Glu Ser Phe Arg Ser Ser Arg
            260                 265                 270

Leu Gln Thr His Asn Ser Val Ile Gly Val Pro Ile Arg Glu Thr Pro
        275                 280                 285

Ile Leu Asp Asp Tyr Asp Cys Glu Glu Asp Glu Glu Pro Pro Arg Arg
    290                 295                 300

Ala Asn His Val Ser Arg Glu Asp Glu Phe Gly Ser Gln Val Thr His
305                 310                 315                 320

Thr Leu Asp Ser Leu Gly His Pro Gly Glu Glu Lys Val Asp Phe Glu
                325                 330                 335

Lys Lys Gly Gly Ile Ser Phe Gly Arg Ala Lys Gly Thr Ser Gly Ser
            340                 345                 350

Glu Ala Asp Asp Glu Thr Gln Leu Thr Phe Tyr Thr Glu Gln Tyr Arg
        355                 360                 365
```

```
Ser Arg Arg Arg Ser Lys Gly Leu Leu Lys Ser Pro Val Asn Lys Thr
    370                 375                 380

Ala Leu Thr Leu Ile Ala Val Ser Ser Cys Ile Leu Ala Met Val Cys
385                 390                 395                 400

Gly Ser Gln Met Ser Cys Pro Leu Thr Val Lys Val Thr Leu His Val
                405                 410                 415

Pro Glu His Phe Ile Ala Asp Gly Ser Ser Phe Val Val Ser Glu Gly
            420                 425                 430

Ser Tyr Leu Asp Ile Ser Asp Trp Leu Asn Pro Ala Lys Leu Ser Leu
        435                 440                 445

Tyr Tyr Gln Ile Asn Ala Thr Ser Pro Trp Val Arg Asp Leu Cys Gly
    450                 455                 460

Gln Arg Thr Thr Asp Ala Cys Glu Gln Leu Cys Asp Pro Glu Thr Gly
465                 470                 475                 480

Glu Cys Ser Cys His Glu Gly Tyr Ala Pro Asp Pro Val His Arg His
                485                 490                 495

Leu Cys Val Arg Ser Asp Trp Gly Gln Ser Glu Gly Pro Trp Pro Tyr
            500                 505                 510

Thr Thr Leu Glu Arg Gly Tyr Asp Leu Val Thr Gly Glu Gln Ala Pro
        515                 520                 525

Glu Lys Ile Leu Arg Ser Thr Phe Ser Leu Gly Gln Gly Leu Trp Leu
    530                 535                 540

Pro Val Ser Lys Ser Phe Val Val Pro Pro Val Glu Leu Ser Ile Asn
545                 550                 555                 560

Pro Leu Ala Ser Cys Lys Thr Asp Val Leu Val Thr Glu Asp Pro Ala
                565                 570                 575

Asp Val Arg Glu Glu Ala Met Leu Ser Thr Tyr Phe Glu Thr Ile Asn
            580                 585                 590
```

```
Asp Leu Leu Ser Ser Phe Gly Pro Val Arg Asp Cys Ser Arg Asn Asn
        595                 600                 605

Gly Gly Cys Thr Arg Asn Phe Lys Cys Val Ser Asp Arg Gln Val Asp
    610                 615                 620

Ser Ser Gly Cys Val Cys Pro Glu Glu Leu Lys Pro Met Lys Asp Gly
625                 630                 635                 640

Ser Gly Cys Tyr Asp His Ser Lys Gly Ile Asp Cys Ser Asp Gly Phe
                645                 650                 655

Asn Gly Gly Cys Glu Gln Leu Cys Leu Gln Gln Thr Leu Pro Leu Pro
            660                 665                 670

Tyr Asp Ala Thr Ser Ser Thr Ile Phe Met Phe Cys Gly Cys Val Glu
        675                 680                 685

Glu Tyr Lys Leu Ala Pro Asp Gly Lys Ser Cys Leu Met Leu Ser Asp
    690                 695                 700

Val Cys Glu Gly Pro Lys Cys Leu Lys Pro Asp Ser Lys Phe Asn Asp
705                 710                 715                 720

Thr Leu Phe Gly Glu Met Leu His Gly Tyr Asn Asn Arg Thr Gln His
                725                 730                 735

Val Asn Gln Gly Gln Val Phe Gln Met Thr Phe Arg Glu Asn Asn Phe
            740                 745                 750

Ile Lys Asp Phe Pro Gln Leu Ala Asp Gly Leu Leu Val Ile Pro Leu
        755                 760                 765

Pro Val Glu Glu Gln Cys Arg Gly Val Leu Ser Glu Pro Leu Pro Asp
    770                 775                 780

Leu Gln Leu Leu Thr Gly Asp Ile Arg Tyr Asp Glu Ala Met Gly Tyr
785                 790                 795                 800

Pro Met Val Gln Gln Trp Arg Val Arg Ser Asn Leu Tyr Arg Val Lys
                805                 810                 815
```

```
Leu Ser Thr Ile Thr Leu Ala Ala Gly Phe Thr Asn Val Leu Lys Ile
            820                 825                 830

Leu Thr Lys Glu Ser Ser Arg Glu Glu Leu Leu Ser Phe Ile Gln His
        835                 840                 845

Tyr Gly Ser His Tyr Ile Ala Glu Ala Leu Tyr Gly Ser Glu Leu Thr
    850                 855                 860

Cys Ile Ile His Phe Pro Ser Lys Lys Val Gln Gln Gln Leu Trp Leu
865                 870                 875                 880

Gln Tyr Gln Lys Glu Thr Thr Glu Leu Gly Ser Lys Lys Glu Leu Lys
                885                 890                 895

Ser Met Pro Phe Ile Thr Tyr Leu Ser Gly Leu Leu Thr Ala Gln Met
            900                 905                 910

Leu Ser Asp Asp Gln Leu Ile Ser Gly Val Glu Ile Arg Cys Glu Glu
        915                 920                 925

Lys Gly Arg Cys Pro Ser Thr Cys His Leu Cys Arg Arg Pro Gly Lys
    930                 935                 940

Glu Gln Leu Ser Pro Thr Pro Val Leu Leu Glu Ile Asn Arg Val Val
945                 950                 955                 960

Pro Leu Tyr Thr Leu Ile Gln Asp Asn Gly Thr Lys Glu Ala Phe Lys
                965                 970                 975

Ser Ala Leu Met Ser Ser Tyr Trp Cys Ser Gly Lys Gly Asp Val Ile
            980                 985                 990

Asp Asp Trp Cys Arg Cys Asp Leu  Ser Ala Phe Asp Ala  Asn Gly
Leu
        995                 1000                1005

Pro Asn  Cys Ser Pro Leu Leu  Gln Pro Val Leu Arg  Leu Ser Pro
    1010                1015                1020

Thr Val  Glu Pro Ser Ser Thr  Val Val Ser Leu Glu  Trp Val Asp
    1025                1030                1035
```

```
Val Gln  Pro Ala Ile Gly Thr  Lys Val Ser Asp Tyr  Ile Leu Gln
    1040                1045                1050

His Lys  Lys Val Asp Glu Tyr  Thr Asp Thr Asp Leu  Tyr Thr Gly
    1055                1060                1065

Glu Phe  Leu Ser Phe Ala Asp  Asp Leu Leu Ser Gly  Leu Gly Thr
    1070                1075                1080

Ser Cys  Val Ala Ala Gly Arg  Ser His Gly Glu Val  Pro Glu Val
    1085                1090                1095

Ser Ile  Tyr Ser Val Ile Phe  Lys Cys Leu Glu Pro  Asp Gly Leu
    1100                1105                1110

Tyr Lys  Phe Thr Leu Tyr Ala  Val Asp Thr Arg Gly  Arg His Ser
    1115                1120                1125

Glu Leu  Ser Thr Val Thr Leu  Arg Thr Ala Cys Pro  Leu Val Asp
    1130                1135                1140

Asp Asn  Lys Ala Glu Glu Ile  Ala Asp Lys Ile Tyr  Asn Leu Tyr
    1145                1150                1155

Asn Gly  Tyr Thr Ser Gly Lys  Glu Gln Gln Met Ala  Tyr Asn Thr
    1160                1165                1170

Leu Met  Glu Val Ser Ala Ser  Met Leu Phe Arg Val  Gln His His
    1175                1180                1185

Tyr Asn  Ser His Tyr Glu Lys  Phe Gly Asp Phe Val  Trp Arg Ser
    1190                1195                1200

Glu Asp  Glu Leu Gly Pro Arg  Lys Ala His Leu Ile  Leu Arg Arg
    1205                1210                1215

Leu Glu  Arg Val Ser Ser His  Cys Ser Ser Leu Leu  Arg Ser Ala
    1220                1225                1230

Tyr Ile  Gln Ser Arg Val Glu  Thr Val Pro Tyr Leu  Phe Cys Arg
    1235                1240                1245

Ser Glu  Glu Val Arg Pro Ala  Gly Met Val Trp Tyr  Ser Ile Leu
```

1250 1255 1260

Lys Asp Thr Lys Ile Thr Cys Glu Glu Lys Met Val Ser Met Ala
1265 1270 1275

Arg Asn Thr Tyr Gly Glu Ser Lys Gly Arg
1280 1285

<210> 6787
<211> 402
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1457; "

<220>
<221> source
<223> /note="Gene Symbol: ASTN2; "

<220>
<221> source
<223> /note="Gene Name:
astrotactin 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000355116"

<400> 6787
Met Pro Phe Ile Thr Tyr Leu Ser Gly Leu Leu Thr Ala Gln Met Leu
1 5 10 15

Ser Asp Asp Gln Leu Ile Ser Gly Val Glu Ile Arg Cys Glu Glu Lys
20 25 30

Gly Arg Cys Pro Ser Thr Cys His Leu Cys Arg Arg Pro Gly Lys Glu
35 40 45

Gln Leu Ser Pro Thr Pro Val Leu Leu Glu Ile Asn Arg Val Val Pro
50 55 60

Leu Tyr Thr Leu Ile Gln Asp Asn Gly Thr Lys Glu Ala Phe Lys Ser
65 70 75 80

Ala Leu Met Ser Ser Tyr Trp Cys Ser Gly Lys Gly Asp Val Ile Asp
85 90 95

```
Asp Trp Cys Arg Cys Asp Leu Ser Ala Phe Asp Ala Asn Gly Leu Pro
            100                 105                 110

Asn Cys Ser Pro Leu Leu Gln Pro Val Leu Arg Leu Ser Pro Thr Val
        115                 120                 125

Glu Pro Ser Ser Thr Val Val Ser Leu Glu Trp Val Asp Val Gln Pro
    130                 135                 140

Ala Ile Gly Thr Lys Val Ser Asp Tyr Ile Leu Gln His Lys Lys Val
145                 150                 155                 160

Asp Glu Tyr Thr Asp Thr Asp Leu Tyr Thr Gly Glu Phe Leu Ser Phe
                165                 170                 175

Ala Asp Asp Leu Leu Ser Gly Leu Gly Thr Ser Cys Val Ala Ala Gly
            180                 185                 190

Arg Ser His Gly Glu Val Pro Glu Val Ser Ile Tyr Ser Val Ile Phe
        195                 200                 205

Lys Cys Leu Glu Pro Asp Gly Leu Tyr Lys Phe Thr Leu Tyr Ala Val
    210                 215                 220

Asp Thr Arg Gly Arg His Ser Glu Leu Ser Thr Val Thr Leu Arg Thr
225                 230                 235                 240

Ala Cys Pro Leu Val Asp Asp Asn Lys Ala Glu Glu Ile Ala Asp Lys
                245                 250                 255

Ile Tyr Asn Leu Tyr Asn Gly Tyr Thr Ser Gly Lys Glu Gln Gln Met
            260                 265                 270

Ala Tyr Asn Thr Leu Met Glu Val Ser Ala Ser Met Leu Phe Arg Val
        275                 280                 285

Gln His His Tyr Asn Ser His Tyr Glu Lys Phe Gly Asp Phe Val Trp
    290                 295                 300

Arg Ser Glu Asp Glu Leu Gly Pro Arg Lys Ala His Leu Ile Leu Arg
305                 310                 315                 320
```

Arg Leu Glu Arg Val Ser Ser His Cys Ser Ser Leu Leu Arg Ser Ala
325 330 335

Tyr Ile Gln Ser Arg Val Glu Thr Val Pro Tyr Leu Phe Cys Arg Ser
340 345 350

Glu Glu Val Arg Pro Ala Gly Met Val Trp Tyr Ser Ile Leu Lys Asp
355 360 365

Thr Lys Ile Thr Cys Glu Glu Lys Met Val Ser Met Ala Arg Asn Thr
370 375 380

Tyr Gly Glu Ser Lys Gly Arg Tyr Tyr Leu Thr Leu Ser Lys Val Ser
385 390 395 400

Pro Phe

<210> 6788
<211> 1062
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1457; "

<220>
<221> source
<223> /note="Gene Symbol: ASTN2; "

<220>
<221> source
<223> /note="Gene Name:
astrotactin 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000363098"

<400> 6788
Gln Thr His Asn Ser Val Ile Gly Val Pro Ile Arg Glu Thr Pro Ile
1 5 10 15

Leu Asp Asp Tyr Asp Cys Glu Glu Asp Glu Glu Pro Pro Arg Arg Ala
20 25 30

Asn His Val Ser Arg Glu Asp Glu Phe Gly Ser Gln Val Thr His Thr
35 40 45

```
Leu Asp Ser Leu Gly His Pro Gly Glu Glu Lys Val Asp Phe Glu Lys
    50                  55                  60

Lys Ala Ala Ala Glu Ala Thr Gln Glu Thr Val Glu Ser Leu Met Gln
65                  70                  75                  80

Lys Phe Lys Glu Ser Phe Arg Ala Asn Thr Pro Ile Glu Ile Gly Gln
                85                  90                  95

Leu Gln Pro Pro Leu Arg Ser Thr Ser Ala Gly Lys Arg Lys Arg Arg
            100                 105                 110

Ser Lys Ser Arg Gly Gly Ile Ser Phe Gly Arg Ala Lys Gly Thr Ser
        115                 120                 125

Gly Ser Glu Ala Asp Asp Glu Thr Gln Leu Thr Phe Tyr Thr Glu Gln
    130                 135                 140

Tyr Arg Ser Arg Arg Arg Ser Lys Gly Leu Leu Lys Ser Pro Val Asn
145                 150                 155                 160

Lys Thr Ala Leu Thr Leu Ile Ala Val Ser Ser Cys Ile Leu Ala Met
                165                 170                 175

Val Cys Gly Ser Gln Met Ser Cys Pro Leu Thr Val Lys Val Thr Leu
            180                 185                 190

His Val Pro Glu His Phe Ile Ala Asp Gly Ser Ser Phe Val Val Ser
        195                 200                 205

Glu Gly Ser Tyr Leu Asp Ile Ser Asp Trp Leu Asn Pro Ala Lys Leu
    210                 215                 220

Ser Leu Tyr Tyr Gln Ile Asn Ala Thr Ser Pro Trp Val Arg Asp Leu
225                 230                 235                 240

Cys Gly Gln Arg Thr Thr Asp Ala Cys Glu Gln Leu Cys Asp Pro Glu
                245                 250                 255

Thr Gly Glu Cys Ser Cys His Glu Gly Tyr Ala Pro Asp Pro Val His
            260                 265                 270
```

```
Arg His Leu Cys Val Arg Ser Asp Trp Gly Gln Ser Glu Gly Pro Trp
        275                 280                 285

Pro Tyr Thr Thr Leu Glu Arg Gly Tyr Asp Leu Val Thr Gly Glu Gln
    290                 295                 300

Ala Pro Glu Lys Ile Leu Ser Leu Gly Gln Gly Leu Trp Leu Pro Val
305                 310                 315                 320

Ser Lys Ser Phe Val Val Pro Pro Val Glu Leu Ser Ile Asn Pro Leu
                325                 330                 335

Ala Ser Cys Lys Thr Asp Val Leu Val Thr Glu Asp Pro Ala Asp Val
            340                 345                 350

Arg Glu Glu Ala Met Leu Ser Thr Tyr Phe Glu Thr Ile Asn Asp Leu
        355                 360                 365

Leu Ser Ser Phe Gly Pro Val Arg Asp Cys Ser Arg Asn Asn Gly Gly
    370                 375                 380

Cys Thr Arg Asn Phe Lys Cys Val Ser Asp Arg Gln Val Asp Ser Ser
385                 390                 395                 400

Gly Cys Val Cys Pro Glu Glu Leu Lys Pro Met Lys Asp Gly Ser Gly
                405                 410                 415

Cys Tyr Asp His Ser Lys Gly Ile Asp Cys Ser Asp Gly Phe Asn Gly
            420                 425                 430

Gly Cys Glu Gln Leu Cys Leu Gln Gln Thr Leu Pro Leu Pro Tyr Asp
        435                 440                 445

Ala Thr Ser Ser Thr Ile Phe Met Phe Cys Gly Cys Val Glu Glu Tyr
    450                 455                 460

Lys Leu Ala Pro Asp Gly Lys Ser Cys Leu Met Leu Ser Asp Val Cys
465                 470                 475                 480

Glu Gly Pro Lys Cys Leu Lys Pro Asp Ser Lys Phe Asn Asp Thr Leu
                485                 490                 495
```

```
Phe Gly Glu Met Leu His Gly Tyr Asn Asn Arg Thr Gln His Val Asn
            500                 505                 510

Gln Gly Gln Val Phe Gln Met Thr Phe Arg Glu Asn Asn Phe Ile Lys
        515                 520                 525

Asp Phe Pro Gln Leu Ala Asp Gly Leu Leu Val Ile Pro Leu Pro Val
    530                 535                 540

Glu Glu Gln Cys Arg Gly Val Leu Ser Glu Pro Leu Pro Asp Leu Gln
545                 550                 555                 560

Leu Leu Thr Gly Asp Ile Arg Tyr Asp Glu Ala Met Gly Tyr Pro Met
                565                 570                 575

Val Gln Gln Trp Arg Val Arg Ser Asn Leu Tyr Arg Val Lys Leu Ser
            580                 585                 590

Thr Ile Thr Leu Ala Ala Gly Phe Thr Asn Val Leu Lys Ile Leu Thr
        595                 600                 605

Lys Glu Ser Ser Arg Glu Glu Leu Leu Ser Phe Ile Gln His Tyr Gly
    610                 615                 620

Ser His Tyr Ile Ala Glu Ala Leu Tyr Gly Ser Glu Leu Thr Cys Ile
625                 630                 635                 640

Ile His Phe Pro Ser Lys Lys Val Gln Gln Gln Leu Trp Leu Gln Tyr
                645                 650                 655

Gln Lys Glu Thr Thr Glu Leu Gly Ser Lys Lys Glu Leu Lys Ser Met
            660                 665                 670

Pro Phe Ile Thr Tyr Leu Ser Gly Leu Leu Thr Ala Gln Met Leu Ser
        675                 680                 685

Asp Asp Gln Leu Ile Ser Gly Val Glu Ile Arg Cys Glu Glu Lys Gly
    690                 695                 700

Arg Cys Pro Ser Thr Cys His Leu Cys Arg Arg Pro Gly Lys Glu Gln
705                 710                 715                 720

Leu Ser Pro Thr Pro Val Leu Leu Glu Ile Asn Arg Val Val Pro Leu
```

```
                725                 730                 735

Tyr Thr Leu Ile Gln Asp Asn Gly Thr Lys Glu Ala Phe Lys Ser Ala
            740                 745                 750

Leu Met Ser Ser Tyr Trp Cys Ser Gly Lys Gly Asp Val Ile Asp Asp
        755                 760                 765

Trp Cys Arg Cys Asp Leu Ser Ala Phe Asp Ala Asn Gly Leu Pro Asn
    770                 775                 780

Cys Ser Pro Leu Leu Gln Pro Val Leu Arg Leu Ser Pro Thr Val Glu
785                 790                 795                 800

Pro Ser Ser Thr Val Val Ser Leu Glu Trp Val Asp Val Gln Pro Ala
                805                 810                 815

Ile Gly Thr Lys Val Ser Asp Tyr Ile Leu Gln His Lys Lys Val Asp
            820                 825                 830

Glu Tyr Thr Asp Thr Asp Leu Tyr Thr Gly Glu Phe Leu Ser Phe Ala
        835                 840                 845

Asp Asp Leu Leu Ser Gly Leu Gly Thr Ser Cys Val Ala Ala Gly Arg
    850                 855                 860

Ser His Gly Glu Val Pro Glu Val Ser Ile Tyr Ser Val Ile Phe Lys
865                 870                 875                 880

Cys Leu Glu Pro Asp Gly Leu Tyr Lys Phe Thr Leu Tyr Ala Val Asp
                885                 890                 895

Thr Arg Gly Arg His Ser Glu Leu Ser Thr Val Thr Leu Arg Thr Ala
            900                 905                 910

Cys Pro Leu Val Asp Asp Asn Lys Ala Glu Glu Ile Ala Asp Lys Ile
        915                 920                 925

Tyr Asn Leu Tyr Asn Gly Tyr Thr Ser Gly Lys Glu Gln Gln Met Ala
    930                 935                 940

Tyr Asn Thr Leu Met Glu Val Ser Ala Ser Met Leu Phe Arg Val Gln
945                 950                 955                 960
```

```
His His Tyr Asn Ser His Tyr Glu Lys Phe Gly Asp Phe Val Trp Arg
                965                 970                 975

Ser Glu Asp Glu Leu Gly Pro Arg Lys Ala His Leu Ile Leu Arg Arg
            980                 985                 990

Leu Glu Arg Val Ser Ser His Cys  Ser Ser Leu Leu Arg  Ser Ala
Tyr
        995                 1000                1005

Ile Gln  Ser Arg Val Glu Thr  Val Pro Tyr Leu Phe  Cys Arg Ser
    1010                1015                1020

Glu Glu  Val Arg Pro Ala Gly  Met Val Trp Tyr Ser  Ile Leu Lys
    1025                1030                1035

Asp Thr  Lys Ile Thr Cys Glu  Glu Lys Met Val Ser  Met Ala Arg
    1040                1045                1050

Asn Thr  Tyr Gly Glu Ser Lys  Gly Arg
    1055                1060
```

<210> 6789
<211> 98
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1457; "

<220>
<221> source
<223> /note="Gene Symbol: ASTN2; "

<220>
<221> source
<223> /note="Gene Name:
astrotactin 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000412099"

<220>
<221> MOD_RES
<222> (1)..(1)

<223> Any amino acid

<400> 6789
Xaa Met Ala Tyr Asn Thr Leu Met Glu Val Ser Ala Ser Met Leu Phe
1   5   10   15

Arg Val Gln His His Tyr Asn Ser His Tyr Glu Lys Phe Gly Asp Phe
            20   25   30

Val Trp Arg Ser Glu Asp Glu Leu Gly Pro Ser Leu Leu Glu Ser Phe
        35   40   45

Met Ser Leu Gln Asp Ile Asn Leu Leu Glu Arg Arg Pro Gly Arg Pro
    50   55   60

Gln Arg Pro Gly Asn Pro Leu Ser Asn Val Ser Trp Arg Ile Ser Glu
65   70   75   80

Ile Ala Pro Thr Ser His Thr Asp Met Ser Ala Gly Ile Lys Glu Thr
                85   90   95

Ala Ser

<210> 6790
<211> 706
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1458; "

<220>
<221> source
<223> /note="Gene Symbol: ASUN; "

<220>
<221> source
<223> /note="Gene Name:
asunder spermatogenesis
regulator; "

<220>
<221> source
<223> /note="Uniprot ID: Q9NVM9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000261191"

<400> 6790
Met Lys Ile Phe Ser Glu Ser His Lys Thr Val Phe Val Val Asp His
1 5 10 15

Cys Pro Tyr Met Ala Glu Ser Cys Arg Gln His Val Glu Phe Asp Met
20 25 30

Leu Val Lys Asn Arg Thr Gln Gly Ile Ile Pro Leu Ala Pro Ile Ser
35 40 45

Lys Ser Leu Trp Thr Cys Ser Val Glu Ser Ser Met Glu Tyr Cys Arg
50 55 60

Ile Met Tyr Asp Ile Phe Pro Phe Lys Lys Leu Val Asn Phe Ile Val
65 70 75 80

Ser Asp Ser Gly Ala His Val Leu Asn Ser Trp Thr Gln Glu Asp Gln
85 90 95

Asn Leu Gln Glu Leu Met Ala Ala Leu Ala Ala Val Gly Pro Pro Asn
100 105 110

Pro Arg Ala Asp Pro Glu Cys Cys Ser Ile Leu His Gly Leu Val Ala
115 120 125

Ala Val Glu Thr Leu Cys Lys Ile Thr Glu Tyr Gln His Glu Ala Arg
130 135 140

Thr Leu Leu Met Glu Asn Ala Glu Arg Val Gly Asn Arg Gly Arg Ile
145 150 155 160

Ile Cys Ile Thr Asn Ala Lys Ser Asp Ser His Val Arg Met Leu Glu
165 170 175

Asp Cys Val Gln Glu Thr Ile His Glu His Asn Lys Leu Ala Ala Asn
180 185 190

Ser Asp His Leu Met Gln Ile Gln Lys Cys Glu Leu Val Leu Ile His
195 200 205

Thr Tyr Pro Val Gly Glu Asp Ser Leu Val Ser Asp Arg Ser Lys Lys
210 215 220

```
Glu Leu Ser Pro Val Leu Thr Ser Glu Val His Ser Val Arg Ala Gly
225                 230                 235                 240

Arg His Leu Ala Thr Lys Leu Asn Ile Leu Val Gln Gln His Phe Asp
                245                 250                 255

Leu Ala Ser Thr Thr Ile Thr Asn Ile Pro Met Lys Glu Glu Gln His
            260                 265                 270

Ala Asn Thr Ser Ala Asn Tyr Asp Val Glu Leu Leu His His Lys Asp
        275                 280                 285

Ala His Val Asp Phe Leu Lys Ser Gly Asp Ser His Leu Gly Gly Gly
    290                 295                 300

Ser Arg Glu Gly Ser Phe Lys Glu Thr Ile Thr Leu Lys Trp Cys Thr
305                 310                 315                 320

Pro Arg Thr Asn Asn Ile Glu Leu His Tyr Cys Thr Gly Ala Tyr Arg
                325                 330                 335

Ile Ser Pro Val Asp Val Asn Ser Arg Pro Ser Ser Cys Leu Thr Asn
            340                 345                 350

Phe Leu Leu Asn Gly Arg Ser Val Leu Leu Glu Gln Pro Arg Lys Ser
        355                 360                 365

Gly Ser Lys Val Ile Ser His Met Leu Ser Ser His Gly Gly Glu Ile
    370                 375                 380

Phe Leu His Val Leu Ser Ser Ser Arg Ser Ile Leu Glu Asp Pro Pro
385                 390                 395                 400

Ser Ile Ser Glu Gly Cys Gly Gly Arg Val Thr Asp Tyr Arg Ile Thr
                405                 410                 415

Asp Phe Gly Glu Phe Met Arg Glu Asn Arg Leu Thr Pro Phe Leu Asp
            420                 425                 430

Pro Arg Tyr Lys Ile Asp Gly Ser Leu Glu Val Pro Leu Glu Arg Ala
        435                 440                 445
```

```
Lys Asp Gln Leu Glu Lys His Thr Arg Tyr Trp Pro Met Ile Ile Ser
    450                 455                 460

Gln Thr Thr Ile Phe Asn Met Gln Ala Val Val Pro Leu Ala Ser Val
465                 470                 475                 480

Ile Val Lys Glu Ser Leu Thr Glu Glu Asp Val Leu Asn Cys Gln Lys
                485                 490                 495

Thr Ile Tyr Asn Leu Val Asp Met Glu Arg Lys Asn Asp Pro Leu Pro
            500                 505                 510

Ile Ser Thr Val Gly Thr Arg Gly Lys Gly Pro Lys Arg Asp Glu Gln
        515                 520                 525

Tyr Arg Ile Met Trp Asn Glu Leu Glu Thr Leu Val Arg Ala His Ile
    530                 535                 540

Asn Asn Ser Glu Lys His Gln Arg Val Leu Glu Cys Leu Met Ala Cys
545                 550                 555                 560

Arg Ser Lys Pro Pro Glu Glu Glu Glu Arg Lys Lys Arg Gly Arg Lys
                565                 570                 575

Arg Glu Asp Lys Glu Asp Lys Ser Glu Lys Ala Val Lys Asp Tyr Glu
            580                 585                 590

Gln Glu Lys Ser Trp Gln Asp Ser Glu Arg Leu Lys Gly Ile Leu Glu
        595                 600                 605

Arg Gly Lys Glu Glu Leu Ala Glu Ala Glu Ile Ile Lys Asp Ser Pro
    610                 615                 620

Asp Ser Pro Glu Pro Pro Asn Lys Lys Pro Leu Val Glu Met Asp Glu
625                 630                 635                 640

Thr Pro Gln Val Glu Lys Ser Lys Gly Pro Val Ser Leu Leu Ser Leu
                645                 650                 655

Trp Ser Asn Arg Ile Asn Thr Ala Asn Ser Arg Lys His Gln Glu Phe
            660                 665                 670

Ala Gly Arg Leu Asn Ser Val Asn Asn Arg Ala Glu Leu Tyr Gln His
```

675 680 685

Leu Lys Glu Glu Asn Gly Met Glu Thr Thr Glu Asn Gly Lys Ala Ser
690 695 700

Arg Gln
705

<210> 6791
<211> 163
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1458; "

<220>
<221> source
<223> /note="Gene Symbol: ASUN; "

<220>
<221> source
<223> /note="Gene Name:
asunder spermatogenesis
regulator; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000443066"

<400> 6791
Met Lys Ile Phe Ser Glu Ser His Lys Thr Val Phe Val Val Asp His
1 5 10 15

Cys Pro Tyr Met Ala Glu Ser Cys Arg Gln His Val Glu Phe Asp Met
20 25 30

Leu Val Lys Asn Arg Thr Gln Gly Ile Ile Pro Leu Ala Pro Ile Ser
35 40 45

Lys Ser Leu Trp Thr Cys Ser Val Glu Ser Ser Met Glu Tyr Cys Arg
50 55 60

Ile Met Tyr Asp Ile Phe Pro Phe Lys Lys Leu Val Asn Phe Ile Val
65 70 75 80

Ser Asp Ser Gly Ala His Val Leu Asn Ser Trp Thr Gln Glu Asp Gln
85 90 95

```
Asn Leu Gln Glu Leu Met Ala Ala Leu Ala Ala Val Gly Pro Pro Asn
            100                 105                 110

Pro Arg Ala Asp Pro Glu Cys Cys Ser Ile Leu His Gly Leu Val Ala
        115                 120                 125

Ala Val Glu Thr Leu Cys Lys Ile Thr Glu Tyr Gln His Glu Ala Arg
    130                 135                 140

Thr Leu Leu Met Glu Asn Ala Glu Arg Val Gly Asn Arg Gly Arg Ile
145                 150                 155                 160

Ile Cys Ile
```

<210> 6792
<211> 353
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1458; "

<220>
<221> source
<223> /note="Gene Symbol: ASUN; "

<220>
<221> source
<223> /note="Gene Name:
asunder spermatogenesis
regulator; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000445645"

<400> 6792

```
Gly Asp Ser His Leu Gly Gly Gly Ser Arg Glu Gly Ser Phe Lys Glu
1               5                   10                  15

Thr Ile Thr Leu Lys Trp Cys Thr Pro Arg Thr Asn Asn Ile Glu Leu
            20                  25                  30

His Tyr Cys Thr Gly Ala Tyr Arg Ile Ser Pro Val Asp Val Asn Ser
        35                  40                  45
```

```
Arg Pro Ser Ser Cys Leu Thr Asn Phe Leu Leu Asn Gly Arg Ser Val
    50                  55                  60

Leu Leu Glu Gln Pro Arg Lys Ser Gly Ser Lys Val Ile Ser His Met
65                  70                  75                  80

Leu Ser Ser His Gly Gly Glu Ile Phe Leu His Val Leu Ser Ser Ser
                85                  90                  95

Arg Ser Ile Leu Glu Asp Pro Pro Ser Ile Ser Glu Gly Cys Gly Gly
            100                 105                 110

Arg Val Thr Asp Tyr Arg Ile Thr Val Val Pro Leu Ala Ser Val Ile
        115                 120                 125

Val Lys Glu Ser Leu Thr Glu Glu Asp Val Leu Asn Cys Gln Lys Thr
    130                 135                 140

Ile Tyr Asn Leu Val Asp Met Glu Arg Lys Asn Asp Pro Leu Pro Ile
145                 150                 155                 160

Ser Thr Val Gly Thr Arg Gly Lys Gly Pro Lys Arg Asp Glu Gln Tyr
                165                 170                 175

Arg Ile Met Trp Asn Glu Leu Glu Thr Leu Val Arg Ala His Ile Asn
            180                 185                 190

Asn Ser Glu Lys His Gln Arg Val Leu Glu Cys Leu Met Ala Cys Arg
        195                 200                 205

Ser Lys Pro Pro Glu Glu Glu Glu Arg Lys Lys Arg Gly Arg Lys Arg
    210                 215                 220

Glu Asp Lys Glu Asp Lys Ser Glu Lys Ala Val Lys Asp Tyr Glu Gln
225                 230                 235                 240

Glu Lys Ser Trp Gln Asp Ser Glu Arg Leu Lys Gly Ile Leu Glu Arg
                245                 250                 255

Gly Lys Glu Glu Leu Ala Glu Ala Glu Ile Ile Lys Asp Ser Pro Asp
            260                 265                 270
```

```
Ser Pro Glu Pro Pro Asn Lys Lys Pro Leu Val Glu Met Asp Glu Thr
        275                 280                 285

Pro Gln Val Glu Lys Ser Lys Gly Pro Val Ser Leu Leu Ser Leu Trp
    290                 295                 300

Ser Asn Arg Ile Asn Thr Ala Asn Ser Arg Lys His Gln Glu Phe Ala
305                 310                 315                 320

Gly Arg Leu Asn Ser Val Asn Asn Arg Ala Glu Leu Tyr Gln His Leu
                325                 330                 335

Lys Glu Glu Asn Gly Met Glu Thr Thr Glu Asn Gly Lys Ala Ser Arg
            340                 345                 350

Gln
```

<210> 6793
<211> 225
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1458; "

<220>
<221> source
<223> /note="Gene Symbol: ASUN; "

<220>
<221> source
<223> /note="Gene Name:
asunder spermatogenesis
regulator; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000446183"

<400> 6793

```
Met Lys Ile Phe Ser Glu Ser His Lys Thr Val Phe Val Val Asp His
1               5                   10                  15

Cys Pro Tyr Met Ala Glu Ser Cys Arg Gln His Val Glu Phe Asp Met
            20                  25                  30

Leu Val Lys Asn Arg Thr Gln Gly Ile Ile Pro Leu Ala Pro Ile Ser
```

```
        35                  40                  45

Lys Ser Leu Trp Thr Cys Ser Val Glu Ser Ser Met Glu Tyr Cys Arg
    50                  55                  60

Ile Met Tyr Asp Ile Phe Pro Phe Lys Lys Leu Val Asn Phe Ile Val
65                  70                  75                  80

Ser Asp Ser Gly Ala His Val Leu Asn Ser Trp Thr Gln Glu Asp Gln
                85                  90                  95

Asn Leu Gln Glu Leu Met Ala Ala Leu Ala Ala Val Gly Pro Pro Asn
            100                 105                 110

Pro Arg Ala Asp Pro Glu Cys Cys Ser Ile Leu His Gly Leu Val Ala
        115                 120                 125

Ala Val Glu Thr Leu Cys Lys Ile Thr Glu Tyr Gln His Glu Ala Arg
    130                 135                 140

Thr Leu Leu Met Glu Asn Ala Glu Arg Val Gly Asn Arg Gly Arg Ile
145                 150                 155                 160

Ile Cys Ile Thr Asn Ala Lys Ser Asp Ser His Val Arg Met Leu Glu
                165                 170                 175

Asp Cys Val Gln Glu Thr Ile His Glu His Asn Lys Leu Ala Ala Asn
            180                 185                 190

Ser Asp His Leu Met Gln Ile Gln Lys Cys Glu Leu Val Leu Ile His
        195                 200                 205

Thr Tyr Pro Val Gly Glu Asp Ser Leu Val Ser Asp Arg Ser Lys Lys
    210                 215                 220

Glu
225
```

<210> 6794
<211> 124
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1458; "

<220>
<221> source
<223> /note="Gene Symbol: ASUN; "

<220>
<221> source
<223> /note="Gene Name:
asunder spermatogenesis
regulator; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000448467"

<400> 6794
Met Ala Ala Leu Ala Ala Val Gly Pro Pro Asn Pro Arg Ala Asp Pro
1 5 10 15

Glu Cys Cys Ser Ile Leu His Gly Leu Val Ala Ala Val Glu Thr Leu
20 25 30

Cys Lys Ile Thr Glu Tyr Gln His Glu Ala Arg Thr Leu Leu Met Glu
35 40 45

Asn Ala Glu Arg Val Gly Asn Arg Gly Arg Ile Ile Cys Ile Thr Asn
50 55 60

Ala Lys Ser Asp Ser His Val Arg Met Leu Glu Asp Cys Val Gln Glu
65 70 75 80

Thr Ile His Glu His Asn Lys Leu Ala Ala Asn Ser Asp His Leu Met
85 90 95

Gln Ile Gln Lys Cys Glu Leu Val Leu Ile His Thr Tyr Pro Val Gly
100 105 110

Glu Asp Ser Leu Val Ser Asp Arg Ser Lys Lys Glu
115 120

<210> 6795
<211> 153
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1458; "

<220>
<221> source
<223> /note="Gene Symbol: ASUN; "

<220>
<221> source
<223> /note="Gene Name:
asunder spermatogenesis
regulator; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000448985"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6795

```
Xaa Ala Thr Lys Leu Asn Ile Leu Val Gln Gln His Phe Asp Leu Ala
1               5                   10                  15

Ser Thr Thr Ile Thr Asn Ile Pro Met Lys Glu Glu Gln His Ala Asn
            20                  25                  30

Thr Ser Ala Asn Tyr Asp Val Glu Leu Leu His His Lys Asp Ala His
        35                  40                  45

Val Asp Phe Leu Lys Ser Glu Leu His Tyr Cys Thr Gly Ala Tyr Arg
    50                  55                  60

Ile Ser Pro Val Asp Val Asn Ser Arg Pro Ser Ser Cys Leu Thr Asn
65                  70                  75                  80

Phe Leu Leu Asn Asp Pro Arg Tyr Lys Ile Asp Gly Ser Leu Glu Val
                85                  90                  95

Pro Leu Glu Arg Ala Lys Asp Gln Leu Glu Lys His Thr Arg Tyr Trp
            100                 105                 110

Pro Met Ile Ile Ser Gln Thr Thr Ile Phe Asn Met Gln Ala Val Val
        115                 120                 125

Pro Leu Ala Ser Val Ile Val Lys Glu Ser Leu Thr Glu Glu Asp Val
    130                 135                 140
```

```
Leu Asn Cys Gln Lys Thr Ile Tyr Asn
145                 150


<210> 6796
<211> 2301
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1459; "

<220>
<221> source
<223> /note="Gene Symbol: AHCTF1; "

<220>
<221> source
<223> /note="Gene Name:
      AT hook containing transcription
      factor 1; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8WYP5; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000355464"

<400> 6796
Met Asp Ser Leu Ala Gly Leu Ser Pro Arg Glu Ala Ala Gly Val Leu
1               5                   10                  15


Ser Leu Ser Cys Val Gly Val Cys Ser Thr Cys Ala Trp Ala Trp Pro
            20                  25                  30


His Gly Ser Met Arg Asp Leu Arg Ala Gln Val Thr Ser Gly Leu Leu
        35                  40                  45


Pro Phe Pro Glu Val Thr Leu Gln Ala Leu Gly Glu Asp Glu Ile Thr
    50                  55                  60


Leu Glu Ser Val Leu Arg Gly Lys Phe Ala Ala Gly Lys Asn Gly Leu
65                  70                  75                  80


Ala Cys Leu Ala Cys Gly Pro Gln Leu Glu Val Val Asn Ser Ile Thr
                85                  90                  95
```

```
Gly Glu Arg Leu Ser Ala Tyr Arg Phe Ser Gly Val Asn Glu Gln Pro
            100                 105                 110

Pro Val Val Leu Ala Val Lys Glu Phe Ser Trp Gln Lys Arg Thr Gly
        115                 120                 125

Leu Leu Ile Gly Leu Glu Glu Thr Glu Gly Ser Val Leu Cys Leu Tyr
    130                 135                 140

Asp Leu Gly Ile Ser Lys Val Val Lys Ala Val Val Leu Pro Gly Arg
145                 150                 155                 160

Val Thr Ala Ile Glu Pro Ile Ile Asn His Gly Gly Ala Ser Ala Ser
                165                 170                 175

Thr Gln His Leu His Pro Ser Leu Arg Trp Leu Phe Gly Val Ala Ala
            180                 185                 190

Val Val Thr Asp Val Gly Gln Ile Leu Leu Val Asp Leu Cys Leu Asp
        195                 200                 205

Asp Leu Ser Cys Asn Gln Asn Glu Val Glu Ala Ser Asp Leu Glu Val
    210                 215                 220

Leu Thr Gly Ile Pro Ala Glu Val Pro His Ile Arg Glu Ser Val Met
225                 230                 235                 240

Arg Gln Gly Arg His Leu Cys Phe Gln Leu Val Ser Pro Thr Gly Thr
                245                 250                 255

Ala Val Ser Thr Leu Ser Tyr Ile Ser Arg Thr Asn Gln Leu Ala Val
            260                 265                 270

Gly Phe Ser Asp Gly Tyr Leu Ala Leu Trp Asn Met Lys Ser Met Lys
        275                 280                 285

Arg Glu Tyr Tyr Ile Gln Leu Glu Ser Gly Gln Val Pro Val Tyr Ala
    290                 295                 300

Val Thr Phe Gln Glu Pro Glu Asn Asp Pro Arg Asn Cys Cys Tyr Leu
305                 310                 315                 320
```

```
Trp Ala Val Gln Ser Thr Gln Asp Ser Glu Gly Asp Val Leu Ser Leu
                325                 330                 335

His Leu Leu Gln Leu Ala Phe Gly Asn Arg Lys Cys Leu Ala Ser Gly
            340                 345                 350

Gln Ile Leu Tyr Glu Gly Leu Glu Tyr Cys Glu Glu Arg Tyr Thr Leu
        355                 360                 365

Asp Leu Thr Gly Gly Met Phe Pro Leu Arg Gly Gln Thr Ser Asn Thr
    370                 375                 380

Lys Leu Leu Gly Cys Gln Ser Ile Glu Lys Phe Arg Ser His Gly Asp
385                 390                 395                 400

Arg Glu Glu Gly Val Asn Glu Ala Leu Ser Pro Asp Thr Ser Val Ser
                405                 410                 415

Val Phe Thr Trp Gln Val Asn Ile Tyr Gly Gln Gly Lys Pro Ser Val
            420                 425                 430

Tyr Leu Gly Leu Phe Asp Ile Asn Arg Trp Tyr His Ala Gln Met Pro
        435                 440                 445

Asp Ser Leu Arg Ser Gly Glu Tyr Leu His Asn Cys Ser Tyr Phe Ala
    450                 455                 460

Leu Trp Ser Leu Glu Ser Val Val Ser Arg Thr Ser Pro His Gly Ile
465                 470                 475                 480

Leu Asp Ile Leu Val His Glu Arg Ser Leu Asn Arg Gly Val Pro Pro
                485                 490                 495

Ser Tyr Pro Pro Pro Glu Gln Phe Phe Asn Pro Ser Thr Tyr Asn Phe
            500                 505                 510

Asp Ala Thr Cys Leu Leu Asn Ser Gly Val Val His Leu Thr Cys Thr
        515                 520                 525

Gly Phe Gln Lys Glu Thr Leu Thr Phe Leu Lys Lys Ser Gly Pro Ser
    530                 535                 540

Leu Asn Glu Leu Ile Pro Asp Gly Tyr Asn Arg Cys Leu Val Ala Gly
```

545 550 555 560

Leu Leu Ser Pro Arg Phe Val Asp Val Gln Pro Ser Ser Leu Ser Gln
565 570 575

Glu Glu Gln Leu Glu Ala Ile Leu Ser Ala Ala Ile Gln Thr Ser Ser
580 585 590

Leu Gly Leu Leu Thr Gly Tyr Ile Arg Arg Trp Ile Thr Glu Glu Gln
595 600 605

Pro Asn Ser Ala Thr Asn Leu Arg Phe Val Leu Glu Trp Thr Trp Asn
610 615 620

Lys Val Val Leu Thr Lys Glu Glu Phe Asp Arg Leu Cys Val Pro Leu
625 630 635 640

Phe Asp Gly Ser Cys His Phe Met Asp Pro Gln Thr Ile Gln Ser Ile
645 650 655

Gln Gln Cys Tyr Leu Leu Leu Ser Asn Leu Asn Ile Val Leu Ser Cys
660 665 670

Phe Ala Ser Glu Ala Arg Glu Ile Thr Glu Arg Gly Leu Ile Asp Leu
675 680 685

Ser Asn Lys Phe Val Val Ser His Leu Ile Cys Gln Tyr Ala Gln Val
690 695 700

Val Leu Trp Phe Ser His Ser Gly Leu Leu Pro Glu Gly Ile Asp Asp
705 710 715 720

Ser Val Gln Leu Ser Arg Leu Cys Tyr Asn Tyr Pro Val Ile Gln Asn
725 730 735

Tyr Tyr Thr Ser Arg Arg Gln Lys Phe Glu Arg Leu Ser Arg Gly Lys
740 745 750

Trp Asn Pro Asp Cys Leu Met Ile Asp Gly Leu Val Ser Gln Leu Gly
755 760 765

Glu Arg Ile Glu Lys Leu Trp Lys Arg Asp Glu Gly Gly Thr Gly Lys
770 775 780

```
Tyr Pro Pro Ala Ser Leu His Ala Val Leu Asp Met Tyr Leu Leu Asp
785                 790                 795                 800

Gly Val Thr Glu Ala Ala Lys His Ser Ile Thr Ile Tyr Leu Leu Leu
                805                 810                 815

Asp Ile Met Tyr Ser Phe Pro Asn Lys Thr Asp Thr Pro Ile Glu Ser
            820                 825                 830

Phe Pro Thr Val Phe Ala Ile Ser Trp Gly Gln Val Lys Leu Ile Gln
        835                 840                 845

Gly Phe Trp Leu Ile Asp His Asn Asp Tyr Glu Ser Gly Leu Asp Leu
    850                 855                 860

Leu Phe His Pro Ala Thr Ala Lys Pro Leu Ser Trp Gln His Ser Lys
865                 870                 875                 880

Ile Ile Gln Ala Phe Met Ser Gln Gly Glu His Arg Gln Ala Leu Arg
                885                 890                 895

Tyr Ile Gln Thr Met Lys Pro Thr Val Ser Ser Gly Asn Asp Val Ile
            900                 905                 910

Leu His Leu Thr Val Leu Leu Phe Asn Arg Cys Met Val Glu Ala Trp
        915                 920                 925

Asn Phe Leu Arg Gln His Cys Asn Arg Leu Asn Ile Glu Glu Leu Leu
    930                 935                 940

Lys His Met Tyr Glu Val Cys Gln Glu Met Gly Leu Met Glu Asp Leu
945                 950                 955                 960

Leu Lys Leu Pro Phe Thr Asp Thr Glu Gln Glu Cys Leu Val Lys Phe
                965                 970                 975

Leu Gln Ser Ser Ala Ser Val Gln Asn His Glu Phe Leu Leu Val His
            980                 985                 990

His Leu Gln Arg Ala Asn Tyr Val  Pro Ala Leu Lys Leu  Asn Gln
Thr
        995                 1000                1005
```

```
Leu Lys  Ile Asn Val Met Asn  Asp Arg Asp Pro Arg  Leu Arg Glu
    1010                1015                1020

Arg Ser  Leu Ala Arg Asn Ser  Ile Leu Asp Gln Tyr  Gly Lys Ile
    1025                1030                1035

Leu Pro  Arg Val His Arg Lys  Leu Ala Ile Glu Arg  Ala Lys Pro
    1040                1045                1050

Tyr His  Leu Ser Thr Ser Ser  Val Phe Arg Leu Val  Ser Arg Pro
    1055                1060                1065

Lys Pro  Leu Ser Ala Val Pro  Lys Gln Val Val Thr  Gly Thr Val
    1070                1075                1080

Leu Thr  Arg Ser Val Phe Ile  Asn Asn Val Leu Ser  Lys Ile Gly
    1085                1090                1095

Glu Val  Trp Ala Ser Lys Glu  Pro Ile Asn Ser Thr  Thr Pro Phe
    1100                1105                1110

Asn Ser  Ser Lys Ile Glu Glu  Pro Ser Pro Ile Val  Tyr Ser Leu
    1115                1120                1125

Pro Ala  Pro Glu Leu Pro Glu  Ala Phe Phe Gly Thr  Pro Ile Ser
    1130                1135                1140

Lys Ala  Ser Gln Lys Ile Ser  Arg Leu Leu Asp Leu  Val Val Gln
    1145                1150                1155

Pro Val  Pro Arg Pro Ser Gln  Cys Ser Glu Phe Ile  Gln Gln Ser
    1160                1165                1170

Ser Met  Lys Ser Pro Leu Tyr  Leu Val Ser Arg Ser  Leu Pro Ser
    1175                1180                1185

Ser Ser  Gln Leu Lys Gly Ser  Pro Gln Ala Ile Ser  Arg Ala Ser
    1190                1195                1200

Glu Leu  His Leu Leu Glu Thr  Pro Leu Val Val Lys  Lys Ala Lys
    1205                1210                1215
```

```
Ser Leu  Ala Met Ser Val Thr  Thr Ser Gly Phe Ser  Glu Phe Thr
    1220                1225                1230

Pro Gln  Ser Ile Leu Arg Ser  Thr Leu Arg Ser Thr  Pro Leu Ala
    1235                1240                1245

Ser Pro  Ser Pro Ser Pro Gly  Arg Ser Pro Gln Arg  Leu Lys Glu
    1250                1255                1260

Thr Arg  Ile Ser Phe Val Glu  Glu Asp Val His Pro  Lys Trp Ile
    1265                1270                1275

Pro Gly  Ala Ala Asp Asp Ser  Lys Leu Glu Val Phe  Thr Thr Pro
    1280                1285                1290

Lys Lys  Cys Ala Val Pro Val  Glu Thr Glu Trp Leu  Lys Ser Lys
    1295                1300                1305

Asp Arg  Thr Thr Ser Phe Phe  Leu Asn Ser Pro Glu  Lys Glu His
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Gln Glu  Met Asp Glu Gly Ser  Gln Ser Leu Glu Lys  Leu Asp Val
    1325                1330                1335

Ser Lys  Gly Asn Ser Ser Val  Ser Ile Thr Ser Asp  Glu Thr Thr
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Leu Glu  Tyr Gln Asp Ala Pro  Ser Pro Glu Asp Leu  Glu Glu Thr
    1355                1360                1365

Val Phe  Thr Ala Ser Lys Pro  Lys Ser Ser Ser Thr  Ala Leu Thr
    1370                1375                1380

Thr Asn  Val Thr Glu Gln Thr  Glu Lys Asp Gly Asp  Lys Asp Val
    1385                1390                1395

Phe Ala  Ser Glu Val Thr Pro  Ser Asp Leu Gln Lys  Gln Met Gly
    1400                1405                1410

Asn Leu  Glu Asp Ala Glu Thr  Lys Asp Leu Leu Val  Ala Ala Glu
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```

Ala Phe Ser Glu Leu Asn His Leu Ser Pro Val Gln Gly Thr Glu
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Ala Ser Leu Cys Ala Pro Ser Val Tyr Glu Gly Lys Ile Phe Thr
1445 1450 1455

Gln Lys Ser Lys Val Pro Val Leu Asp Glu Gly Leu Thr Ser Val
1460 1465 1470

Glu Thr Tyr Thr Pro Ala Ile Arg Ala Asn Asp Asn Lys Ser Met
1475 1480 1485

Ala Asp Val Leu Gly Asp Gly Gly Asn Ser Ser Leu Thr Ile Ser
1490 1495 1500

Glu Gly Pro Ile Val Ser Glu Arg Arg Leu Asn Gln Glu Val Ala
1505 1510 1515

Leu Asn Leu Lys Glu Asp His Glu Val Glu Val Gly Val Leu Lys
1520 1525 1530

Glu Ser Val Asp Leu Pro Glu Glu Lys Leu Pro Ile Ser Asp Ser
1535 1540 1545

Pro Pro Asp Thr Gln Glu Ile His Val Ile Glu Gln Glu Lys Leu
1550 1555 1560

Glu Ala Gln Asp Ser Gly Glu Glu Ala Arg Asn Leu Ser Phe Asn
1565 1570 1575

Glu Leu Tyr Pro Ser Gly Thr Leu Lys Leu Gln Tyr Asn Phe Asp
1580 1585 1590

Thr Ile Asp Gln Gln Phe Cys Asp Leu Ala Asp Asn Lys Asp Thr
1595 1600 1605

Ala Glu Cys Asp Ile Ala Glu Val Asp Gly Glu Leu Phe Val Ala
1610 1615 1620

Gln Ser Asn Phe Thr Leu Ile Leu Glu Gly Glu Glu Gly Glu Val
1625 1630 1635

Glu Pro Gly Asp Phe Ala Ser Ser Asp Val Leu Pro Lys Ala Ala

```
    1640                1645                1650

Asn Thr  Ala Thr Glu Glu Lys  Leu Val Cys Ser Gly  Glu Asn Asp
    1655                1660                1665

Asn His  Gly Gln Ile Ala Asn  Leu Pro Ser Ala Val  Thr Ser Asp
    1670                1675                1680

Gln Lys  Ser Gln Lys Val Asp  Thr Leu Pro Tyr Val  Pro Glu Pro
    1685                1690                1695

Ile Lys  Val Ala Ile Ala Glu  Asn Leu Leu Asp Val  Ile Lys Asp
    1700                1705                1710

Thr Arg  Ser Lys Glu Ile Thr  Ser Asp Thr Met Glu  Gln Ser Ile
    1715                1720                1725

His Glu  Thr Ile Pro Leu Val  Ser Gln Asn Ile Met  Cys Pro Thr
    1730                1735                1740

Lys Leu  Val Lys Ser Ala Phe  Lys Thr Ala Gln Glu  Thr Ser Thr
    1745                1750                1755

Met Thr  Met Asn Val Ser Gln  Val Asp Asp Val Val  Ser Ser Lys
    1760                1765                1770

Thr Arg  Thr Arg Gly Gln Arg  Ile Gln Asn Val Asn  Val Lys Ser
    1775                1780                1785

Ala Gln  Gln Glu Ala Ser Ala  Asp Val Ala Thr Pro  Lys Met Pro
    1790                1795                1800

Gly Gln  Ser Val Arg Lys Lys  Thr Arg Lys Ala Lys  Glu Ile Ser
    1805                1810                1815

Glu Ala  Ser Glu Asn Ile Tyr  Ser Asp Val Arg Gly  Leu Ser Gln
    1820                1825                1830

Asn Gln  Gln Ile Pro Gln Asn  Ser Val Thr Pro Arg  Arg Gly Arg
    1835                1840                1845

Arg Lys  Lys Glu Val Asn Gln  Asp Ile Leu Glu Asn  Thr Ser Ser
    1850                1855                1860
```

```
Val Glu  Gln Glu Leu Gln Ile  Thr Thr Gly Arg Glu  Ser Lys Arg
    1865                1870                1875

Leu Lys  Ser Ser Gln Leu Leu  Glu Pro Ala Val Glu  Glu Thr Thr
    1880                1885                1890

Lys Lys  Glu Val Lys Val Ser  Ser Val Thr Lys Arg  Thr Pro Arg
    1895                1900                1905

Arg Ile  Lys Arg Ser Val Glu  Asn Gln Glu Ser Val  Glu Ile Ile
    1910                1915                1920

Asn Asp  Leu Lys Val Ser Thr  Val Thr Ser Pro Ser  Arg Met Ile
    1925                1930                1935

Arg Lys  Leu Arg Ser Thr Asn  Leu Asp Ala Ser Glu  Asn Thr Gly
    1940                1945                1950

Asn Lys  Gln Asp Asp Lys Ser  Ser Asp Lys Gln Leu  Arg Ile Lys
    1955                1960                1965

His Val  Arg Arg Val Arg Gly  Arg Glu Val Ser Pro  Ser Asp Val
    1970                1975                1980

Arg Glu  Asp Ser Asn Leu Glu  Ser Ser Gln Leu Thr  Val Gln Ala
    1985                1990                1995

Glu Phe  Asp Met Ser Ala Ile  Pro Arg Lys Arg Gly  Arg Pro Arg
    2000                2005                2010

Lys Ile  Asn Pro Ser Glu Asp  Val Gly Ser Lys Ala  Val Lys Glu
    2015                2020                2025

Glu Arg  Ser Pro Lys Lys Lys  Glu Ala Pro Ser Ile  Arg Arg Arg
    2030                2035                2040

Ser Thr  Arg Asn Thr Pro Ala  Lys Ser Glu Asn Val  Asp Val Gly
    2045                2050                2055

Lys Pro  Ala Leu Gly Lys Ser  Ile Leu Val Pro Asn  Glu Glu Leu
    2060                2065                2070
```

```
Ser Met  Val Met Ser Ser Lys  Lys Lys Leu Thr Lys  Lys Thr Glu
    2075                2080                2085

Ser Gln  Ser Gln Lys Arg Ser  Leu His Ser Val Ser  Glu Glu Arg
    2090                2095                2100

Thr Asp  Glu Met Thr His Lys  Glu Thr Asn Glu Gln  Glu Glu Arg
    2105                2110                2115

Leu Leu  Ala Thr Ala Ser Phe  Thr Lys Ser Ser Arg  Ser Ser Arg
    2120                2125                2130

Thr Arg  Ser Ser Lys Ala Ile  Leu Leu Pro Asp Leu  Ser Glu Pro
    2135                2140                2145

Asn Asn  Glu Pro Leu Phe Ser  Pro Ala Ser Glu Val  Pro Arg Lys
    2150                2155                2160

Ala Lys  Ala Lys Lys Ile Glu  Val Pro Ala Gln Leu  Lys Glu Leu
    2165                2170                2175

Val Ser  Asp Leu Ser Ser Gln  Phe Val Ile Ser Pro  Pro Ala Leu
    2180                2185                2190

Arg Ser  Arg Gln Lys Asn Thr  Ser Asn Lys Asn Lys  Leu Glu Asp
    2195                2200                2205

Glu Leu  Lys Asp Asp Ala Gln  Ser Val Glu Thr Leu  Gly Lys Pro
    2210                2215                2220

Lys Ala  Lys Arg Ile Arg Thr  Ser Lys Thr Lys Gln  Ala Ser Lys
    2225                2230                2235

Asn Thr  Glu Lys Glu Ser Ala  Trp Ser Pro Pro Pro  Ile Glu Ile
    2240                2245                2250

Arg Leu  Ile Ser Pro Leu Ala  Ser Pro Ala Asp Gly  Val Lys Ser
    2255                2260                2265

Lys Pro  Arg Lys Thr Thr Glu  Val Thr Gly Thr Gly  Leu Gly Arg
    2270                2275                2280
```

```
Asn Arg  Lys Lys Leu Ser Ser  Tyr Pro Lys Gln Ile  Leu Arg Arg
    2285                2290                2295


Lys Met  Leu
    2300


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            20                  25                  30


Gly Glu Asp Glu Ile Thr Leu Glu Ser Val Leu Arg Gly Lys Phe Ala
        35                  40                  45


Ala Gly Lys Asn Gly Leu Ala Cys Leu Ala Cys Gly Pro Gln Leu Glu
    50                  55                  60


Val Val Asn Ser Ile Thr Gly Glu Arg Leu Ser Ala Tyr Arg Phe Ser
65                  70                  75                  80


Gly Val Asn Glu Gln Pro Pro Val Val Leu Ala Val Lys Glu Phe Ser
```

```
                85                  90                  95

Trp Gln Lys Arg Thr Gly Leu Leu Ile Gly Leu Glu Glu Thr Glu Gly
            100                 105                 110

Ser Val Leu Cys Leu Tyr Asp Leu Gly Ile Ser Lys Val Val Lys Ala
        115                 120                 125

Val Val Leu Pro Gly Arg Val Thr Ala Ile Glu Pro Ile Ile Asn His
    130                 135                 140

Gly Gly Ala Ser Ala Ser Thr Gln His Leu His Pro Ser Leu Arg Trp
145                 150                 155                 160

Leu Phe Gly Val Ala Ala Val Val Thr Asp Val Gly Gln Ile Leu Leu
                165                 170                 175

Val Asp Leu Cys Leu Asp Asp Leu Ser Cys Asn Gln Asn Glu Val Glu
            180                 185                 190

Ala Ser Asp Leu Glu Val Leu Thr Gly Ile Pro Ala Glu Val Pro His
        195                 200                 205

Ile Arg Glu Ser Val Met Arg Gln Gly Arg His Leu Cys Phe Gln Leu
    210                 215                 220

Val Ser Pro Thr Gly Thr Ala Val Ser Thr Leu Ser Tyr Ile Ser Arg
225                 230                 235                 240

Thr Asn Gln Leu Ala Val Gly Phe Ser Asp Gly Tyr Leu Ala Leu Trp
                245                 250                 255

Asn Met Lys Ser Met Lys Arg Glu Tyr Tyr Ile Gln Leu Glu Ser Gly
            260                 265                 270

Gln Val Pro Val Tyr Ala Val Thr Phe Gln Glu Pro Glu Asn Asp Pro
        275                 280                 285

Arg Asn Cys Cys Tyr Leu Trp Ala Val Gln Ser Thr Gln Asp Ser Glu
    290                 295                 300

Gly Asp Val Leu Ser Leu His Leu Leu Gln Leu Ala Phe Gly Asn Arg
305                 310                 315                 320
```

Lys Cys Leu Ala Ser Gly Gln Ile Leu Tyr Glu Gly Leu Glu Tyr Cys
325 330 335

Glu Glu Arg Tyr Thr Leu Asp Leu Thr Gly Gly Met Phe Pro Leu Arg
340 345 350

Gly Gln Thr Ser Asn Thr Lys Leu Leu Gly Cys Gln Ser Ile Glu Lys
355 360 365

Phe Arg Ser His Gly Asp Arg Glu Glu Gly Val Asn Glu Ala Leu Ser
370 375 380

Pro Asp Thr Ser Val Ser Val Phe Thr Trp Gln Val Asn Ile Tyr Gly
385 390 395 400

Gln Gly Lys Pro Ser Val Tyr Leu Gly Leu Phe Asp Ile Asn Arg Trp
405 410 415

Tyr His Ala Gln Met Pro Asp Ser Leu Arg Ser Gly Glu Tyr Leu His
420 425 430

Asn Cys Ser Tyr Phe Ala Leu Trp Ser Leu Glu Ser Val Val Ser Arg
435 440 445

Thr Ser Pro His Gly Ile Leu Asp Ile Leu Val His Glu Arg Ser Leu
450 455 460

Asn Arg Gly Val Pro Pro Ser Tyr Pro Pro Pro Glu Gln Phe Phe Asn
465 470 475 480

Pro Ser Thr Tyr Asn Phe Asp Ala Thr Cys Leu Leu Asn Ser Gly Val
485 490 495

Val His Leu Thr Cys Thr Gly Phe Gln Lys Glu Thr Leu Thr Phe Leu
500 505 510

Lys Lys Ser Gly Pro Ser Leu Asn Glu Leu Ile Pro Asp Gly Tyr Asn
515 520 525

Arg Cys Leu Val Ala Gly Leu Leu Ser Pro Arg Phe Val Asp Val Gln
530 535 540

```
Pro Ser Ser Leu Ser Gln Glu Glu Gln Leu Glu Ala Ile Leu Ser Ala
545                 550                 555                 560

Ala Ile Gln Thr Ser Ser Leu Gly Leu Leu Thr Gly Tyr Ile Arg Arg
                565                 570                 575

Trp Ile Thr Glu Glu Gln Pro Asn Ser Ala Thr Asn Leu Arg Phe Val
            580                 585                 590

Leu Glu Trp Thr Trp Asn Lys Val Val Leu Thr Lys Glu Glu Phe Asp
        595                 600                 605

Arg Leu Cys Val Pro Leu Phe Asp Gly Ser Cys His Phe Met Asp Pro
    610                 615                 620

Gln Thr Ile Gln Ser Ile Gln Gln Cys Tyr Leu Leu Leu Ser Asn Leu
625                 630                 635                 640

Asn Ile Val Leu Ser Cys Phe Ala Ser Glu Ala Arg Glu Ile Thr Glu
                645                 650                 655

Arg Gly Leu Ile Asp Leu Ser Asn Lys Phe Val Val Ser His Leu Ile
            660                 665                 670

Cys Gln Tyr Ala Gln Val Val Leu Trp Phe Ser His Ser Gly Leu Leu
        675                 680                 685

Pro Glu Gly Ile Asp Asp Ser Val Gln Leu Ser Arg Leu Cys Tyr Asn
    690                 695                 700

Tyr Pro Val Ile Gln Asn Tyr Tyr Thr Ser Arg Arg Gln Lys Phe Glu
705                 710                 715                 720

Arg Leu Ser Arg Gly Lys Trp Asn Pro Asp Cys Leu Met Ile Asp Gly
                725                 730                 735

Leu Val Ser Gln Leu Gly Glu Arg Ile Glu Lys Leu Trp Lys Arg Asp
            740                 745                 750

Glu Gly Gly Thr Gly Lys Tyr Pro Pro Ala Ser Leu His Ala Val Leu
        755                 760                 765
```

```
Asp Met Tyr Leu Leu Asp Gly Val Thr Glu Ala Ala Lys His Ser Ile
    770                 775                 780

Thr Ile Tyr Leu Leu Leu Asp Ile Met Tyr Ser Phe Pro Asn Lys Thr
785                 790                 795                 800

Asp Thr Pro Ile Glu Ser Phe Pro Thr Val Phe Ala Ile Ser Trp Gly
                805                 810                 815

Gln Val Lys Leu Ile Gln Gly Phe Trp Leu Ile Asp His Asn Asp Tyr
            820                 825                 830

Glu Ser Gly Leu Asp Leu Leu Phe His Pro Ala Thr Ala Lys Pro Leu
        835                 840                 845

Ser Trp Gln His Ser Lys Ile Ile Gln Ala Phe Met Ser Gln Gly Glu
    850                 855                 860

His Arg Gln Ala Leu Arg Tyr Ile Gln Thr Met Lys Pro Thr Val Ser
865                 870                 875                 880

Ser Gly Asn Asp Val Ile Leu His Leu Thr Val Leu Leu Phe Asn Arg
                885                 890                 895

Cys Met Val Glu Ala Trp Asn Phe Leu Arg Gln His Cys Asn Arg Leu
            900                 905                 910

Asn Ile Glu Glu Leu Leu Lys His Met Tyr Glu Val Cys Gln Glu Met
        915                 920                 925

Gly Leu Met Glu Asp Leu Leu Lys Leu Pro Phe Thr Asp Thr Glu Gln
    930                 935                 940

Glu Cys Leu Val Lys Phe Leu Gln Ser Ser Ala Ser Val Gln Asn His
945                 950                 955                 960

Glu Phe Leu Leu Val His His Leu Gln Arg Ala Asn Tyr Val Pro Ala
                965                 970                 975

Leu Lys Leu Asn Gln Thr Leu Lys Ile Asn Val Met Asn Asp Arg Asp
            980                 985                 990

Pro Arg Leu Arg Glu Arg Ser Leu  Ala Arg Asn Ser Ile  Leu Asp
```

Gln
995 1000 1005

Tyr Gly Lys Ile Leu Pro Arg Val His Arg Lys Leu Ala Ile Glu
1010 1015 1020

Arg Ala Lys Pro Tyr His Leu Ser Thr Ser Ser Val Phe Arg Leu
1025 1030 1035

Val Ser Arg Pro Lys Pro Leu Ser Ala Val Pro Lys Gln Val Val
1040 1045 1050

Thr Gly Thr Val Leu Thr Arg Ser Val Phe Ile Asn Asn Val Leu
1055 1060 1065

Ser Lys Ile Gly Glu Val Trp Ala Ser Lys Glu Pro Ile Asn Ser
1070 1075 1080

Thr Thr Pro Phe Asn Ser Ser Lys Ile Glu Glu Pro Ser Pro Ile
1085 1090 1095

Val Tyr Ser Leu Pro Ala Pro Glu Leu Pro Glu Ala Phe Phe Gly
1100 1105 1110

Thr Pro Ile Ser Lys Ala Ser Gln Lys Ile Ser Arg Leu Leu Asp
1115 1120 1125

Leu Val Val Gln Pro Val Pro Arg Pro Ser Gln Cys Ser Glu Phe
1130 1135 1140

Ile Gln Gln Ser Ser Met Lys Ser Pro Leu Tyr Leu Val Ser Arg
1145 1150 1155

Ser Leu Pro Ser Ser Ser Gln Leu Lys Gly Ser Pro Gln Ala Ile
1160 1165 1170

Ser Arg Ala Ser Glu Leu His Leu Leu Glu Thr Pro Leu Val Val
1175 1180 1185

Lys Lys Ala Lys Ser Leu Ala Met Ser Val Thr Thr Ser Gly Phe
1190 1195 1200

Ser Glu Phe Thr Pro Gln Ser Ile Leu Arg Ser Thr Leu Arg Ser

1205 1210 1215

Thr Pro Leu Ala Ser Pro Ser Pro Ser Pro Gly Arg Ser Pro Gln
1220 1225 1230

Arg Leu Lys Glu Thr Arg Ile Ser Phe Val Glu Glu Asp Val His
1235 1240 1245

Pro Lys Trp Ile Pro Gly Ala Ala Asp Asp Ser Lys Leu Glu Val
1250 1255 1260

Phe Thr Thr Pro Lys Lys Cys Ala Val Pro Val Glu Thr Glu Trp
1265 1270 1275

Leu Lys Ser Lys Asp Arg Thr Thr Ser Phe Phe Leu Asn Ser Pro
1280 1285 1290

Glu Lys Glu His Gln Glu Met Asp Glu Gly Ser Gln Ser Leu Glu
1295 1300 1305

Lys Leu Asp Val Ser Lys Gly Asn Ser Ser Val Ser Ile Thr Ser
1310 1315 1320

Asp Glu Thr Thr Leu Glu Tyr Gln Asp Ala Pro Ser Pro Glu Asp
1325 1330 1335

Leu Glu Glu Thr Val Phe Thr Ala Ser Lys Pro Lys Ser Ser Ser
1340 1345 1350

Thr Ala Leu Thr Thr Asn Val Thr Glu Gln Thr Glu Lys Asp Gly
1355 1360 1365

Asp Lys Asp Val Phe Ala Ser Glu Val Thr Pro Ser Asp Leu Gln
1370 1375 1380

Lys Gln Met Gly Asn Leu Glu Asp Ala Glu Thr Lys Asp Leu Leu
1385 1390 1395

Val Ala Ala Glu Ala Phe Ser Glu Leu Asn His Leu Ser Pro Val
1400 1405 1410

Gln Gly Thr Glu Ala Ser Leu Cys Ala Pro Ser Val Tyr Glu Gly
1415 1420 1425

```
Lys Ile  Phe Thr Gln Lys Ser  Lys Val Pro Val Leu  Asp Glu Gly
    1430                1435                1440

Leu Thr  Ser Val Glu Thr Tyr  Thr Pro Ala Ile Arg  Ala Asn Asp
    1445                1450                1455

Asn Lys  Ser Met Ala Asp Val  Leu Gly Asp Gly Gly  Asn Ser Ser
    1460                1465                1470

Leu Thr  Ile Ser Glu Gly Pro  Ile Val Ser Glu Arg  Arg Leu Asn
    1475                1480                1485

Gln Glu  Val Ala Leu Asn Leu  Lys Glu Asp His Glu  Val Glu Val
    1490                1495                1500

Gly Val  Leu Lys Glu Ser Val  Asp Leu Pro Glu Glu  Lys Leu Pro
    1505                1510                1515

Ile Ser  Asp Ser Pro Pro Asp  Thr Gln Glu Ile His  Val Ile Glu
    1520                1525                1530

Gln Glu  Lys Leu Glu Ala Gln  Asp Ser Gly Glu Glu  Ala Arg Asn
    1535                1540                1545

Leu Ser  Phe Asn Glu Leu Tyr  Pro Ser Gly Thr Leu  Lys Leu Gln
    1550                1555                1560

Tyr Asn  Phe Asp Thr Ile Asp  Gln Gln Phe Cys Asp  Leu Ala Asp
    1565                1570                1575

Asn Lys  Asp Thr Ala Glu Cys  Asp Ile Ala Glu Val  Asp Gly Glu
    1580                1585                1590

Leu Phe  Val Ala Gln Ser Asn  Phe Thr Leu Ile Leu  Glu Gly Glu
    1595                1600                1605

Glu Gly  Glu Val Glu Pro Gly  Asp Phe Ala Ser Ser  Asp Val Leu
    1610                1615                1620

Pro Lys  Ala Ala Asn Thr Ala  Thr Glu Glu Lys Leu  Val Cys Ser
    1625                1630                1635
```

```
Gly Glu  Asn Asp Asn His Gly  Gln Ile Ala Asn Leu  Pro Ser Ala
    1640                1645                1650

Val Thr  Ser Asp Gln Lys Ser  Gln Lys Val Asp Thr  Leu Pro Tyr
    1655                1660                1665

Val Pro  Glu Pro Ile Lys Val  Ala Ile Ala Glu Asn  Leu Leu Asp
    1670                1675                1680

Val Ile  Lys Asp Thr Arg Ser  Lys Glu Ile Thr Ser  Asp Thr Met
    1685                1690                1695

Glu Gln  Ser Ile His Glu Thr  Ile Pro Leu Val Ser  Gln Asn Ile
    1700                1705                1710

Met Cys  Pro Thr Lys Leu Val  Lys Ser Ala Phe Lys  Thr Ala Gln
    1715                1720                1725

Glu Thr  Ser Thr Met Thr Met  Asn Val Ser Gln Val  Asp Asp Val
    1730                1735                1740

Val Ser  Ser Lys Thr Arg Thr  Arg Gly Gln Arg Ile  Gln Asn Val
    1745                1750                1755

Asn Val  Lys Ser Ala Gln Gln  Glu Ala Ser Ala Asp  Val Ala Thr
    1760                1765                1770

Pro Lys  Met Pro Gly Gln Ser  Val Arg Lys Lys Thr  Arg Lys Ala
    1775                1780                1785

Lys Glu  Ile Ser Glu Ala Ser  Glu Asn Ile Tyr Ser  Asp Val Arg
    1790                1795                1800

Gly Leu  Ser Gln Asn Gln Gln  Ile Pro Gln Asn Ser  Val Thr Pro
    1805                1810                1815

Arg Arg  Gly Arg Arg Lys Lys  Glu Val Asn Gln Asp  Ile Leu Glu
    1820                1825                1830

Asn Thr  Ser Ser Val Glu Gln  Glu Leu Gln Ile Thr  Thr Gly Arg
    1835                1840                1845
```

Glu Ser Lys Arg Leu Lys Ser Ser Gln Leu Leu Glu Pro Ala Val
1850 1855 1860

Glu Glu Thr Thr Lys Lys Glu Val Lys Val Ser Ser Val Thr Lys
1865 1870 1875

Arg Thr Pro Arg Arg Ile Lys Arg Ser Val Glu Asn Gln Glu Ser
1880 1885 1890

Val Glu Ile Ile Asn Asp Leu Lys Val Ser Thr Val Thr Ser Pro
1895 1900 1905

Ser Arg Met Ile Arg Lys Leu Arg Ser Thr Asn Leu Asp Ala Ser
1910 1915 1920

Glu Asn Thr Gly Asn Lys Gln Asp Asp Lys Ser Ser Asp Lys Gln
1925 1930 1935

Leu Arg Ile Lys His Val Arg Arg Val Arg Gly Arg Glu Val Ser
1940 1945 1950

Pro Ser Asp Val Arg Glu Asp Ser Asn Leu Glu Ser Ser Gln Leu
1955 1960 1965

Thr Val Gln Ala Glu Phe Asp Met Ser Ala Ile Pro Arg Lys Arg
1970 1975 1980

Gly Arg Pro Arg Lys Ile Asn Pro Ser Glu Asp Val Gly Ser Lys
1985 1990 1995

Ala Val Lys Glu Glu Arg Ser Pro Lys Lys Lys Glu Ala Pro Ser
2000 2005 2010

Ile Arg Arg Arg Ser Thr Arg Asn Thr Pro Ala Lys Ser Glu Asn
2015 2020 2025

Val Asp Val Gly Lys Pro Ala Leu Gly Lys Ser Ile Leu Val Pro
2030 2035 2040

Asn Glu Glu Leu Ser Met Val Met Ser Ser Lys Lys Lys Leu Thr
2045 2050 2055

Lys Lys Thr Glu Ser Gln Ser Gln Lys Arg Ser Leu His Ser Val

2060 2065 2070

Ser Glu Glu Arg Thr Asp Glu Met Thr His Lys Glu Thr Asn Glu
2075 2080 2085

Gln Glu Glu Arg Leu Leu Ala Thr Ala Ser Phe Thr Lys Ser Ser
2090 2095 2100

Arg Ser Ser Arg Thr Arg Ser Ser Lys Ala Ile Leu Leu Pro Asp
2105 2110 2115

Leu Ser Glu Pro Asn Asn Glu Pro Leu Phe Ser Pro Ala Ser Glu
2120 2125 2130

Val Pro Arg Lys Ala Lys Ala Lys Lys Ile Glu Val Pro Ala Gln
2135 2140 2145

Leu Lys Glu Leu Val Ser Asp Leu Ser Ser Gln Phe Val Ile Ser
2150 2155 2160

Pro Pro Ala Leu Arg Ser Arg Gln Lys Asn Thr Ser Asn Lys Asn
2165 2170 2175

Lys Leu Glu Asp Glu Leu Lys Asp Asp Ala Gln Ser Val Glu Thr
2180 2185 2190

Leu Gly Lys Pro Lys Ala Lys Arg Ile Arg Thr Ser Lys Thr Lys
2195 2200 2205

Gln Ala Ser Lys Asn Thr Glu Lys Glu Ser Ala Trp Ser Pro Pro
2210 2215 2220

Pro Ile Glu Ile Arg Leu Ile Ser Pro Leu Ala Ser Pro Ala Asp
2225 2230 2235

Gly Val Lys Ser Lys Pro Arg Lys Thr Thr Glu Val Thr Gly Thr
2240 2245 2250

Gly Leu Gly Arg Asn Arg Lys Lys Leu Ser Ser Tyr Pro Lys Gln
2255 2260 2265

Ile Leu Arg Arg Lys Met Leu
2270 2275

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<211> 67
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1 5 10 15

Glu Val Thr Leu Gln Ala Leu Gly Glu Asp Glu Ile Thr Leu Glu Ser
20 25 30

Val Leu Arg Gly Lys Phe Ala Ala Gly Lys Asn Gly Leu Ala Cys Leu
35 40 45

Ala Cys Gly Pro Gln Leu Glu Val Val Asn Ser Ile Thr Gly Glu Arg
50 55 60

Leu Ser Ala
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Glu Ser Gln Ser Gln Lys Arg Ser Leu His Ser Val Ser Glu Glu Arg
1 5 10 15

Thr Asp Glu Met Thr His Lys Glu Thr Asn Glu Gln Glu Glu Arg Leu
20 25 30

Leu Ala Thr Ala Ser Phe Thr Lys Ser Ser Arg Ser Ser Arg Thr Arg
35 40 45

Ser Ser Lys Ala Ile Leu Leu Pro Asp Leu Ser Glu Pro Asn Asn Glu
50 55 60

Pro Leu Phe Ser Pro Ala Ser Glu Val Pro Arg Lys Ala Lys Glu Arg
65 70 75 80

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Met Arg Val Lys Pro Gln Gly Leu Val Val Thr Ser Ser Ala Val Cys
1 5 10 15

Ser Ser Pro Asp Tyr Leu Arg Glu Pro Lys Tyr Tyr Pro Gly Gly Pro
20 25 30

Pro Thr Pro Arg Pro Leu Leu Pro Thr Arg Pro Pro Ala Ser Pro Pro
35 40 45

Asp Lys Ala Phe Ser Thr His Ala Phe Ser Glu Asn Pro Arg Pro Pro
50 55 60

Pro Arg Arg Asp Pro Ser Thr Arg Arg Pro Pro Val Leu Ala Lys Gly
65 70 75 80

Asp Asp Pro Leu Pro Pro Arg Ala Ala Arg Pro Val Ser Gln Ala Arg
85 90 95

Cys Pro Thr Pro Val Gly Asp Gly Ser Ser Ser Arg Arg Cys Trp Asp
100 105 110

Asn Gly Arg Val Asn Leu Arg Pro Val Val Gln Leu Ile Asp Ile Met
115 120 125

Lys Asp Leu Thr Arg Leu Ser Gln Asp Leu Gln His Ser Gly Val His
130 135 140

Leu Asp Cys Gly Gly Leu Arg Leu Ser Arg Pro Pro Ala Pro Pro Pro
145 150 155 160

Gly Asp Leu Gln Tyr Ser Phe Phe Ser Ser Pro Ser Leu Ala Asn Ser
165 170 175

Ile Arg Ser Pro Glu Glu Arg Ala Thr Pro His Ala Lys Ser Glu Arg
180 185 190

Pro Ser His Pro Leu Tyr Glu Pro Glu Pro Glu Pro Arg Asp Ser Pro
195 200 205

Gln Pro Gly Gln Gly His Ser Pro Gly Ala Thr Ala Ala Ala Thr Gly

```
    210                 215                 220

Leu Pro Pro Glu Pro Glu Pro Asp Ser Thr Asp Tyr Ser Glu Leu Ala
225                 230                 235                 240

Asp Ala Asp Ile Leu Ser Glu Leu Ala Ser Leu Thr Cys Pro Glu Ala
                245                 250                 255

Gln Leu Leu Glu Ala Gln Ala Leu Glu Pro Pro Ser Pro Glu Pro Glu
            260                 265                 270

Pro Gln Leu Leu Asp Pro Gln Pro Arg Phe Leu Asp Pro Gln Ala Leu
        275                 280                 285

Glu Pro Leu Gly Glu Ala Leu Glu Leu Pro Pro Leu Gln Pro Leu Ala
    290                 295                 300

Asp Pro Leu Gly Leu Pro Gly Leu Ala Leu Gln Ala Leu Asp Thr Leu
305                 310                 315                 320

Pro Asp Ser Leu Glu Ser Gln Leu Leu Asp Pro Gln Ala Leu Asp Pro
                325                 330                 335

Leu Pro Lys Leu Leu Asp Val Pro Gly Arg Arg Leu Glu Pro Gln Gln
            340                 345                 350

Pro Leu Gly His Cys Pro Leu Ala Glu Pro Leu Arg Leu Asp Leu Cys
        355                 360                 365

Ser Pro His Gly Pro Pro Gly Pro Glu Gly His Pro Lys Tyr Ala Leu
    370                 375                 380

Arg Arg Thr Asp Arg Pro Lys Ile Leu Cys Arg Arg Arg Lys Ala Gly
385                 390                 395                 400

Arg Gly Arg Lys Ala Asp Ala Gly Pro Glu Gly Arg Leu Leu Pro Leu
                405                 410                 415

Pro Met Pro Thr Gly Leu Val Ala Ala Leu Ala Glu Pro Pro Pro Pro
            420                 425                 430

Pro Pro Pro Pro Pro Pro Ala Leu Pro Gly Pro Gly Pro Val Ser Val
        435                 440                 445
```

```
Pro Glu Leu Lys Pro Glu Ser Ser Gln Thr Pro Val Val Ser Thr Arg
    450                 455                 460

Lys Gly Lys Cys Arg Gly Val Arg Arg Met Val Val Lys Met Ala Lys
465                 470                 475                 480

Ile Pro Val Ser Leu Gly Arg Arg Asn Lys Thr Thr Tyr Lys Val Ser
                485                 490                 495

Ser Leu Ser Ser Ser Leu Ser Val Glu Gly Lys Glu Leu Gly Leu Arg
            500                 505                 510

Val Ser Ala Glu Pro Thr Pro Leu Leu Lys Met Lys Asn Asn Gly Arg
        515                 520                 525

Asn Val Val Val Val Phe Pro Pro Gly Glu Met Pro Ile Ile Leu Lys
    530                 535                 540

Arg Lys Arg Gly Arg Pro Pro Lys Asn Leu Leu Leu Gly Pro Gly Lys
545                 550                 555                 560

Pro Lys Glu Pro Ala Val Val Ala Ala Glu Ala Ala Thr Val Ala Ala
                565                 570                 575

Ala Thr Met Ala Met Pro Glu Val Lys Lys Arg Arg Arg Arg Lys Gln
            580                 585                 590

Lys Leu Ala Ser Pro Gln Pro Ser Tyr Ala Ala Asp Ala Asn Asp Ser
        595                 600                 605

Lys Ala Glu Tyr Ser Asp Val Leu Ala Lys Leu Ala Phe Leu Asn Arg
    610                 615                 620

Gln Ser Gln Cys Ala Gly Arg Cys Ser Pro Pro Arg Cys Trp Thr Pro
625                 630                 635                 640

Ser Glu Pro Glu Ser Val His Gln Ala Pro Asp Thr Gln Ser Ile Ser
                645                 650                 655

His Phe Leu His Arg Val Gln Gly Phe Arg Arg Arg Gly Gly Lys Ala
            660                 665                 670
```

```
Gly Gly Phe Gly Gly Arg Gly Gly Gly His Ala Ala Lys Ser Ala Arg
        675                 680                 685

Cys Ser Phe Ser Asp Phe Phe Glu Gly Ile Gly Lys Lys Lys Lys Val
    690                 695                 700

Val Ala Val Ala Ala Ala Gly Val Gly Gly Pro Gly Leu Thr Glu Leu
705                 710                 715                 720

Gly His Pro Arg Lys Arg Gly Arg Gly Glu Val Asp Ala Val Thr Gly
                725                 730                 735

Lys Pro Lys Arg Lys Arg Arg Ser Arg Lys Asn Gly Thr Leu Phe Pro
            740                 745                 750

Glu Gln Val Pro Ser Gly Pro Gly Phe Gly Glu Ala Gly Ala Glu Trp
        755                 760                 765

Ala Gly Asp Lys Gly Gly Gly Trp Ala Pro His His Gly His Pro Gly
    770                 775                 780

Gly Gln Ala Gly Arg Asn Cys Gly Phe Gln Gly Thr Glu Ala Arg Ala
785                 790                 795                 800

Phe Ala Ser Thr Gly Leu Glu Ser Gly Ala Ser Gly Arg Gly Ser Tyr
                805                 810                 815

Tyr Ser Thr Gly Ala Pro Ser Gly Gln Thr Glu Leu Ser Gln Glu Arg
            820                 825                 830

Gln Asn Leu Phe Thr Gly Tyr Phe Arg Ser Leu Leu Asp Ser Asp Asp
        835                 840                 845

Ser Ser Asp Leu Leu Asp Phe Ala Leu Ser Ala Ser Arg Pro Glu Ser
    850                 855                 860

Arg Lys Ala Ser Gly Thr Tyr Ala Gly Pro Pro Thr Ser Ala Leu Pro
865                 870                 875                 880

Ala Gln Arg Gly Leu Ala Thr Phe Pro Ser Arg Gly Ala Lys Ala Ser
                885                 890                 895
```

```
Pro Val Ala Val Gly Ser Ser Gly Ala Gly Ala Asp Pro Ser Phe Gln
            900                 905                 910

Pro Val Leu Ser Ala Arg Gln Thr Phe Pro Pro Gly Arg Ala Ala Ser
        915                 920                 925

Tyr Gly Leu Thr Pro Ala Ala Ser Asp Cys Arg Ala Ala Glu Thr Phe
    930                 935                 940

Pro Lys Leu Val Pro Pro Pro Ser Ala Met Ala Arg Ser Pro Thr Thr
945                 950                 955                 960

His Pro Pro Ala Asn Thr Tyr Leu Pro Gln Tyr Gly Gly Tyr Gly Ala
                965                 970                 975

Gly Gln Ser Val Phe Ala Pro Thr Lys Pro Phe Thr Gly Gln Asp Cys
            980                 985                 990

Ala Asn Ser Lys Asp Cys Ser Phe  Ala Tyr Gly Ser Gly  Asn Ser
Leu
        995                 1000                1005

Pro Ala  Ser Pro Ser Ser Ala  His Ser Ala Gly Tyr  Ala Pro Pro
    1010                1015                1020

Pro Thr  Gly Gly Pro Cys Leu  Pro Pro Ser Lys Ala  Ser Phe Phe
    1025                1030                1035

Ser Ser  Ser Glu Gly Ala Pro  Phe Ser Gly Ser Ala  Pro Thr Pro
    1040                1045                1050

Leu Arg  Cys Asp Ser Arg Ala  Ser Thr Val Ser Pro  Gly Gly Tyr
    1055                1060                1065

Met Val  Pro Lys Gly Thr Thr  Ala Ser Ala Thr Ser  Ala Ala Ser
    1070                1075                1080

Ala Ala  Ser Ser Ser Ser Ser  Ser Phe Gln Pro Ser  Pro Glu Asn
    1085                1090                1095

Cys Arg  Gln Phe Ala Gly Ala  Ser Gln Trp Pro Phe  Arg Gln Gly
    1100                1105                1110
```

```
Tyr Gly  Gly Leu Asp Trp Ala  Ser Glu Ala Phe Ser  Gln Leu Tyr
    1115                1120                1125

Asn Pro  Ser Phe Asp Cys His  Val Ser Glu Pro Asn  Val Ile Leu
    1130                1135                1140

Asp Ile  Ser Asn Tyr Thr Pro  Gln Lys Val Lys Gln  Gln Thr Ala
    1145                1150                1155

Val Ser  Glu Thr Phe Ser Glu  Ser Ser Ser Asp Ser  Thr Gln Phe
    1160                1165                1170

Asn Gln  Pro Val Gly Gly Gly  Gly Phe Arg Arg Ala  Asn Ser Glu
    1175                1180                1185

Ala Ser  Ser Ser Glu Gly Gln  Ser Ser Leu Ser Ser  Leu Glu Lys
    1190                1195                1200

Leu Met  Met Asp Trp Asn Glu  Ala Ser Ser Ala Pro  Gly Tyr Asn
    1205                1210                1215

Trp Asn  Gln Ser Val Leu Phe  Gln Ser Ser Ser Lys  Pro Gly Arg
    1220                1225                1230

Gly Arg  Arg Lys Lys Val Asp  Leu Phe Glu Ala Ser  His Leu Gly
    1235                1240                1245

Phe Pro  Thr Ser Ala Ser Ala  Ala Ala Ser Gly Tyr  Pro Ser Lys
    1250                1255                1260

Arg Ser  Thr Gly Pro Arg Gln  Pro Arg Gly Gly Arg  Gly Gly Gly
    1265                1270                1275

Ala Cys  Ser Ala Lys Lys Glu  Arg Gly Gly Ala Ala  Ala Lys Ala
    1280                1285                1290

Lys Phe  Ile Pro Lys Pro Gln  Pro Val Asn Pro Leu  Phe Gln Asp
    1295                1300                1305

Ser Pro  Asp Leu Gly Leu Asp  Tyr Tyr Ser Gly Asp  Ser Ser Met
    1310                1315                1320

Ser Pro  Leu Pro Ser Gln Ser  Arg Ala Phe Gly Val  Gly Glu Arg
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1325 1330 1335

Asp Pro Cys Asp Phe Ile Gly Pro Tyr Ser Met Asn Pro Ser Thr
1340 1345 1350

Pro Ser Asp Gly Thr Phe Gly Gln Gly Phe His Cys Asp Ser Pro
1355 1360 1365

Ser Leu Gly Ala Pro Glu Leu Asp Gly Lys His Phe Pro Pro Leu
1370 1375 1380

Ala His Pro Pro Thr Val Phe Asp Ala Gly Leu Gln Lys Ala Tyr
1385 1390 1395

Ser Pro Thr Cys Ser Pro Thr Leu Gly Phe Lys Glu Glu Leu Arg
1400 1405 1410

Pro Pro Pro Thr Lys Leu Ala Ala Cys Glu Pro Leu Lys His Gly
1415 1420 1425

Leu Gln Gly Ala Ser Leu Gly His Ala Ala Ala Ala Gln Ala His
1430 1435 1440

Leu Ser Cys Arg Asp Leu Pro Leu Gly Gln Pro His Tyr Asp Ser
1445 1450 1455

Pro Ser Cys Lys Gly Thr Ala Tyr Trp Tyr Pro Pro Gly Ser Ala
1460 1465 1470

Ala Arg Ser Pro Pro Tyr Glu Gly Lys Val Gly Thr Gly Leu Leu
1475 1480 1485

Ala Asp Phe Leu Gly Arg Thr Glu Ala Ala Cys Leu Ser Ala Pro
1490 1495 1500

His Leu Ala Ser Pro Pro Ala Thr Pro Lys Ala Asp Lys Glu Pro
1505 1510 1515

Leu Glu Met Ala Arg Pro Pro Gly Pro Pro Arg Gly Pro Ala Ala
1520 1525 1530

Ala Ala Ala Gly Tyr Gly Cys Pro Leu Leu Ser Asp Leu Thr Leu
1535 1540 1545

```
Ser Pro  Val Pro Arg Asp Ser  Leu Leu Pro Leu Gln  Asp Thr Ala
    1550                1555                1560


Tyr Arg  Tyr Pro Gly Phe Met  Pro Gln Ala His Pro  Gly Leu Gly
    1565                1570                1575


Gly Gly  Pro Lys Ser Gly Phe  Leu Gly Pro Met Ala  Glu Pro His
    1580                1585                1590


Pro Glu  Asp Thr Phe Thr Val  Thr Ser Leu
    1595                1600


<210> 6801
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      motif, containing 1; "

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Met Arg Val Lys Pro Gln Gly Leu Val Val Thr Ser Ser Ala Val Cys
1               5                  10                  15


Ser Ser Pro Asp Tyr Leu Arg Glu Pro Lys Tyr Tyr Pro Gly Gly Pro
            20                  25                  30


Pro Thr Pro Arg Pro Leu Leu Pro Thr Arg Pro Pro Ala Ser Pro Pro
        35                  40                  45
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```
Asp Lys Ala Phe Ser Thr His Ala Phe Ser Glu Asn Pro Arg Pro Pro
    50                  55                  60

Pro Arg Arg Asp Pro Ser Thr Arg Arg Pro Pro Val Leu Ala Lys Gly
65                  70                  75                  80

Asp Asp Pro Leu Pro Pro Arg Ala Ala Arg Pro Val Ser Gln Ala Arg
                85                  90                  95

Cys Pro Thr Pro Val Gly Asp Gly Ser Ser Ser Arg Arg Cys Trp Asp
            100                 105                 110

Asn Gly Arg Val Asn Leu Arg Pro Val Val Gln Leu Ile Asp Ile Met
        115                 120                 125

Lys Asp Leu Thr Arg Leu Ser Gln Asp Leu Gln His Ser Gly Val His
    130                 135                 140

Leu Asp Cys Gly Gly Leu Arg Leu Ser Arg Pro Pro Ala Pro Pro Pro
145                 150                 155                 160

Gly Asp Leu Gln Tyr Ser Phe Phe Ser Ser Pro Ser Leu Ala Asn Ser
                165                 170                 175

Ile Arg Ser Pro Glu Glu Arg Ala Thr Pro His Ala Lys Ser Glu Arg
            180                 185                 190

Pro Ser His Pro Leu Tyr Glu Pro Glu Pro Glu Pro Arg Asp Ser Pro
        195                 200                 205

Gln Pro Gly Gln Gly His Ser Pro Gly Ala Thr Ala Ala Ala Thr Gly
    210                 215                 220

Leu Pro Pro Glu Pro Glu Pro Asp Ser Thr Asp Tyr Ser Glu Leu Ala
225                 230                 235                 240

Asp Ala Asp Ile Leu Ser Glu Leu Ala Ser Leu Thr Cys Pro Glu Ala
                245                 250                 255

Gln Leu Leu Glu Ala Gln Ala Leu Glu Pro Pro Ser Pro Glu Pro Glu
            260                 265                 270
```

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Pro Gln Leu Leu Asp Pro Gln Pro Arg Phe Leu Asp Pro Gln Ala Leu
        275                 280                 285

Glu Pro Leu Gly Glu Ala Leu Glu Leu Pro Pro Leu Gln Pro Leu Ala
    290                 295                 300

Asp Pro Leu Gly Leu Pro Gly Leu Ala Leu Gln Ala Leu Asp Thr Leu
305                 310                 315                 320

Pro Asp Ser Leu Glu Ser Gln Leu Leu Asp Pro Gln Ala Leu Asp Pro
                325                 330                 335

Leu Pro Lys Leu Leu Asp Val Pro Gly Arg Arg Leu Glu Pro Gln Gln
            340                 345                 350

Pro Leu Gly His Cys Pro Leu Ala Glu Pro Leu Arg Leu Asp Leu Cys
        355                 360                 365

Ser Pro His Gly Pro Pro Gly Pro Glu Gly His Pro Lys Tyr Ala Leu
    370                 375                 380

Arg Arg Thr Asp Arg Pro Lys Ile Leu Cys Arg Arg Arg Lys Ala Gly
385                 390                 395                 400

Arg Gly Arg Lys Ala Asp Ala Gly Pro Glu Gly Arg Leu Leu Pro Leu
                405                 410                 415

Pro Met Pro Thr Gly Leu Val Ala Ala Leu Ala Glu Pro Pro Pro Pro
            420                 425                 430

Pro Pro Pro Pro Pro Pro Ala Leu Pro Gly Pro Gly Pro Val Ser Val
        435                 440                 445

Pro Glu Leu Lys Pro Glu Ser Ser Gln Thr Pro Val Val Ser Thr Arg
    450                 455                 460

Lys Gly Lys Cys Arg Gly Val Arg Arg Met Val Val Lys Met Ala Lys
465                 470                 475                 480

Ile Pro Val Ser Leu Gly Arg Arg Asn Lys Thr Thr Tyr Lys Val Ser
                485                 490                 495

Ser Leu Ser Ser Ser Leu Ser Val Glu Gly Lys Glu Leu Gly Leu Arg
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```
            500                 505                 510

Val Ser Ala Glu Pro Thr Pro Leu Leu Lys Met Lys Asn Asn Gly Arg
        515                 520                 525

Asn Val Val Val Val Phe Pro Pro Gly Glu Met Pro Ile Ile Leu Lys
    530                 535                 540

Arg Lys Arg Gly Arg Pro Pro Lys Asn Leu Leu Leu Gly Pro Gly Lys
545                 550                 555                 560

Pro Lys Glu Pro Ala Val Val Ala Ala Glu Ala Ala Thr Val Ala Ala
                565                 570                 575

Ala Thr Met Ala Met Pro Glu Val Lys Lys Arg Arg Arg Arg Lys Gln
            580                 585                 590

Lys Leu Ala Ser Pro Gln Pro Ser Tyr Ala Ala Asp Ala Asn Asp Ser
        595                 600                 605

Lys Ala Glu Tyr Ser Asp Val Leu Ala Lys Leu Ala Phe Leu Asn Arg
    610                 615                 620

Gln Ser Gln Cys Ala Gly Arg Cys Ser Pro Pro Arg Cys Trp Thr Pro
625                 630                 635                 640

Ser Glu Pro Glu Ser Val His Gln Ala Pro Asp Thr Gln Ser Ile Ser
                645                 650                 655

His Phe Leu His Arg Val Gln Gly Phe Arg Arg Arg Gly Gly Lys Ala
            660                 665                 670

Gly Gly Phe Gly Gly Arg Gly Gly Gly His Ala Ala Lys Ser Ala Arg
        675                 680                 685

Cys Ser Phe Ser Asp Phe Phe Glu Gly Ile Gly Lys Lys Lys Lys Val
    690                 695                 700

Val Ala Val Ala Ala Ala Gly Val Gly Gly Pro Gly Leu Thr Glu Leu
705                 710                 715                 720

Gly His Pro Arg Lys Arg Gly Arg Gly Glu Val Asp Ala Val Thr Gly
                725                 730                 735
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Lys Pro Lys Arg Lys Arg Arg Ser Arg Lys Asn Gly Thr Leu Phe Pro
            740                 745                 750

Glu Gln Val Pro Ser Gly Pro Gly Phe Gly Glu Ala Gly Ala Glu Trp
        755                 760                 765

Ala Gly Asp Lys Gly Gly Gly Trp Ala Pro His His Gly His Pro Gly
    770                 775                 780

Gly Gln Ala Gly Arg Asn Cys Gly Phe Gln Gly Thr Glu Ala Arg Ala
785                 790                 795                 800

Phe Ala Ser Thr Gly Leu Glu Ser Gly Ala Ser Gly Arg Gly Ser Tyr
                805                 810                 815

Tyr Ser Thr Gly Ala Pro Ser Gly Gln Thr Glu Leu Ser Gln Glu Arg
            820                 825                 830

Gln Asn Leu Phe Thr Gly Tyr Phe Arg Ser Leu Leu Asp Ser Asp Asp
        835                 840                 845

Ser Ser Asp Leu Leu Asp Phe Ala Leu Ser Ala Ser Arg Pro Glu Ser
    850                 855                 860

Arg Lys Ala Ser Gly Thr Tyr Ala Gly Pro Pro Thr Ser Ala Leu Pro
865                 870                 875                 880

Ala Gln Arg Gly Leu Ala Thr Phe Pro Ser Arg Gly Ala Lys Ala Ser
                885                 890                 895

Pro Val Ala Val Gly Ser Ser Gly Ala Gly Ala Asp Pro Ser Phe Gln
            900                 905                 910

Pro Val Leu Ser Ala Arg Gln Thr Phe Pro Pro Gly Arg Ala Ala Ser
        915                 920                 925

Tyr Gly Leu Thr Pro Ala Ala Ser Asp Cys Arg Ala Ala Glu Thr Phe
    930                 935                 940

Pro Lys Leu Val Pro Pro Pro Ser Ala Met Ala Arg Ser Pro Thr Thr
945                 950                 955                 960
```

```
His Pro Pro Ala Asn Thr Tyr Leu Pro Gln Tyr Gly Gly Tyr Gly Ala
                965                 970                 975

Gly Gln Ser Val Phe Ala Pro Thr Lys Pro Phe Thr Gly Gln Asp Cys
            980                 985                 990

Ala Asn Ser Lys Asp Cys Ser Phe  Ala Tyr Gly Ser Gly  Asn Ser
Leu
        995                 1000                1005

Pro Ala  Ser Pro Ser Ser Ala  His Ser Ala Gly Tyr  Ala Pro Pro
    1010                1015                1020

Pro Thr  Gly Gly Pro Cys Leu  Pro Pro Ser Lys Ala  Ser Phe Phe
    1025                1030                1035

Ser Ser  Ser Glu Gly Ala Pro  Phe Ser Gly Ser Ala  Pro Thr Pro
    1040                1045                1050

Leu Arg  Cys Asp Ser Arg Ala  Ser Thr Val Ser Pro  Gly Gly Tyr
    1055                1060                1065

Met Val  Pro Lys Gly Thr Thr  Ala Ser Ala Thr Ser  Ala Ala Ser
    1070                1075                1080

Ala Ala  Ser Ser Ser Ser Ser  Ser Phe Gln Pro Ser  Pro Glu Asn
    1085                1090                1095

Cys Arg  Gln Phe Ala Gly Ala  Ser Gln Trp Pro Phe  Arg Gln Gly
    1100                1105                1110

Tyr Gly  Gly Leu Asp Trp Ala  Ser Glu Ala Phe Ser  Gln Leu Tyr
    1115                1120                1125

Asn Pro  Ser Phe Asp Cys His  Val Ser Glu Pro Asn  Val Ile Leu
    1130                1135                1140

Asp Ile  Ser Asn Tyr Thr Pro  Gln Lys Val Lys Gln  Gln Thr Ala
    1145                1150                1155

Val Ser  Glu Thr Phe Ser Glu  Ser Ser Ser Asp Ser  Thr Gln Phe
    1160                1165                1170
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Asn Gln  Pro Val Gly Gly Gly  Gly Phe Arg Arg Ala  Asn Ser Glu
    1175                1180                1185

Ala Ser  Ser Ser Glu Gly Gln  Ser Ser Leu Ser Ser  Leu Glu Lys
    1190                1195                1200

Leu Met  Met Asp Trp Asn Glu  Ala Ser Ser Ala Pro  Gly Tyr Asn
    1205                1210                1215

Trp Asn  Gln Ser Val Leu Phe  Gln Ser Ser Ser Lys  Pro Gly Arg
    1220                1225                1230

Gly Arg  Arg Lys Lys Val Asp  Leu Phe Glu Ala Ser  His Leu Gly
    1235                1240                1245

Phe Pro  Thr Ser Ala Ser Ala  Ala Ala Ser Gly Tyr  Pro Ser Lys
    1250                1255                1260

Arg Ser  Thr Gly Pro Arg Gln  Pro Arg Gly Gly Arg  Gly Gly Gly
    1265                1270                1275

Ala Cys  Ser Ala Lys Lys Glu  Arg Gly Gly Ala Ala  Ala Lys Ala
    1280                1285                1290

Lys Phe  Ile Pro Lys Pro Gln  Pro Val Asn Pro Leu  Phe Gln Asp
    1295                1300                1305

Ser Pro  Asp Leu Gly Leu Asp  Tyr Tyr Ser Gly Asp  Ser Ser Met
    1310                1315                1320

Ser Pro  Leu Pro Ser Gln Ser  Arg Ala Phe Gly Val  Gly Glu Arg
    1325                1330                1335

Asp Pro  Cys Asp Phe Ile Gly  Pro Tyr Ser Met Asn  Pro Ser Thr
    1340                1345                1350

Pro Ser  Asp Gly Thr Phe Gly  Gln Gly Phe His Cys  Asp Ser Pro
    1355                1360                1365

Ser Leu  Gly Ala Pro Glu Leu  Asp Gly Lys His Phe  Pro Pro Leu
    1370                1375                1380
```

Ala His Pro Pro Thr Val Phe Asp Ala Gly Leu Gln Lys Ala Tyr
1385 1390 1395

Ser Pro Thr Cys Ser Pro Thr Leu Gly Phe Lys Glu Glu Leu Arg
1400 1405 1410

Pro Pro Pro Thr Lys Leu Ala Ala Cys Glu Pro Leu Lys His Gly
1415 1420 1425

Leu Gln Gly Ala Ser Leu Gly His Ala Ala Ala Ala Gln Ala His
1430 1435 1440

Leu Ser Cys Arg Asp Leu Pro Leu Gly Gln Pro His Tyr Asp Ser
1445 1450 1455

Pro Ser Cys Lys Gly Thr Ala Tyr Trp Tyr Pro Pro Gly Ser Ala
1460 1465 1470

Ala Arg Ser Pro Pro Tyr Glu Gly Lys Val Gly Thr Gly Leu Leu
1475 1480 1485

Ala Asp Phe Leu Gly Arg Thr Glu Ala Ala Cys Leu Ser Ala Pro
1490 1495 1500

His Leu Ala Ser Pro Pro Ala Thr Pro Lys Ala Asp Lys Glu Pro
1505 1510 1515

Leu Glu Met Ala Arg Pro Pro Gly Pro Pro Arg Gly Pro Ala Ala
1520 1525 1530

Ala Ala Ala Gly Tyr Gly Cys Pro Leu Leu Ser Asp Leu Thr Leu
1535 1540 1545

Ser Pro Val Pro Arg Asp Ser Leu Leu Pro Leu Gln Asp Thr Ala
1550 1555 1560

Tyr Arg Tyr Pro Gly Phe Met Pro Gln Ala His Pro Gly Leu Gly
1565 1570 1575

Gly Gly Pro Lys Ser Gly Phe Leu Gly Pro Met Ala Glu Pro His
1580 1585 1590

Pro Glu Asp Thr Phe Thr Val Thr Ser Leu

1595 1600

<210> 6802
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<223> /note="Gene Name:
AT rich interactive domain 1A (SWI-like); "

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Met Ala Ala Gln Val Ala Pro Ala Ala Ala Ser Ser Leu Gly Asn Pro
1 5 10 15

Pro Pro Pro Pro Pro Ser Glu Leu Lys Lys Ala Glu Gln Gln Gln Arg
20 25 30

Glu Glu Ala Gly Gly Glu Ala Ala Ala Ala Ala Ala Ala Glu Arg Gly
35 40 45

Glu Met Lys Ala Ala Ala Gly Gln Glu Ser Glu Gly Pro Ala Val Gly
50 55 60

Pro Pro Gln Pro Leu Gly Lys Glu Leu Gln Asp Gly Ala Glu Ser Asn
65 70 75 80

Gly Gly Gly Gly Gly Gly Gly Ala Gly Ser Gly Gly Gly Pro Gly Ala
85 90 95

Glu Pro Asp Leu Lys Asn Ser Asn Gly Asn Ala Gly Pro Arg Pro Ala
100 105 110

```
Leu Asn Asn Asn Leu Thr Glu Pro Pro Gly Gly Gly Gly Gly Gly Ser
        115                 120                 125

Ser Asp Gly Val Gly Ala Pro Pro His Ser Ala Ala Ala Ala Leu Pro
    130                 135                 140

Pro Pro Ala Tyr Gly Phe Gly Gln Pro Tyr Gly Arg Ser Pro Ser Ala
145                 150                 155                 160

Val Ala Ala Ala Ala Ala Ala Val Phe His Gln Gln His Gly Gly Gln
                165                 170                 175

Gln Ser Pro Gly Leu Ala Ala Leu Gln Ser Gly Gly Gly Gly Gly Leu
            180                 185                 190

Glu Pro Tyr Ala Gly Pro Gln Gln Asn Ser His Asp His Gly Phe Pro
        195                 200                 205

Asn His Gln Tyr Asn Ser Tyr Tyr Pro Asn Arg Ser Ala Tyr Pro Pro
    210                 215                 220

Pro Ala Pro Ala Tyr Ala Leu Ser Ser Pro Arg Gly Gly Thr Pro Gly
225                 230                 235                 240

Ser Gly Ala Ala Ala Ala Ala Gly Ser Lys Pro Pro Pro Ser Ser Ser
                245                 250                 255

Ala Ser Ala Ser Ser Ser Ser Ser Ser Phe Ala Gln Gln Arg Phe Gly
            260                 265                 270

Ala Met Gly Gly Gly Gly Pro Ser Ala Ala Gly Gly Gly Thr Pro Gln
        275                 280                 285

Pro Thr Ala Thr Pro Thr Leu Asn Gln Leu Leu Thr Ser Pro Ser Ser
    290                 295                 300

Ala Arg Gly Tyr Gln Gly Tyr Pro Gly Gly Asp Tyr Ser Gly Gly Pro
305                 310                 315                 320

Gln Asp Gly Gly Ala Gly Lys Gly Pro Ala Asp Met Ala Ser Gln Cys
                325                 330                 335
```

```
Trp Gly Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ser Gly Gly
            340                 345                 350

Ala Gln Gln Arg Ser His His Ala Pro Met Ser Pro Gly Ser Ser Gly
        355                 360                 365

Gly Gly Gly Gln Pro Leu Ala Arg Thr Pro Gln Pro Ser Ser Pro Met
    370                 375                 380

Asp Gln Met Gly Lys Met Arg Pro Gln Pro Tyr Gly Gly Thr Asn Pro
385                 390                 395                 400

Tyr Ser Gln Gln Gln Gly Pro Pro Ser Gly Pro Gln Gln Gly His Gly
                405                 410                 415

Tyr Pro Gly Gln Pro Tyr Gly Ser Gln Thr Pro Gln Arg Tyr Pro Met
            420                 425                 430

Thr Met Gln Gly Arg Ala Gln Ser Ala Met Gly Gly Leu Ser Tyr Thr
        435                 440                 445

Gln Gln Ile Pro Pro Tyr Gly Gln Gln Gly Pro Ser Gly Tyr Gly Gln
    450                 455                 460

Gln Gly Gln Thr Pro Tyr Tyr Asn Gln Gln Ser Pro His Pro Gln Gln
465                 470                 475                 480

Gln Gln Pro Pro Tyr Ser Gln Gln Pro Pro Ser Gln Thr Pro His Ala
                485                 490                 495

Gln Pro Ser Tyr Gln Gln Gln Pro Gln Ser Gln Pro Pro Gln Leu Gln
            500                 505                 510

Ser Ser Gln Pro Pro Tyr Ser Gln Gln Pro Ser Gln Pro Pro His Gln
        515                 520                 525

Gln Ser Pro Ala Pro Tyr Pro Ser Gln Gln Ser Thr Thr Gln Gln His
    530                 535                 540

Pro Gln Ser Gln Pro Pro Tyr Ser Gln Pro Gln Ala Gln Ser Pro Tyr
545                 550                 555                 560

Gln Gln Gln Gln Pro Gln Gln Pro Ala Pro Ser Thr Leu Ser Gln Gln
```

565 570 575

Ala Ala Tyr Pro Gln Pro Gln Ser Gln Gln Ser Gln Gln Thr Ala Tyr
580 585 590

Ser Gln Gln Arg Phe Pro Pro Pro Gln Glu Leu Ser Gln Asp Ser Phe
595 600 605

Gly Ser Gln Ala Ser Ser Ala Pro Ser Met Thr Ser Ser Lys Gly Gly
610 615 620

Gln Glu Asp Met Asn Leu Ser Leu Gln Ser Arg Pro Ser Ser Leu Pro
625 630 635 640

Asp Leu Ser Gly Ser Ile Asp Asp Leu Pro Met Gly Thr Glu Gly Ala
645 650 655

Leu Ser Pro Gly Val Ser Thr Ser Gly Ile Ser Ser Ser Gln Gly Glu
660 665 670

Gln Ser Asn Pro Ala Gln Ser Pro Phe Ser Pro His Thr Ser Pro His
675 680 685

Leu Pro Gly Ile Arg Gly Pro Ser Pro Ser Pro Val Gly Ser Pro Ala
690 695 700

Ser Val Ala Gln Ser Arg Ser Gly Pro Leu Ser Pro Ala Ala Val Pro
705 710 715 720

Gly Asn Gln Met Pro Pro Arg Pro Pro Ser Gly Gln Ser Asp Ser Ile
725 730 735

Met His Pro Ser Met Asn Gln Ser Ser Ile Ala Gln Asp Arg Gly Tyr
740 745 750

Met Gln Arg Asn Pro Gln Met Pro Gln Tyr Ser Ser Pro Gln Pro Gly
755 760 765

Ser Ala Leu Ser Pro Arg Gln Pro Ser Gly Gly Gln Ile His Thr Gly
770 775 780

Met Gly Ser Tyr Gln Gln Asn Ser Met Gly Ser Tyr Gly Pro Gln Gly
785 790 795 800

```
Gly Gln Tyr Gly Pro Gln Gly Gly Tyr Pro Arg Gln Pro Asn Tyr Asn
                805                 810                 815

Ala Leu Pro Asn Ala Asn Tyr Pro Ser Ala Gly Met Ala Gly Gly Ile
            820                 825                 830

Asn Pro Met Gly Ala Gly Gly Gln Met His Gly Gln Pro Gly Ile Pro
        835                 840                 845

Pro Tyr Gly Thr Leu Pro Pro Gly Arg Met Ser His Ala Ser Met Gly
    850                 855                 860

Asn Arg Pro Tyr Gly Pro Asn Met Ala Asn Met Pro Pro Gln Val Gly
865                 870                 875                 880

Ser Gly Met Cys Pro Pro Pro Gly Gly Met Asn Arg Lys Thr Gln Glu
                885                 890                 895

Thr Ala Val Ala Met His Val Ala Ala Asn Ser Ile Gln Asn Arg Pro
            900                 905                 910

Pro Gly Tyr Pro Asn Met Asn Gln Gly Gly Met Met Gly Thr Gly Pro
        915                 920                 925

Pro Tyr Gly Gln Gly Ile Asn Ser Met Ala Gly Met Ile Asn Pro Gln
    930                 935                 940

Gly Pro Pro Tyr Ser Met Gly Gly Thr Met Ala Asn Asn Ser Ala Gly
945                 950                 955                 960

Met Ala Ala Ser Pro Glu Met Met Gly Leu Gly Asp Val Lys Leu Thr
                965                 970                 975

Pro Ala Thr Lys Met Asn Asn Lys Ala Asp Gly Thr Pro Lys Thr Glu
            980                 985                 990

Ser Lys Ser Lys Lys Ser Ser Ser  Ser Thr Thr Thr Asn  Glu Lys
Ile
        995                 1000                1005

Thr Lys  Leu Tyr Glu Leu Gly  Gly Glu Pro Glu Arg  Lys Met Trp
    1010                1015                1020
```

```
Val Asp  Arg Tyr Leu Ala Phe  Thr Glu Glu Lys Ala  Met Gly Met
    1025                1030                1035

Thr Asn  Leu Pro Ala Val Gly  Arg Lys Pro Leu Asp  Leu Tyr Arg
    1040                1045                1050

Leu Tyr  Val Ser Val Lys Glu  Ile Gly Gly Leu Thr  Gln Val Asn
    1055                1060                1065

Lys Asn  Lys Lys Trp Arg Glu  Leu Ala Thr Asn Leu  Asn Val Gly
    1070                1075                1080

Thr Ser  Ser Ser Ala Ala Ser  Ser Leu Lys Lys Gln  Tyr Ile Gln
    1085                1090                1095

Cys Leu  Tyr Ala Phe Glu Cys  Lys Ile Glu Arg Gly  Glu Asp Pro
    1100                1105                1110

Pro Pro  Asp Ile Phe Ala Ala  Ala Asp Ser Lys Lys  Ser Gln Pro
    1115                1120                1125

Lys Ile  Gln Pro Pro Ser Pro  Ala Gly Ser Gly Ser  Met Gln Gly
    1130                1135                1140

Pro Gln  Thr Pro Gln Ser Thr  Ser Ser Ser Met Ala  Glu Gly Gly
    1145                1150                1155

Asp Leu  Lys Pro Pro Thr Pro  Ala Ser Thr Pro His  Ser Gln Ile
    1160                1165                1170

Pro Pro  Leu Pro Gly Met Ser  Arg Ser Asn Ser Val  Gly Ile Gln
    1175                1180                1185

Asp Ala  Phe Asn Asp Gly Ser  Asp Ser Thr Phe Gln  Lys Arg Asn
    1190                1195                1200

Ser Met  Thr Pro Asn Pro Gly  Tyr Gln Pro Ser Met  Asn Thr Ser
    1205                1210                1215

Asp Met  Met Gly Arg Met Ser  Tyr Glu Pro Asn Lys  Asp Pro Tyr
    1220                1225                1230
```

```
Gly Ser  Met Arg Lys Ala Pro  Gly Ser Asp Pro Phe  Met Ser Ser
    1235                1240                1245

Gly Gln  Gly Pro Asn Gly Gly  Met Gly Asp Pro Tyr  Ser Arg Ala
    1250                1255                1260

Ala Gly  Pro Gly Leu Gly Asn  Val Ala Met Gly Pro  Arg Gln His
    1265                1270                1275

Tyr Pro  Tyr Gly Gly Pro Tyr  Asp Arg Val Arg Thr  Glu Pro Gly
    1280                1285                1290

Ile Gly  Pro Glu Gly Asn Met  Ser Thr Gly Ala Pro  Gln Pro Asn
    1295                1300                1305

Leu Met  Pro Ser Asn Pro Asp  Ser Gly Met Tyr Ser  Pro Ser Arg
    1310                1315                1320

Tyr Pro  Pro Gln Gln Gln Gln  Gln Gln Gln Gln Arg  His Asp Ser
    1325                1330                1335

Tyr Gly  Asn Gln Phe Ser Thr  Gln Gly Thr Pro Ser  Gly Ser Pro
    1340                1345                1350

Phe Pro  Ser Gln Gln Thr Thr  Met Tyr Gln Gln Gln  Gln Gln Asn
    1355                1360                1365

Tyr Lys  Arg Pro Met Asp Gly  Thr Tyr Gly Pro Pro  Ala Lys Arg
    1370                1375                1380

His Glu  Gly Glu Met Tyr Ser  Val Pro Tyr Ser Thr  Gly Gln Gly
    1385                1390                1395

Gln Pro  Gln Gln Gln Gln Leu  Pro Pro Ala Gln Pro  Gln Pro Ala
    1400                1405                1410

Ser Gln  Gln Gln Ala Ala Gln  Pro Ser Pro Gln Gln  Asp Val Tyr
    1415                1420                1425

Asn Gln  Tyr Gly Asn Ala Tyr  Pro Ala Thr Ala Thr  Ala Ala Thr
    1430                1435                1440
```

```
Glu Arg  Arg Pro Ala Gly Gly  Pro Gln Asn Gln Phe  Pro Phe Gln
    1445                1450                1455

Phe Gly  Arg Asp Arg Val Ser  Ala Pro Pro Gly Thr  Asn Ala Gln
    1460                1465                1470

Gln Asn  Met Pro Pro Gln Met  Met Gly Gly Pro Ile  Gln Ala Ser
    1475                1480                1485

Ala Glu  Val Ala Gln Gln Gly  Thr Met Trp Gln Gly  Arg Asn Asp
    1490                1495                1500

Met Thr  Tyr Asn Tyr Ala Asn  Arg Gln Ser Thr Gly  Ser Ala Pro
    1505                1510                1515

Gln Gly  Pro Ala Tyr His Gly  Val Asn Arg Thr Asp  Glu Met Leu
    1520                1525                1530

His Thr  Asp Gln Arg Ala Asn  His Glu Gly Ser Trp  Pro Ser His
    1535                1540                1545

Gly Thr  Arg Gln Pro Pro Tyr  Gly Pro Ser Ala Pro  Val Pro Pro
    1550                1555                1560

Met Thr  Arg Pro Pro Pro Ser  Asn Tyr Gln Pro Pro  Pro Ser Met
    1565                1570                1575

Gln Asn  His Ile Pro Gln Val  Ser Ser Pro Ala Pro  Leu Pro Arg
    1580                1585                1590

Pro Met  Glu Asn Arg Thr Ser  Pro Ser Lys Ser Pro  Phe Leu His
    1595                1600                1605

Ser Gly  Met Lys Met Gln Lys  Ala Gly Pro Pro Val  Pro Ala Ser
    1610                1615                1620

His Ile  Ala Pro Ala Pro Val  Gln Pro Pro Met Ile  Arg Arg Asp
    1625                1630                1635

Ile Thr  Phe Pro Pro Gly Ser  Val Glu Ala Thr Gln  Pro Val Leu
    1640                1645                1650

Lys Gln  Arg Arg Arg Leu Thr  Met Lys Asp Ile Gly  Thr Pro Glu
```

1655 1660 1665

Ala Trp Arg Val Met Met Ser Leu Lys Ser Gly Leu Leu Ala Glu
1670 1675 1680

Ser Thr Trp Ala Leu Asp Thr Ile Asn Ile Leu Leu Tyr Asp Asp
1685 1690 1695

Asn Ser Ile Met Thr Phe Asn Leu Ser Gln Leu Pro Gly Leu Leu
1700 1705 1710

Glu Leu Leu Val Glu Tyr Phe Arg Arg Cys Leu Ile Glu Ile Phe
1715 1720 1725

Gly Ile Leu Lys Glu Tyr Glu Val Gly Asp Pro Gly Gln Arg Thr
1730 1735 1740

Leu Leu Asp Pro Gly Arg Phe Ser Lys Val Ser Ser Pro Ala Pro
1745 1750 1755

Met Glu Gly Gly Glu Glu Glu Glu Glu Leu Leu Gly Pro Lys Leu
1760 1765 1770

Glu Glu Glu Glu Glu Glu Glu Val Val Glu Asn Asp Glu Glu Ile
1775 1780 1785

Ala Phe Ser Gly Lys Asp Lys Pro Ala Ser Glu Asn Ser Glu Glu
1790 1795 1800

Lys Leu Ile Ser Lys Phe Asp Lys Leu Pro Val Lys Ile Val Gln
1805 1810 1815

Lys Asn Asp Pro Phe Val Val Asp Cys Ser Asp Lys Leu Gly Arg
1820 1825 1830

Val Gln Glu Phe Asp Ser Gly Leu Leu His Trp Arg Ile Gly Gly
1835 1840 1845

Gly Asp Thr Thr Glu His Ile Gln Thr His Phe Glu Ser Lys Thr
1850 1855 1860

Glu Leu Leu Pro Ser Arg Pro His Ala Pro Cys Pro Pro Ala Pro
1865 1870 1875

```
Arg Lys  His Val Thr Thr Ala  Glu Gly Thr Pro Gly  Thr Thr Asp
    1880                 1885                 1890

Gln Glu  Gly Pro Pro Pro Asp  Gly Pro Pro Glu Lys  Arg Ile Thr
    1895                 1900                 1905

Ala Thr  Met Asp Asp Met Leu  Ser Thr Arg Ser Ser  Thr Leu Thr
    1910                 1915                 1920

Glu Asp  Gly Ala Lys Ser Ser  Glu Ala Ile Lys Glu  Ser Ser Lys
    1925                 1930                 1935

Phe Pro  Phe Gly Ile Ser Pro  Ala Gln Ser His Arg  Asn Ile Lys
    1940                 1945                 1950

Ile Leu  Glu Asp Glu Pro His  Ser Lys Asp Glu Thr  Pro Leu Cys
    1955                 1960                 1965

Thr Leu  Leu Asp Trp Gln Asp  Ser Leu Ala Lys Arg  Cys Val Cys
    1970                 1975                 1980

Val Ser  Asn Thr Ile Arg Ser  Leu Ser Phe Val Pro  Gly Asn Asp
    1985                 1990                 1995

Phe Glu  Met Ser Lys His Pro  Gly Leu Leu Leu Ile  Leu Gly Lys
    2000                 2005                 2010

Leu Ile  Leu Leu His His Lys  His Pro Glu Arg Lys  Gln Ala Pro
    2015                 2020                 2025

Leu Thr  Tyr Glu Lys Glu Glu  Glu Gln Asp Gln Gly  Val Ser Cys
    2030                 2035                 2040

Asn Lys  Val Glu Trp Trp Trp  Asp Cys Leu Glu Met  Leu Arg Glu
    2045                 2050                 2055

Asn Thr  Leu Val Thr Leu Ala  Asn Ile Ser Gly Gln  Leu Asp Leu
    2060                 2065                 2070

Ser Pro  Tyr Pro Glu Ser Ile  Cys Leu Pro Val Leu  Asp Gly Leu
    2075                 2080                 2085
```

Leu His Trp Ala Val Cys Pro Ser Ala Glu Ala Gln Asp Pro Phe
2090 2095 2100

Ser Thr Leu Gly Pro Asn Ala Val Leu Ser Pro Gln Arg Leu Val
2105 2110 2115

Leu Glu Thr Leu Ser Lys Leu Ser Ile Gln Asp Asn Asn Val Asp
2120 2125 2130

Leu Ile Leu Ala Thr Pro Pro Phe Ser Arg Leu Glu Lys Leu Tyr
2135 2140 2145

Ser Thr Met Val Arg Phe Leu Ser Asp Arg Lys Asn Pro Val Cys
2150 2155 2160

Arg Glu Met Ala Val Val Leu Leu Ala Asn Leu Ala Gln Gly Asp
2165 2170 2175

Ser Leu Ala Ala Arg Ala Ile Ala Val Gln Lys Gly Ser Ile Gly
2180 2185 2190

Asn Leu Leu Gly Phe Leu Glu Asp Ser Leu Ala Ala Thr Gln Phe
2195 2200 2205

Gln Gln Ser Gln Ala Ser Leu Leu His Met Gln Asn Pro Pro Phe
2210 2215 2220

Glu Pro Thr Ser Val Asp Met Met Arg Arg Ala Ala Arg Ala Leu
2225 2230 2235

Leu Ala Leu Ala Lys Val Asp Glu Asn His Ser Glu Phe Thr Leu
2240 2245 2250

Tyr Glu Ser Arg Leu Leu Asp Ile Ser Val Ser Pro Leu Met Asn
2255 2260 2265

Ser Leu Val Ser Gln Val Ile Cys Asp Val Leu Phe Leu Ile Gly
2270 2275 2280

Gln Ser
2285

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Gly Tyr Pro Gly Gln Pro Tyr Gly Ser Gln Thr Pro Gln Arg Tyr Pro
        35   40   45

Met Thr Met Gln Gly Arg Ala Gln Ser Ala Met Gly Gly Leu Ser Tyr
    50   55   60

Thr Gln Gln Ile Pro Pro Tyr Gly Gln Gln Gly Pro Ser Gly Tyr Gly
65   70   75   80

Gln Gln Gly Gln Thr Pro Tyr Tyr Asn Gln Gln Ser Pro His Pro Gln
                85   90   95

Gln Gln Gln Pro Pro Tyr Ser Gln Gln Pro Pro Ser Gln Thr Pro His
            100   105   110

Ala Gln Pro Ser Tyr Gln Gln Gln Pro Gln Ser Gln Pro Pro Gln Leu
        115   120   125

```
Gln Ser Ser Gln Pro Pro Tyr Ser Gln Gln Pro Ser Gln Pro Pro His
    130                 135                 140

Gln Gln Ser Pro Ala Pro Tyr Pro Ser Gln Gln Ser Thr Thr Gln Gln
145                 150                 155                 160

His Pro Gln Ser Gln Pro Pro Tyr Ser Gln Pro Gln Ala Gln Ser Pro
                165                 170                 175

Tyr Gln Gln Gln Gln Pro Gln Gln Pro Ala Pro Ser Thr Leu Ser Gln
            180                 185                 190

Gln Ala Ala Tyr Pro Gln Pro Gln Ser Gln Gln Ser Gln Gln Thr Ala
        195                 200                 205

Tyr Ser Gln Gln Arg Phe Pro Pro Pro Gln Glu Leu Ser Gln Asp Ser
    210                 215                 220

Phe Gly Ser Gln Ala Ser Ser Ala Pro Ser Met Thr Ser Ser Lys Gly
225                 230                 235                 240

Gly Gln Glu Asp Met Asn Leu Ser Leu Gln Ser Arg Pro Ser Ser Leu
                245                 250                 255

Pro Asp Leu Ser Gly Ser Ile Asp Asp Leu Pro Met Gly Thr Glu Gly
            260                 265                 270

Ala Leu Ser Pro Gly Val Ser Thr Ser Gly Ile Ser Ser Ser Gln Gly
        275                 280                 285

Glu Gln Ser Asn Pro Ala Gln Ser Pro Phe Ser Pro His Thr Ser Pro
    290                 295                 300

His Leu Pro Gly Ile Arg Gly Pro Ser Pro Ser Pro Val Gly Ser Pro
305                 310                 315                 320

Ala Ser Val Ala Gln Ser Arg Ser Gly Pro Leu Ser Pro Ala Ala Val
                325                 330                 335

Pro Gly Asn Gln Met Pro Pro Arg Pro Pro Ser Gly Gln Ser Asp Ser
            340                 345                 350
```

```
Ile Met His Pro Ser Met Asn Gln Ser Ser Ile Ala Gln Asp Arg Gly
        355                 360                 365

Tyr Met Gln Arg Asn Pro Gln Met Pro Gln Tyr Ser Ser Pro Gln Pro
    370                 375                 380

Gly Ser Ala Leu Ser Pro Arg Gln Pro Ser Gly Gly Gln Ile His Thr
385                 390                 395                 400

Gly Met Gly Ser Tyr Gln Gln Asn Ser Met Gly Ser Tyr Gly Pro Gln
                405                 410                 415

Gly Gly Gln Tyr Gly Pro Gln Gly Gly Tyr Pro Arg Gln Pro Asn Tyr
            420                 425                 430

Asn Ala Leu Pro Asn Ala Asn Tyr Pro Ser Ala Gly Met Ala Gly Gly
        435                 440                 445

Ile Asn Pro Met Gly Ala Gly Gly Gln Met His Gly Gln Pro Gly Ile
    450                 455                 460

Pro Pro Tyr Gly Thr Leu Pro Pro Gly Arg Met Ser His Ala Ser Met
465                 470                 475                 480

Gly Asn Arg Pro Tyr Gly Pro Asn Met Ala Asn Met Pro Pro Gln Val
                485                 490                 495

Gly Ser Gly Met Cys Pro Pro Pro Gly Gly Met Asn Arg Lys Thr Gln
            500                 505                 510

Glu Thr Ala Val Ala Met His Val Ala Ala Asn Ser Ile Gln Asn Arg
        515                 520                 525

Pro Pro Gly Tyr Pro Asn Met Asn Gln Gly Gly Met Met Gly Thr Gly
    530                 535                 540

Pro Pro Tyr Gly Gln Gly Ile Asn Ser Met Ala Gly Met Ile Asn Pro
545                 550                 555                 560

Gln Gly Pro Pro Tyr Ser Met Gly Gly Thr Met Ala Asn Asn Ser Ala
                565                 570                 575
```

```
Gly Met Ala Ala Ser Pro Glu Met Met Gly Leu Gly Asp Val Lys Leu
            580                 585                 590

Thr Pro Ala Thr Lys Met Asn Asn Lys Ala Asp Gly Thr Pro Lys Thr
        595                 600                 605

Glu Ser Lys Ser Lys Lys Ser Ser Ser Ser Thr Thr Thr Asn Glu Lys
    610                 615                 620

Ile Thr Lys Leu Tyr Glu Leu Gly Gly Glu Pro Glu Arg Lys Met Trp
625                 630                 635                 640

Val Asp Arg Tyr Leu Ala Phe Thr Glu Glu Lys Ala Met Gly Met Thr
                645                 650                 655

Asn Leu Pro Ala Val Gly Arg Lys Pro Leu Asp Leu Tyr Arg Leu Tyr
            660                 665                 670

Val Ser Val Lys Glu Ile Gly Gly Leu Thr Gln Val Asn Lys Asn Lys
        675                 680                 685

Lys Trp Arg Glu Leu Ala Thr Asn Leu Asn Val Gly Thr Ser Ser Ser
    690                 695                 700

Ala Ala Ser Ser Leu Lys Lys Gln Tyr Ile Gln Cys Leu Tyr Ala Phe
705                 710                 715                 720

Glu Cys Lys Ile Glu Arg Gly Glu Asp Pro Pro Pro Asp Ile Phe Ala
                725                 730                 735

Ala Ala Asp Ser Lys Lys Ser Gln Pro Lys Ile Gln Pro Pro Ser Pro
            740                 745                 750

Ala Gly Ser Gly Ser Met Gln Gly Pro Gln Thr Pro Gln Ser Thr Ser
        755                 760                 765

Ser Ser Met Ala Glu Gly Gly Asp Leu Lys Pro Pro Thr Pro Ala Ser
    770                 775                 780

Thr Pro His Ser Gln Ile Pro Pro Leu Pro Gly Met Ser Arg Ser Asn
785                 790                 795                 800

Ser Val Gly Ile Gln Asp Ala Phe Asn Asp Gly Ser Asp Ser Thr Phe
```

805 810 815

Gln Lys Arg Asn Ser Met Thr Pro Asn Pro Gly Tyr Gln Pro Ser Met
820 825 830

Asn Thr Ser Asp Met Met Gly Arg Met Ser Tyr Glu Pro Asn Lys Asp
835 840 845

Pro Tyr Gly Ser Met Arg Lys Ala Pro Gly Ser Asp Pro Phe Met Ser
850 855 860

Ser Gly Gln Gly Pro Asn Gly Gly Met Gly Asp Pro Tyr Ser Arg Ala
865 870 875 880

Ala Gly Pro Gly Leu Gly Asn Val Ala Met Gly Pro Arg Gln His Tyr
885 890 895

Pro Tyr Gly Gly Pro Tyr Asp Arg Val Arg Thr Glu Pro Gly Ile Gly
900 905 910

Pro Glu Gly Asn Met Ser Thr Gly Ala Pro Gln Pro Asn Leu Met Pro
915 920 925

Ser Asn Pro Asp Ser Gly Met Tyr Ser Pro Ser Arg Tyr Pro Pro Gln
930 935 940

Gln Gln Gln Gln Gln Gln Gln Arg His Asp Ser Tyr Gly Asn Gln Phe
945 950 955 960

Ser Thr Gln Gly Thr Pro Ser Gly Ser Pro Phe Pro Ser Gln Gln Thr
965 970 975

Thr Met Tyr Gln Gln Gln Gln Gln Asn Tyr Lys Arg Pro Met Asp Gly
980 985 990

Thr Tyr Gly Pro Pro Ala Lys Arg His Glu Gly Glu Met Tyr Ser
Val
995 1000 1005

Pro Tyr Ser Thr Gly Gln Gly Gln Pro Gln Gln Gln Gln Leu Pro
1010 1015 1020

Pro Ala Gln Pro Gln Pro Ala Ser Gln Gln Gln Ala Ala Gln Pro

1025 1030 1035

Ser Pro Gln Gln Asp Val Tyr Asn Gln Tyr Gly Asn Ala Tyr Pro
1040 1045 1050

Ala Thr Ala Thr Ala Ala Thr Glu Arg Arg Pro Ala Gly Gly Pro
1055 1060 1065

Gln Asn Gln Phe Pro Phe Gln Phe Gly Arg Asp Arg Val Ser Ala
1070 1075 1080

Pro Pro Gly Thr Asn Ala Gln Gln Asn Met Pro Pro Gln Met Met
1085 1090 1095

Gly Gly Pro Ile Gln Ala Ser Ala Glu Val Ala Gln Gln Gly Thr
1100 1105 1110

Met Trp Gln Gly Arg Asn Asp Met Thr Tyr Asn Tyr Ala Asn Arg
1115 1120 1125

Gln Ser Thr Gly Ser Ala Pro Gln Gly Pro Ala Tyr His Gly Val
1130 1135 1140

Asn Arg Thr Asp Glu Met Leu His Thr Asp Gln Arg Ala Asn His
1145 1150 1155

Glu Gly Ser Trp Pro Ser His Gly Thr Arg Gln Pro Pro Tyr Gly
1160 1165 1170

Pro Ser Ala Pro Val Pro Pro Met Thr Arg Pro Pro Pro Ser Asn
1175 1180 1185

Tyr Gln Pro Pro Pro Ser Met Gln Asn His Ile Pro Gln Val Ser
1190 1195 1200

Ser Pro Ala Pro Leu Pro Arg Pro Met Glu Asn Arg Thr Ser Pro
1205 1210 1215

Ser Lys Ser Pro Phe Leu His Ser Gly Met Lys Met Gln Lys Ala
1220 1225 1230

Gly Pro Pro Val Pro Ala Ser His Ile Ala Pro Ala Pro Val Gln
1235 1240 1245

```
Pro Pro  Met Ile Arg Arg Asp  Ile Thr Phe Pro Pro  Gly Ser Val
    1250                1255                1260

Glu Ala  Thr Gln Pro Val Leu  Lys Gln Arg Arg Arg  Leu Thr Met
    1265                1270                1275

Lys Asp  Ile Gly Thr Pro Glu  Ala Trp Arg Val Met  Met Ser Leu
    1280                1285                1290

Lys Ser  Gly Leu Leu Ala Glu  Ser Thr Trp Ala Leu  Asp Thr Ile
    1295                1300                1305

Asn Ile  Leu Leu Tyr Asp Asp  Asn Ser Ile Met Thr  Phe Asn Leu
    1310                1315                1320

Ser Gln  Leu Pro Gly Leu Leu  Glu Leu Leu Val Glu  Tyr Phe Arg
    1325                1330                1335

Arg Cys  Leu Ile Glu Ile Phe  Gly Ile Leu Lys Glu  Tyr Glu Val
    1340                1345                1350

Gly Asp  Pro Gly Gln Arg Thr  Leu Leu Asp Pro Gly  Arg Phe Ser
    1355                1360                1365

Lys Val  Ser Ser Pro Ala Pro  Met Glu Gly Gly Glu  Glu Glu Glu
    1370                1375                1380

Glu Leu  Leu Gly Pro Lys Leu  Glu Glu Glu Glu Glu  Glu Glu Val
    1385                1390                1395

Val Glu  Asn Asp Glu Glu Ile  Ala Phe Ser Gly Lys  Asp Lys Pro
    1400                1405                1410

Ala Ser  Glu Asn Ser Glu Glu  Lys Leu Ile Ser Lys  Phe Asp Lys
    1415                1420                1425

Leu Pro  Val Lys Ile Val Gln  Lys Asn Asp Pro Phe  Val Val Asp
    1430                1435                1440

Cys Ser  Asp Lys Leu Gly Arg  Val Gln Glu Phe Asp  Ser Gly Leu
    1445                1450                1455
```

```
Leu His  Trp Arg Ile Gly Gly  Gly Asp Thr Thr Glu  His Ile Gln
    1460                1465                1470

Thr His  Phe Glu Ser Lys Thr  Glu Leu Leu Pro Ser  Arg Pro His
    1475                1480                1485

Ala Pro  Cys Pro Pro Ala Pro  Arg Lys His Val Thr  Thr Ala Glu
    1490                1495                1500

Gly Thr  Pro Gly Thr Thr Asp  Gln Glu Gly Pro Pro  Pro Asp Gly
    1505                1510                1515

Pro Pro  Glu Lys Arg Ile Thr  Ala Thr Met Asp Asp  Met Leu Ser
    1520                1525                1530

Thr Arg  Ser Ser Thr Leu Thr  Glu Asp Gly Ala Lys  Ser Ser Glu
    1535                1540                1545

Ala Ile  Lys Glu Ser Ser Lys  Phe Pro Phe Gly Ile  Ser Pro Ala
    1550                1555                1560

Gln Ser  His Arg Asn Ile Lys  Ile Leu Glu Asp Glu  Pro His Ser
    1565                1570                1575

Lys Asp  Glu Thr Pro Leu Cys  Thr Leu Leu Asp Trp  Gln Asp Ser
    1580                1585                1590

Leu Ala  Lys Arg Cys Val Cys  Val Ser Asn Thr Ile  Arg Ser Leu
    1595                1600                1605

Ser Phe  Val Pro Gly Asn Asp  Phe Glu Met Ser Lys  His Pro Gly
    1610                1615                1620

Leu Leu  Leu Ile Leu Gly Lys  Leu Ile Leu Leu His  His Lys His
    1625                1630                1635

Pro Glu  Arg Lys Gln Ala Pro  Leu Thr Tyr Glu Lys  Glu Glu Glu
    1640                1645                1650

Gln Asp  Gln Gly Val Ser Cys  Asn Lys Val Glu Trp  Trp Trp Asp
    1655                1660                1665
```

```
Cys Leu  Glu Met Leu Arg Glu  Asn Thr Leu Val Thr  Leu Ala Asn
    1670                1675                1680

Ile Ser  Gly Gln Leu Asp Leu  Ser Pro Tyr Pro Glu  Ser Ile Cys
    1685                1690                1695

Leu Pro  Val Leu Asp Gly Leu  Leu His Trp Ala Val  Cys Pro Ser
    1700                1705                1710

Ala Glu  Ala Gln Asp Pro Phe  Ser Thr Leu Gly Pro  Asn Ala Val
    1715                1720                1725

Leu Ser  Pro Gln Arg Leu Val  Leu Glu Thr Leu Ser  Lys Leu Ser
    1730                1735                1740

Ile Gln  Asp Asn Asn Val Asp  Leu Ile Leu Ala Thr  Pro Pro Phe
    1745                1750                1755

Ser Arg  Leu Glu Lys Leu Tyr  Ser Thr Met Val Arg  Phe Leu Ser
    1760                1765                1770

Asp Arg  Lys Asn Pro Val Cys  Arg Glu Met Ala Val  Val Leu Leu
    1775                1780                1785

Ala Asn  Leu Ala Gln Gly Asp  Ser Leu Ala Ala Arg  Ala Ile Ala
    1790                1795                1800

Val Gln  Lys Gly Ser Ile Gly  Asn Leu Leu Gly Phe  Leu Glu Asp
    1805                1810                1815

Ser Leu  Ala Ala Thr Gln Phe  Gln Gln Ser Gln Ala  Ser Leu Leu
    1820                1825                1830

His Met  Gln Asn Pro Pro Phe  Glu Pro Thr Ser Val  Asp Met Met
    1835                1840                1845

Arg Arg  Ala Ala Arg Ala Leu  Leu Ala Leu Ala Lys  Val Asp Glu
    1850                1855                1860

Asn His  Ser Glu Phe Thr Leu  Tyr Glu Ser Arg Leu  Leu Asp Ile
    1865                1870                1875

Ser Val  Ser Pro Leu Met Asn  Ser Leu Val Ser Gln  Val Ile Cys
```

```
    1880                1885                1890


Asp Val  Leu Phe Leu Ile Gly  Gln Ser
    1895                1900


<210> 6804
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Met Ala Ala Gln Val Ala Pro Ala Ala Ala Ser Ser Leu Gly Asn Pro
1               5                  10                  15


Pro Pro Pro Pro Pro Ser Glu Leu Lys Lys Ala Glu Gln Gln Gln Arg
            20                  25                  30


Glu Glu Ala Gly Gly Glu Ala Ala Ala Ala Ala Ala Ala Glu Arg Gly
        35                  40                  45


Glu Met Lys Ala Ala Ala Gly Gln Glu Ser Glu Gly Pro Ala Val Gly
    50                  55                  60


Pro Pro Gln Pro Leu Gly Lys Glu Leu Gln Asp Gly Ala Glu Ser Asn
65                  70                  75                  80


Gly Gly Gly Gly Gly Gly Gly Ala Gly Ser Gly Gly Gly Pro Gly Ala
                85                  90                  95
```

```
Glu Pro Asp Leu Lys Asn Ser Asn Gly Asn Ala Gly Pro Arg Pro Ala
            100                 105                 110

Leu Asn Asn Asn Leu Thr Glu Pro Pro Gly Gly Gly Gly Gly Gly Ser
        115                 120                 125

Ser Asp Gly Val Gly Ala Pro Pro His Ser Ala Ala Ala Ala Leu Pro
    130                 135                 140

Pro Pro Ala Tyr Gly Phe Gly Gln Pro Tyr Gly Arg Ser Pro Ser Ala
145                 150                 155                 160

Val Ala Ala Ala Ala Ala Ala Val Phe His Gln Gln His Gly Gly Gln
                165                 170                 175

Gln Ser Pro Gly Leu Ala Ala Leu Gln Ser Gly Gly Gly Gly Gly Leu
            180                 185                 190

Glu Pro Tyr Ala Gly Pro Gln Gln Asn Ser His Asp His Gly Phe Pro
        195                 200                 205

Asn His Gln Tyr Asn Ser Tyr Tyr Pro Asn Arg Ser Ala Tyr Pro Pro
    210                 215                 220

Pro Ala Pro Ala Tyr Ala Leu Ser Ser Pro Arg Gly Gly Thr Pro Gly
225                 230                 235                 240

Ser Gly Ala Ala Ala Ala Ala Gly Ser Lys Pro Pro Pro Ser Ser Ser
                245                 250                 255

Ala Ser Ala Ser Ser Ser Ser Ser Ser Phe Ala Gln Gln Arg Phe Gly
            260                 265                 270

Ala Met Gly Gly Gly Gly Pro Ser Ala Ala Gly Gly Gly Thr Pro Gln
        275                 280                 285

Pro Thr Ala Thr Pro Thr Leu Asn Gln Leu Leu Thr Ser Pro Ser Ser
    290                 295                 300

Ala Arg Gly Tyr Gln Gly Tyr Pro Gly Gly Asp Tyr Ser Gly Gly Pro
305                 310                 315                 320
```

```
Gln Asp Gly Gly Ala Gly Lys Gly Pro Ala Asp Met Ala Ser Gln Cys
                325                 330                 335

Trp Gly Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ser Gly Gly
            340                 345                 350

Ala Gln Gln Arg Ser His His Ala Pro Met Ser Pro Gly Ser Ser Gly
        355                 360                 365

Gly Gly Gly Gln Pro Leu Ala Arg Thr Pro Gln Pro Ser Ser Pro Met
    370                 375                 380

Asp Gln Met Gly Lys Met Arg Pro Gln Pro Tyr Gly Gly Thr Asn Pro
385                 390                 395                 400

Tyr Ser Gln Gln Gln Gly Pro Pro Ser Gly Pro Gln Gln Gly His Gly
                405                 410                 415

Tyr Pro Gly Gln Pro Tyr Gly Ser Gln Thr Pro Gln Arg Tyr Pro Met
            420                 425                 430

Thr Met Gln Gly Arg Ala Gln Ser Ala Met Gly Gly Leu Ser Tyr Thr
        435                 440                 445

Gln Gln Ile Pro Pro Tyr Gly Gln Gln Gly Pro Ser Gly Tyr Gly Gln
    450                 455                 460

Gln Gly Gln Thr Pro Tyr Tyr Asn Gln Gln Ser Pro His Pro Gln Gln
465                 470                 475                 480

Gln Gln Pro Pro Tyr Ser Gln Gln Pro Pro Ser Gln Thr Pro His Ala
                485                 490                 495

Gln Pro Ser Tyr Gln Gln Gln Pro Gln Ser Gln Pro Pro Gln Leu Gln
            500                 505                 510

Ser Ser Gln Pro Pro Tyr Ser Gln Gln Pro Ser Gln Pro Pro His Gln
        515                 520                 525

Gln Ser Pro Ala Pro Tyr Pro Ser Gln Gln Ser Thr Thr Gln Gln His
    530                 535                 540

Pro Gln Ser Gln Pro Pro Tyr Ser Gln Pro Gln Ala Gln Ser Pro Tyr
```

545 550 555 560

Gln Gln Gln Gln Pro Gln Gln Pro Ala Pro Ser Thr Leu Ser Gln Gln
565 570 575

Ala Ala Tyr Pro Gln Pro Gln Ser Gln Gln Ser Gln Gln Thr Ala Tyr
580 585 590

Ser Gln Gln Arg Phe Pro Pro Pro Gln Glu Leu Ser Gln Asp Ser Phe
595 600 605

Gly Ser Gln Ala Ser Ser Ala Pro Ser Met Thr Ser Ser Lys Gly Gly
610 615 620

Gln Glu Asp Met Asn Leu Ser Leu Gln Ser Arg Pro Ser Ser Leu Pro
625 630 635 640

Asp Leu Ser Gly Ser Ile Asp Asp Leu Pro Met Gly Thr Glu Gly Ala
645 650 655

Leu Ser Pro Gly Val Ser Thr Ser Gly Ile Ser Ser Ser Gln Gly Glu
660 665 670

Gln Ser Asn Pro Ala Gln Ser Pro Phe Ser Pro His Thr Ser Pro His
675 680 685

Leu Pro Gly Ile Arg Gly Pro Ser Pro Ser Pro Val Gly Ser Pro Ala
690 695 700

Ser Val Ala Gln Ser Arg Ser Gly Pro Leu Ser Pro Ala Ala Val Pro
705 710 715 720

Gly Asn Gln Met Pro Pro Arg Pro Pro Ser Gly Gln Ser Asp Ser Ile
725 730 735

Met His Pro Ser Met Asn Gln Ser Ser Ile Ala Gln Asp Arg Gly Tyr
740 745 750

Met Gln Arg Asn Pro Gln Met Pro Gln Tyr Ser Ser Pro Gln Pro Gly
755 760 765

Ser Ala Leu Ser Pro Arg Gln Pro Ser Gly Gly Gln Ile His Thr Gly
770 775 780

```
Met Gly Ser Tyr Gln Gln Asn Ser Met Gly Ser Tyr Gly Pro Gln Gly
785                 790                 795                 800

Gly Gln Tyr Gly Pro Gln Gly Gly Tyr Pro Arg Gln Pro Asn Tyr Asn
                805                 810                 815

Ala Leu Pro Asn Ala Asn Tyr Pro Ser Ala Gly Met Ala Gly Gly Ile
            820                 825                 830

Asn Pro Met Gly Ala Gly Gly Gln Met His Gly Gln Pro Gly Ile Pro
        835                 840                 845

Pro Tyr Gly Thr Leu Pro Pro Gly Arg Met Ser His Ala Ser Met Gly
    850                 855                 860

Asn Arg Pro Tyr Gly Pro Asn Met Ala Asn Met Pro Pro Gln Val Gly
865                 870                 875                 880

Ser Gly Met Cys Pro Pro Pro Gly Gly Met Asn Arg Lys Thr Gln Glu
                885                 890                 895

Thr Ala Val Ala Met His Val Ala Ala Asn Ser Ile Gln Asn Arg Pro
            900                 905                 910

Pro Gly Tyr Pro Asn Met Asn Gln Gly Gly Met Met Gly Thr Gly Pro
        915                 920                 925

Pro Tyr Gly Gln Gly Ile Asn Ser Met Ala Gly Met Ile Asn Pro Gln
    930                 935                 940

Gly Pro Pro Tyr Ser Met Gly Gly Thr Met Ala Asn Asn Ser Ala Gly
945                 950                 955                 960

Met Ala Ala Ser Pro Glu Met Met Gly Leu Gly Asp Val Lys Leu Thr
                965                 970                 975

Pro Ala Thr Lys Met Asn Asn Lys Ala Asp Gly Thr Pro Lys Thr Glu
            980                 985                 990

Ser Lys Ser Lys Lys Ser Ser Ser  Ser Thr Thr Thr Asn  Glu Lys
Ile
        995                 1000                1005
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```
Thr Lys  Leu Tyr Glu Leu Gly  Gly Glu Pro Glu Arg  Lys Met Trp
    1010                1015                1020

Val Asp  Arg Tyr Leu Ala Phe  Thr Glu Glu Lys Ala  Met Gly Met
    1025                1030                1035

Thr Asn  Leu Pro Ala Val Gly  Arg Lys Pro Leu Asp  Leu Tyr Arg
    1040                1045                1050

Leu Tyr  Val Ser Val Lys Glu  Ile Gly Gly Leu Thr  Gln Val Asn
    1055                1060                1065

Lys Asn  Lys Lys Trp Arg Glu  Leu Ala Thr Asn Leu  Asn Val Gly
    1070                1075                1080

Thr Ser  Ser Ser Ala Ala Ser  Ser Leu Lys Lys Gln  Tyr Ile Gln
    1085                1090                1095

Cys Leu  Tyr Ala Phe Glu Cys  Lys Ile Glu Arg Gly  Glu Asp Pro
    1100                1105                1110

Pro Pro  Asp Ile Phe Ala Ala  Ala Asp Ser Lys Lys  Ser Gln Pro
    1115                1120                1125

Lys Ile  Gln Pro Pro Ser Pro  Ala Gly Ser Gly Ser  Met Gln Gly
    1130                1135                1140

Pro Gln  Thr Pro Gln Ser Thr  Ser Ser Ser Met Ala  Glu Gly Gly
    1145                1150                1155

Asp Leu  Lys Pro Pro Thr Pro  Ala Ser Thr Pro His  Ser Gln Ile
    1160                1165                1170

Pro Pro  Leu Pro Gly Met Ser  Arg Ser Asn Ser Val  Gly Ile Gln
    1175                1180                1185

Asp Ala  Phe Asn Asp Gly Ser  Asp Ser Thr Phe Gln  Lys Arg Asn
    1190                1195                1200

Ser Met  Thr Pro Asn Pro Gly  Tyr Gln Pro Ser Met  Asn Thr Ser
    1205                1210                1215
```

Asp Met Met Gly Arg Met Ser Tyr Glu Pro Asn Lys Asp Pro Tyr
1220 1225 1230

Gly Ser Met Arg Lys Ala Pro Gly Ser Asp Pro Phe Met Ser Ser
1235 1240 1245

Gly Gln Gly Pro Asn Gly Gly Met Gly Asp Pro Tyr Ser Arg Ala
1250 1255 1260

Ala Gly Pro Gly Leu Gly Asn Val Ala Met Gly Pro Arg Gln His
1265 1270 1275

Tyr Pro Tyr Gly Gly Pro Tyr Asp Arg Val Arg Thr Glu Pro Gly
1280 1285 1290

Ile Gly Pro Glu Gly Asn Met Ser Thr Gly Ala Pro Gln Pro Asn
1295 1300 1305

Leu Met Pro Ser Asn Pro Asp Ser Gly Met Tyr Ser Pro Ser Arg
1310 1315 1320

Tyr Pro Pro Gln Gln Gln Gln Gln Gln Gln Gln Arg His Asp Ser
1325 1330 1335

Tyr Gly Asn Gln Phe Ser Thr Gln Gly Thr Pro Ser Gly Ser Pro
1340 1345 1350

Phe Pro Ser Gln Gln Thr Thr Met Tyr Gln Gln Gln Gln Gln Val
1355 1360 1365

Ser Ser Pro Ala Pro Leu Pro Arg Pro Met Glu Asn Arg Thr Ser
1370 1375 1380

Pro Ser Lys Ser Pro Phe Leu His Ser Gly Met Lys Met Gln Lys
1385 1390 1395

Ala Gly Pro Pro Val Pro Ala Ser His Ile Ala Pro Ala Pro Val
1400 1405 1410

Gln Pro Pro Met Ile Arg Arg Asp Ile Thr Phe Pro Pro Gly Ser
1415 1420 1425

```
Val Glu  Ala Thr Gln Pro Val  Leu Lys Gln Arg Arg  Arg Leu Thr
    1430                1435                1440

Met Lys  Asp Ile Gly Thr Pro  Glu Ala Trp Arg Val  Met Met Ser
    1445                1450                1455

Leu Lys  Ser Gly Leu Leu Ala  Glu Ser Thr Trp Ala  Leu Asp Thr
    1460                1465                1470

Ile Asn  Ile Leu Leu Tyr Asp  Asp Asn Ser Ile Met  Thr Phe Asn
    1475                1480                1485

Leu Ser  Gln Leu Pro Gly Leu  Leu Glu Leu Leu Val  Glu Tyr Phe
    1490                1495                1500

Arg Arg  Cys Leu Ile Glu Ile  Phe Gly Ile Leu Lys  Glu Tyr Glu
    1505                1510                1515

Val Gly  Asp Pro Gly Gln Arg  Thr Leu Leu Asp Pro  Gly Arg Phe
    1520                1525                1530

Ser Lys  Val Ser Ser Pro Ala  Pro Met Glu Gly Gly  Glu Glu Glu
    1535                1540                1545

Glu Glu  Leu Leu Gly Pro Lys  Leu Glu Glu Glu Glu  Glu Glu Glu
    1550                1555                1560

Val Val  Glu Asn Asp Glu Glu  Ile Ala Phe Ser Gly  Lys Asp Lys
    1565                1570                1575

Pro Ala  Ser Glu Asn Ser Glu  Glu Lys Leu Ile Ser  Lys Phe Asp
    1580                1585                1590

Lys Leu  Pro Val Lys Ile Val  Gln Lys Asn Asp Pro  Phe Val Val
    1595                1600                1605

Asp Cys  Ser Asp Lys Leu Gly  Arg Val Gln Glu Phe  Asp Ser Gly
    1610                1615                1620

Leu Leu  His Trp Arg Ile Gly  Gly Gly Asp Thr Thr  Glu His Ile
    1625                1630                1635

Gln Thr  His Phe Glu Ser Lys  Thr Glu Leu Leu Pro  Ser Arg Pro
```

1640 1645 1650

His Ala Pro Cys Pro Pro Ala Pro Arg Lys His Val Thr Thr Ala
1655 1660 1665

Glu Gly Thr Pro Gly Thr Thr Asp Gln Glu Gly Pro Pro Pro Asp
1670 1675 1680

Gly Pro Pro Glu Lys Arg Ile Thr Ala Thr Met Asp Asp Met Leu
1685 1690 1695

Ser Thr Arg Ser Ser Thr Leu Thr Glu Asp Gly Ala Lys Ser Ser
1700 1705 1710

Glu Ala Ile Lys Glu Ser Ser Lys Phe Pro Phe Gly Ile Ser Pro
1715 1720 1725

Ala Gln Ser His Arg Asn Ile Lys Ile Leu Glu Asp Glu Pro His
1730 1735 1740

Ser Lys Asp Glu Thr Pro Leu Cys Thr Leu Leu Asp Trp Gln Asp
1745 1750 1755

Ser Leu Ala Lys Arg Cys Val Cys Val Ser Asn Thr Ile Arg Ser
1760 1765 1770

Leu Ser Phe Val Pro Gly Asn Asp Phe Glu Met Ser Lys His Pro
1775 1780 1785

Gly Leu Leu Leu Ile Leu Gly Lys Leu Ile Leu Leu His His Lys
1790 1795 1800

His Pro Glu Arg Lys Gln Ala Pro Leu Thr Tyr Glu Lys Glu Glu
1805 1810 1815

Glu Gln Asp Gln Gly Val Ser Cys Asn Lys Val Glu Trp Trp Trp
1820 1825 1830

Asp Cys Leu Glu Met Leu Arg Glu Asn Thr Leu Val Thr Leu Ala
1835 1840 1845

Asn Ile Ser Gly Gln Leu Asp Leu Ser Pro Tyr Pro Glu Ser Ile
1850 1855 1860

```
Cys Leu  Pro Val Leu Asp Gly  Leu Leu His Trp Ala  Val Cys Pro
    1865                1870                1875

Ser Ala  Glu Ala Gln Asp Pro  Phe Ser Thr Leu Gly  Pro Asn Ala
    1880                1885                1890

Val Leu  Ser Pro Gln Arg Leu  Val Leu Glu Thr Leu  Ser Lys Leu
    1895                1900                1905

Ser Ile  Gln Asp Asn Asn Val  Asp Leu Ile Leu Ala  Thr Pro Pro
    1910                1915                1920

Phe Ser  Arg Leu Glu Lys Leu  Tyr Ser Thr Met Val  Arg Phe Leu
    1925                1930                1935

Ser Asp  Arg Lys Asn Pro Val  Cys Arg Glu Met Ala  Val Val Leu
    1940                1945                1950

Leu Ala  Asn Leu Ala Gln Gly  Asp Ser Leu Ala Ala  Arg Ala Ile
    1955                1960                1965

Ala Val  Gln Lys Gly Ser Ile  Gly Asn Leu Leu Gly  Phe Leu Glu
    1970                1975                1980

Asp Ser  Leu Ala Ala Thr Gln  Phe Gln Gln Ser Gln  Ala Ser Leu
    1985                1990                1995

Leu His  Met Gln Asn Pro Pro  Phe Glu Pro Thr Ser  Val Asp Met
    2000                2005                2010

Met Arg  Arg Ala Ala Arg Ala  Leu Leu Ala Leu Ala  Lys Val Asp
    2015                2020                2025

Glu Asn  His Ser Glu Phe Thr  Leu Tyr Glu Ser Arg  Leu Leu Asp
    2030                2035                2040

Ile Ser  Val Ser Pro Leu Met  Asn Ser Leu Val Ser  Gln Val Ile
    2045                2050                2055

Cys Asp  Val Leu Phe Leu Ile  Gly Gln Ser
    2060                2065
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<210> 6805
<211> 1182
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<223> Any amino acid

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Xaa Glu Cys Lys Ile Glu Arg Gly Glu Asp Pro Pro Pro Asp Ile Phe
1 5 10 15

Ala Ala Ala Asp Ser Lys Lys Ser Gln Pro Lys Ile Gln Pro Pro Ser
20 25 30

Pro Ala Gly Ser Gly Ser Met Gln Gly Pro Gln Thr Pro Gln Ser Thr
35 40 45

Ser Ser Ser Met Ala Glu Gly Gly Asp Leu Lys Pro Pro Thr Pro Ala
50 55 60

Ser Thr Pro His Ser Gln Ile Pro Pro Leu Pro Gly Met Arg Ser Asn
65 70 75 80

Ser Val Gly Ile Gln Asp Ala Phe Asn Asp Gly Ser Asp Ser Thr Phe
85 90 95

Gln Lys Arg Asn Ser Met Thr Pro Asn Pro Gly Tyr Gln Pro Ser Met
100 105 110

```
Asn Thr Ser Asp Met Met Gly Arg Met Ser Tyr Glu Pro Asn Lys Asp
        115                 120                 125

Pro Tyr Gly Ser Met Arg Lys Ala Pro Gly Ser Asp Pro Phe Met Ser
    130                 135                 140

Ser Gly Gln Gly Pro Asn Gly Gly Met Gly Asp Pro Tyr Ser Arg Ala
145                 150                 155                 160

Ala Gly Pro Gly Leu Gly Asn Val Ala Met Gly Pro Arg Gln His Tyr
                165                 170                 175

Pro Tyr Gly Gly Pro Tyr Asp Arg Val Arg Thr Glu Pro Gly Ile Gly
            180                 185                 190

Pro Glu Gly Asn Met Ser Thr Gly Ala Pro Gln Pro Asn Leu Met Pro
        195                 200                 205

Ser Asn Pro Asp Ser Gly Met Tyr Ser Pro Ser Arg Tyr Pro Pro Gln
    210                 215                 220

Gln Gln Gln Gln Gln Gln Gln Arg His Asp Ser Tyr Gly Asn Gln Phe
225                 230                 235                 240

Ser Thr Gln Gly Thr Pro Ser Gly Ser Pro Phe Pro Ser Gln Gln Thr
                245                 250                 255

Thr Met Tyr Gln Gln Gln Gln Gln Asn Tyr Lys Arg Pro Met Asp Gly
            260                 265                 270

Thr Tyr Gly Pro Pro Ala Lys Arg His Glu Gly Glu Met Tyr Ser Val
        275                 280                 285

Pro Tyr Ser Thr Gly Gln Gly Gln Pro Gln Gln Gln Gln Leu Pro Pro
    290                 295                 300

Ala Gln Pro Gln Pro Ala Ser Gln Gln Gln Ala Ala Gln Pro Ser Pro
305                 310                 315                 320

Gln Gln Asp Val Tyr Asn Gln Tyr Gly Asn Ala Tyr Pro Ala Thr Ala
                325                 330                 335
```

```
Thr Ala Ala Thr Glu Arg Arg Pro Ala Gly Gly Pro Gln Asn Gln Phe
            340                 345                 350

Pro Phe Gln Phe Gly Arg Asp Arg Val Ser Ala Pro Pro Gly Thr Asn
        355                 360                 365

Ala Gln Gln Asn Met Pro Pro Gln Met Met Gly Gly Pro Ile Gln Ala
    370                 375                 380

Ser Ala Glu Val Ala Gln Gln Gly Thr Met Trp Gln Gly Arg Asn Asp
385                 390                 395                 400

Met Thr Tyr Asn Tyr Ala Asn Arg Gln Ser Thr Gly Ser Ala Pro Gln
                405                 410                 415

Gly Pro Ala Tyr His Gly Val Asn Arg Thr Asp Glu Met Leu His Thr
            420                 425                 430

Asp Gln Arg Ala Asn His Glu Gly Ser Trp Pro Ser His Gly Thr Arg
        435                 440                 445

Gln Pro Pro Tyr Gly Pro Ser Ala Pro Val Pro Pro Met Thr Arg Pro
    450                 455                 460

Pro Pro Ser Asn Tyr Gln Pro Pro Pro Ser Met Gln Asn His Ile Pro
465                 470                 475                 480

Gln Val Ser Ser Pro Ala Pro Leu Pro Arg Pro Met Glu Asn Arg Thr
                485                 490                 495

Ser Pro Ser Lys Ser Pro Phe Leu His Ser Gly Met Lys Met Gln Lys
            500                 505                 510

Ala Gly Pro Pro Val Pro Ala Ser His Ile Ala Pro Ala Pro Val Gln
        515                 520                 525

Pro Pro Met Ile Arg Arg Asp Ile Thr Phe Pro Pro Gly Ser Val Glu
    530                 535                 540

Ala Thr Gln Pro Val Leu Lys Gln Arg Arg Arg Leu Thr Met Lys Asp
545                 550                 555                 560

Ile Gly Thr Pro Glu Ala Trp Arg Val Met Met Ser Leu Lys Ser Gly
```

565 570 575

Leu Leu Ala Glu Ser Thr Trp Ala Leu Asp Thr Ile Asn Ile Leu Leu
580 585 590

Tyr Asp Asp Asn Ser Ile Met Thr Phe Asn Leu Ser Gln Leu Pro Gly
595 600 605

Leu Leu Glu Leu Leu Val Glu Tyr Phe Arg Arg Cys Leu Ile Glu Ile
610 615 620

Phe Gly Ile Leu Lys Glu Tyr Glu Val Gly Asp Pro Gly Gln Arg Thr
625 630 635 640

Leu Leu Asp Pro Gly Arg Phe Ser Lys Val Ser Ser Pro Ala Pro Met
645 650 655

Glu Gly Gly Glu Glu Glu Glu Glu Leu Leu Gly Pro Lys Leu Glu Glu
660 665 670

Glu Glu Glu Glu Glu Val Val Glu Asn Asp Glu Glu Ile Ala Phe Ser
675 680 685

Gly Lys Asp Lys Pro Ala Ser Glu Asn Ser Glu Glu Lys Leu Ile Ser
690 695 700

Lys Phe Asp Lys Leu Pro Val Lys Ile Val Gln Lys Asn Asp Pro Phe
705 710 715 720

Val Val Asp Cys Ser Asp Lys Leu Gly Arg Val Gln Glu Phe Asp Ser
725 730 735

Gly Leu Leu His Trp Arg Ile Gly Gly Gly Asp Thr Thr Glu His Ile
740 745 750

Gln Thr His Phe Glu Ser Lys Thr Glu Leu Leu Pro Ser Arg Pro His
755 760 765

Ala Pro Cys Pro Pro Ala Pro Arg Lys His Val Thr Thr Ala Glu Gly
770 775 780

Thr Pro Gly Thr Thr Asp Gln Glu Gly Pro Pro Pro Asp Gly Pro Pro
785 790 795 800

```
Glu Lys Arg Ile Thr Ala Thr Met Asp Asp Met Leu Ser Thr Arg Ser
                805                 810                 815

Ser Thr Leu Thr Glu Asp Gly Ala Lys Ser Ser Glu Ala Ile Lys Glu
            820                 825                 830

Ser Ser Lys Phe Pro Phe Gly Ile Ser Pro Ala Gln Ser His Arg Asn
        835                 840                 845

Ile Lys Ile Leu Glu Asp Glu Pro His Ser Lys Asp Glu Thr Pro Leu
    850                 855                 860

Cys Thr Leu Leu Asp Trp Gln Asp Ser Leu Ala Lys Arg Cys Val Cys
865                 870                 875                 880

Val Ser Asn Thr Ile Arg Ser Leu Ser Phe Val Pro Gly Asn Asp Phe
                885                 890                 895

Glu Met Ser Lys His Pro Gly Leu Leu Leu Ile Leu Gly Lys Leu Ile
            900                 905                 910

Leu Leu His His Lys His Pro Glu Arg Lys Gln Ala Pro Leu Thr Tyr
        915                 920                 925

Glu Lys Glu Glu Glu Gln Asp Gln Gly Val Ser Cys Asn Lys Val Glu
    930                 935                 940

Trp Trp Trp Asp Cys Leu Glu Met Leu Arg Glu Asn Thr Leu Val Thr
945                 950                 955                 960

Leu Ala Asn Ile Ser Gly Gln Leu Asp Leu Ser Pro Tyr Pro Glu Ser
                965                 970                 975

Ile Cys Leu Pro Val Leu Asp Gly Leu Leu His Trp Ala Val Cys Pro
            980                 985                 990

Ser Ala Glu Ala Gln Asp Pro Phe  Ser Thr Leu Gly Pro  Asn Ala
Val
        995                 1000                1005

Leu Ser  Pro Gln Arg Leu Val  Leu Glu Thr Leu Ser  Lys Leu Ser
    1010                1015                1020
```

```
Ile Gln  Asp Asn Asn Val Asp  Leu Ile Leu Ala Thr  Pro Pro Phe
    1025                1030                1035

Ser Arg  Leu Glu Lys Leu Tyr  Ser Thr Met Val Arg  Phe Leu Ser
    1040                1045                1050

Asp Arg  Lys Asn Pro Val Cys  Arg Glu Met Ala Val  Val Leu Leu
    1055                1060                1065

Ala Asn  Leu Ala Gln Gly Asp  Ser Leu Ala Ala Arg  Ala Ile Ala
    1070                1075                1080

Val Gln  Lys Gly Ser Ile Gly  Asn Leu Leu Gly Phe  Leu Glu Asp
    1085                1090                1095

Ser Leu  Ala Ala Thr Gln Phe  Gln Gln Ser Gln Ala  Ser Leu Leu
    1100                1105                1110

His Met  Gln Asn Pro Pro Phe  Glu Pro Thr Ser Val  Asp Met Met
    1115                1120                1125

Arg Arg  Ala Ala Arg Ala Leu  Leu Ala Leu Ala Lys  Val Asp Glu
    1130                1135                1140

Asn His  Ser Glu Phe Thr Leu  Tyr Glu Ser Arg Leu  Leu Asp Ile
    1145                1150                1155

Ser Val  Ser Pro Leu Met Asn  Ser Leu Val Ser Gln  Val Ile Cys
    1160                1165                1170

Asp Val  Leu Phe Leu Ile Gly  Gln Ser
    1175                1180


<210> 6806
<211> 144
<212> PRT
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Xaa Pro Tyr Gly Ser Met Arg Lys Ala Pro Gly Ser Asp Pro Phe Met
1 5 10 15

Ser Ser Gly Gln Gly Pro Asn Gly Gly Met Gly Asp Pro Tyr Ser Arg
20 25 30

Ala Ala Gly Pro Gly Leu Gly Asn Val Ala Met Gly Pro Arg Gln His
35 40 45

Tyr Pro Tyr Gly Gly Pro Tyr Asp Arg Val Arg Thr Glu Pro Gly Ile
50 55 60

Gly Pro Glu Gly Asn Met Ser Thr Gly Ala Pro Gln Pro Asn Leu Met
65 70 75 80

Pro Ser Asn Pro Asp Ser Gly Met Tyr Ser Pro Ser Arg Tyr Pro Pro
85 90 95

Gln Gln Gln Gln Gln Gln Gln Gln Arg His Asp Ser Tyr Gly Asn Gln
100 105 110

Phe Ser Thr Gln Gly Thr Pro Ser Gly Ser Pro Phe Pro Ser Gln Gln
115 120 125

Thr Thr Met Tyr Gln Gln Gln Gln Gln Glu Pro Arg Arg His Gly Gly
130 135 140

<210> 6807
<211> 122
<212> PRT

<213> Homo sapiens

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Met Asp Gln Met Gly Lys Met Arg Pro Gln Pro Tyr Gly Gly Thr Asn
1 5 10 15

Pro Tyr Ser Gln Gln Gln Gly Pro Pro Ser Gly Pro Gln Gln Gly His
20 25 30

Gly Tyr Pro Gly Gln Pro Tyr Gly Ser Gln Thr Pro Gln Arg Tyr Pro
35 40 45

Met Thr Met Gln Gly Arg Ala Gln Ser Ala Met Gly Gly Leu Ser Tyr
50 55 60

Thr Gln Gln Ile Pro Pro Tyr Gly Gln Gln Gly Pro Ser Gly Tyr Gly
65 70 75 80

Gln Gln Gly Gln Thr Pro Tyr Tyr Asn Gln Gln Ser Pro His Pro Gln
85 90 95

Gln Gln Gln Pro Pro Tyr Ser Gln Gln Pro Pro Ser Gln Thr Pro His
100 105 110

Ala Gln Pro Ser Tyr Gln Gln Gln Pro Gln
115 120

<210> 6808
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Xaa Gly Thr Arg Gln Pro Pro Tyr Gly Pro Ser Ala Pro Val Pro Pro
1 5 10 15

Met Thr Arg Pro Pro Pro Ser Asn Tyr Gln Pro Pro Pro Ser Met Gln
20 25 30

Asn His Ile Pro Gln Val Ser Ser Pro Ala Pro Leu Pro Arg Pro Met
35 40 45

Glu Asn Arg Thr Ser Pro Ser Lys Ser Pro Phe Leu His Ser Gly Met
50 55 60

Lys Met Gln Lys Ala Gly Pro Pro Val Pro Ala Ser His Ile Ala Pro
65 70 75 80

Ala Pro Val Gln Pro Pro Met Ile Arg Arg Asp Ile Thr Phe Pro Pro
85 90 95

Gly Ser Val Glu Ala Thr Gln Pro Val Leu Lys Gln Arg Arg Arg Leu
100 105 110

Thr Met Lys Asp Ile Gly Thr Pro Glu Ala Trp Arg Val Met Met Ser
115 120 125

Leu Lys Ser Gly Leu Leu Ala Glu Ser Thr Trp Ala Leu Asp Thr Ile

```
    130                 135                 140

Asn Ile Leu Leu Tyr Asp Asp Asn Ser Ile Met Thr Phe Asn Leu Ser
145                 150                 155                 160

Gln Ile Ser Ser Met Pro Val Leu Cys Phe Leu Cys Leu Trp Ala Arg
                165                 170                 175

Ala Gln Asp Phe Asp Ser Asn Asn Asn Leu Phe Thr
            180                 185


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Met Asp Gln Met Gly Lys Met Arg Pro Gln Pro Tyr Gly Gly Thr Asn
1               5                   10                  15

Pro Tyr Ser Gln Gln Gln Gly Pro Pro Ser Gly Pro Gln Gln Gly His
            20                  25                  30

Gly Tyr Pro Gly Gln Pro Tyr Gly Ser Gln Thr Pro Gln Arg Tyr Pro
        35                  40                  45

Met Thr Met Gln Gly Arg Ala Gln Ser Ala Met Gly Gly Leu Ser Tyr
    50                  55                  60

Thr Gln Gln Ile Pro Pro Tyr Gly Gln Gln Gly Pro Ser Gly Tyr Gly
65                  70                  75                  80
```

```
Gln Gln Gly Gln Thr Pro Tyr Tyr Asn Gln Gln Ser Pro His Pro Gln
                85                  90                  95

Gln Gln Gln Pro Pro Tyr Ser Gln Gln Pro Pro Ser Gln Thr Pro His
            100                 105                 110

Ala Gln Pro Ser Tyr Gln Gln Gln Pro Gln Ser Gln Pro Pro Gln Leu
        115                 120                 125

Gln Ser Ser Gln Pro Pro Tyr Ser Gln Gln Pro Ser Gln Pro Pro His
    130                 135                 140

Gln Gln Ser Pro Ala Pro Tyr Pro Ser Gln Gln Ser Thr Thr Gln Gln
145                 150                 155                 160

His Pro Gln Ser Gln Pro Pro Tyr Ser Gln Pro Gln Ala Gln Ser Pro
                165                 170                 175

Tyr Gln Gln Gln Gln Pro Gln Gln Pro Ala Pro Ser Thr Leu Ser Gln
            180                 185                 190

Gln Ala Ala Tyr Pro Gln Pro Gln Ser Gln Gln Ser Gln Gln Thr Ala
        195                 200                 205

Tyr Ser Gln Gln Arg Phe Pro Pro Pro Gln Glu Leu Ser Gln Asp Ser
    210                 215                 220

Phe Gly Ser Gln Ala Ser Ser Ala Pro Ser Met Thr Ser Ser Lys Gly
225                 230                 235                 240

Gly Gln Glu Asp Met Asn Leu Ser Leu Gln Ser Arg Pro Ser Ser Leu
                245                 250                 255

Pro Asp Leu Ser Gly Ser Ile Asp Asp Leu Pro Met Gly Thr Glu Gly
            260                 265                 270

Ala Leu Ser Pro Gly Val Ser Thr Ser Gly Ile Ser Ser Ser Gln Gly
        275                 280                 285

Glu Gln Ser Asn Pro Ala Gln Ser Pro Phe Ser Pro His Thr Ser Pro
    290                 295                 300
```

```
His Leu Pro Gly Ile Arg Gly Pro Ser Pro Ser Pro Val Gly Ser Pro
305                 310                 315                 320

Ala Ser Val Ala Gln Ser Arg Ser Gly Pro Leu Ser Pro Ala Ala Val
                325                 330                 335

Pro Gly Asn Gln Met Pro Pro Arg Pro Pro Ser Gly Gln Ser Asp Ser
            340                 345                 350

Ile Met His Pro Ser Met Asn Gln Ser Ser Ile Ala Gln Asp Arg Gly
        355                 360                 365

Tyr Met Gln Arg Asn Pro Gln Met Pro Gln Tyr Ser Ser Pro Gln Pro
    370                 375                 380

Gly Ser Ala Leu Ser Pro Arg Gln Pro Ser Gly Gly Gln Ile His Thr
385                 390                 395                 400

Gly Met Gly Ser Tyr Gln Gln Asn Ser Met Gly Ser Tyr Gly Pro Gln
                405                 410                 415

Gly Gly Gln Tyr Gly Pro Gln Gly Gly Tyr Pro Arg Gln Pro Asn Tyr
            420                 425                 430

Asn Ala Leu Pro Asn Ala Asn Tyr Pro Ser Ala Gly Met Ala Gly Gly
        435                 440                 445

Ile Asn Pro Met Gly Ala Gly Gly Gln Met His Gly Gln Pro Gly Ile
    450                 455                 460

Pro Pro Tyr Gly Thr Leu Pro Pro Gly Arg Met Ser His Ala Ser Met
465                 470                 475                 480

Gly Asn Arg Pro Tyr Gly Pro Asn Met Ala Asn Ala Thr Ser Gly Trp
                485                 490                 495

Val Arg Asp Val Ser Pro Pro Gly Gly Met Asn Arg Lys Thr Gln Glu
            500                 505                 510

Thr Ala Val Ala Met His Val Ala Ala Asn Ser Ile Gln Asn Arg Pro
        515                 520                 525

Pro Gly Tyr Pro Asn Met Asn Gln Gly Gly Met Met Gly Thr Gly Pro
```

```
    530                 535                 540

Pro Tyr Gly Gln Gly Ile Asn Ser Met Ala Gly Met Ile Asn Pro Gln
545                 550                 555                 560

Gly Pro Pro Tyr Ser Met Gly Gly Thr Met Ala Asn Asn Ser Ala Gly
                565                 570                 575

Met Ala Ala Ser Pro Glu Met Met Gly Leu Gly Asp Val Lys Leu Thr
            580                 585                 590

Pro Ala Thr Lys Met Asn Asn Lys Ala Asp Gly Thr Pro Lys Thr Glu
        595                 600                 605

Ser Lys Ser Lys Lys Ser Ser Ser Ser Thr Thr Thr Asn Glu Lys Ile
    610                 615                 620

Thr Lys Leu Tyr Glu Leu Gly Gly Glu Pro Glu Arg Lys Met Trp Val
625                 630                 635                 640

Asp Arg Tyr Leu Ala Phe Thr Glu Glu Lys Ala Met Gly Met Thr Asn
                645                 650                 655

Leu Pro Ala Val Gly Arg Lys Pro Leu Asp Leu Tyr Arg Leu Tyr Val
            660                 665                 670

Ser Val Lys Glu Ile Gly Gly Leu Thr Gln Val Asn Lys Asn Lys Lys
        675                 680                 685

Trp Arg Glu Leu Ala Thr Asn Leu Asn Val Gly Thr Ser Ser Ser Ala
    690                 695                 700

Ala Ser Ser Leu Lys Lys Gln Tyr Ile Gln Cys Leu Tyr Ala Phe Glu
705                 710                 715                 720

Cys Lys Ile Glu Arg Gly Glu Asp Pro Pro Pro Asp Ile Phe Ala Ala
                725                 730                 735

Ala Asp Ser Lys Lys Ser Gln Pro Lys Ile Gln Pro Pro Ser Pro Ala
            740                 745                 750

Gly Ser Gly Ser Met Gln Gly Pro Gln Thr Pro Gln Ser Thr Ser Ser
        755                 760                 765
```

```
Ser Met Ala Glu Gly Gly Asp Leu Lys Pro Pro Thr Pro Ala Ser Thr
    770                 775                 780

Pro His Ser Gln Ile Pro Pro Leu Pro Gly Met Ser Arg Ser Asn Ser
785                 790                 795                 800

Val Gly Ile Gln Asp Ala Phe Asn Asp Gly Ser Asp Ser Thr Phe Gln
                805                 810                 815

Lys Arg Asn Ser Met Thr Pro Asn Pro Gly Tyr Gln Pro Ser Met Asn
            820                 825                 830

Thr Ser Asp Met Met Gly Arg Met Ser Tyr Glu Pro Asn Lys Asp Pro
        835                 840                 845

Tyr Gly Ser Met Arg Lys Ala Pro Gly Ser Asp Pro Phe Met Ser Ser
    850                 855                 860

Gly Gln Gly Pro Asn Gly Gly Met Gly Asp Pro Tyr Ser Arg Ala Ala
865                 870                 875                 880

Gly Pro Gly Leu Gly Asn Val Ala Met Gly Pro Arg Gln His Tyr Pro
                885                 890                 895

Tyr Gly Gly Pro Tyr Asp Arg Val Arg Thr Glu Pro Gly Ile Gly Pro
            900                 905                 910

Glu Gly Asn Met Ser Thr Gly Ala Pro Gln Pro Asn Leu Met Pro Ser
        915                 920                 925

Asn Pro Asp Ser Gly Met Tyr Ser Pro Ser Arg Tyr Pro Pro Gln Gln
    930                 935                 940

Gln Gln Gln Gln Gln Gln Arg His Asp Ser Tyr Gly Asn Gln Phe Ser
945                 950                 955                 960

Thr Gln Gly Thr Pro Ser Gly Ser Pro Phe Pro Ser Gln Gln Thr Thr
                965                 970                 975

Met Tyr Gln Gln Gln Gln Gln Asn Tyr Lys Arg Pro Met Asp Gly Thr
            980                 985                 990
```

Tyr Gly Pro Pro Ala Lys Arg His Glu Gly Glu Met Tyr Ser Val Pro
995 1000 1005

Tyr Ser Thr Gly Gln Gly Gln Pro Gln Gln Gln Gln Leu Pro Pro
1010 1015 1020

Ala Gln Pro Gln Pro Ala Ser Gln Gln Gln Ala Ala Gln Pro Ser
1025 1030 1035

Pro Gln Gln Asp Val Tyr Asn Gln Tyr Gly Asn Ala Tyr Pro Ala
1040 1045 1050

Thr Ala Thr Ala Ala Thr Glu Arg Arg Pro Ala Gly Gly Pro Gln
1055 1060 1065

Asn Gln Phe Pro Phe Gln Phe Gly Arg Asp Arg Val Ser Ala Pro
1070 1075 1080

Pro Gly Thr Asn Ala Gln Gln Asn Met Pro Pro Gln Met Met Gly
1085 1090 1095

Gly Pro Ile Gln Ala Ser Ala Glu Val Ala Gln Gln Gly Thr Met
1100 1105 1110

Trp Gln Gly Arg Asn Asp Met Thr Tyr Asn Tyr Ala Asn Arg Gln
1115 1120 1125

Ser Thr Ala Leu Pro Pro Arg Ala Pro Pro Ile Met Ala
1130 1135 1140

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<400> 6810

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Met Ala His Asn Ala Gly Ala Ala Ala Ala Ala Gly Thr His Ser Ala
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Lys Ser Gly Gly Ser Glu Ala Ala Leu Lys Glu Gly Gly Ser Ala Ala
            20                  25                  30

Ala Leu Ser Ser Ser Ser Ser Ser Ser Ala Ala Ala Ala Ala Ala Ser
        35                  40                  45

Ser Ser Ser Ser Ser Gly Pro Gly Ser Ala Met Glu Thr Gly Leu Leu
    50                  55                  60

Pro Asn His Lys Leu Lys Thr Val Gly Glu Ala Pro Ala Ala Pro Pro
65                  70                  75                  80

His Gln Gln His His His His His His Ala His His His His His His
                85                  90                  95

Ala His His Leu His His His His Ala Leu Gln Gln Gln Leu Asn Gln
            100                 105                 110

Phe Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln
        115                 120                 125

Gln Gln Gln His Pro Ile Ser Asn Asn Asn Ser Leu Gly Gly Ala Gly
    130                 135                 140

Gly Gly Ala Pro Gln Pro Gly Pro Asp Met Glu Gln Pro Gln His Gly
145                 150                 155                 160

Gly Ala Lys Asp Ser Ala Ala Gly Gly Gln Ala Asp Pro Pro Gly Pro
                165                 170                 175
```

```
Pro Leu Leu Ser Lys Pro Gly Asp Glu Asp Asp Ala Pro Pro Lys Met
            180                 185                 190

Gly Glu Pro Ala Gly Gly Arg Tyr Glu His Pro Gly Leu Gly Ala Leu
        195                 200                 205

Gly Thr Gln Gln Pro Pro Val Ala Val Pro Gly Gly Gly Gly Gly Pro
    210                 215                 220

Ala Ala Val Pro Glu Phe Asn Asn Tyr Tyr Gly Ser Ala Ala Pro Ala
225                 230                 235                 240

Ser Gly Gly Pro Gly Gly Arg Ala Gly Pro Cys Phe Asp Gln His Gly
                245                 250                 255

Gly Gln Gln Ser Pro Gly Met Gly Met Met His Ser Ala Ser Ala Ala
            260                 265                 270

Ala Ala Gly Ala Pro Gly Ser Met Asp Pro Leu Gln Asn Ser His Glu
        275                 280                 285

Gly Tyr Pro Asn Ser Gln Cys Asn His Tyr Pro Gly Tyr Ser Arg Pro
    290                 295                 300

Gly Ala Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Ser
305                 310                 315                 320

Gly Gly Gly Gly Gly Gly Gly Gly Ala Gly Ala Gly Gly Ala Gly Ala
                325                 330                 335

Gly Ala Val Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Gly Gly
            340                 345                 350

Gly Gly Gly Gly Gly Tyr Gly Gly Ser Ser Ala Gly Tyr Gly Val Leu
        355                 360                 365

Ser Ser Pro Arg Gln Gln Gly Gly Gly Met Met Met Gly Pro Gly Gly
    370                 375                 380

Gly Gly Ala Ala Ser Leu Ser Lys Ala Ala Ala Gly Ser Ala Ala Gly
385                 390                 395                 400

Gly Phe Gln Arg Phe Ala Gly Gln Asn Gln His Pro Ser Gly Ala Thr
```

405 410 415

Pro Thr Leu Asn Gln Leu Leu Thr Ser Pro Ser Pro Met Met Arg Ser
420 425 430

Tyr Gly Gly Ser Tyr Pro Glu Tyr Ser Ser Pro Ser Ala Pro Pro Pro
435 440 445

Pro Pro Ser Gln Pro Gln Ser Gln Ala Ala Ala Ala Gly Ala Ala Ala
450 455 460

Gly Gly Gln Gln Ala Ala Ala Gly Met Gly Leu Gly Lys Asp Met Gly
465 470 475 480

Ala Gln Tyr Ala Ala Ala Ser Pro Ala Trp Ala Ala Ala Gln Gln Arg
485 490 495

Ser His Pro Ala Met Ser Pro Gly Thr Pro Gly Pro Thr Met Gly Arg
500 505 510

Ser Gln Gly Ser Pro Met Asp Pro Met Val Met Lys Arg Pro Gln Leu
515 520 525

Tyr Gly Met Gly Ser Asn Pro His Ser Gln Pro Gln Gln Ser Ser Pro
530 535 540

Tyr Pro Gly Gly Ser Tyr Gly Pro Pro Gly Pro Gln Arg Tyr Pro Ile
545 550 555 560

Gly Ile Gln Gly Arg Thr Pro Gly Ala Met Ala Gly Met Gln Tyr Pro
565 570 575

Gln Gln Gln Met Pro Pro Gln Tyr Gly Gln Gln Gly Val Ser Gly Tyr
580 585 590

Cys Gln Gln Gly Gln Gln Pro Tyr Tyr Ser Gln Gln Pro Gln Pro Pro
595 600 605

His Leu Pro Pro Gln Ala Gln Tyr Leu Pro Ser Gln Ser Gln Gln Arg
610 615 620

Tyr Gln Pro Gln Gln Asp Met Ser Gln Glu Gly Tyr Gly Thr Arg Ser
625 630 635 640

```
Gln Pro Pro Leu Ala Pro Gly Lys Pro Asn His Glu Asp Leu Asn Leu
                645                 650                 655

Ile Gln Gln Glu Arg Pro Ser Ser Leu Pro Asp Leu Ser Gly Ser Ile
            660                 665                 670

Asp Asp Leu Pro Thr Gly Thr Glu Ala Thr Leu Ser Ser Ala Val Ser
        675                 680                 685

Ala Ser Gly Ser Thr Ser Ser Gln Gly Asp Gln Ser Asn Pro Ala Gln
    690                 695                 700

Ser Pro Phe Ser Pro His Ala Ser Pro His Leu Ser Ser Ile Pro Gly
705                 710                 715                 720

Gly Pro Ser Pro Ser Pro Val Gly Ser Pro Val Gly Ser Asn Gln Ser
                725                 730                 735

Arg Ser Gly Pro Ile Ser Pro Ala Ser Ile Pro Gly Ser Gln Met Pro
            740                 745                 750

Pro Gln Pro Pro Gly Ser Gln Ser Glu Ser Ser Ser His Pro Ala Leu
        755                 760                 765

Ser Gln Ser Pro Met Pro Gln Glu Arg Gly Phe Met Ala Gly Thr Gln
    770                 775                 780

Arg Asn Pro Gln Met Ala Gln Tyr Gly Pro Gln Gln Thr Gly Pro Ser
785                 790                 795                 800

Met Ser Pro His Pro Ser Pro Gly Gly Gln Met His Ala Gly Ile Ser
                805                 810                 815

Ser Phe Gln Gln Ser Asn Ser Ser Gly Thr Tyr Gly Pro Gln Met Ser
            820                 825                 830

Gln Tyr Gly Pro Gln Gly Asn Tyr Ser Arg Pro Pro Ala Tyr Ser Gly
        835                 840                 845

Val Pro Ser Ala Ser Tyr Ser Gly Pro Gly Pro Gly Met Gly Ile Ser
    850                 855                 860
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```
Ala Asn Asn Gln Met His Gly Gln Gly Pro Ser Gln Pro Cys Gly Ala
865                 870                 875                 880

Val Pro Leu Gly Arg Met Pro Ser Ala Gly Met Gln Asn Arg Pro Phe
                885                 890                 895

Pro Gly Asn Met Ser Ser Met Thr Pro Ser Ser Pro Gly Met Ser Gln
            900                 905                 910

Gln Gly Gly Pro Gly Met Gly Pro Pro Met Pro Thr Val Asn Arg Lys
        915                 920                 925

Ala Gln Glu Ala Ala Ala Ala Val Met Gln Ala Ala Ala Asn Ser Ala
    930                 935                 940

Gln Ser Arg Gln Gly Ser Phe Pro Gly Met Asn Gln Ser Gly Leu Met
945                 950                 955                 960

Ala Ser Ser Ser Pro Tyr Ser Gln Pro Met Asn Asn Ser Ser Ser Leu
                965                 970                 975

Met Asn Thr Gln Ala Pro Pro Tyr Ser Met Ala Pro Ala Met Val Asn
            980                 985                 990

Ser Ser Ala Ala Ser Val Gly Leu  Ala Asp Met Met Ser  Pro Gly
Glu
        995                 1000                1005

Ser Lys  Leu Pro Leu Pro Leu  Lys Ala Asp Gly Lys  Glu Glu Gly
    1010                1015                1020

Thr Pro  Gln Pro Glu Ser Lys  Ser Lys Lys Ser Ser  Ser Ser Thr
    1025                1030                1035

Thr Thr  Gly Glu Lys Ile Thr  Lys Val Tyr Glu Leu  Gly Asn Glu
    1040                1045                1050

Pro Glu  Arg Lys Leu Trp Val  Asp Arg Tyr Leu Thr  Phe Met Glu
    1055                1060                1065

Glu Arg  Gly Ser Pro Val Ser  Ser Leu Pro Ala Val  Gly Lys Lys
    1070                1075                1080
```

```
Pro Leu  Asp Leu Phe Arg Leu  Tyr Val Cys Val Lys  Glu Ile Gly
    1085                1090                1095

Gly Leu  Ala Gln Val Asn Lys  Asn Lys Lys Trp Arg  Glu Leu Ala
    1100                1105                1110

Thr Asn  Leu Asn Val Gly Thr  Ser Ser Ser Ala Ala  Ser Ser Leu
    1115                1120                1125

Lys Lys  Gln Tyr Ile Gln Tyr  Leu Phe Ala Phe Glu  Cys Lys Ile
    1130                1135                1140

Glu Arg  Gly Glu Glu Pro Pro  Pro Glu Val Phe Ser  Thr Gly Asp
    1145                1150                1155

Thr Lys  Lys Gln Pro Lys Leu  Gln Pro Pro Ser Pro  Ala Asn Ser
    1160                1165                1170

Gly Ser  Leu Gln Gly Pro Gln  Thr Pro Gln Ser Thr  Gly Ser Asn
    1175                1180                1185

Ser Met  Ala Glu Val Pro Gly  Asp Leu Lys Pro Pro  Thr Pro Ala
    1190                1195                1200

Ser Thr  Pro His Gly Gln Met  Thr Pro Met Gln Gly  Gly Arg Ser
    1205                1210                1215

Ser Thr  Ile Ser Val His Asp  Pro Phe Ser Asp Val  Ser Asp Ser
    1220                1225                1230

Ser Phe  Pro Lys Arg Asn Ser  Met Thr Pro Asn Ala  Pro Tyr Gln
    1235                1240                1245

Gln Gly  Met Ser Met Pro Asp  Val Met Gly Arg Met  Pro Tyr Glu
    1250                1255                1260

Pro Asn  Lys Asp Pro Phe Gly  Gly Met Arg Lys Val  Pro Gly Ser
    1265                1270                1275

Ser Glu  Pro Phe Met Thr Gln  Gly Gln Met Pro Asn  Ser Ser Met
    1280                1285                1290
```

```
Gln Asp  Met Tyr Asn Gln Ser  Pro Ser Gly Ala Met  Ser Asn Leu
    1295                1300                1305

Gly Met  Gly Gln Arg Gln Gln  Phe Pro Tyr Gly Ala  Ser Tyr Asp
    1310                1315                1320

Arg Arg  His Glu Pro Tyr Gly  Gln Gln Tyr Pro Gly  Gln Gly Pro
    1325                1330                1335

Pro Ser  Gly Gln Pro Pro Tyr  Gly Gly His Gln Pro  Gly Leu Tyr
    1340                1345                1350

Pro Gln  Gln Pro Asn Tyr Lys  Arg His Met Asp Gly  Met Tyr Gly
    1355                1360                1365

Pro Pro  Ala Lys Arg His Glu  Gly Asp Met Tyr Asn  Met Gln Tyr
    1370                1375                1380

Ser Ser  Gln Gln Gln Glu Met  Tyr Asn Gln Tyr Gly  Gly Ser Tyr
    1385                1390                1395

Ser Gly  Pro Asp Arg Arg Pro  Ile Gln Gly Gln Tyr  Pro Tyr Pro
    1400                1405                1410

Tyr Ser  Arg Glu Arg Met Gln  Gly Pro Gly Gln Ile  Gln Thr His
    1415                1420                1425

Gly Ile  Pro Pro Gln Met Met  Gly Gly Pro Leu Gln  Ser Ser Ser
    1430                1435                1440

Ser Glu  Gly Pro Gln Gln Asn  Met Trp Ala Ala Arg  Asn Asp Met
    1445                1450                1455

Pro Tyr  Pro Tyr Gln Asn Arg  Gln Gly Pro Gly Gly  Pro Thr Gln
    1460                1465                1470

Ala Pro  Pro Tyr Pro Gly Met  Asn Arg Thr Asp Asp  Met Met Val
    1475                1480                1485

Pro Asp  Gln Arg Ile Asn His  Glu Ser Gln Trp Pro  Ser His Val
    1490                1495                1500

Ser Gln  Arg Gln Pro Tyr Met  Ser Ser Ser Ala Ser  Met Gln Pro
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1505 1510 1515

Ile Thr Arg Pro Pro Gln Pro Ser Tyr Gln Thr Pro Pro Ser Leu
1520 1525 1530

Pro Asn His Ile Ser Arg Ala Pro Ser Pro Ala Ser Phe Gln Arg
1535 1540 1545

Ser Leu Glu Asn Arg Met Ser Pro Ser Lys Ser Pro Phe Leu Pro
1550 1555 1560

Ser Met Lys Met Gln Lys Val Met Pro Thr Val Pro Thr Ser Gln
1565 1570 1575

Val Thr Gly Pro Pro Pro Gln Pro Pro Pro Ile Arg Arg Glu Ile
1580 1585 1590

Thr Phe Pro Pro Gly Ser Val Glu Ala Ser Gln Pro Val Leu Lys
1595 1600 1605

Gln Arg Arg Lys Ile Thr Ser Lys Asp Ile Val Thr Pro Glu Ala
1610 1615 1620

Trp Arg Val Met Met Ser Leu Lys Ser Gly Leu Leu Ala Glu Ser
1625 1630 1635

Thr Trp Ala Leu Asp Thr Ile Asn Ile Leu Leu Tyr Asp Asp Ser
1640 1645 1650

Thr Val Ala Thr Phe Asn Leu Ser Gln Leu Ser Gly Phe Leu Glu
1655 1660 1665

Leu Leu Val Glu Tyr Phe Arg Lys Cys Leu Ile Asp Ile Phe Gly
1670 1675 1680

Ile Leu Met Glu Tyr Glu Val Gly Asp Pro Ser Gln Lys Ala Leu
1685 1690 1695

Asp His Asn Ala Ala Arg Lys Asp Asp Ser Gln Ser Leu Ala Asp
1700 1705 1710

Asp Ser Gly Lys Glu Glu Glu Asp Ala Glu Cys Ile Asp Asp Asp
1715 1720 1725

```
Glu Glu  Asp Glu Glu Asp Glu  Glu Glu Asp Ser Glu  Lys Thr Glu
    1730                1735                1740

Ser Asp  Glu Lys Ser Ser Ile  Ala Leu Thr Ala Pro  Asp Ala Ala
    1745                1750                1755

Ala Asp  Pro Lys Glu Lys Pro  Lys Gln Ala Ser Lys  Phe Asp Lys
    1760                1765                1770

Leu Pro  Ile Lys Ile Val Lys  Lys Asn Asn Leu Phe  Val Val Asp
    1775                1780                1785

Arg Ser  Asp Lys Leu Gly Arg  Val Gln Glu Phe Asn  Ser Gly Leu
    1790                1795                1800

Leu His  Trp Gln Leu Gly Gly  Gly Asp Thr Thr Glu  His Ile Gln
    1805                1810                1815

Thr His  Phe Glu Ser Lys Met  Glu Ile Pro Pro Arg  Arg Arg Pro
    1820                1825                1830

Pro Pro  Pro Leu Ser Ser Ala  Gly Arg Lys Lys Glu  Gln Glu Gly
    1835                1840                1845

Lys Gly  Asp Ser Glu Glu Gln  Gln Glu Lys Ser Ile  Ile Ala Thr
    1850                1855                1860

Ile Asp  Asp Val Leu Ser Ala  Arg Pro Gly Ala Leu  Pro Glu Asp
    1865                1870                1875

Ala Asn  Pro Gly Pro Gln Thr  Glu Ser Ser Lys Phe  Pro Phe Gly
    1880                1885                1890

Ile Gln  Gln Ala Lys Ser His  Arg Asn Ile Lys Leu  Leu Glu Asp
    1895                1900                1905

Glu Pro  Arg Ser Arg Asp Glu  Thr Pro Leu Cys Thr  Ile Ala His
    1910                1915                1920

Trp Gln  Asp Ser Leu Ala Lys  Arg Cys Ile Cys Val  Ser Asn Ile
    1925                1930                1935
```

```
Val Arg  Ser Leu Ser Phe Val  Pro Gly Asn Asp Ala  Glu Met Ser
    1940                1945                1950

Lys His  Pro Gly Leu Val Leu  Ile Leu Gly Lys Leu  Ile Leu Leu
    1955                1960                1965

His His  Glu His Pro Glu Arg  Lys Arg Ala Pro Gln  Thr Tyr Glu
    1970                1975                1980

Lys Glu  Glu Asp Glu Asp Lys  Gly Val Ala Cys Ser  Lys Asp Glu
    1985                1990                1995

Trp Trp  Trp Asp Cys Leu Glu  Val Leu Arg Asp Asn  Thr Leu Val
    2000                2005                2010

Thr Leu  Ala Asn Ile Ser Gly  Gln Leu Asp Leu Ser  Ala Tyr Thr
    2015                2020                2025

Glu Ser  Ile Cys Leu Pro Ile  Leu Asp Gly Leu Leu  His Trp Met
    2030                2035                2040

Val Cys  Pro Ser Ala Glu Ala  Gln Asp Pro Phe Pro  Thr Val Gly
    2045                2050                2055

Pro Asn  Ser Val Leu Ser Pro  Gln Arg Leu Val Leu  Glu Thr Leu
    2060                2065                2070

Cys Lys  Leu Ser Ile Gln Asp  Asn Asn Val Asp Leu  Ile Leu Ala
    2075                2080                2085

Thr Pro  Pro Phe Ser Arg Gln  Glu Lys Phe Tyr Ala  Thr Leu Val
    2090                2095                2100

Arg Tyr  Val Gly Asp Arg Lys  Asn Pro Val Cys Arg  Glu Met Ser
    2105                2110                2115

Met Ala  Leu Leu Ser Asn Leu  Ala Gln Gly Asp Ala  Leu Ala Ala
    2120                2125                2130

Arg Ala  Ile Ala Val Gln Lys  Gly Ser Ile Gly Asn  Leu Ile Ser
    2135                2140                2145
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```
Phe Leu  Glu Asp Gly Val Thr  Met Ala Gln Tyr Gln  Gln Ser Gln
    2150                 2155                 2160


His Asn  Leu Met His Met Gln  Pro Pro Pro Leu Glu  Pro Pro Ser
    2165                 2170                 2175


Val Asp  Met Met Cys Arg Ala  Ala Lys Ala Leu Leu  Ala Met Ala
    2180                 2185                 2190


Arg Val  Asp Glu Asn Arg Ser  Glu Phe Leu Leu His  Glu Gly Arg
    2195                 2200                 2205


Leu Leu  Asp Ile Ser Ile Ser  Ala Val Leu Asn Ser  Leu Val Ala
    2210                 2215                 2220


Ser Val  Ile Cys Asp Val Leu  Phe Gln Ile Gly Gln  Leu
    2225                 2230                 2235


<210> 6811
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Gln Met Pro Pro Gln Tyr Gly Gln Gln Gly Val Ser Gly Tyr Cys Gln
1               5                  10                  15


Gln Gly Gln Gln Pro Tyr Tyr Ser Gln Gln Pro Gln Pro Pro His Leu
            20                  25                  30


Pro Pro Gln Ala Gln Tyr Leu Pro Ser Gln Ser Gln Gln Arg Tyr Gln
```

```
        35                  40                  45

Pro Gln Gln Asp Met Ser Gln Glu Gly Tyr Gly Thr Arg Ser Gln Pro
    50                  55                  60

Pro Leu Ala Pro Gly Lys Pro Asn His Glu Asp Leu Asn Leu Ile Gln
65                  70                  75                  80

Gln Glu Arg Pro Ser Ser Leu Pro Asp Leu Ser Gly Ser Ile Asp Asp
                85                  90                  95

Leu Pro Thr Gly Thr Glu Ala Thr Leu Ser Ser Ala Val Ser Ala Ser
            100                 105                 110

Gly Ser Thr Ser Ser Gln Gly Asp Gln Ser Asn Pro Ala Gln Ser Pro
        115                 120                 125

Phe Ser Pro His Ala Ser Pro His Leu Ser Ser Ile Pro Gly Gly Pro
    130                 135                 140

Ser Pro Ser Pro Val Gly Ser Pro Val Gly Ser Asn Gln Ser Arg Ser
145                 150                 155                 160

Gly Pro Ile Ser Pro Ala Ser Ile Pro Gly Ser Gln Met Pro Pro Gln
                165                 170                 175

Pro Pro Gly Ser Gln Ser Glu Ser Ser Ser His Pro Ala Leu Ser Gln
            180                 185                 190

Ser Pro Met Pro Gln Glu Arg Gly Phe Met Ala Gly Thr Gln Arg Asn
        195                 200                 205

Pro Gln Met Ala Gln Tyr Gly Pro Gln Gln Thr Gly Pro Ser Met Ser
    210                 215                 220

Pro His Pro Ser Pro Gly Gly Gln Met His Ala Gly Ile Ser Ser Phe
225                 230                 235                 240

Gln Gln Ser Asn Ser Ser Gly Thr Tyr Gly Pro Gln Met Ser Gln Tyr
                245                 250                 255

Gly Pro Gln Gly Asn Tyr Ser Arg Pro Pro Ala Tyr Ser Gly Val Pro
            260                 265                 270
```

```
Ser Ala Ser Tyr Ser Gly Pro Gly Pro Gly Met Gly Ile Ser Ala Asn
        275                 280                 285

Asn Gln Met His Gly Gln Gly Pro Ser Gln Pro Cys Gly Ala Val Pro
    290                 295                 300

Leu Gly Arg Met Pro Ser Ala Gly Met Gln Asn Arg Pro Phe Pro Gly
305                 310                 315                 320

Asn Met Ser Ser Met Thr Pro Ser Ser Pro Gly Met Ser Gln Gln Gly
                325                 330                 335

Gly Pro Gly Met Gly Pro Pro Met Pro Thr Val Asn Arg Lys Ala Gln
            340                 345                 350

Glu Ala Ala Ala Ala Val Met Gln Ala Ala Ala Asn Ser Ala Gln Ser
        355                 360                 365

Arg Gln Gly Ser Phe Pro Gly Met Asn Gln Ser Gly Leu Met Ala Ser
    370                 375                 380

Ser Ser Pro Tyr Ser Gln Pro Met Asn Asn Ser Ser Ser Leu Met Asn
385                 390                 395                 400

Thr Gln Ala Pro Pro Tyr Ser Met Ala Pro Ala Met Val Asn Ser Ser
                405                 410                 415

Ala Ala Ser Val Gly Leu Ala Asp Met Met Ser Pro Gly Glu Ser Lys
            420                 425                 430

Leu Pro Leu Pro Leu Lys Ala Asp Gly Lys Glu Glu Gly Thr Pro Gln
        435                 440                 445

Pro Glu Ser Lys Ser Lys Asp Ser Tyr Ser Ser Gln Gly Ile Ser Gln
    450                 455                 460

Pro Pro Thr Pro Gly Asn Leu Pro Val Pro Ser Pro Met Ser Pro Ser
465                 470                 475                 480

Ser Ala Ser Ile Ser Ser Phe His Gly Asp Glu Ser Asp Ser Ile Ser
                485                 490                 495
```

```
Ser Pro Gly Trp Pro Lys Thr Pro Ser Ser Pro Lys Ser Ser Ser Ser
            500                 505                 510

Thr Thr Thr Gly Glu Lys Ile Thr Lys Val Tyr Glu Leu Gly Asn Glu
        515                 520                 525

Pro Glu Arg Lys Leu Trp Val Asp Arg Tyr Leu Thr Phe Met Glu Glu
    530                 535                 540

Arg Gly Ser Pro Val Ser Ser Leu Pro Ala Val Gly Lys Lys Pro Leu
545                 550                 555                 560

Asp Leu Phe Arg Leu Tyr Val Cys Val Lys Glu Ile Gly Gly Leu Ala
                565                 570                 575

Gln Val Asn Lys Asn Lys Lys Trp Arg Glu Leu Ala Thr Asn Leu Asn
            580                 585                 590

Val Gly Thr Ser Ser Ser Ala Ala Ser Ser Leu Lys Lys Gln Tyr Ile
        595                 600                 605

Gln Tyr Leu Phe Ala Phe Glu Cys Lys Ile Glu Arg Gly Glu Glu Pro
    610                 615                 620

Pro Pro Glu Val Phe Ser Thr Gly Asp Thr Lys Lys Gln Pro Lys Leu
625                 630                 635                 640

Gln Pro Pro Ser Pro Val Val Gln Met Glu Pro Arg Ala Cys Asp Thr
                645                 650                 655

Gly Gly Ser Gly Arg Lys Ala Ser Trp Ser Arg Pro Ala Pro Arg Ala
            660                 665                 670

Arg Ala Gly Gly Ser Arg His Thr Gln Ala Ser Gly Gly Arg Arg Gln
        675                 680                 685

Arg His Pro Gly Leu Gln Lys Pro Leu Asp Ser Leu Pro Pro Thr Gln
    690                 695                 700

Gln Val Ala Ser Pro Ile Pro Val Pro Ser Leu Gly Lys Val Ser Gly
705                 710                 715                 720
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Asn Ile Phe Val Val Lys Gly Lys
725

<210> 6812
<211> 2249
<212> PRT
<213> Homo sapiens

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1-like); "

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<400> 6812
Met Ala His Asn Ala Gly Ala Ala Ala Ala Ala Gly Thr His Ser Ala
1 5 10 15

Lys Ser Gly Gly Ser Glu Ala Ala Leu Lys Glu Gly Gly Ser Ala Ala
20 25 30

Ala Leu Ser Ser Ser Ser Ser Ser Ser Ala Ala Ala Ala Ala Ala Ser
35 40 45

Ser Ser Ser Ser Ser Gly Pro Gly Ser Ala Met Glu Thr Gly Leu Leu
50 55 60

Pro Asn His Lys Leu Lys Thr Val Gly Glu Ala Pro Ala Ala Pro Pro
65 70 75 80

His Gln Gln His His His His His His Ala His His His His His His
85 90 95

Ala His His Leu His His His His Ala Leu Gln Gln Gln Leu Asn Gln

```
            100                 105                 110

Phe Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln
        115                 120                 125

Gln Gln Gln His Pro Ile Ser Asn Asn Asn Ser Leu Gly Gly Ala Gly
    130                 135                 140

Gly Gly Ala Pro Gln Pro Gly Pro Asp Met Glu Gln Pro Gln His Gly
145                 150                 155                 160

Gly Ala Lys Asp Ser Ala Ala Gly Gly Gln Ala Asp Pro Pro Gly Pro
                165                 170                 175

Pro Leu Leu Ser Lys Pro Gly Asp Glu Asp Asp Ala Pro Pro Lys Met
            180                 185                 190

Gly Glu Pro Ala Gly Gly Arg Tyr Glu His Pro Gly Leu Gly Ala Leu
        195                 200                 205

Gly Thr Gln Gln Pro Pro Val Ala Val Pro Gly Gly Gly Gly Gly Pro
    210                 215                 220

Ala Ala Val Pro Glu Phe Asn Asn Tyr Tyr Gly Ser Ala Ala Pro Ala
225                 230                 235                 240

Ser Gly Gly Pro Gly Gly Arg Ala Gly Pro Cys Phe Asp Gln His Gly
                245                 250                 255

Gly Gln Gln Ser Pro Gly Met Gly Met Met His Ser Ala Ser Ala Ala
            260                 265                 270

Ala Ala Gly Ala Pro Gly Ser Met Asp Pro Leu Gln Asn Ser His Glu
        275                 280                 285

Gly Tyr Pro Asn Ser Gln Cys Asn His Tyr Pro Gly Tyr Ser Arg Pro
    290                 295                 300

Gly Ala Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Ser
305                 310                 315                 320

Gly Gly Gly Gly Gly Gly Gly Gly Ala Gly Ala Gly Gly Ala Gly Ala
                325                 330                 335
```

```
Gly Ala Val Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Ala Gly Gly
            340                 345                 350

Gly Gly Gly Gly Gly Tyr Gly Gly Ser Ser Ala Gly Tyr Gly Val Leu
        355                 360                 365

Ser Ser Pro Arg Gln Gln Gly Gly Gly Met Met Met Gly Pro Gly Gly
    370                 375                 380

Gly Gly Ala Ala Ser Leu Ser Lys Ala Ala Ala Gly Ser Ala Ala Gly
385                 390                 395                 400

Gly Phe Gln Arg Phe Ala Gly Gln Asn Gln His Pro Ser Gly Ala Thr
                405                 410                 415

Pro Thr Leu Asn Gln Leu Leu Thr Ser Pro Ser Pro Met Met Arg Ser
            420                 425                 430

Tyr Gly Gly Ser Tyr Pro Glu Tyr Ser Ser Pro Ser Ala Pro Pro Pro
        435                 440                 445

Pro Pro Ser Gln Pro Gln Ser Gln Ala Ala Ala Ala Gly Ala Ala Ala
    450                 455                 460

Gly Gly Gln Gln Ala Ala Ala Gly Met Gly Leu Gly Lys Asp Met Gly
465                 470                 475                 480

Ala Gln Tyr Ala Ala Ala Ser Pro Ala Trp Ala Ala Ala Gln Gln Arg
                485                 490                 495

Ser His Pro Ala Met Ser Pro Gly Thr Pro Gly Pro Thr Met Gly Arg
            500                 505                 510

Ser Gln Gly Ser Pro Met Asp Pro Met Val Met Lys Arg Pro Gln Leu
        515                 520                 525

Tyr Gly Met Gly Ser Asn Pro His Ser Gln Pro Gln Gln Ser Ser Pro
    530                 535                 540

Tyr Pro Gly Gly Ser Tyr Gly Pro Pro Gly Pro Gln Arg Tyr Pro Ile
545                 550                 555                 560
```

```
Gly Ile Gln Gly Arg Thr Pro Gly Ala Met Ala Gly Met Gln Tyr Pro
               565                 570                 575

Gln Gln Gln Asp Ser Gly Asp Ala Thr Trp Lys Glu Thr Phe Trp Leu
            580                 585                 590

Met Pro Pro Gln Tyr Gly Gln Gln Gly Val Ser Gly Tyr Cys Gln Gln
        595                 600                 605

Gly Gln Gln Pro Tyr Tyr Ser Gln Gln Pro Gln Pro Pro His Leu Pro
    610                 615                 620

Pro Gln Ala Gln Tyr Leu Pro Ser Gln Ser Gln Gln Arg Tyr Gln Pro
625                 630                 635                 640

Gln Gln Asp Met Ser Gln Glu Gly Tyr Gly Thr Arg Ser Gln Pro Pro
               645                 650                 655

Leu Ala Pro Gly Lys Pro Asn His Glu Asp Leu Asn Leu Ile Gln Gln
            660                 665                 670

Glu Arg Pro Ser Ser Leu Pro Asp Leu Ser Gly Ser Ile Asp Asp Leu
        675                 680                 685

Pro Thr Gly Thr Glu Ala Thr Leu Ser Ser Ala Val Ser Ala Ser Gly
    690                 695                 700

Ser Thr Ser Ser Gln Gly Asp Gln Ser Asn Pro Ala Gln Ser Pro Phe
705                 710                 715                 720

Ser Pro His Ala Ser Pro His Leu Ser Ser Ile Pro Gly Gly Pro Ser
               725                 730                 735

Pro Ser Pro Val Gly Ser Pro Val Gly Ser Asn Gln Ser Arg Ser Gly
            740                 745                 750

Pro Ile Ser Pro Ala Ser Ile Pro Gly Ser Gln Met Pro Pro Gln Pro
        755                 760                 765

Pro Gly Ser Gln Ser Glu Ser Ser Ser His Pro Ala Leu Ser Gln Ser
    770                 775                 780
```

```
Pro Met Pro Gln Glu Arg Gly Phe Met Ala Gly Thr Gln Arg Asn Pro
785                 790                 795                 800

Gln Met Ala Gln Tyr Gly Pro Gln Gln Thr Gly Pro Ser Met Ser Pro
                805                 810                 815

His Pro Ser Pro Gly Gly Gln Met His Ala Gly Ile Ser Ser Phe Gln
            820                 825                 830

Gln Ser Asn Ser Ser Gly Thr Tyr Gly Pro Gln Met Ser Gln Tyr Gly
        835                 840                 845

Pro Gln Gly Asn Tyr Ser Arg Pro Pro Ala Tyr Ser Gly Val Pro Ser
    850                 855                 860

Ala Ser Tyr Ser Gly Pro Gly Pro Gly Met Gly Ile Ser Ala Asn Asn
865                 870                 875                 880

Gln Met His Gly Gln Gly Pro Ser Gln Pro Cys Gly Ala Val Pro Leu
                885                 890                 895

Gly Arg Met Pro Ser Ala Gly Met Gln Asn Arg Pro Phe Pro Gly Asn
            900                 905                 910

Met Ser Ser Met Thr Pro Ser Ser Pro Gly Met Ser Gln Gln Gly Gly
        915                 920                 925

Pro Gly Met Gly Pro Pro Met Pro Thr Val Asn Arg Lys Ala Gln Glu
    930                 935                 940

Ala Ala Ala Ala Val Met Gln Ala Ala Ala Asn Ser Ala Gln Ser Arg
945                 950                 955                 960

Gln Gly Ser Phe Pro Gly Met Asn Gln Ser Gly Leu Met Ala Ser Ser
                965                 970                 975

Ser Pro Tyr Ser Gln Pro Met Asn Asn Ser Ser Ser Leu Met Asn Thr
            980                 985                 990

Gln Ala Pro Pro Tyr Ser Met Ala  Pro Ala Met Val Asn  Ser Ser
Ala
        995                 1000                1005
```

Ala Ser Val Gly Leu Ala Asp Met Met Ser Pro Gly Glu Ser Lys
1010 1015 1020

Leu Pro Leu Pro Leu Lys Ala Asp Gly Lys Glu Glu Gly Thr Pro
1025 1030 1035

Gln Pro Glu Ser Lys Ser Lys Lys Ser Ser Ser Ser Thr Thr Thr
1040 1045 1050

Gly Glu Lys Ile Thr Lys Val Tyr Glu Leu Gly Asn Glu Pro Glu
1055 1060 1065

Arg Lys Leu Trp Val Asp Arg Tyr Leu Thr Phe Met Glu Glu Arg
1070 1075 1080

Gly Ser Pro Val Ser Ser Leu Pro Ala Val Gly Lys Lys Pro Leu
1085 1090 1095

Asp Leu Phe Arg Leu Tyr Val Cys Val Lys Glu Ile Gly Gly Leu
1100 1105 1110

Ala Gln Val Asn Lys Asn Lys Lys Trp Arg Glu Leu Ala Thr Asn
1115 1120 1125

Leu Asn Val Gly Thr Ser Ser Ser Ala Ala Ser Ser Leu Lys Lys
1130 1135 1140

Gln Tyr Ile Gln Tyr Leu Phe Ala Phe Glu Cys Lys Ile Glu Arg
1145 1150 1155

Gly Glu Glu Pro Pro Pro Glu Val Phe Ser Thr Gly Asp Thr Lys
1160 1165 1170

Lys Gln Pro Lys Leu Gln Pro Pro Ser Pro Ala Asn Ser Gly Ser
1175 1180 1185

Leu Gln Gly Pro Gln Thr Pro Gln Ser Thr Gly Ser Asn Ser Met
1190 1195 1200

Ala Glu Val Pro Gly Asp Leu Lys Pro Pro Thr Pro Ala Ser Thr
1205 1210 1215

Pro His Gly Gln Met Thr Pro Met Gln Gly Gly Arg Ser Ser Thr

1220 1225 1230

Ile Ser Val His Asp Pro Phe Ser Asp Val Ser Asp Ser Ser Phe
1235 1240 1245

Pro Lys Arg Asn Ser Met Thr Pro Asn Ala Pro Tyr Gln Gln Gly
1250 1255 1260

Met Ser Met Pro Asp Val Met Gly Arg Met Pro Tyr Glu Pro Asn
1265 1270 1275

Lys Asp Pro Phe Gly Gly Met Arg Lys Val Pro Gly Ser Ser Glu
1280 1285 1290

Pro Phe Met Thr Gln Gly Gln Met Pro Asn Ser Ser Met Gln Asp
1295 1300 1305

Met Tyr Asn Gln Ser Pro Ser Gly Ala Met Ser Asn Leu Gly Met
1310 1315 1320

Gly Gln Arg Gln Gln Phe Pro Tyr Gly Ala Ser Tyr Asp Arg Arg
1325 1330 1335

His Glu Pro Tyr Gly Gln Gln Tyr Pro Gly Gln Gly Pro Pro Ser
1340 1345 1350

Gly Gln Pro Pro Tyr Gly Gly His Gln Pro Gly Leu Tyr Pro Gln
1355 1360 1365

Gln Pro Asn Tyr Lys Arg His Met Asp Gly Met Tyr Gly Pro Pro
1370 1375 1380

Ala Lys Arg His Glu Gly Asp Met Tyr Asn Met Gln Tyr Ser Ser
1385 1390 1395

Gln Gln Gln Glu Met Tyr Asn Gln Tyr Gly Gly Ser Tyr Ser Gly
1400 1405 1410

Pro Asp Arg Arg Pro Ile Gln Gly Gln Tyr Pro Tyr Pro Tyr Ser
1415 1420 1425

Arg Glu Arg Met Gln Gly Pro Gly Gln Ile Gln Thr His Gly Ile
1430 1435 1440

```
Pro Pro  Gln Met Met Gly Gly  Pro Leu Gln Ser Ser  Ser Ser Glu
    1445                1450                1455

Gly Pro  Gln Gln Asn Met Trp  Ala Ala Arg Asn Asp  Met Pro Tyr
    1460                1465                1470

Pro Tyr  Gln Asn Arg Gln Gly  Pro Gly Gly Pro Thr  Gln Ala Pro
    1475                1480                1485

Pro Tyr  Pro Gly Met Asn Arg  Thr Asp Asp Met Met  Val Pro Asp
    1490                1495                1500

Gln Arg  Ile Asn His Glu Ser  Gln Trp Pro Ser His  Val Ser Gln
    1505                1510                1515

Arg Gln  Pro Tyr Met Ser Ser  Ser Ala Ser Met Gln  Pro Ile Thr
    1520                1525                1530

Arg Pro  Pro Gln Pro Ser Tyr  Gln Thr Pro Pro Ser  Leu Pro Asn
    1535                1540                1545

His Ile  Ser Arg Ala Pro Ser  Pro Ala Ser Phe Gln  Arg Ser Leu
    1550                1555                1560

Glu Asn  Arg Met Ser Pro Ser  Lys Ser Pro Phe Leu  Pro Ser Met
    1565                1570                1575

Lys Met  Gln Lys Val Met Pro  Thr Val Pro Thr Ser  Gln Val Thr
    1580                1585                1590

Gly Pro  Pro Pro Gln Pro Pro  Pro Ile Arg Arg Glu  Ile Thr Phe
    1595                1600                1605

Pro Pro  Gly Ser Val Glu Ala  Ser Gln Pro Val Leu  Lys Gln Arg
    1610                1615                1620

Arg Lys  Ile Thr Ser Lys Asp  Ile Val Thr Pro Glu  Ala Trp Arg
    1625                1630                1635

Val Met  Met Ser Leu Lys Ser  Gly Leu Leu Ala Glu  Ser Thr Trp
    1640                1645                1650
```

```
Ala Leu  Asp Thr Ile Asn Ile  Leu Leu Tyr Asp Asp  Ser Thr Val
    1655                 1660                 1665

Ala Thr  Phe Asn Leu Ser Gln  Leu Ser Gly Phe Leu  Glu Leu Leu
    1670                 1675                 1680

Val Glu  Tyr Phe Arg Lys Cys  Leu Ile Asp Ile Phe  Gly Ile Leu
    1685                 1690                 1695

Met Glu  Tyr Glu Val Gly Asp  Pro Ser Gln Lys Ala  Leu Asp His
    1700                 1705                 1710

Asn Ala  Ala Arg Lys Asp Asp  Ser Gln Ser Leu Ala  Asp Asp Ser
    1715                 1720                 1725

Gly Lys  Glu Glu Glu Asp Ala  Glu Cys Ile Asp Asp  Asp Glu Glu
    1730                 1735                 1740

Asp Glu  Glu Asp Glu Glu Glu  Asp Ser Glu Lys Thr  Glu Ser Asp
    1745                 1750                 1755

Glu Lys  Ser Ser Ile Ala Leu  Thr Ala Pro Asp Ala  Ala Ala Asp
    1760                 1765                 1770

Pro Lys  Glu Lys Pro Lys Gln  Ala Ser Lys Phe Asp  Lys Leu Pro
    1775                 1780                 1785

Ile Lys  Ile Val Lys Lys Asn  Asn Leu Phe Val Val  Asp Arg Ser
    1790                 1795                 1800

Asp Lys  Leu Gly Arg Val Gln  Glu Phe Asn Ser Gly  Leu Leu His
    1805                 1810                 1815

Trp Gln  Leu Gly Gly Gly Asp  Thr Thr Glu His Ile  Gln Thr His
    1820                 1825                 1830

Phe Glu  Ser Lys Met Glu Ile  Pro Pro Arg Arg Arg  Pro Pro Pro
    1835                 1840                 1845

Pro Leu  Ser Ser Ala Gly Arg  Lys Lys Glu Gln Glu  Gly Lys Gly
    1850                 1855                 1860
```

Asp Ser Glu Glu Gln Gln Glu Lys Ser Ile Ile Ala Thr Ile Asp
1865 1870 1875

Asp Val Leu Ser Ala Arg Pro Gly Ala Leu Pro Glu Asp Ala Asn
1880 1885 1890

Pro Gly Pro Gln Thr Glu Ser Ser Lys Phe Pro Phe Gly Ile Gln
1895 1900 1905

Gln Ala Lys Ser His Arg Asn Ile Lys Leu Leu Glu Asp Glu Pro
1910 1915 1920

Arg Ser Arg Asp Glu Thr Pro Leu Cys Thr Ile Ala His Trp Gln
1925 1930 1935

Asp Ser Leu Ala Lys Arg Cys Ile Cys Val Ser Asn Ile Val Arg
1940 1945 1950

Ser Leu Ser Phe Val Pro Gly Asn Asp Ala Glu Met Ser Lys His
1955 1960 1965

Pro Gly Leu Val Leu Ile Leu Gly Lys Leu Ile Leu Leu His His
1970 1975 1980

Glu His Pro Glu Arg Lys Arg Ala Pro Gln Thr Tyr Glu Lys Glu
1985 1990 1995

Glu Asp Glu Asp Lys Gly Val Ala Cys Ser Lys Asp Glu Trp Trp
2000 2005 2010

Trp Asp Cys Leu Glu Val Leu Arg Asp Asn Thr Leu Val Thr Leu
2015 2020 2025

Ala Asn Ile Ser Gly Gln Leu Asp Leu Ser Ala Tyr Thr Glu Ser
2030 2035 2040

Ile Cys Leu Pro Ile Leu Asp Gly Leu Leu His Trp Met Val Cys
2045 2050 2055

Pro Ser Ala Glu Ala Gln Asp Pro Phe Pro Thr Val Gly Pro Asn
2060 2065 2070

Ser Val Leu Ser Pro Gln Arg Leu Val Leu Glu Thr Leu Cys Lys

2075 2080 2085

Leu Ser Ile Gln Asp Asn Asn Val Asp Leu Ile Leu Ala Thr Pro
2090 2095 2100

Pro Phe Ser Arg Gln Glu Lys Phe Tyr Ala Thr Leu Val Arg Tyr
2105 2110 2115

Val Gly Asp Arg Lys Asn Pro Val Cys Arg Glu Met Ser Met Ala
2120 2125 2130

Leu Leu Ser Asn Leu Ala Gln Gly Asp Ala Leu Ala Ala Arg Ala
2135 2140 2145

Ile Ala Val Gln Lys Gly Ser Ile Gly Asn Leu Ile Ser Phe Leu
2150 2155 2160

Glu Asp Gly Val Thr Met Ala Gln Tyr Gln Gln Ser Gln His Asn
2165 2170 2175

Leu Met His Met Gln Pro Pro Pro Leu Glu Pro Pro Ser Val Asp
2180 2185 2190

Met Met Cys Arg Ala Ala Lys Ala Leu Leu Ala Met Ala Arg Val
2195 2200 2205

Asp Glu Asn Arg Ser Glu Phe Leu Leu His Glu Gly Arg Leu Leu
2210 2215 2220

Asp Ile Ser Ile Ser Ala Val Leu Asn Ser Leu Val Ala Ser Val
2225 2230 2235

Ile Cys Asp Val Leu Phe Gln Ile Gly Gln Leu
2240 2245

<210> 6813
<211> 273
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ARID1B; "

<220>
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<223> /note="Gene Name:
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1-like); "

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<400> 6813

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Ala Ala Val Met Gln Ala Ala Ala Asn Ser Ala Gln Ser Arg Gln Gly
1               5                  10                  15

Ser Phe Pro Gly Met Asn Gln Ser Gly Leu Met Ala Ser Ser Ser Pro
            20                  25                  30

Tyr Ser Gln Pro Met Asn Asn Ser Ser Ser Leu Met Asn Thr Gln Ala
        35                  40                  45

Pro Pro Tyr Ser Met Ala Pro Ala Met Val Asn Ser Ser Ala Ala Ser
    50                  55                  60

Val Gly Leu Ala Asp Met Met Ser Pro Gly Glu Ser Lys Leu Pro Leu
65                  70                  75                  80

Pro Leu Lys Ala Asp Gly Lys Glu Glu Gly Thr Pro Gln Pro Glu Ser
                85                  90                  95

Lys Ser Lys Lys Ser Ser Ser Ser Thr Thr Thr Gly Glu Lys Ile Thr
            100                 105                 110

Lys Val Tyr Glu Leu Gly Asn Glu Pro Glu Arg Lys Leu Trp Val Asp
        115                 120                 125

Arg Tyr Leu Thr Phe Met Glu Glu Arg Gly Ser Pro Val Ser Ser Leu
    130                 135                 140

Pro Ala Val Gly Lys Lys Pro Leu Asp Leu Phe Arg Leu Tyr Val Cys
145                 150                 155                 160

Val Lys Glu Ile Gly Gly Leu Ala Gln Val Asn Lys Asn Lys Lys Trp
                165                 170                 175
```

```
Arg Glu Leu Ala Thr Asn Leu Asn Val Gly Thr Ser Ser Ser Ala Ala
            180                 185                 190

Ser Ser Leu Lys Lys Gln Tyr Ile Gln Tyr Leu Phe Ala Phe Glu Cys
        195                 200                 205

Lys Ile Glu Arg Gly Glu Glu Pro Pro Pro Glu Val Phe Ser Thr Gly
    210                 215                 220

Asp Thr Lys Lys Gln Pro Lys Leu Gln Pro Pro Ser Pro Gly Lys Trp
225                 230                 235                 240

Arg Arg Cys Ser His Trp Pro Arg Lys Ala Gln Ala Pro Gly Leu Gly
                245                 250                 255

Gly Ser Gly Lys Val Val Ser Gln Ser Gly Gln Gln Gly Thr Trp Asp
            260                 265                 270

Phe
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<210> 6814
<211> 1758
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<213> Homo sapiens

<220>
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1-like); "

<220>
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<400> 6814

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Ser Pro Gly Thr Pro Gly Pro Thr Met Gly Arg Ser Gln Gly Ser Pro
1               5                   10                  15
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Met Asp Pro Met Val Met Lys Arg Pro Gln Leu Tyr Gly Met Gly Ser
            20                  25                  30

Asn Pro His Ser Gln Pro Gln Gln Ser Ser Pro Tyr Pro Gly Gly Ser
        35                  40                  45

Tyr Gly Pro Pro Gly Pro Gln Arg Tyr Pro Ile Gly Ile Gln Gly Arg
    50                  55                  60

Thr Pro Gly Ala Met Ala Gly Met Gln Tyr Pro Gln Gln Gln Met Pro
65                  70                  75                  80

Pro Gln Tyr Gly Gln Gln Gly Val Ser Gly Tyr Cys Gln Gln Gly Gln
                85                  90                  95

Gln Pro Tyr Tyr Ser Gln Gln Pro Gln Pro Pro His Leu Pro Pro Gln
            100                 105                 110

Ala Gln Tyr Leu Pro Ser Gln Ser Gln Gln Arg Tyr Gln Pro Gln Gln
        115                 120                 125

Asp Met Ser Gln Glu Gly Tyr Gly Thr Arg Ser Gln Pro Pro Leu Ala
    130                 135                 140

Pro Gly Lys Pro Asn His Glu Asp Leu Asn Leu Ile Gln Gln Glu Arg
145                 150                 155                 160

Pro Ser Ser Leu Pro Asp Leu Ser Gly Ser Ile Asp Asp Leu Pro Thr
                165                 170                 175

Gly Thr Glu Ala Thr Leu Ser Ser Ala Val Ser Ala Ser Gly Ser Thr
            180                 185                 190

Ser Ser Gln Gly Asp Gln Ser Asn Pro Ala Gln Ser Pro Phe Ser Pro
        195                 200                 205

His Ala Ser Pro His Leu Ser Ser Ile Pro Gly Gly Pro Ser Pro Ser
    210                 215                 220

Pro Val Gly Ser Pro Val Gly Ser Asn Gln Ser Arg Ser Gly Pro Ile
225                 230                 235                 240

Ser Pro Ala Ser Ile Pro Gly Phe Met Ala Gly Thr Gln Arg Asn Pro
```

```
                245                 250                 255

Gln Met Ala Gln Tyr Gly Pro Gln Gln Thr Gly Pro Ser Met Ser Pro
            260                 265                 270

His Pro Ser Pro Gly Gly Gln Met His Ala Gly Ile Ser Ser Phe Gln
        275                 280                 285

Gln Ser Asn Ser Ser Gly Thr Tyr Gly Pro Gln Met Ser Gln Tyr Gly
    290                 295                 300

Pro Gln Gly Asn Tyr Ser Arg Pro Pro Ala Tyr Ser Gly Val Pro Ser
305                 310                 315                 320

Ala Ser Tyr Ser Gly Pro Gly Pro Gly Met Gly Ile Ser Ala Asn Asn
                325                 330                 335

Gln Met His Gly Gln Gly Pro Ser Gln Pro Cys Gly Ala Val Pro Leu
            340                 345                 350

Gly Arg Met Pro Ser Ala Gly Met Gln Asn Arg Pro Phe Pro Gly Asn
        355                 360                 365

Met Ser Ser Met Thr Pro Ser Ser Pro Gly Met Ser Gln Gln Gly Gly
    370                 375                 380

Pro Gly Met Gly Pro Pro Met Pro Thr Val Asn Arg Lys Ala Gln Glu
385                 390                 395                 400

Ala Ala Ala Ala Val Met Gln Ala Ala Ala Asn Ser Ala Gln Ser Arg
                405                 410                 415

Gln Gly Ser Phe Pro Gly Met Asn Gln Ser Gly Leu Met Ala Ser Ser
            420                 425                 430

Ser Pro Tyr Ser Gln Pro Met Asn Asn Ser Ser Ser Leu Met Asn Thr
        435                 440                 445

Gln Ala Pro Pro Tyr Ser Met Ala Pro Ala Met Val Asn Ser Ser Ala
    450                 455                 460

Ala Ser Val Gly Leu Ala Asp Met Met Ser Pro Gly Glu Ser Lys Leu
465                 470                 475                 480
```

```
Pro Leu Pro Leu Lys Ala Asp Gly Lys Glu Glu Gly Thr Pro Gln Pro
                485                 490                 495

Glu Ser Lys Ser Lys Asp Ser Tyr Ser Ser Gln Gly Ile Ser Gln Pro
            500                 505                 510

Pro Thr Pro Gly Asn Leu Pro Val Pro Ser Pro Met Ser Pro Ser Ser
        515                 520                 525

Ala Ser Ile Ser Ser Phe His Gly Asp Glu Ser Asp Ser Ile Ser Ser
    530                 535                 540

Pro Gly Trp Pro Lys Thr Pro Ser Ser Pro Lys Ser Ser Ser Ser Thr
545                 550                 555                 560

Thr Thr Gly Glu Lys Ile Thr Lys Val Tyr Glu Leu Gly Asn Glu Pro
                565                 570                 575

Glu Arg Lys Leu Trp Val Asp Arg Tyr Leu Thr Phe Met Glu Glu Arg
            580                 585                 590

Gly Ser Pro Val Ser Ser Leu Pro Ala Val Gly Lys Lys Pro Leu Asp
        595                 600                 605

Leu Phe Arg Leu Tyr Val Cys Val Lys Glu Ile Gly Gly Leu Ala Gln
    610                 615                 620

Val Asn Lys Asn Lys Lys Trp Arg Glu Leu Ala Thr Asn Leu Asn Val
625                 630                 635                 640

Gly Thr Ser Ser Ser Ala Ala Ser Ser Leu Lys Lys Gln Tyr Ile Gln
                645                 650                 655

Tyr Leu Phe Ala Phe Glu Cys Lys Ile Glu Arg Gly Glu Glu Pro Pro
            660                 665                 670

Pro Glu Val Phe Ser Thr Gly Asp Thr Lys Lys Gln Pro Lys Leu Gln
        675                 680                 685

Pro Pro Ser Pro Ala Asn Ser Gly Ser Leu Gln Gly Pro Gln Thr Pro
    690                 695                 700
```

```
Gln Ser Thr Gly Ser Asn Ser Met Ala Glu Val Pro Gly Asp Leu Lys
705                 710                 715                 720

Pro Pro Thr Pro Ala Ser Thr Pro His Gly Gln Met Thr Pro Met Gln
                725                 730                 735

Gly Gly Arg Ser Ser Thr Ile Ser Val His Asp Pro Phe Ser Asp Val
            740                 745                 750

Ser Asp Ser Ser Phe Pro Lys Arg Asn Ser Met Thr Pro Asn Ala Pro
        755                 760                 765

Tyr Gln Gln Gly Met Ser Met Pro Asp Val Met Gly Arg Met Pro Tyr
    770                 775                 780

Glu Pro Asn Lys Asp Pro Phe Gly Gly Met Arg Lys Val Pro Gly Ser
785                 790                 795                 800

Ser Glu Pro Phe Met Thr Gln Gly Gln Met Pro Asn Ser Ser Met Gln
                805                 810                 815

Asp Met Tyr Asn Gln Ser Pro Ser Gly Ala Met Ser Asn Leu Gly Met
            820                 825                 830

Gly Gln Arg Gln Gln Phe Pro Tyr Gly Ala Ser Tyr Asp Arg Arg His
        835                 840                 845

Glu Pro Tyr Gly Gln Gln Tyr Pro Gly Gln Gly Pro Pro Ser Gly Gln
    850                 855                 860

Pro Pro Tyr Gly Gly His Gln Pro Gly Leu Tyr Pro Gln Gln Pro Asn
865                 870                 875                 880

Tyr Lys Arg His Met Asp Gly Met Tyr Gly Pro Pro Ala Lys Arg His
                885                 890                 895

Glu Gly Asp Met Tyr Asn Met Gln Tyr Ser Ser Gln Gln Gln Glu Met
            900                 905                 910

Tyr Asn Gln Tyr Gly Gly Ser Tyr Ser Gly Pro Asp Arg Arg Pro Ile
        915                 920                 925
```

```
Gln Gly Gln Tyr Pro Tyr Pro Tyr Ser Arg Glu Arg Met Gln Gly Pro
    930                 935                 940

Gly Gln Ile Gln Thr His Gly Ile Pro Pro Gln Met Met Gly Gly Pro
945                 950                 955                 960

Leu Gln Ser Ser Ser Ser Glu Gly Pro Gln Gln Asn Met Trp Ala Ala
                965                 970                 975

Arg Asn Asp Met Pro Tyr Pro Tyr Gln Asn Arg Gln Gly Pro Gly Gly
            980                 985                 990

Pro Thr Gln Ala Pro Pro Tyr Pro  Gly Met Asn Arg Thr  Asp Asp
Met
        995                 1000                1005

Met Val  Pro Asp Gln Arg Ile  Asn His Glu Ser Gln  Trp Pro Ser
    1010                1015                1020

His Val  Ser Gln Arg Gln Pro  Tyr Met Ser Ser Ser  Ala Ser Met
    1025                1030                1035

Gln Pro  Ile Thr Arg Pro Pro  Gln Pro Ser Tyr Gln  Thr Pro Pro
    1040                1045                1050

Ser Leu  Pro Asn His Ile Ser  Arg Ala Pro Ser Pro  Ala Ser Phe
    1055                1060                1065

Gln Arg  Ser Leu Glu Asn Arg  Met Ser Pro Ser Lys  Ser Pro Phe
    1070                1075                1080

Leu Pro  Ser Met Lys Met Gln  Lys Val Met Pro Thr  Val Pro Thr
    1085                1090                1095

Ser Gln  Val Thr Gly Pro Pro  Pro Gln Pro Pro Pro  Ile Arg Arg
    1100                1105                1110

Glu Ile  Thr Phe Pro Pro Gly  Ser Val Glu Ala Ser  Gln Pro Val
    1115                1120                1125

Leu Lys  Gln Arg Arg Lys Ile  Thr Ser Lys Asp Ile  Val Thr Pro
    1130                1135                1140
```

```
Glu Ala  Trp Arg Val Met Met  Ser Leu Lys Ser Gly  Leu Leu Ala
    1145                1150                1155

Glu Ser  Thr Trp Ala Leu Asp  Thr Ile Asn Ile Leu  Leu Tyr Asp
    1160                1165                1170

Asp Ser  Thr Val Ala Thr Phe  Asn Leu Ser Gln Leu  Ser Gly Phe
    1175                1180                1185

Leu Glu  Leu Leu Val Glu Tyr  Phe Arg Lys Cys Leu  Ile Asp Ile
    1190                1195                1200

Phe Gly  Ile Leu Met Glu Tyr  Glu Val Gly Asp Pro  Ser Gln Lys
    1205                1210                1215

Ala Leu  Asp His Asn Ala Ala  Arg Lys Asp Asp Ser  Gln Ser Leu
    1220                1225                1230

Ala Asp  Asp Ser Gly Lys Glu  Glu Glu Asp Ala Glu  Cys Ile Asp
    1235                1240                1245

Asp Asp  Glu Glu Asp Glu Glu  Asp Glu Glu Glu Asp  Ser Glu Lys
    1250                1255                1260

Thr Glu  Ser Asp Glu Lys Ser  Ser Ile Ala Leu Thr  Ala Pro Asp
    1265                1270                1275

Ala Ala  Ala Asp Pro Lys Glu  Lys Pro Lys Gln Ala  Ser Lys Phe
    1280                1285                1290

Asp Lys  Leu Pro Ile Lys Ile  Val Lys Lys Asn Asn  Leu Phe Val
    1295                1300                1305

Val Asp  Arg Ser Asp Lys Leu  Gly Arg Val Gln Glu  Phe Asn Ser
    1310                1315                1320

Gly Leu  Leu His Trp Gln Leu  Gly Gly Gly Asp Thr  Thr Glu His
    1325                1330                1335

Ile Gln  Thr His Phe Glu Ser  Lys Met Glu Ile Pro  Pro Arg Arg
    1340                1345                1350

Arg Pro  Pro Pro Pro Leu Ser  Ser Ala Gly Arg Lys  Lys Glu Gln
```

1355 1360 1365

Glu Gly Lys Gly Asp Ser Glu Glu Gln Gln Glu Lys Ser Ile Ile
1370 1375 1380

Ala Thr Ile Asp Asp Val Leu Ser Ala Arg Pro Gly Ala Leu Pro
1385 1390 1395

Glu Asp Ala Asn Pro Gly Pro Gln Thr Glu Ser Ser Lys Phe Pro
1400 1405 1410

Phe Gly Ile Gln Gln Ala Lys Ser His Arg Asn Ile Lys Leu Leu
1415 1420 1425

Glu Asp Glu Pro Arg Ser Arg Asp Glu Thr Pro Leu Cys Thr Ile
1430 1435 1440

Ala His Trp Gln Asp Ser Leu Ala Lys Arg Cys Ile Cys Val Ser
1445 1450 1455

Asn Ile Val Arg Ser Leu Ser Phe Val Pro Gly Asn Asp Ala Glu
1460 1465 1470

Met Ser Lys His Pro Gly Leu Val Leu Ile Leu Gly Lys Leu Ile
1475 1480 1485

Leu Leu His His Glu His Pro Glu Arg Lys Arg Ala Pro Gln Thr
1490 1495 1500

Tyr Glu Lys Glu Glu Asp Glu Asp Lys Gly Val Ala Cys Ser Lys
1505 1510 1515

Asp Glu Trp Trp Trp Asp Cys Leu Glu Val Leu Arg Asp Asn Thr
1520 1525 1530

Leu Val Thr Leu Ala Asn Ile Ser Gly Gln Leu Asp Leu Ser Ala
1535 1540 1545

Tyr Thr Glu Ser Ile Cys Leu Pro Ile Leu Asp Gly Leu Leu His
1550 1555 1560

Trp Met Val Cys Pro Ser Ala Glu Ala Gln Asp Pro Phe Pro Thr
1565 1570 1575

```
Val Gly  Pro Asn Ser Val Leu  Ser Pro Gln Arg Leu  Val Leu Glu
    1580                1585                1590

Thr Leu  Cys Lys Leu Ser Ile  Gln Asp Asn Asn Val  Asp Leu Ile
    1595                1600                1605

Leu Ala  Thr Pro Pro Phe Ser  Arg Gln Glu Lys Phe  Tyr Ala Thr
    1610                1615                1620

Leu Val  Arg Tyr Val Gly Asp  Arg Lys Asn Pro Val  Cys Arg Glu
    1625                1630                1635

Met Ser  Met Ala Leu Leu Ser  Asn Leu Ala Gln Gly  Asp Ala Leu
    1640                1645                1650

Ala Ala  Arg Ala Ile Ala Val  Gln Lys Gly Ser Ile  Gly Asn Leu
    1655                1660                1665

Ile Ser  Phe Leu Glu Asp Gly  Val Thr Met Ala Gln  Tyr Gln Gln
    1670                1675                1680

Ser Gln  His Asn Leu Met His  Met Gln Pro Pro Pro  Leu Glu Pro
    1685                1690                1695

Pro Ser  Val Asp Met Met Cys  Arg Ala Ala Lys Ala  Leu Leu Ala
    1700                1705                1710

Met Ala  Arg Val Asp Glu Asn  Arg Ser Glu Phe Leu  Leu His Glu
    1715                1720                1725

Gly Arg  Leu Leu Asp Ile Ser  Ile Ser Ala Val Leu  Asn Ser Leu
    1730                1735                1740

Val Ala  Ser Val Ile Cys Asp  Val Leu Phe Gln Ile  Gly Gln Leu
    1745                1750                1755
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<210> 6815
<211> 306
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
AT rich interactive domain 1B (SWI
1-like); "

<220>
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<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6815

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Xaa Arg Pro Phe Pro Gly Asn Met Ser Ser Met Thr Pro Ser Ser Pro
1               5                  10                  15

Gly Met Ser Gln Gln Gly Gly Pro Gly Met Gly Pro Pro Met Pro Thr
            20                  25                  30

Val Asn Arg Lys Ala Gln Glu Ala Ala Ala Ala Val Met Gln Ala Ala
        35                  40                  45

Ala Asn Ser Ala Gln Ser Arg Pro Pro Tyr Ile Arg Ser Pro Ala Tyr
    50                  55                  60

Pro Ser Gln Ser Gly Ala Gly Gly Arg Pro Met Phe Ser Ser Gln His
65                  70                  75                  80

Pro Asn Tyr Gly Asn Ser Gln Ala Pro Met Val His Gln Pro Asp Gln
                85                  90                  95

Tyr Gly Gln Gly Ser Phe Pro Gly Met Asn Gln Ser Gly Leu Met Ala
            100                 105                 110

Ser Ser Ser Pro Tyr Ser Gln Pro Met Asn Asn Ser Ser Ser Leu Met
        115                 120                 125

Asn Thr Gln Ala Pro Pro Tyr Ser Met Ala Pro Ala Met Val Asn Ser
    130                 135                 140
```

```
Ser Ala Ala Ser Val Gly Leu Ala Asp Met Met Ser Pro Gly Glu Ser
145                 150                 155                 160

Lys Leu Pro Leu Pro Leu Lys Ala Asp Gly Lys Glu Glu Gly Thr Pro
                165                 170                 175

Gln Pro Glu Ser Lys Ser Lys Asp Ser Tyr Ser Ser Gln Gly Ile Ser
            180                 185                 190

Gln Pro Pro Thr Pro Gly Asn Leu Pro Val Pro Ser Pro Met Ser Pro
        195                 200                 205

Ser Ser Ala Ser Ile Ser Ser Phe His Gly Asp Glu Ser Asp Ser Ile
    210                 215                 220

Ser Ser Pro Gly Trp Pro Lys Thr Pro Ser Ser Pro Lys Ser Ser Ser
225                 230                 235                 240

Ser Thr Thr Thr Gly Glu Lys Ile Thr Lys Val Tyr Glu Leu Gly Asn
                245                 250                 255

Glu Pro Glu Arg Lys Leu Trp Val Asp Arg Tyr Leu Thr Phe Met Glu
            260                 265                 270

Glu Arg Gly Ser Pro Val Ser Ser Leu Pro Ala Val Gly Lys Lys Pro
        275                 280                 285

Leu Asp Leu Phe Arg Leu Tyr Val Cys Val Lys Glu Ile Gly Gly Leu
    290                 295                 300

Ala Gln
305


<210> 6816
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<220>
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<220>
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<220>
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<400> 6816

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Met Ala Asn Ser Thr Gly Lys Ala Pro Pro Asp Glu Arg Arg Lys Gly
1               5                   10                  15

Leu Ala Phe Leu Asp Glu Leu Arg Gln Phe His His Ser Arg Gly Ser
            20                  25                  30

Pro Phe Lys Lys Ile Pro Ala Val Gly Gly Lys Glu Leu Asp Leu His
        35                  40                  45

Gly Leu Tyr Thr Arg Val Thr Thr Leu Gly Gly Phe Ala Lys Val Ser
    50                  55                  60

Glu Lys Asn Gln Trp Gly Glu Ile Val Glu Glu Phe Asn Phe Pro Arg
65                  70                  75                  80

Ser Cys Ser Asn Ala Ala Phe Ala Leu Lys Gln Tyr Tyr Leu Arg Tyr
                85                  90                  95

Leu Glu Lys Tyr Glu Lys Val His His Phe Gly Glu Asp Asp Asp Glu
            100                 105                 110

Val Pro Pro Gly Asn Pro Lys Pro Gln Leu Pro Ile Gly Ala Ile Pro
        115                 120                 125

Ser Ser Tyr Asn Tyr Gln Gln His Ser Val Ser Asp Tyr Leu Arg Gln
    130                 135                 140

Ser Tyr Gly Leu Ser Met Asp Phe Asn Ser Pro Asn Asp Tyr Asn Lys
145                 150                 155                 160

Leu Val Leu Ser Leu Leu Ser Gly Leu Pro Asn Glu Val Asp Phe Ala
```

```
                165                 170                 175

Ile Asn Val Cys Thr Leu Leu Ser Asn Glu Ser Lys His Val Met Gln
            180                 185                 190

Leu Glu Lys Asp Pro Lys Ile Ile Thr Leu Leu Leu Ala Asn Ala Gly
        195                 200                 205

Val Phe Asp Asp Thr Leu Gly Ser Phe Ser Thr Val Phe Gly Glu Glu
    210                 215                 220

Trp Lys Glu Lys Thr Asp Arg Asp Phe Val Lys Phe Trp Lys Asp Ile
225                 230                 235                 240

Val Asp Asp Asn Glu Val Arg Asp Leu Ile Ser Asp Arg Asn Lys Ser
                245                 250                 255

His Glu Gly Thr Ser Gly Glu Trp Ile Trp Glu Ser Leu Phe His Pro
            260                 265                 270

Pro Arg Lys Leu Gly Ile Asn Asp Ile Glu Gly Gln Arg Val Leu Gln
        275                 280                 285

Ile Ala Val Ile Leu Arg Asn Leu Ser Phe Glu Glu Gly Asn Val Lys
    290                 295                 300

Leu Leu Ala Ala Asn Arg Thr Cys Leu Arg Phe Leu Leu Leu Ser Ala
305                 310                 315                 320

His Ser His Phe Ile Ser Leu Arg Gln Leu Gly Leu Asp Thr Leu Gly
                325                 330                 335

Asn Ile Ala Ala Glu Leu Leu Leu Asp Pro Val Asp Phe Lys Thr Thr
            340                 345                 350

His Leu Met Phe His Thr Val Thr Lys Cys Leu Met Ser Arg Asp Arg
        355                 360                 365

Phe Leu Lys Met Arg Gly Met Glu Ile Leu Gly Asn Leu Cys Lys Ala
    370                 375                 380

Glu Asp Asn Gly Val Leu Ile Cys Glu Tyr Val Asp Gln Asp Ser Tyr
385                 390                 395                 400
```

```
Arg Glu Ile Ile Cys His Leu Thr Leu Pro Asp Val Leu Leu Val Ile
                405                 410                 415

Ser Thr Leu Glu Val Leu Tyr Met Leu Thr Glu Met Gly Asp Val Ala
            420                 425                 430

Cys Thr Lys Ile Ala Lys Val Glu Lys Ser Ile Asp Met Leu Val Cys
        435                 440                 445

Leu Val Ser Met Asp Ile Gln Met Phe Gly Pro Asp Ala Leu Ala Ala
    450                 455                 460

Val Lys Leu Ile Glu His Pro Ser Ser Ser His Gln Met Leu Ser Glu
465                 470                 475                 480

Ile Arg Pro Gln Ala Ile Glu Gln Val Gln Thr Gln Thr His Val Ala
                485                 490                 495

Ser Ala Pro Ala Ser Arg Ala Val Val Ala Gln His Val Ala Pro Pro
            500                 505                 510

Pro Gly Ile Val Glu Ile Asp Ser Glu Lys Phe Ala Cys Gln Trp Leu
        515                 520                 525

Asn Ala His Phe Glu Val Asn Pro Asp Cys Ser Val Ser Arg Ala Glu
    530                 535                 540

Met Tyr Ser Glu Tyr Leu Ser Thr Cys Ser Lys Leu Ala Arg Gly Gly
545                 550                 555                 560

Ile Leu Thr Ser Thr Gly Phe Tyr Lys Cys Leu Arg Thr Val Phe Pro
                565                 570                 575

Asn His Thr Val Lys Arg Val Glu Asp Ser Ser Ser Asn Gly Gln Ala
            580                 585                 590

His Ile His Val Val Gly Val Lys Arg Arg Ala Ile Pro Leu Pro Ile
        595                 600                 605

Gln Met Tyr Tyr Gln Gln Gln Pro Val Ser Thr Ser Val Val Arg Val
    610                 615                 620
```

```
Asp Ser Val Pro Asp Val Ser Pro Ala Pro Ser Pro Ala Gly Ile Pro
625                 630                 635                 640

His Gly Ser Gln Thr Ile Gly Asn His Phe Gln Arg Thr Pro Val Ala
                645                 650                 655

Asn Gln Ser Ser Asn Leu Thr Ala Thr Gln Met Ser Phe Pro Val Gln
            660                 665                 670

Gly Val His Thr Val Ala Gln Thr Val Ser Arg Ile Pro Gln Asn Pro
        675                 680                 685

Ser Pro His Thr His Gln Gln Gln Asn Ala Pro Val Thr Val Ile Gln
    690                 695                 700

Ser Lys Ala Pro Ile Pro Cys Glu Val Val Lys Ala Thr Val Ile Gln
705                 710                 715                 720

Asn Ser Ile Pro Gln Thr Gly Val Pro Val Ser Ile Ala Val Gly Gly
                725                 730                 735

Gly Pro Pro Gln Ser Ser Val Val Gln Asn His Ser Thr Gly Pro Gln
            740                 745                 750

Pro Val Thr Val Val Asn Ser Gln Thr Leu Leu His His Pro Ser Val
        755                 760                 765

Ile Pro Gln Gln Ser Pro Leu His Thr Val Val Pro Gly Gln Ile Pro
    770                 775                 780

Ser Gly Thr Pro Val Thr Val Ile Gln Gln Ala Val Pro Gln Ser His
785                 790                 795                 800

Met Phe Gly Arg Val Gln Asn Ile Pro Ala Cys Thr Ser Thr Val Ser
                805                 810                 815

Gln Gly Gln Gln Leu Ile Thr Thr Ser Pro Gln Pro Val Gln Thr Ser
            820                 825                 830

Ser Gln Gln Thr Ser Ala Gly Ser Gln Ser Gln Asp Thr Val Ile Ile
        835                 840                 845
```

```
Ala Pro Pro Gln Tyr Val Thr Thr Ser Ala Ser Asn Ile Val Ser Ala
    850                 855                 860

Thr Ser Val Gln Asn Phe Gln Val Ala Thr Gly Gln Met Val Thr Ile
865                 870                 875                 880

Ala Gly Val Pro Ser Pro Gln Ala Ser Arg Val Gly Phe Gln Asn Ile
                885                 890                 895

Ala Pro Lys Pro Leu Pro Ser Gln Gln Val Ser Ser Thr Val Val Gln
            900                 905                 910

Gln Pro Ile Gln Gln Pro Gln Gln Pro Thr Gln Gln Ser Val Val Ile
        915                 920                 925

Val Ser Gln Pro Ala Gln Gln Gly Gln Thr Tyr Ala Pro Ala Ile His
    930                 935                 940

Gln Ile Val Leu Ala Asn Pro Ala Ala Leu Pro Ala Gly Gln Thr Val
945                 950                 955                 960

Gln Leu Thr Gly Gln Pro Asn Ile Thr Pro Ser Ser Ser Pro Ser Pro
                965                 970                 975

Val Pro Ala Thr Asn Asn Gln Val Pro Thr Ala Met Ser Ser Ser Ser
            980                 985                 990

Thr Pro Gln Ser Gln Gly Pro Pro  Pro Thr Val Ser Gln  Met Leu
Ser
        995                 1000                1005

Val Lys  Arg Gln Gln Gln Gln  Gln His Ser Pro Ala  Pro Pro Pro
    1010                1015                1020

Gln Gln  Val Gln Val Gln Val  Gln Gln Pro Gln Gln  Val Gln Met
    1025                1030                1035

Gln Val  Gln Pro Gln Gln Ser  Asn Ala Gly Val Gly  Gln Pro Ala
    1040                1045                1050

Ser Gly  Glu Ser Ser Leu Ile  Lys Gln Leu Leu Leu  Pro Lys Arg
    1055                1060                1065
```

```
Gly Pro  Ser Thr Pro Gly Gly  Lys Leu Ile Leu Pro  Ala Pro Gln
    1070                1075                1080

Ile Pro  Pro Pro Asn Asn Ala  Arg Ala Pro Ser Pro  Gln Val Val
    1085                1090                1095

Tyr Gln  Val Ala Ser Asn Gln  Ala Ala Gly Phe Gly  Val Gln Gly
    1100                1105                1110

Gln Thr  Pro Ala Gln Gln Leu  Leu Val Gly Gln Gln  Asn Val Gln
    1115                1120                1125

Leu Val  Pro Ser Ala Met Pro  Pro Ser Gly Gly Val  Gln Thr Val
    1130                1135                1140

Pro Ile  Ser Asn Leu Gln Ile  Leu Pro Gly Pro Leu  Ile Ser Asn
    1145                1150                1155

Ser Pro  Ala Thr Ile Phe Gln  Gly Thr Ser Gly Asn  Gln Val Thr
    1160                1165                1170

Ile Thr  Val Val Pro Asn Thr  Ser Phe Ala Pro Ala  Thr Val Ser
    1175                1180                1185

Gln Gly  Asn Ala Thr Gln Leu  Ile Ala Pro Ala Gly  Ile Thr Met
    1190                1195                1200

Ser Gly  Thr Gln Thr Gly Val  Gly Leu Pro Val Gln  Thr Leu Pro
    1205                1210                1215

Ala Thr  Gln Ala Ser Pro Ala  Gly Gln Ser Ser Cys  Thr Thr Ala
    1220                1225                1230

Thr Pro  Pro Phe Lys Gly Asp  Lys Ile Ile Cys Gln  Lys Glu Glu
    1235                1240                1245

Glu Ala  Lys Glu Ala Thr Gly  Leu His Val His Glu  Arg Lys Ile
    1250                1255                1260

Glu Val  Met Glu Asn Pro Ser  Cys Arg Arg Gly Ala  Thr Asn Thr
    1265                1270                1275

Ser Asn  Gly Asp Thr Lys Glu  Asn Glu Met His Val  Gly Ser Leu
```

1280 1285 1290

Leu Asn Gly Arg Lys Tyr Ser Asp Ser Ser Leu Pro Pro Ser Asn
1295 1300 1305

Ser Gly Lys Ile Gln Ser Glu Thr Asn Gln Cys Ser Leu Ile Ser
1310 1315 1320

Asn Gly Pro Ser Leu Glu Leu Gly Glu Asn Gly Ala Ser Gly Lys
1325 1330 1335

Gln Asn Ser Glu Gln Ile Asp Met Gln Asp Ile Lys Ser Asp Leu
1340 1345 1350

Arg Lys Pro Leu Val Asn Gly Ile Cys Asp Phe Asp Lys Gly Asp
1355 1360 1365

Gly Ser His Leu Ser Lys Asn Ile Pro Asn His Lys Thr Ser Asn
1370 1375 1380

His Val Gly Asn Gly Glu Ile Ser Pro Met Glu Pro Gln Gly Thr
1385 1390 1395

Leu Asp Ile Thr Gln Gln Asp Thr Ala Lys Gly Asp Gln Leu Glu
1400 1405 1410

Arg Ile Ser Asn Gly Pro Val Leu Thr Leu Gly Gly Ser Ser Val
1415 1420 1425

Ser Ser Ile Gln Glu Ala Ser Asn Ala Ala Thr Gln Gln Phe Ser
1430 1435 1440

Gly Thr Asp Leu Leu Asn Gly Pro Leu Ala Ser Ser Leu Asn Ser
1445 1450 1455

Asp Val Pro Gln Gln Arg Pro Ser Val Val Val Ser Pro His Ser
1460 1465 1470

Thr Thr Ser Val Ile Gln Gly His Gln Ile Ile Ala Val Pro Asp
1475 1480 1485

Ser Gly Ser Lys Val Ser His Ser Pro Ala Leu Ser Ser Asp Val
1490 1495 1500

```
Arg Ser  Thr Asn Gly Thr Ala  Glu Cys Lys Thr Val  Lys Arg Pro
    1505                1510                1515

Ala Glu  Asp Thr Asp Arg Glu  Thr Val Ala Gly Ile  Pro Asn Lys
    1520                1525                1530

Val Gly  Val Arg Ile Val Thr  Ile Ser Asp Pro Asn  Asn Ala Gly
    1535                1540                1545

Cys Ser  Ala Thr Met Val Ala  Val Pro Ala Gly Ala  Asp Pro Ser
    1550                1555                1560

Thr Val  Ala Lys Val Ala Ile  Glu Ser Ala Val Gln  Gln Lys Gln
    1565                1570                1575

Gln His  Pro Pro Thr Tyr Val  Gln Asn Val Val Pro  Gln Asn Thr
    1580                1585                1590

Pro Met  Pro Pro Ser Pro Ala  Val Gln Val Gln Gly  Gln Pro Asn
    1595                1600                1605

Ser Ser  Gln Pro Ser Pro Phe  Ser Gly Ser Ser Gln  Pro Gly Asp
    1610                1615                1620

Pro Met  Arg Lys Pro Gly Gln  Asn Phe Met Cys Leu  Trp Gln Ser
    1625                1630                1635

Cys Lys  Lys Trp Phe Gln Thr  Pro Ser Gln Val Phe  Tyr His Ala
    1640                1645                1650

Ala Thr  Glu His Gly Gly Lys  Asp Val Tyr Pro Gly  Gln Cys Leu
    1655                1660                1665

Trp Glu  Gly Cys Glu Pro Phe  Gln Arg Gln Arg Phe  Ser Phe Ile
    1670                1675                1680

Thr His  Leu Gln Asp Lys His  Cys Ser Lys Asp Ala  Leu Leu Ala
    1685                1690                1695

Gly Leu  Lys Gln Asp Glu Pro  Gly Gln Ala Gly Ser  Gln Lys Ser
    1700                1705                1710
```

```
Ser Thr  Lys Gln Pro Thr Val  Gly Gly Thr Ser Ser  Thr Pro Arg
    1715                1720                1725

Ala Gln  Lys Ala Ile Val Asn  His Pro Ser Ala Ala  Leu Met Ala
    1730                1735                1740

Leu Arg  Arg Gly Ser Arg Asn  Leu Val Phe Arg Asp  Phe Thr Asp
    1745                1750                1755

Glu Lys  Glu Gly Pro Ile Thr  Lys His Ile Arg Leu  Thr Ala Ala
    1760                1765                1770

Leu Ile  Leu Lys Asn Ile Gly  Lys Tyr Ser Glu Cys  Gly Arg Arg
    1775                1780                1785

Leu Leu  Lys Arg His Glu Asn  Asn Leu Ser Val Leu  Ala Ile Ser
    1790                1795                1800

Asn Met  Glu Ala Ser Ser Thr  Leu Ala Lys Cys Leu  Tyr Glu Leu
    1805                1810                1815

Asn Phe  Thr Val Gln Ser Lys  Glu Gln Glu Lys Asp  Ser Glu Met
    1820                1825                1830

Leu Gln
    1835


<210> 6817
<211> 401
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1463; "

<220>
<221> source
<223> /note="Gene Symbol: ARID2; "

<220>
<221> source
<223> /note="Gene Name:
      AT rich interactive domain 2 (ARID, RFX-like); "

<220>
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<223> /note="ENSP ID: ENSP00000388357"

<400> 6817

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Met Glu Pro Gln Gly Thr Leu Asp Ile Thr Gln Gln Asp Thr Ala Lys
1               5                  10                  15

Gly Asp Gln Leu Glu Arg Ile Ser Asn Gly Pro Val Leu Thr Leu Gly
            20                  25                  30

Gly Ser Ser Val Ser Ser Ile Gln Glu Ala Ser Asn Ala Ala Thr Gln
        35                  40                  45

Gln Phe Ser Gly Thr Asp Leu Leu Asn Gly Pro Leu Ala Ser Ser Leu
    50                  55                  60

Asn Ser Asp Val Pro Gln Gln Arg Pro Ser Val Val Val Ser Pro His
65                  70                  75                  80

Ser Thr Thr Ser Val Ile Gln Gly His Gln Ile Ile Ala Val Pro Asp
                85                  90                  95

Ser Gly Ser Lys Val Ser His Ser Pro Ala Leu Ser Ser Asp Val Arg
            100                 105                 110

Ser Thr Asn Gly Thr Ala Glu Cys Lys Thr Val Lys Arg Pro Ala Glu
        115                 120                 125

Asp Thr Asp Arg Glu Thr Val Ala Gly Ile Pro Asn Lys Val Gly Val
    130                 135                 140

Arg Ile Val Thr Ile Ser Asp Pro Asn Asn Ala Gly Cys Ser Ala Thr
145                 150                 155                 160

Met Val Ala Val Pro Ala Gly Ala Asp Pro Ser Thr Val Ala Lys Val
                165                 170                 175

Ala Ile Glu Ser Ala Val Gln Gln Lys Gln Gln His Pro Pro Thr Tyr
            180                 185                 190

Val Gln Asn Val Val Pro Gln Asn Thr Pro Met Pro Pro Ser Pro Ala
        195                 200                 205

Val Gln Val Gln Gly Gln Pro Asn Ser Ser Gln Pro Ser Pro Phe Ser
    210                 215                 220
```

```
Gly Ser Ser Gln Pro Gly Asp Pro Met Arg Lys Pro Gly Gln Asn Phe
225                 230                 235                 240

Met Cys Leu Trp Gln Ser Cys Lys Lys Trp Phe Gln Thr Pro Ser Gln
                245                 250                 255

Val Phe Tyr His Ala Ala Thr Glu His Gly Gly Lys Asp Val Tyr Pro
            260                 265                 270

Gly Gln Cys Leu Trp Glu Gly Cys Glu Pro Phe Gln Arg Gln Arg Phe
        275                 280                 285

Ser Phe Ile Thr His Leu Gln Asp Lys His Cys Ser Lys Asp Ala Leu
    290                 295                 300

Leu Ala Gly Leu Lys Gln Asp Glu Pro Gly Gln Ala Gly Ser Gln Lys
305                 310                 315                 320

Ser Ser Thr Lys Gln Pro Thr Val Gly Gly Thr Ser Ser Thr Pro Arg
                325                 330                 335

Ala Gln Lys Ala Ile Val Asn His Pro Ser Ala Ala Leu Met Ala Leu
            340                 345                 350

Arg Arg Gly Ser Arg Asn Leu Val Phe Arg Asp Phe Thr Asp Glu Lys
        355                 360                 365

Glu Gly Pro Ile Thr Lys His Ile Arg Leu Thr Ala Ala Leu Ile Leu
    370                 375                 380

Lys Asn Ile Gly Lys Tyr Ser Glu Cys Gly Arg Arg Asn Met Asn Glu
385                 390                 395                 400

Asp
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<210> 6818
<211> 1445
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1463; "

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<400> 6818

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Met Arg Gly Met Glu Ile Leu Gly Asn Leu Cys Lys Ala Glu Asp Asn
1               5                  10                  15

Gly Val Leu Ile Cys Glu Tyr Val Asp Gln Asp Ser Tyr Arg Glu Ile
            20                  25                  30

Ile Cys His Leu Thr Leu Pro Asp Val Leu Leu Val Ile Ser Thr Leu
        35                  40                  45

Glu Val Leu Tyr Met Leu Thr Glu Met Gly Asp Val Ala Cys Thr Lys
    50                  55                  60

Ile Ala Lys Val Glu Lys Ser Ile Ala Ala Val Lys Leu Ile Glu His
65                  70                  75                  80

Pro Ser Ser Ser His Gln Met Leu Ser Glu Ile Arg Pro Gln Ala Ile
                85                  90                  95

Glu Gln Val Gln Thr Gln Thr His Val Ala Ser Ala Pro Ala Ser Arg
            100                 105                 110

Ala Val Val Ala Gln His Val Ala Pro Pro Pro Gly Ile Val Glu Ile
        115                 120                 125

Asp Ser Glu Lys Phe Ala Cys Gln Trp Leu Asn Ala His Phe Glu Val
    130                 135                 140

Asn Pro Asp Cys Ser Val Ser Arg Ala Glu Met Tyr Ser Glu Tyr Leu
145                 150                 155                 160

Ser Thr Cys Ser Lys Leu Ala Arg Gly Gly Ile Leu Thr Ser Thr Gly
```

```
                165                 170                 175

Phe Tyr Lys Cys Leu Arg Thr Val Phe Pro Asn His Thr Val Lys Arg
            180                 185                 190

Val Glu Asp Ser Ser Ser Asn Gly Gln Ala His Ile His Val Val Gly
        195                 200                 205

Val Lys Arg Arg Ala Ile Pro Leu Pro Ile Gln Met Tyr Tyr Gln Gln
    210                 215                 220

Gln Pro Val Ser Thr Ser Val Val Arg Val Asp Ser Val Pro Asp Val
225                 230                 235                 240

Ser Pro Ala Pro Ser Pro Ala Gly Ile Pro His Gly Ser Gln Thr Ile
                245                 250                 255

Gly Asn His Phe Gln Arg Thr Pro Val Ala Asn Gln Ser Ser Asn Leu
            260                 265                 270

Thr Ala Thr Gln Met Ser Phe Pro Val Gln Gly Val His Thr Val Ala
        275                 280                 285

Gln Thr Val Ser Arg Ile Pro Gln Asn Pro Ser Pro His Thr His Gln
    290                 295                 300

Gln Gln Asn Ala Pro Val Thr Val Ile Gln Ser Lys Ala Pro Ile Pro
305                 310                 315                 320

Cys Glu Val Val Lys Ala Thr Val Ile Gln Asn Ser Ile Pro Gln Thr
                325                 330                 335

Gly Val Pro Val Ser Ile Ala Val Gly Gly Gly Pro Pro Gln Ser Ser
            340                 345                 350

Val Val Gln Asn His Ser Thr Gly Pro Gln Pro Val Thr Val Val Asn
        355                 360                 365

Ser Gln Thr Leu Leu His His Pro Ser Val Ile Pro Gln Gln Ser Pro
    370                 375                 380

Leu His Thr Val Val Pro Gly Gln Ile Pro Ser Gly Thr Pro Val Thr
385                 390                 395                 400
```

Val Ile Gln Gln Ala Val Pro Gln Ser His Met Phe Gly Arg Val Gln
405 410 415

Asn Ile Pro Ala Cys Thr Ser Thr Val Ser Gln Gly Gln Gln Leu Ile
420 425 430

Thr Thr Ser Pro Gln Pro Val Gln Thr Ser Ser Gln Gln Thr Ser Ala
435 440 445

Gly Ser Gln Ser Gln Asp Thr Val Ile Ile Ala Pro Pro Gln Tyr Val
450 455 460

Thr Thr Ser Ala Ser Asn Ile Val Ser Ala Thr Ser Val Gln Asn Phe
465 470 475 480

Gln Val Ala Thr Gly Gln Met Val Thr Ile Ala Gly Val Pro Ser Pro
485 490 495

Gln Ala Ser Arg Val Gly Phe Gln Asn Ile Ala Pro Lys Pro Leu Pro
500 505 510

Ser Gln Gln Val Ser Ser Thr Val Val Gln Gln Pro Ile Gln Gln Pro
515 520 525

Gln Gln Pro Thr Gln Gln Ser Val Val Ile Val Ser Gln Pro Ala Gln
530 535 540

Gln Gly Gln Thr Tyr Ala Pro Ala Ile His Gln Ile Val Leu Ala Asn
545 550 555 560

Pro Ala Ala Leu Pro Ala Gly Gln Thr Val Gln Leu Thr Gly Gln Pro
565 570 575

Asn Ile Thr Pro Ser Ser Ser Pro Ser Pro Val Pro Ala Thr Asn Asn
580 585 590

Gln Val Pro Thr Ala Met Ser Ser Ser Ser Thr Pro Gln Ser Gln Gly
595 600 605

Pro Pro Pro Thr Val Ser Gln Met Leu Ser Val Lys Arg Gln Gln Gln
610 615 620

```
Gln Gln His Ser Pro Ala Pro Pro Pro Gln Gln Val Gln Val Gln Val
625                 630                 635                 640

Gln Gln Pro Gln Gln Val Gln Met Gln Val Gln Pro Gln Gln Ser Asn
                645                 650                 655

Ala Gly Val Gly Gln Pro Ala Ser Gly Glu Ser Ser Leu Ile Lys Gln
            660                 665                 670

Leu Leu Leu Pro Lys Arg Gly Pro Ser Thr Pro Gly Gly Lys Leu Ile
        675                 680                 685

Leu Pro Ala Pro Gln Ile Pro Pro Pro Asn Asn Ala Arg Ala Pro Ser
    690                 695                 700

Pro Gln Val Val Tyr Gln Val Ala Ser Asn Gln Ala Ala Gly Phe Gly
705                 710                 715                 720

Val Gln Gly Gln Thr Pro Ala Gln Gln Leu Leu Val Gly Gln Gln Asn
                725                 730                 735

Val Gln Leu Val Pro Ser Ala Met Pro Pro Ser Gly Gly Val Gln Thr
            740                 745                 750

Val Pro Ile Ser Asn Leu Gln Ile Leu Pro Gly Pro Leu Ile Ser Asn
        755                 760                 765

Ser Pro Ala Thr Ile Phe Gln Gly Thr Ser Gly Asn Gln Val Thr Ile
    770                 775                 780

Thr Val Val Pro Asn Thr Ser Phe Ala Pro Ala Thr Val Ser Gln Gly
785                 790                 795                 800

Asn Ala Thr Gln Leu Ile Ala Pro Ala Gly Ile Thr Met Ser Gly Thr
                805                 810                 815

Gln Thr Gly Val Gly Leu Pro Val Gln Thr Leu Pro Ala Thr Gln Ala
            820                 825                 830

Ser Pro Ala Gly Gln Ser Ser Cys Thr Thr Ala Thr Pro Pro Phe Lys
        835                 840                 845
```

```
Gly Asp Lys Ile Ile Cys Gln Lys Glu Glu Glu Ala Lys Glu Ala Thr
    850                 855                 860

Gly Leu His Val His Glu Arg Lys Ile Glu Val Met Glu Asn Pro Ser
865                 870                 875                 880

Cys Arg Arg Gly Ala Thr Asn Thr Ser Asn Gly Asp Thr Lys Glu Asn
                885                 890                 895

Glu Met His Val Gly Ser Leu Leu Asn Gly Arg Lys Tyr Ser Asp Ser
            900                 905                 910

Ser Leu Pro Pro Ser Asn Ser Gly Lys Ile Gln Ser Glu Thr Asn Gln
        915                 920                 925

Cys Ser Leu Ile Ser Asn Gly Pro Ser Leu Glu Leu Gly Glu Asn Gly
    930                 935                 940

Ala Ser Gly Lys Gln Asn Ser Glu Gln Ile Asp Met Gln Asp Ile Lys
945                 950                 955                 960

Ser Asp Leu Arg Lys Pro Leu Val Asn Gly Ile Cys Asp Phe Asp Lys
                965                 970                 975

Gly Asp Gly Ser His Leu Ser Lys Asn Ile Pro Asn His Lys Thr Ser
            980                 985                 990

Asn His Val Gly Asn Gly Glu Ile  Ser Pro Met Glu Pro  Gln Gly
Thr
        995                 1000                1005

Leu Asp  Ile Thr Gln Gln Asp  Thr Ala Lys Gly Asp  Gln Leu Glu
    1010                1015                1020

Arg Ile  Ser Asn Gly Pro Val  Leu Thr Leu Gly Gly  Ser Ser Val
    1025                1030                1035

Ser Ser  Ile Gln Glu Ala Ser  Asn Ala Ala Thr Gln  Gln Phe Ser
    1040                1045                1050

Gly Thr  Asp Leu Leu Asn Gly  Pro Leu Ala Ser Ser  Leu Asn Ser
    1055                1060                1065
```

```
Asp Val  Pro Gln Gln Arg Pro  Ser Val Val Val Ser  Pro His Ser
    1070                1075                1080

Thr Thr  Ser Val Ile Gln Gly  His Gln Ile Ile Ala  Val Pro Asp
    1085                1090                1095

Ser Gly  Ser Lys Val Ser His  Ser Pro Ala Leu Ser  Ser Asp Val
    1100                1105                1110

Arg Ser  Thr Asn Gly Thr Ala  Glu Cys Lys Thr Val  Lys Arg Pro
    1115                1120                1125

Ala Glu  Asp Thr Asp Arg Glu  Thr Val Ala Gly Ile  Pro Asn Lys
    1130                1135                1140

Val Gly  Val Arg Ile Val Thr  Ile Ser Asp Pro Asn  Asn Ala Gly
    1145                1150                1155

Cys Ser  Ala Thr Met Val Ala  Val Pro Ala Gly Ala  Asp Pro Ser
    1160                1165                1170

Thr Val  Ala Lys Val Ala Ile  Glu Ser Ala Val Gln  Gln Lys Gln
    1175                1180                1185

Gln His  Pro Pro Thr Tyr Val  Gln Asn Val Val Pro  Gln Asn Thr
    1190                1195                1200

Pro Met  Pro Pro Ser Pro Ala  Val Gln Val Gln Gly  Gln Pro Asn
    1205                1210                1215

Ser Ser  Gln Pro Ser Pro Phe  Ser Gly Ser Ser Gln  Pro Gly Asp
    1220                1225                1230

Pro Met  Arg Lys Pro Gly Gln  Asn Phe Met Cys Leu  Trp Gln Ser
    1235                1240                1245

Cys Lys  Lys Trp Phe Gln Thr  Pro Ser Gln Val Phe  Tyr His Ala
    1250                1255                1260

Ala Thr  Glu His Gly Gly Lys  Asp Val Tyr Pro Gly  Gln Cys Leu
    1265                1270                1275

Trp Glu  Gly Cys Glu Pro Phe  Gln Arg Gln Arg Phe  Ser Phe Ile
```

1280 1285 1290

Thr His Leu Gln Asp Lys His Cys Ser Lys Asp Ala Leu Leu Ala
1295 1300 1305

Gly Leu Lys Gln Asp Glu Pro Gly Gln Ala Gly Ser Gln Lys Ser
1310 1315 1320

Ser Thr Lys Gln Pro Thr Val Gly Gly Thr Ser Ser Thr Pro Arg
1325 1330 1335

Ala Gln Lys Ala Ile Val Asn His Pro Ser Ala Ala Leu Met Ala
1340 1345 1350

Leu Arg Arg Gly Ser Arg Asn Leu Val Phe Arg Asp Phe Thr Asp
1355 1360 1365

Glu Lys Glu Gly Pro Ile Thr Lys His Ile Arg Leu Thr Ala Ala
1370 1375 1380

Leu Ile Leu Lys Asn Ile Gly Lys Tyr Ser Glu Cys Gly Arg Arg
1385 1390 1395

Leu Leu Lys Arg His Glu Asn Asn Leu Ser Val Leu Ala Ile Ser
1400 1405 1410

Asn Met Glu Ala Ser Ser Thr Leu Ala Lys Cys Leu Tyr Glu Leu
1415 1420 1425

Asn Phe Thr Val Gln Ser Lys Glu Gln Glu Lys Asp Ser Glu Met
1430 1435 1440

Leu Gln
1445

<210> 6819
<211> 1639
<212> PRT
<213> Homo sapiens

<220>
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AT rich interactive domain 2 (ARID, RFX-like); "

<220>
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<223> /note="ENSP ID: ENSP00000415650"

<400> 6819

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Met Asp Phe Asn Ser Pro Asn Asp Tyr Asn Lys Leu Val Leu Ser Leu
1               5                  10                  15

Leu Ser Gly Leu Pro Asn Glu Val Asp Phe Ala Ile Asn Val Cys Thr
            20                  25                  30

Leu Leu Ser Asn Glu Ser Lys His Val Met Gln Leu Glu Lys Asp Pro
        35                  40                  45

Lys Ile Ile Thr Leu Leu Leu Ala Asn Ala Gly Val Phe Asp Asp Thr
    50                  55                  60

Leu Gly Ser Phe Ser Thr Val Phe Gly Glu Glu Trp Lys Glu Lys Thr
65                  70                  75                  80

Asp Arg Asp Phe Val Lys Phe Trp Lys Asp Ile Val Asp Asp Asn Glu
                85                  90                  95

Val Arg Asp Leu Ile Ser Asp Arg Asn Lys Ser His Glu Gly Thr Ser
            100                 105                 110

Gly Glu Trp Ile Trp Glu Ser Leu Phe His Pro Pro Arg Lys Leu Gly
        115                 120                 125

Ile Asn Asp Ile Glu Gly Gln Arg Val Leu Gln Ile Ala Val Ile Leu
    130                 135                 140

Arg Asn Leu Ser Phe Glu Glu Gly Asn Val Lys Leu Leu Ala Ala Asn
145                 150                 155                 160

Arg Thr Cys Leu Arg Phe Leu Leu Leu Ser Ala His Ser His Phe Ile
                165                 170                 175
```

```
Ser Leu Arg Gln Leu Gly Leu Asp Thr Leu Gly Asn Ile Ala Ala Glu
            180                 185                 190

Leu Leu Leu Asp Pro Val Asp Phe Lys Thr Thr His Leu Met Phe His
        195                 200                 205

Thr Val Thr Lys Cys Leu Met Ser Arg Asp Arg Phe Leu Lys Met Arg
    210                 215                 220

Gly Met Glu Ile Leu Gly Asn Leu Cys Lys Ala Glu Asp Asn Gly Val
225                 230                 235                 240

Leu Ile Cys Glu Tyr Val Asp Gln Asp Ser Tyr Arg Glu Ile Ile Cys
                245                 250                 255

His Leu Thr Leu Pro Asp Val Leu Leu Val Ile Ser Thr Leu Glu Val
            260                 265                 270

Leu Tyr Met Leu Thr Glu Met Gly Asp Val Ala Cys Thr Lys Ile Ala
        275                 280                 285

Lys Val Glu Lys Ser Ile Asp Met Leu Val Cys Leu Val Ser Met Asp
    290                 295                 300

Ile Gln Met Phe Gly Pro Asp Ala Leu Ala Ala Val Lys Leu Ile Glu
305                 310                 315                 320

His Pro Ser Ser Ser His Gln Met Leu Ser Glu Ile Arg Pro Gln Ala
                325                 330                 335

Ile Glu Gln Val Gln Thr Gln Thr His Val Ala Ser Ala Pro Ala Ser
            340                 345                 350

Arg Ala Val Val Ala Gln His Val Ala Pro Pro Pro Gly Ile Val Glu
        355                 360                 365

Ile Asp Ser Glu Lys Phe Ala Cys Gln Trp Leu Asn Ala His Phe Glu
    370                 375                 380

Val Asn Pro Asp Cys Ser Val Ser Arg Ala Glu Met Tyr Ser Glu Tyr
385                 390                 395                 400

Leu Ser Thr Cys Ser Lys Leu Ala Arg Gly Gly Ile Leu Thr Ser Thr
```

```
                405                 410                 415

Gly Phe Tyr Lys Cys Leu Arg Thr Val Phe Pro Asn His Thr Val Lys
            420                 425                 430

Arg Val Glu Asp Ser Ser Ser Asn Gly Gln Ala His Ile His Val Val
        435                 440                 445

Gly Val Lys Arg Arg Ala Ile Pro Leu Pro Ile Gln Met Tyr Tyr Gln
    450                 455                 460

Gln Gln Pro Val Ser Thr Ser Val Val Arg Val Asp Ser Val Pro Asp
465                 470                 475                 480

Val Ser Pro Ala Pro Ser Pro Ala Gly Ile Pro His Gly Ser Gln Thr
                485                 490                 495

Ile Gly Asn His Phe Gln Arg Thr Pro Val Ala Asn Gln Ser Ser Asn
            500                 505                 510

Leu Thr Ala Thr Gln Met Ser Phe Pro Val Gln Gly Val His Thr Val
        515                 520                 525

Ala Gln Thr Val Ser Arg Ile Pro Gln Asn Pro Ser Pro His Thr His
    530                 535                 540

Gln Gln Gln Asn Ala Pro Val Thr Val Ile Gln Ser Lys Ala Pro Ile
545                 550                 555                 560

Pro Cys Glu Val Val Lys Ala Thr Val Ile Gln Asn Ser Ile Pro Gln
                565                 570                 575

Thr Gly Val Pro Val Ser Ile Ala Val Gly Gly Gly Pro Pro Gln Ser
            580                 585                 590

Ser Val Val Gln Asn His Ser Thr Gly Pro Gln Pro Val Thr Val Val
        595                 600                 605

Asn Ser Gln Thr Leu Leu His His Pro Ser Val Ile Pro Gln Gln Ser
    610                 615                 620

Pro Leu His Thr Val Val Pro Gly Gln Ile Pro Ser Gly Thr Pro Val
625                 630                 635                 640
```

```
Thr Val Ile Gln Gln Ala Val Pro Gln Ser His Met Phe Gly Arg Val
                645                 650                 655

Gln Asn Ile Pro Ala Cys Thr Ser Thr Val Ser Gln Gly Gln Gln Leu
            660                 665                 670

Ile Thr Thr Ser Pro Gln Pro Val Gln Thr Ser Ser Gln Gln Thr Ser
        675                 680                 685

Ala Gly Ser Gln Ser Gln Asp Thr Val Ile Ile Ala Pro Pro Gln Tyr
    690                 695                 700

Val Thr Thr Ser Ala Ser Asn Ile Val Ser Ala Thr Ser Val Gln Asn
705                 710                 715                 720

Phe Gln Val Ala Thr Gly Gln Met Val Thr Ile Ala Gly Val Pro Ser
                725                 730                 735

Pro Gln Ala Ser Arg Val Gly Phe Gln Asn Ile Ala Pro Lys Pro Leu
            740                 745                 750

Pro Ser Gln Gln Val Ser Ser Thr Val Val Gln Gln Pro Ile Gln Gln
        755                 760                 765

Pro Gln Gln Pro Thr Gln Gln Ser Val Val Ile Val Ser Gln Pro Ala
    770                 775                 780

Gln Gln Gly Gln Thr Tyr Ala Pro Ala Ile His Gln Ile Val Leu Ala
785                 790                 795                 800

Asn Pro Ala Ala Leu Pro Ala Gly Gln Thr Val Gln Leu Thr Gly Gln
                805                 810                 815

Pro Asn Ile Thr Pro Ser Ser Ser Pro Ser Pro Val Pro Ala Thr Asn
            820                 825                 830

Asn Gln Val Pro Thr Ala Met Ser Ser Ser Ser Thr Pro Gln Ser Gln
        835                 840                 845

Gly Pro Pro Pro Thr Val Ser Gln Met Leu Ser Val Lys Arg Gln Gln
    850                 855                 860
```

```
Gln Gln Gln His Ser Pro Ala Pro Pro Pro Gln Gln Val Gln Val Gln
865                 870                 875                 880

Val Gln Gln Pro Gln Gln Val Gln Met Gln Val Gln Pro Gln Gln Ser
                885                 890                 895

Asn Ala Gly Val Gly Gln Pro Ala Ser Gly Glu Ser Ser Leu Ile Lys
            900                 905                 910

Gln Leu Leu Leu Pro Lys Arg Gly Pro Ser Thr Pro Gly Gly Lys Leu
        915                 920                 925

Ile Leu Pro Ala Pro Gln Ile Pro Pro Pro Asn Asn Ala Arg Ala Pro
    930                 935                 940

Ser Pro Gln Val Val Tyr Gln Val Ala Ser Asn Gln Ala Ala Gly Phe
945                 950                 955                 960

Gly Val Gln Gly Gln Thr Pro Ala Gln Gln Leu Leu Val Gly Gln Gln
                965                 970                 975

Asn Val Gln Leu Val Pro Ser Ala Met Pro Pro Ser Gly Gly Val Gln
            980                 985                 990

Thr Val Pro Ile Ser Asn Leu Gln  Ile Leu Pro Gly Pro  Leu Ile
Ser
        995                 1000                1005

Asn Ser  Pro Ala Thr Ile Phe  Gln Gly Thr Ser Gly  Asn Gln Val
    1010                1015                1020

Thr Ile  Thr Val Val Pro Asn  Thr Ser Phe Ala Pro  Ala Thr Val
    1025                1030                1035

Ser Gln  Gly Asn Ala Thr Gln  Leu Ile Ala Pro Ala  Gly Ile Thr
    1040                1045                1050

Met Ser  Gly Thr Gln Thr Gly  Val Gly Leu Pro Val  Gln Thr Leu
    1055                1060                1065

Pro Ala  Thr Gln Ala Ser Pro  Ala Gly Gln Ser Ser  Cys Thr Thr
    1070                1075                1080
```

Ala Thr Pro Pro Phe Lys Gly Asp Lys Ile Ile Cys Gln Lys Glu
1085 1090 1095

Glu Glu Ala Lys Glu Ala Thr Gly Leu His Val His Glu Arg Lys
1100 1105 1110

Ile Glu Val Met Glu Asn Pro Ser Cys Arg Arg Gly Ala Thr Asn
1115 1120 1125

Thr Ser Asn Gly Asp Thr Lys Glu Asn Glu Met His Val Gly Ser
1130 1135 1140

Leu Leu Asn Gly Arg Lys Tyr Ser Asp Ser Ser Leu Pro Pro Ser
1145 1150 1155

Asn Ser Gly Lys Ile Gln Ser Glu Thr Asn Gln Cys Ser Leu Ile
1160 1165 1170

Ser Asn Gly Pro Ser Leu Glu Leu Gly Glu Asn Gly Ala Ser Gly
1175 1180 1185

Lys Gln Asn Ser Glu Gln Ile Asp Met Gln Asp Ile Lys Ser Asp
1190 1195 1200

Leu Arg Lys Pro Leu Val Asn Gly Ile Cys Asp Phe Asp Lys Gly
1205 1210 1215

Asp Gly Ser His Leu Ser Lys Asn Ile Pro Asn His Lys Thr Ser
1220 1225 1230

Asn His Val Gly Asn Gly Glu Ile Ser Pro Met Glu Pro Gln Gly
1235 1240 1245

Thr Leu Asp Ile Thr Gln Gln Asp Thr Ala Lys Gly Asp Gln Leu
1250 1255 1260

Glu Arg Ile Ser Asn Gly Pro Val Leu Thr Leu Gly Gly Ser Ser
1265 1270 1275

Val Ser Ser Ile Gln Glu Ala Ser Asn Ala Ala Thr Gln Gln Phe
1280 1285 1290

```
Ser Gly  Thr Asp Leu Leu Asn  Gly Pro Leu Ala Ser  Ser Leu Asn
    1295                 1300                 1305

Ser Asp  Val Pro Gln Gln Arg  Pro Ser Val Val Val  Ser Pro His
    1310                 1315                 1320

Ser Thr  Thr Ser Val Ile Gln  Gly His Gln Ile Ile  Ala Val Pro
    1325                 1330                 1335

Asp Ser  Gly Ser Lys Val Ser  His Ser Pro Ala Leu  Ser Ser Asp
    1340                 1345                 1350

Val Arg  Ser Thr Asn Gly Thr  Ala Glu Cys Lys Thr  Val Lys Arg
    1355                 1360                 1365

Pro Ala  Glu Asp Thr Asp Arg  Glu Thr Val Ala Gly  Ile Pro Asn
    1370                 1375                 1380

Lys Val  Gly Val Arg Ile Val  Thr Ile Ser Asp Pro  Asn Asn Ala
    1385                 1390                 1395

Gly Cys  Ser Ala Thr Met Val  Ala Val Pro Ala Gly  Ala Asp Pro
    1400                 1405                 1410

Ser Thr  Val Ala Lys Val Ala  Ile Glu Ser Ala Val  Gln Gln Lys
    1415                 1420                 1425

Gln Gln  His Pro Pro Thr Tyr  Val Gln Asn Val Val  Pro Gln Asn
    1430                 1435                 1440

Thr Pro  Met Pro Pro Ser Pro  Ala Val Gln Val Gln  Gly Gln Pro
    1445                 1450                 1455

Asn Ser  Ser Gln Pro Ser Pro  Phe Ser Gly Ser Ser  Gln Pro Gly
    1460                 1465                 1470

Asp Pro  Met Arg Lys Pro Gly  Gln Asn Phe Met Cys  Leu Trp Gln
    1475                 1480                 1485

Ser Cys  Lys Lys Trp Phe Gln  Thr Pro Ser Gln Val  Phe Tyr His
    1490                 1495                 1500

Ala Ala  Thr Glu His Gly Gly  Lys Asp Val Tyr Pro  Gly Gln Cys
```

```
    1505                1510                1515

Leu Trp  Glu Gly Cys Glu Pro  Phe Gln Arg Gln Arg  Phe Ser Phe
    1520                1525                1530

Ile Thr  His Leu Gln Asp Lys  His Cys Ser Lys Asp  Ala Leu Leu
    1535                1540                1545

Ala Gly  Leu Lys Gln Asp Glu  Pro Gly Gln Ala Gly  Ser Gln Lys
    1550                1555                1560

Ser Ser  Thr Lys Gln Pro Thr  Val Gly Gly Thr Ser  Ser Thr Pro
    1565                1570                1575

Arg Ala  Gln Lys Ala Ile Val  Asn His Pro Ser Ala  Ala Leu Met
    1580                1585                1590

Ala Leu  Arg Arg Gly Ser Arg  Asn Leu Val Phe Arg  Asp Phe Thr
    1595                1600                1605

Asp Glu  Lys Glu Gly Pro Ile  Thr Lys His Ile Arg  Leu Thr Ala
    1610                1615                1620

Ala Leu  Ile Leu Lys Asn Ile  Gly Lys Tyr Ser Glu  Cys Gly Arg
    1625                1630                1635

Arg
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<210> 6820
<211> 64
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 6820
Xaa Gly Leu Lys Gln Asp Glu Pro Gly Gln Ala Gly Ser Gln Lys Ser
1 5 10 15

Ser Thr Lys Gln Pro Thr Val Gly Gly Thr Ser Ser Thr Pro Arg Ala
20 25 30

Gln Lys Ala Ile Val Asn His Pro Ser Ala Ala Leu Met Ala Leu Arg
35 40 45

Arg Gly Ser Arg Asn Leu Val Phe Arg Asp Phe Thr Val Ser Met Pro
50 55 60

<210> 6821
<211> 593
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
<221> source
<223> /note="Gene Name:
AT rich interactive domain 3A (BRIGHT-like); "

<220>
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000263620"

<400> 6821
Met Lys Leu Gln Ala Val Met Glu Thr Leu Leu Gln Arg Gln Gln Arg
1 5 10 15

```
Ala Arg Gln Glu Leu Glu Ala Arg Gln Gln Leu Pro Pro Asp Pro Pro
            20                  25                  30

Ala Ala Pro Pro Gly Arg Ala Arg Ala Ala Pro Asp Glu Asp Arg Glu
        35                  40                  45

Pro Glu Ser Ala Arg Met Gln Arg Ala Gln Met Ala Ala Leu Ala Ala
    50                  55                  60

Met Arg Ala Ala Ala Ala Gly Leu Gly His Pro Ala Ser Pro Gly Gly
65                  70                  75                  80

Ser Glu Asp Gly Pro Pro Gly Ser Glu Glu Glu Asp Ala Ala Arg Glu
                85                  90                  95

Gly Thr Pro Gly Ser Pro Gly Arg Gly Arg Glu Gly Pro Gly Glu Glu
            100                 105                 110

His Phe Glu Asp Met Ala Ser Asp Glu Asp Met Lys Pro Lys Trp Glu
        115                 120                 125

Glu Glu Glu Met Glu Glu Asp Leu Gly Glu Asp Glu Glu Glu Glu Glu
    130                 135                 140

Glu Asp Tyr Glu Asp Glu Glu Glu Glu Glu Asp Glu Glu Gly Leu Gly
145                 150                 155                 160

Pro Pro Gly Pro Ala Ser Leu Gly Thr Thr Ala Leu Phe Pro Arg Lys
                165                 170                 175

Ala Gln Pro Pro Gln Ala Phe Arg Gly Asp Gly Val Pro Arg Val Leu
            180                 185                 190

Gly Gly Gln Glu Arg Pro Gly Pro Gly Pro Ala His Pro Gly Gly Ala
        195                 200                 205

Ala His Val Ala Pro Gln Leu Gln Pro Pro Asp His Gly Asp Trp Thr
    210                 215                 220

Tyr Glu Glu Gln Phe Lys Gln Leu Tyr Glu Leu Asp Gly Asp Pro Lys
225                 230                 235                 240
```

```
Arg Lys Glu Phe Leu Asp Asp Leu Phe Ser Phe Met Gln Lys Arg Gly
                245                 250                 255

Thr Pro Val Asn Arg Ile Pro Ile Met Ala Lys Gln Val Leu Asp Leu
            260                 265                 270

Phe Met Leu Tyr Val Leu Val Thr Glu Lys Gly Gly Leu Val Glu Val
        275                 280                 285

Ile Asn Lys Lys Leu Trp Arg Glu Ile Thr Lys Gly Leu Asn Leu Pro
    290                 295                 300

Thr Ser Ile Thr Ser Ala Ala Phe Thr Leu Arg Thr Gln Tyr Met Lys
305                 310                 315                 320

Tyr Leu Tyr Pro Tyr Glu Cys Glu Lys Arg Gly Leu Ser Asn Pro Asn
                325                 330                 335

Glu Leu Gln Ala Ala Ile Asp Ser Asn Arg Arg Glu Gly Arg Arg Gln
            340                 345                 350

Ser Phe Gly Gly Ser Leu Phe Ala Tyr Ser Pro Gly Gly Ala His Gly
        355                 360                 365

Met Leu Ser Ser Pro Lys Leu Pro Val Ser Ser Leu Gly Leu Ala Ala
    370                 375                 380

Ser Thr Asn Gly Ser Ser Ile Thr Pro Ala Pro Lys Ile Lys Lys Glu
385                 390                 395                 400

Glu Asp Ser Ala Ile Pro Ile Thr Val Pro Gly Arg Leu Pro Val Ser
                405                 410                 415

Leu Ala Gly His Pro Val Val Ala Ala Gln Ala Ala Ala Val Gln Ala
            420                 425                 430

Ala Ala Ala Gln Ala Ala Val Ala Ala Gln Ala Ala Ala Leu Glu Gln
        435                 440                 445

Leu Arg Glu Lys Leu Glu Ser Ala Glu Pro Pro Glu Lys Lys Met Ala
    450                 455                 460

Leu Val Ala Asp Glu Gln Gln Arg Leu Met Gln Arg Ala Leu Gln Gln
```

```
465                 470                 475                 480

Asn Phe Leu Ala Met Ala Ala Gln Leu Pro Met Ser Ile Arg Ile Asn
                485                 490                 495

Ser Gln Ala Ser Glu Ser Arg Gln Asp Ser Ala Val Asn Leu Thr Gly
            500                 505                 510

Thr Asn Gly Ser Asn Ser Ile Ser Met Ser Val Glu Ile Asn Gly Ile
        515                 520                 525

Met Tyr Thr Gly Val Leu Phe Ala Gln Pro Pro Ala Pro Thr Pro Thr
    530                 535                 540

Ser Ala Pro Asn Lys Gly Gly Gly Gly Gly Gly Gly Ser Ser Ser Asn
545                 550                 555                 560

Ala Gly Gly Arg Gly Gly Asn Thr Gly Thr Ser Gly Gly Gln Ala Gly
                565                 570                 575

Pro Ala Gly Leu Ser Thr Pro Ser Thr Ser Thr Ser Asn Asn Ser Leu
            580                 585                 590

Pro
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<210> 6822
<211> 96
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1464; "

<220>
<221> source
<223> /note="Gene Symbol: ARID3A; "

<220>
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<223> /note="Gene Name:
AT rich interactive domain 3A (BRIGHT-like); "

<220>
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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 6822
Xaa Phe Pro Arg Lys Ala Gln Pro Pro Gln Ala Phe Arg Gly Asp Gly
1   5   10   15

Val Pro Arg Val Leu Gly Gly Gln Glu Arg Pro Gly Pro Gly Pro Ala
            20   25   30

His Pro Gly Gly Ala Ala His Val Ala Pro Gln Leu Gln Pro Pro Asp
        35   40   45

His Gly Asp Trp Thr Tyr Glu Glu Gln Phe Lys Gln Leu Tyr Glu Leu
    50   55   60

Asp Gly Asp Pro Lys Arg Lys Glu Phe Leu Asp Asp Leu Phe Ser Phe
65   70   75   80

Met Gln Lys Arg Val Gln Lys Leu Thr Arg Arg Gly Gly Arg Arg Leu
                85   90   95

<210> 6823
<211> 338
<212> PRT
<213> Homo sapiens

<220>
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<220>
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      AT rich interactive domain 3A (BRIGHT-like); "

<220>
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<400> 6823
Glu Asp Glu Glu Gly Leu Gly Pro Pro Gly Pro Ala Ser Leu Gly Thr
1   5   10   15

```
Thr Ala Leu Phe Pro Arg Lys Ala Gln Pro Pro Gln Ala Phe Arg Gly
            20                  25                  30

Asp Gly Val Pro Arg Val Leu Gly Gly Gln Glu Arg Pro Gly Pro Gly
        35                  40                  45

Pro Ala His Pro Gly Gly Ala Ala His Val Ala Pro Gln Leu Gln Pro
    50                  55                  60

Pro Asp His Gly Asp Trp Thr Tyr Glu Glu Gln Phe Lys Gln Leu Tyr
65                  70                  75                  80

Glu Leu Asp Gly Asp Pro Lys Arg Lys Glu Phe Leu Asp Asp Leu Phe
                85                  90                  95

Ser Phe Met Gln Lys Arg Gly Thr Pro Val Asn Arg Ile Pro Ile Met
            100                 105                 110

Ala Lys Gln Val Leu Asp Leu Phe Met Leu Tyr Val Leu Val Thr Glu
        115                 120                 125

Lys Gly Gly Leu Val Glu Val Ile Asn Lys Lys Leu Trp Arg Glu Ile
    130                 135                 140

Thr Lys Gly Leu Asn Leu Pro Thr Ser Ile Thr Ser Ala Ala Phe Thr
145                 150                 155                 160

Leu Arg Thr Gln Tyr Met Lys Tyr Leu Tyr Pro Tyr Glu Cys Glu Lys
                165                 170                 175

Arg Gly Leu Ser Asn Pro Asn Glu Leu Gln Ala Ala Ile Asp Ser Asn
            180                 185                 190

Arg Arg Glu Gly Arg Arg Gln Ser Phe Gly Gly Ser Leu Phe Ala Tyr
        195                 200                 205

Ser Pro Gly Gly Ala His Gly Met Leu Ser Ser Pro Lys Leu Pro Val
    210                 215                 220

Ser Ser Leu Gly Leu Ala Ala Ser Thr Asn Gly Ser Ser Ile Thr Pro
225                 230                 235                 240
```

```
Ala Pro Lys Ile Lys Lys Ala Ser Glu Ser Arg Gln Asp Ser Ala Val
                245                 250                 255

Asn Leu Thr Gly Thr Asn Gly Ser Asn Ser Ile Ser Met Ser Val Glu
            260                 265                 270

Ile Asn Gly Ile Met Tyr Thr Gly Val Leu Phe Ala Gln Pro Pro Ala
        275                 280                 285

Pro Thr Pro Thr Ser Ala Pro Asn Lys Gly Gly Gly Gly Gly Gly Gly
    290                 295                 300

Ser Ser Ser Asn Ala Gly Gly Arg Gly Gly Asn Thr Gly Thr Ser Gly
305                 310                 315                 320

Gly Gln Ala Gly Pro Ala Gly Leu Ser Thr Pro Ser Thr Ser Thr Ser
                325                 330                 335

Asn Asn
```

<210> 6824
<211> 560
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<220>
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<223> /note="Uniprot ID: Q8IVW6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000343126"

<400> 6824

```
Met Glu Pro Leu Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Lys
1               5                  10                  15
```

```
Gln Pro His Leu Ala Pro Leu Gln Met Asp Ala Arg Glu Lys Gln Gly
            20                  25                  30

Gln Gln Met Arg Glu Ala Gln Phe Leu Tyr Ala Gln Lys Leu Val Thr
        35                  40                  45

Gln Pro Thr Leu Leu Ser Ala Thr Ala Gly Arg Pro Ser Gly Ser Thr
    50                  55                  60

Pro Leu Gly Pro Leu Ala Arg Val Pro Pro Thr Ala Ala Val Ala Gln
65                  70                  75                  80

Val Phe Glu Arg Gly Asn Met Asn Ser Glu Pro Glu Glu Glu Asp Gly
                85                  90                  95

Gly Leu Glu Asp Glu Asp Gly Asp Asp Glu Val Ala Glu Val Ala Glu
            100                 105                 110

Lys Glu Thr Gln Ala Ala Ser Lys Tyr Phe His Val Gln Lys Val Ala
        115                 120                 125

Arg Gln Asp Pro Arg Val Ala Pro Met Ser Asn Leu Leu Pro Ala Pro
    130                 135                 140

Gly Leu Pro Pro His Gly Gln Gln Ala Lys Glu Asp His Thr Lys Asp
145                 150                 155                 160

Ala Ser Lys Ala Ser Pro Ser Val Ser Thr Ala Gly Gln Pro Asn Trp
                165                 170                 175

Asn Leu Asp Glu Gln Leu Lys Gln Asn Gly Gly Leu Ala Trp Ser Asp
            180                 185                 190

Asp Ala Asp Gly Gly Arg Gly Arg Glu Ile Ser Arg Asp Phe Ala Lys
        195                 200                 205

Leu Tyr Glu Leu Asp Gly Asp Pro Glu Arg Lys Glu Phe Leu Asp Asp
    210                 215                 220

Leu Phe Val Phe Met Gln Lys Arg Gly Thr Pro Ile Asn Arg Ile Pro
225                 230                 235                 240
```

```
Ile Met Ala Lys Gln Ile Leu Asp Leu Tyr Met Leu Tyr Lys Leu Val
                245                 250                 255

Thr Glu Lys Gly Gly Leu Val Glu Ile Ile Asn Lys Lys Ile Trp Arg
            260                 265                 270

Glu Ile Thr Lys Gly Leu Asn Leu Pro Thr Ser Ile Thr Ser Ala Ala
        275                 280                 285

Phe Thr Leu Arg Thr Gln Tyr Met Lys Tyr Leu Tyr Ala Tyr Glu Cys
    290                 295                 300

Glu Lys Lys Ala Leu Ser Ser Pro Ala Glu Leu Gln Ala Ala Ile Asp
305                 310                 315                 320

Gly Asn Arg Arg Glu Gly Arg Arg Pro Ser Tyr Ser Ser Ser Leu Phe
                325                 330                 335

Gly Tyr Ser Pro Ala Ala Ala Thr Ala Ala Ala Ala Ala Gly Ala Pro
            340                 345                 350

Ala Leu Leu Ser Pro Pro Lys Ile Arg Phe Pro Ile Leu Gly Leu Gly
        355                 360                 365

Ser Ser Ser Gly Thr Asn Thr Ser Ser Pro Arg Ile Ser Pro Ala Thr
    370                 375                 380

Thr Leu Arg Lys Gly Asp Gly Ala Pro Val Thr Thr Val Pro Val Pro
385                 390                 395                 400

Asn Arg Leu Ala Val Pro Val Thr Leu Ala Ser Gln Gln Ala Gly Thr
                405                 410                 415

Arg Thr Ala Ala Leu Glu Gln Leu Arg Glu Arg Leu Glu Ser Gly Glu
            420                 425                 430

Pro Ala Glu Lys Lys Ala Ser Arg Leu Ser Glu Glu Glu Gln Arg Leu
        435                 440                 445

Val Gln Gln Ala Phe Gln Arg Asn Phe Phe Ser Met Ala Arg Gln Leu
    450                 455                 460
```

```
Pro Met Lys Ile Arg Ile Asn Gly Arg Glu Asp Arg Ala Glu Ala Ser
465                 470                 475                 480


Ala Ala Ala Leu Asn Leu Thr Thr Ser Ser Ile Gly Ser Ile Asn Met
                485                 490                 495


Ser Val Asp Ile Asp Gly Thr Thr Tyr Ala Gly Val Leu Phe Ala Gln
            500                 505                 510


Lys Pro Val Val His Leu Ile Thr Gly Ser Ala Pro Gln Ser Leu Gly
        515                 520                 525


Ser Ser Ala Ser Ser Ser Ser Ser Ser His Cys Ser Pro Ser Pro Thr
    530                 535                 540


Ser Ser Arg Gly Thr Pro Ser Ala Glu Pro Ser Thr Ser Trp Ser Leu
545                 550                 555                 560


<210> 6825
<211> 138
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<213> Homo sapiens

<220>
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<220>
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000455668"

<400> 6825
Met Ala Lys Gln Ile Leu Asp Leu Tyr Met Leu Tyr Lys Leu Val Thr
1               5                   10                  15


Glu Lys Gly Gly Leu Val Glu Ile Ile Asn Lys Lys Ile Trp Arg Glu
            20                  25                  30


Ile Thr Lys Gly Leu Asn Leu Pro Thr Ser Ile Thr Ser Ala Ala Phe
        35                  40                  45
```

```
Thr Leu Arg Thr Gln Tyr Met Lys Tyr Leu Tyr Ala Tyr Glu Cys Glu
    50                  55                  60

Lys Lys Ala Leu Ser Ser Pro Ala Glu Leu Gln Ala Ala Ile Asp Gly
65                  70                  75                  80

Asn Arg Arg Glu Gly Arg Arg Pro Ser Tyr Ser Ser Ser Leu Phe Gly
                85                  90                  95

Tyr Ser Pro Ala Ala Ala Thr Ala Ala Ala Ala Ala Gly Ala Pro Ala
            100                 105                 110

Leu Leu Ser Pro Pro Lys Ile Arg Phe Pro Ile Leu Gly Leu Gly Ser
        115                 120                 125

Ser Ser Gly Thr Asn Thr Ser Ser Pro Arg
    130                 135


<210> 6826
<211> 561
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<223> /note="Uniprot ID:  Q8IVW6; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000477878"

<400> 6826
Met Glu Pro Leu Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Lys
1               5                   10                  15
```

```
Gln Pro His Leu Ala Pro Leu Gln Met Asp Ala Arg Glu Lys Gln Gly
            20                  25                  30

Gln Gln Met Arg Glu Ala Gln Phe Leu Tyr Ala Gln Lys Leu Val Thr
        35                  40                  45

Gln Pro Thr Leu Leu Ser Ala Thr Ala Gly Arg Pro Ser Gly Ser Thr
    50                  55                  60

Pro Leu Gly Pro Leu Ala Arg Val Pro Pro Thr Ala Ala Val Ala Gln
65                  70                  75                  80

Val Phe Glu Arg Gly Asn Met Asn Ser Glu Pro Glu Glu Glu Asp Gly
                85                  90                  95

Gly Leu Glu Asp Glu Asp Gly Asp Asp Glu Val Ala Glu Val Ala Glu
            100                 105                 110

Lys Glu Thr Gln Ala Ala Ser Lys Tyr Phe His Val Gln Lys Val Ala
        115                 120                 125

Arg Gln Asp Pro Arg Val Ala Pro Met Ser Asn Leu Leu Pro Ala Pro
    130                 135                 140

Gly Leu Pro Pro His Gly Gln Gln Ala Lys Glu Asp His Thr Lys Asp
145                 150                 155                 160

Ala Ser Lys Ala Ser Pro Ser Val Ser Thr Ala Gly Gln Pro Asn Trp
                165                 170                 175

Asn Leu Asp Glu Gln Leu Lys Gln Asn Gly Gly Leu Ala Trp Ser Asp
            180                 185                 190

Asp Ala Asp Gly Gly Arg Gly Arg Glu Ile Ser Arg Asp Phe Ala Lys
        195                 200                 205

Leu Tyr Glu Leu Asp Gly Asp Pro Glu Arg Lys Glu Phe Leu Asp Asp
    210                 215                 220

Leu Phe Val Phe Met Gln Lys Arg Gly Thr Pro Ile Asn Arg Ile Pro
225                 230                 235                 240

Ile Met Ala Lys Gln Ile Leu Asp Leu Tyr Met Leu Tyr Lys Leu Val
```

```
                245                 250                 255

Thr Glu Lys Gly Gly Leu Val Glu Ile Ile Asn Lys Lys Ile Trp Arg
            260                 265                 270

Glu Ile Thr Lys Gly Leu Asn Leu Pro Thr Ser Ile Thr Ser Ala Ala
        275                 280                 285

Phe Thr Leu Arg Thr Gln Tyr Met Lys Tyr Leu Tyr Ala Tyr Glu Cys
    290                 295                 300

Glu Lys Lys Ala Leu Ser Ser Pro Ala Glu Leu Gln Ala Ala Ile Asp
305                 310                 315                 320

Gly Asn Arg Arg Glu Gly Arg Arg Pro Ser Tyr Ser Ser Ser Leu Phe
                325                 330                 335

Gly Tyr Ser Pro Ala Ala Ala Thr Ala Ala Ala Ala Ala Gly Ala Pro
            340                 345                 350

Ala Leu Leu Ser Pro Pro Lys Ile Arg Phe Pro Ile Leu Gly Leu Gly
        355                 360                 365

Ser Ser Ser Gly Thr Asn Thr Ser Ser Pro Arg Ile Ser Pro Ala Thr
    370                 375                 380

Thr Leu Arg Lys Gly Asp Gly Ala Pro Val Thr Thr Val Pro Val Pro
385                 390                 395                 400

Asn Arg Leu Ala Val Pro Val Thr Leu Ala Ser Gln Gln Ala Gly Thr
                405                 410                 415

Arg Thr Ala Ala Leu Glu Gln Leu Arg Glu Arg Leu Glu Ser Gly Glu
            420                 425                 430

Pro Ala Glu Lys Lys Ala Ser Arg Leu Ser Glu Glu Glu Gln Arg Leu
        435                 440                 445

Val Gln Gln Ala Phe Gln Arg Asn Phe Phe Ser Met Ala Arg Gln Leu
    450                 455                 460

Pro Met Lys Ile Arg Ile Asn Gly Arg Ala Glu Asp Arg Ala Glu Ala
465                 470                 475                 480
```

```
Ser Ala Ala Ala Leu Asn Leu Thr Thr Ser Ser Ile Gly Ser Ile Asn
                485                 490                 495

Met Ser Val Asp Ile Asp Gly Thr Thr Tyr Ala Gly Val Leu Phe Ala
            500                 505                 510

Gln Lys Pro Val Val His Leu Ile Thr Gly Ser Ala Pro Gln Ser Leu
        515                 520                 525

Gly Ser Ser Ala Ser Ser Ser Ser Ser Ser His Cys Ser Pro Ser Pro
    530                 535                 540

Thr Ser Ser Arg Gly Thr Pro Ser Ala Glu Pro Ser Thr Ser Trp Ser
545                 550                 555                 560

Leu
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<210> 6827
<211> 412
<212> PRT
<213> Homo sapiens

<220>
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<220>
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AT rich interactive domain 3C (BRIGHT-like); "

<220>
<221> source
<223> /note="Uniprot ID: A6NKF2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000368189"

<400> 6827

```
Met Glu Ala Leu Gln Lys Gln Gln Ala Ala Arg Leu Ala Gln Gly Val
1               5                   10                  15
```

```
Gly Pro Leu Ala Pro Ala Cys Pro Leu Leu Pro Pro Gln Pro Pro Leu
            20                  25                  30

Pro Asp His Arg Thr Leu Gln Ala Pro Glu Gly Ala Leu Gly Asn Val
        35                  40                  45

Gly Ala Glu Glu Glu Glu Asp Ala Glu Glu Asp Glu Glu Lys Arg Glu
    50                  55                  60

Glu Ala Gly Ala Glu Glu Glu Ala Ala Glu Glu Ser Arg Pro Gly Ala
65                  70                  75                  80

Gln Gly Pro Ser Ser Pro Ser Ser Gln Pro Pro Gly Leu His Pro His
                85                  90                  95

Glu Trp Thr Tyr Glu Glu Gln Phe Lys Gln Leu Tyr Glu Leu Asp Ala
            100                 105                 110

Asp Pro Lys Arg Lys Glu Phe Leu Asp Asp Leu Phe Ser Phe Met Gln
        115                 120                 125

Lys Arg Gly Thr Pro Val Asn Arg Val Pro Ile Met Ala Lys Gln Val
    130                 135                 140

Leu Asp Leu Tyr Ala Leu Phe Arg Leu Val Thr Ala Lys Gly Gly Leu
145                 150                 155                 160

Val Glu Val Ile Asn Arg Lys Val Trp Arg Glu Val Thr Arg Gly Leu
                165                 170                 175

Ser Leu Pro Thr Thr Ile Thr Ser Ala Ala Phe Thr Leu Arg Thr Gln
            180                 185                 190

Tyr Met Lys Tyr Leu Tyr Pro Tyr Glu Cys Glu Thr Arg Ala Leu Ser
        195                 200                 205

Ser Pro Gly Glu Leu Gln Ala Ala Ile Asp Ser Asn Arg Arg Glu Gly
    210                 215                 220

Arg Arg Gln Ala Tyr Thr Ala Thr Pro Leu Phe Gly Leu Ala Gly Pro
225                 230                 235                 240

Pro Pro Arg Gly Ala Gln Asp Pro Ala Leu Gly Pro Gly Pro Ala Pro
```

```
                245                 250                 255

Pro Ala Thr Gln Ser Ser Pro Gly Pro Ala Gln Gly Ser Thr Ser Gly
            260                 265                 270

Leu Pro Ala His Ala Cys Ala Gln Leu Ser Pro Ser Pro Ile Lys Lys
        275                 280                 285

Glu Glu Ser Gly Ile Pro Asn Pro Cys Leu Ala Leu Pro Val Gly Leu
    290                 295                 300

Ala Leu Gly Pro Thr Arg Glu Lys Leu Ala Pro Glu Glu Pro Pro Glu
305                 310                 315                 320

Lys Arg Ala Val Leu Met Gly Pro Met Asp Pro Pro Arg Pro Cys Met
                325                 330                 335

Pro Pro Ser Phe Leu Pro Arg Gly Lys Val Pro Leu Arg Glu Glu Arg
            340                 345                 350

Leu Asp Gly Pro Leu Asn Leu Ala Gly Ser Gly Ile Ser Ser Ile Asn
        355                 360                 365

Met Ala Leu Glu Ile Asn Gly Val Val Tyr Thr Gly Val Leu Phe Ala
    370                 375                 380

Arg Arg Gln Pro Val Pro Ala Ser Gln Gly Pro Thr Asn Pro Ala Pro
385                 390                 395                 400

Pro Pro Ser Thr Gly Pro Pro Ser Ser Ile Leu Pro
                405                 410


<210> 6828
<211> 1188
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1467; "

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<223> /note="Gene Symbol: ARID4A; "

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<221> source
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AT rich interactive domain 4A (RBP
1-like); "

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<223> /note="Uniprot ID: P29374; "

<220>
<221> source
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<400> 6828

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Met Lys Ala Ala Asp Glu Pro Ala Tyr Leu Thr Val Gly Thr Asp Val
1               5                  10                  15

Ser Ala Lys Tyr Arg Gly Ala Phe Cys Glu Ala Lys Ile Lys Thr Val
            20                  25                  30

Lys Arg Leu Val Lys Val Lys Val Leu Leu Lys Gln Asp Asn Thr Thr
        35                  40                  45

Gln Leu Val Gln Asp Asp Gln Val Lys Gly Pro Leu Arg Val Gly Ala
    50                  55                  60

Ile Val Glu Thr Arg Thr Ser Asp Gly Ser Phe Gln Glu Ala Ile Ile
65                  70                  75                  80

Ser Lys Leu Thr Asp Ala Ser Trp Tyr Thr Val Val Phe Asp Asp Gly
                85                  90                  95

Asp Glu Arg Thr Leu Arg Arg Thr Ser Leu Cys Leu Lys Gly Glu Arg
            100                 105                 110

His Phe Ala Glu Ser Glu Thr Leu Asp Gln Leu Pro Leu Thr Asn Pro
        115                 120                 125

Glu His Phe Gly Thr Pro Val Ile Ala Lys Lys Thr Asn Arg Gly Arg
    130                 135                 140

Arg Ser Ser Leu Pro Val Thr Glu Asp Glu Lys Glu Glu Glu Ser Ser
145                 150                 155                 160

Glu Glu Glu Asp Glu Asp Lys Arg Arg Leu Asn Asp Glu Leu Leu Gly
                165                 170                 175
```

```
Lys Val Val Ser Val Val Ser Ala Thr Glu Arg Thr Glu Trp Tyr Pro
            180                 185                 190

Ala Leu Val Ile Ser Pro Ser Cys Asn Asp Asp Ile Thr Val Lys Lys
        195                 200                 205

Asp Gln Cys Leu Val Arg Ser Phe Ile Asp Ser Lys Phe Tyr Ser Ile
    210                 215                 220

Ala Arg Lys Asp Ile Lys Glu Val Asp Ile Leu Asn Leu Pro Glu Ser
225                 230                 235                 240

Glu Leu Ser Thr Lys Pro Gly Leu Gln Lys Ala Ser Ile Phe Leu Lys
                245                 250                 255

Thr Arg Val Val Pro Asp Asn Trp Lys Met Asp Ile Ser Glu Ile Leu
            260                 265                 270

Glu Ser Ser Ser Ser Asp Asp Glu Asp Gly Pro Ala Glu Glu Asn Asp
        275                 280                 285

Glu Glu Lys Glu Lys Glu Ala Lys Lys Thr Glu Glu Glu Val Pro Glu
    290                 295                 300

Glu Glu Leu Asp Pro Glu Glu Arg Asp Asn Phe Leu Gln Gln Leu Tyr
305                 310                 315                 320

Lys Phe Met Glu Asp Arg Gly Thr Pro Ile Asn Lys Pro Pro Val Leu
                325                 330                 335

Gly Tyr Lys Asp Leu Asn Leu Phe Lys Leu Phe Arg Leu Val Tyr His
            340                 345                 350

Gln Gly Gly Cys Asp Asn Ile Asp Ser Gly Ala Val Trp Lys Gln Ile
        355                 360                 365

Tyr Met Asp Leu Gly Ile Pro Ile Leu Asn Ser Ala Ala Ser Tyr Asn
    370                 375                 380

Val Lys Thr Ala Tyr Arg Lys Tyr Leu Tyr Gly Phe Glu Glu Tyr Cys
385                 390                 395                 400
```

```
Arg Ser Ala Asn Ile Gln Phe Arg Thr Val His His His Glu Pro Lys
                405                 410                 415

Val Lys Glu Glu Lys Lys Asp Leu Glu Glu Ser Met Glu Glu Ala Leu
            420                 425                 430

Lys Leu Asp Gln Glu Met Pro Leu Thr Glu Val Lys Ser Glu Pro Glu
        435                 440                 445

Glu Asn Ile Asp Ser Asn Ser Glu Ser Glu Arg Glu Glu Ile Glu Leu
    450                 455                 460

Lys Ser Pro Arg Gly Arg Arg Arg Ile Ala Arg Asp Val Asn Ser Ile
465                 470                 475                 480

Lys Lys Glu Ile Glu Glu Glu Lys Thr Glu Asp Lys Leu Lys Asp Asn
                485                 490                 495

Asp Thr Glu Asn Lys Asp Val Asp Asp Asp Tyr Glu Thr Ala Glu Lys
            500                 505                 510

Lys Glu Asn Glu Leu Leu Leu Gly Arg Lys Asn Thr Pro Lys Gln Lys
        515                 520                 525

Glu Lys Lys Ile Lys Lys Gln Glu Asp Ser Asp Lys Asp Ser Asp Glu
    530                 535                 540

Glu Glu Glu Lys Ser Gln Glu Arg Glu Glu Thr Glu Ser Lys Cys Asp
545                 550                 555                 560

Ser Glu Gly Glu Glu Asp Glu Glu Asp Met Glu Pro Cys Leu Thr Gly
                565                 570                 575

Thr Lys Val Lys Val Lys Tyr Gly Arg Gly Lys Thr Gln Lys Ile Tyr
            580                 585                 590

Glu Ala Ser Ile Lys Ser Thr Glu Ile Asp Asp Gly Glu Val Leu Tyr
        595                 600                 605

Leu Val His Tyr Tyr Gly Trp Asn Val Arg Tyr Asp Glu Trp Val Lys
    610                 615                 620

Ala Asp Arg Ile Ile Trp Pro Leu Asp Lys Gly Gly Pro Lys Lys Lys
```

625 630 635 640

Gln Lys Lys Lys Ala Lys Asn Lys Glu Asp Ser Glu Lys Asp Glu Lys
645 650 655

Arg Asp Glu Glu Arg Gln Lys Ser Lys Arg Gly Arg Pro Pro Leu Lys
660 665 670

Ser Thr Leu Ser Ser Asn Met Pro Tyr Gly Leu Ser Lys Thr Ala Asn
675 680 685

Ser Glu Gly Lys Ser Asp Ser Cys Ser Ser Asp Ser Glu Thr Glu Asp
690 695 700

Ala Leu Glu Lys Asn Leu Ile Asn Glu Glu Leu Ser Leu Lys Asp Glu
705 710 715 720

Leu Glu Lys Asn Glu Asn Leu Asn Asp Asp Lys Leu Asp Glu Glu Asn
725 730 735

Pro Lys Ile Ser Ala His Ile Leu Lys Glu Asn Asp Arg Thr Gln Met
740 745 750

Gln Pro Leu Glu Thr Leu Lys Leu Glu Val Gly Glu Asn Glu Gln Ile
755 760 765

Val Gln Ile Phe Gly Asn Lys Met Glu Lys Thr Glu Glu Val Lys Lys
770 775 780

Glu Ala Glu Lys Ser Pro Lys Gly Lys Gly Arg Arg Ser Lys Thr Lys
785 790 795 800

Asp Leu Ser Leu Glu Ile Ile Lys Ile Ser Ser Phe Gly Gln Asn Glu
805 810 815

Ala Gly Ser Glu Pro His Ile Glu Ala His Ser Leu Glu Leu Ser Ser
820 825 830

Leu Asp Asn Lys Asn Phe Ser Ser Ala Thr Glu Asp Glu Ile Asp Gln
835 840 845

Cys Val Lys Glu Lys Lys Leu Lys Arg Lys Ile Leu Gly Gln Ser Ser
850 855 860

```
Pro Glu Lys Lys Ile Arg Ile Glu Asn Gly Met Glu Met Thr Asn Thr
865                 870                 875                 880

Val Ser Gln Glu Arg Thr Ser Asp Cys Ile Gly Ser Glu Gly Met Lys
                885                 890                 895

Asn Leu Asn Phe Glu Gln His Phe Glu Arg Glu Asn Glu Gly Met Pro
            900                 905                 910

Ser Leu Ile Ala Glu Ser Asn Gln Cys Ile Gln Gln Leu Thr Ser Glu
        915                 920                 925

Arg Phe Asp Ser Pro Ala Glu Glu Thr Val Asn Ile Pro Leu Lys Glu
    930                 935                 940

Asp Glu Asp Ala Met Pro Leu Ile Gly Pro Glu Thr Leu Val Cys His
945                 950                 955                 960

Glu Val Asp Leu Asp Asp Leu Asp Glu Lys Asp Lys Thr Ser Ile Glu
                965                 970                 975

Asp Val Ala Val Glu Ser Ser Glu Ser Asn Ser Leu Val Ser Ile Pro
            980                 985                 990

Pro Ala Leu Pro Pro Val Val Gln  His Asn Phe Ser Val  Ala Ser
Pro
        995                 1000                1005

Leu Thr  Leu Ser Gln Asp Glu  Ser Arg Ser Val Lys  Ser Glu Ser
    1010                1015                1020

Asp Ile  Thr Ile Glu Val Asp  Ser Ile Ala Glu Glu  Ser Gln Glu
    1025                1030                1035

Gly Leu  Cys Glu Arg Glu Ser  Ala Asn Gly Phe Glu  Thr Asn Val
    1040                1045                1050

Ala Ser  Gly Thr Cys Ser Ile  Ile Val Gln Glu Arg  Glu Ser Arg
    1055                1060                1065

Glu Lys  Gly Gln Lys Arg Pro  Ser Asp Gly Asn Ser  Gly Leu Met
    1070                1075                1080
```

```
Ala Lys  Lys Gln Lys Arg Thr  Pro Lys Arg Thr Ser  Ala Ala Ala
    1085                 1090                 1095

Lys Asn  Glu Lys Asn Gly Thr  Asp Glu Leu Asp Asn  Met Asn Ser
    1100                 1105                 1110

Thr Glu  Arg Ile Ser Phe Leu  Gln Glu Lys Leu Gln  Glu Ile Arg
    1115                 1120                 1125

Lys Tyr  Tyr Met Ser Leu Lys  Ser Glu Val Ala Thr  Ile Asp Arg
    1130                 1135                 1140

Arg Arg  Lys Arg Leu Lys Lys  Lys Asp Arg Glu Val  Ser His Ala
    1145                 1150                 1155

Gly Ala  Ser Met Ser Ser Ala  Ser Ser Asp Thr Gly  Met Ser Pro
    1160                 1165                 1170

Ser Ser  Ser Ser Pro Pro Gln  Asn Val Leu Ala Val  Glu Cys Arg
    1175                 1180                 1185


<210> 6829
<211> 1257
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1467; "

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<223> /note="Gene Symbol: ARID4A; "

<220>
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<223> /note="Gene Name:
      AT rich interactive domain 4A (RBP
      1-like); "

<220>
<221> source
<223> /note="Uniprot ID:  P29374; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000347602"
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<400> 6829
Met Lys Ala Ala Asp Glu Pro Ala Tyr Leu Thr Val Gly Thr Asp Val
1 5 10 15

Ser Ala Lys Tyr Arg Gly Ala Phe Cys Glu Ala Lys Ile Lys Thr Val
20 25 30

Lys Arg Leu Val Lys Val Lys Val Leu Leu Lys Gln Asp Asn Thr Thr
35 40 45

Gln Leu Val Gln Asp Asp Gln Val Lys Gly Pro Leu Arg Val Gly Ala
50 55 60

Ile Val Glu Thr Arg Thr Ser Asp Gly Ser Phe Gln Glu Ala Ile Ile
65 70 75 80

Ser Lys Leu Thr Asp Ala Ser Trp Tyr Thr Val Val Phe Asp Asp Gly
85 90 95

Asp Glu Arg Thr Leu Arg Arg Thr Ser Leu Cys Leu Lys Gly Glu Arg
100 105 110

His Phe Ala Glu Ser Glu Thr Leu Asp Gln Leu Pro Leu Thr Asn Pro
115 120 125

Glu His Phe Gly Thr Pro Val Ile Ala Lys Lys Thr Asn Arg Gly Arg
130 135 140

Arg Ser Ser Leu Pro Val Thr Glu Asp Glu Lys Glu Glu Glu Ser Ser
145 150 155 160

Glu Glu Glu Asp Glu Asp Lys Arg Arg Leu Asn Asp Glu Leu Leu Gly
165 170 175

Lys Val Val Ser Val Val Ser Ala Thr Glu Arg Thr Glu Trp Tyr Pro
180 185 190

Ala Leu Val Ile Ser Pro Ser Cys Asn Asp Asp Ile Thr Val Lys Lys
195 200 205

Asp Gln Cys Leu Val Arg Ser Phe Ile Asp Ser Lys Phe Tyr Ser Ile
210 215 220

```
Ala Arg Lys Asp Ile Lys Glu Val Asp Ile Leu Asn Leu Pro Glu Ser
225                 230                 235                 240

Glu Leu Ser Thr Lys Pro Gly Leu Gln Lys Ala Ser Ile Phe Leu Lys
                245                 250                 255

Thr Arg Val Val Pro Asp Asn Trp Lys Met Asp Ile Ser Glu Ile Leu
            260                 265                 270

Glu Ser Ser Ser Ser Asp Asp Glu Asp Gly Pro Ala Glu Glu Asn Asp
        275                 280                 285

Glu Glu Lys Glu Lys Glu Ala Lys Lys Thr Glu Glu Glu Val Pro Glu
    290                 295                 300

Glu Glu Leu Asp Pro Glu Glu Arg Asp Asn Phe Leu Gln Gln Leu Tyr
305                 310                 315                 320

Lys Phe Met Glu Asp Arg Gly Thr Pro Ile Asn Lys Pro Pro Val Leu
                325                 330                 335

Gly Tyr Lys Asp Leu Asn Leu Phe Lys Leu Phe Arg Leu Val Tyr His
            340                 345                 350

Gln Gly Gly Cys Asp Asn Ile Asp Ser Gly Ala Val Trp Lys Gln Ile
        355                 360                 365

Tyr Met Asp Leu Gly Ile Pro Ile Leu Asn Ser Ala Ala Ser Tyr Asn
    370                 375                 380

Val Lys Thr Ala Tyr Arg Lys Tyr Leu Tyr Gly Phe Glu Glu Tyr Cys
385                 390                 395                 400

Arg Ser Ala Asn Ile Gln Phe Arg Thr Val His His His Glu Pro Lys
                405                 410                 415

Val Lys Glu Glu Lys Lys Asp Leu Glu Glu Ser Met Glu Glu Ala Leu
            420                 425                 430

Lys Leu Asp Gln Glu Met Pro Leu Thr Glu Val Lys Ser Glu Pro Glu
        435                 440                 445

Glu Asn Ile Asp Ser Asn Ser Glu Ser Glu Arg Glu Glu Ile Glu Leu
```

```
    450                 455                 460

Lys Ser Pro Arg Gly Arg Arg Arg Ile Ala Arg Asp Val Asn Ser Ile
465                 470                 475                 480

Lys Lys Glu Ile Glu Glu Glu Lys Thr Glu Asp Lys Leu Lys Asp Asn
                485                 490                 495

Asp Thr Glu Asn Lys Asp Val Asp Asp Asp Tyr Glu Thr Ala Glu Lys
            500                 505                 510

Lys Glu Asn Glu Leu Leu Leu Gly Arg Lys Asn Thr Pro Lys Gln Lys
        515                 520                 525

Glu Lys Lys Ile Lys Lys Gln Glu Asp Ser Asp Lys Asp Ser Asp Glu
    530                 535                 540

Glu Glu Glu Lys Ser Gln Glu Arg Glu Glu Thr Glu Ser Lys Cys Asp
545                 550                 555                 560

Ser Glu Gly Glu Glu Asp Glu Glu Asp Met Glu Pro Cys Leu Thr Gly
                565                 570                 575

Thr Lys Val Lys Val Lys Tyr Gly Arg Gly Lys Thr Gln Lys Ile Tyr
            580                 585                 590

Glu Ala Ser Ile Lys Ser Thr Glu Ile Asp Asp Gly Glu Val Leu Tyr
        595                 600                 605

Leu Val His Tyr Tyr Gly Trp Asn Val Arg Tyr Asp Glu Trp Val Lys
    610                 615                 620

Ala Asp Arg Ile Ile Trp Pro Leu Asp Lys Gly Gly Pro Lys Lys Lys
625                 630                 635                 640

Gln Lys Lys Lys Ala Lys Asn Lys Glu Asp Ser Glu Lys Asp Glu Lys
                645                 650                 655

Arg Asp Glu Glu Arg Gln Lys Ser Lys Arg Gly Arg Pro Pro Leu Lys
            660                 665                 670

Ser Thr Leu Ser Ser Asn Met Pro Tyr Gly Leu Ser Lys Thr Ala Asn
        675                 680                 685
```

```
Ser Glu Gly Lys Ser Asp Ser Cys Ser Ser Asp Ser Glu Thr Glu Asp
    690                 695                 700

Ala Leu Glu Lys Asn Leu Ile Asn Glu Glu Leu Ser Leu Lys Asp Glu
705                 710                 715                 720

Leu Glu Lys Asn Glu Asn Leu Asn Asp Asp Lys Leu Asp Glu Glu Asn
                725                 730                 735

Pro Lys Ile Ser Ala His Ile Leu Lys Glu Asn Asp Arg Thr Gln Met
            740                 745                 750

Gln Pro Leu Glu Thr Leu Lys Leu Glu Val Gly Glu Asn Glu Gln Ile
        755                 760                 765

Val Gln Ile Phe Gly Asn Lys Met Glu Lys Thr Glu Glu Val Lys Lys
    770                 775                 780

Glu Ala Glu Lys Ser Pro Lys Gly Lys Gly Arg Arg Ser Lys Thr Lys
785                 790                 795                 800

Asp Leu Ser Leu Glu Ile Ile Lys Ile Ser Ser Phe Gly Gln Asn Glu
                805                 810                 815

Ala Gly Ser Glu Pro His Ile Glu Ala His Ser Leu Glu Leu Ser Ser
            820                 825                 830

Leu Asp Asn Lys Asn Phe Ser Ser Ala Thr Glu Asp Glu Ile Asp Gln
        835                 840                 845

Cys Val Lys Glu Lys Lys Leu Lys Arg Lys Ile Leu Gly Gln Ser Ser
    850                 855                 860

Pro Glu Lys Lys Ile Arg Ile Glu Asn Gly Met Glu Met Thr Asn Thr
865                 870                 875                 880

Val Ser Gln Glu Arg Thr Ser Asp Cys Ile Gly Ser Glu Gly Met Lys
                885                 890                 895

Asn Leu Asn Phe Glu Gln His Phe Glu Arg Glu Asn Glu Gly Met Pro
            900                 905                 910
```

```
Ser Leu Ile Ala Glu Ser Asn Gln Cys Ile Gln Gln Leu Thr Ser Glu
        915                 920                 925

Arg Phe Asp Ser Pro Ala Glu Glu Thr Val Asn Ile Pro Leu Lys Glu
    930                 935                 940

Asp Glu Asp Ala Met Pro Leu Ile Gly Pro Glu Thr Leu Val Cys His
945                 950                 955                 960

Glu Val Asp Leu Asp Asp Leu Asp Glu Lys Asp Lys Thr Ser Ile Glu
                965                 970                 975

Asp Val Ala Val Glu Ser Ser Glu Ser Asn Ser Leu Val Ser Ile Pro
            980                 985                 990

Pro Ala Leu Pro Pro Val Val Gln  His Asn Phe Ser Val  Ala Ser
Pro
        995                 1000                1005

Leu Thr  Leu Ser Gln Asp Glu  Ser Arg Ser Val Lys  Ser Glu Ser
    1010                1015                1020

Asp Ile  Thr Ile Glu Val Asp  Ser Ile Ala Glu Glu  Ser Gln Glu
    1025                1030                1035

Gly Leu  Cys Glu Arg Glu Ser  Ala Asn Gly Phe Glu  Thr Asn Val
    1040                1045                1050

Ala Ser  Gly Thr Cys Ser Ile  Ile Val Gln Glu Arg  Glu Ser Arg
    1055                1060                1065

Glu Lys  Gly Gln Lys Arg Pro  Ser Asp Gly Asn Ser  Gly Leu Met
    1070                1075                1080

Ala Lys  Lys Gln Lys Arg Thr  Pro Lys Arg Thr Ser  Ala Ala Ala
    1085                1090                1095

Lys Asn  Glu Lys Asn Gly Thr  Gly Gln Ser Ser Asp  Ser Glu Asp
    1100                1105                1110

Leu Pro  Val Leu Asp Asn Ser  Ser Lys Cys Thr Pro  Val Lys His
    1115                1120                1125
```

```
Leu Asn  Val Ser Lys Pro Gln  Lys Leu Ala Arg Ser  Pro Ala Arg
    1130                1135                1140

Ile Ser  Pro His Ile Lys Asp  Gly Glu Lys Asp Lys  His Arg Glu
    1145                1150                1155

Lys His  Pro Asn Ser Ser Pro  Arg Thr Tyr Lys Trp  Ser Phe Gln
    1160                1165                1170

Leu Asn  Glu Leu Asp Asn Met  Asn Ser Thr Glu Arg  Ile Ser Phe
    1175                1180                1185

Leu Gln  Glu Lys Leu Gln Glu  Ile Arg Lys Tyr Tyr  Met Ser Leu
    1190                1195                1200

Lys Ser  Glu Val Ala Thr Ile  Asp Arg Arg Arg Lys  Arg Leu Lys
    1205                1210                1215

Lys Lys  Asp Arg Glu Val Ser  His Ala Gly Ala Ser  Met Ser Ser
    1220                1225                1230

Ala Ser  Ser Asp Thr Gly Met  Ser Pro Ser Ser Ser  Ser Pro Pro
    1235                1240                1245

Gln Asn  Val Leu Ala Val Glu  Cys Arg
    1250                1255


<210> 6830
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Met Lys Ala Ala Asp Glu Pro Ala Tyr Leu Thr Val Gly Thr Asp Val
1   5   10   15

Ser Ala Lys Tyr Arg Gly Ala Phe Cys Glu Ala Lys Ile Lys Thr Val
            20   25   30

Lys Arg Leu Val Lys Val Lys Val Leu Leu Lys Gln Asp Asn Thr Thr
        35   40   45

Gln Leu Val Gln Asp Asp Gln Val Lys Gly Pro Leu Arg Val Gly Ala
    50   55   60

Ile Val Glu Thr Arg Thr Ser Asp Gly Ser Phe Gln Glu Ala Ile Ile
65   70   75   80

Ser Lys Leu Thr Asp Ala Ser Trp Tyr Thr Val Val Phe Asp Asp Gly
                85   90   95

Asp Glu Arg Thr Leu Arg Arg Thr Ser Leu Cys Leu Lys Gly Glu Arg
            100   105   110

His Phe Ala Glu Ser Glu Thr Leu Asp Gln Leu Pro Leu Thr Asn Pro
        115   120   125

Glu His Phe Gly Thr Pro Val Ile Ala Lys Lys Thr Asn Arg Gly Arg
    130   135   140

Arg Ser Ser Leu Pro Val Thr Glu Asp Glu Lys Glu Glu Glu Ser Ser
145   150   155   160

Glu Glu Glu Asp Glu Asp Lys Arg Arg Leu Asn Asp Glu Leu Leu Gly
                165   170   175

Lys Val Val Ser Val Val Ser Ala Thr Glu Arg Thr Glu Trp Tyr Pro
            180   185   190

Ala Leu Val Ile Ser Pro Ser Cys Asn Asp Asp Ile Thr Val Lys Lys

```
        195                 200                 205

Asp Gln Cys Leu Val Arg Ser Phe Ile Asp Ser Lys Phe Tyr Ser Ile
    210                 215                 220

Ala Arg Lys Asp Ile Lys Glu Val Asp Ile Leu Asn Leu Pro Glu Ser
225                 230                 235                 240

Glu Leu Ser Thr Lys Pro Gly Leu Gln Lys Ala Ser Ile Phe Leu Lys
                245                 250                 255

Thr Arg Val Val Pro Asp Asn Trp Lys Met Asp Ile Ser Glu Ile Leu
            260                 265                 270

Glu Ser Ser Ser Ser Asp Asp Glu Asp Gly Pro Ala Glu Glu Asn Asp
        275                 280                 285

Glu Glu Lys Glu Lys Glu Ala Lys Lys Thr Glu Glu Glu Val Pro Glu
    290                 295                 300

Glu Glu Leu Asp Pro Glu Glu Arg Asp Asn Phe Leu Gln Gln Leu Tyr
305                 310                 315                 320

Lys Phe Met Glu Asp Arg Gly Thr Pro Ile Asn Lys Pro Pro Val Leu
                325                 330                 335

Gly Tyr Lys Asp Leu Asn Leu Phe Lys Leu Phe Arg Leu Val Tyr His
            340                 345                 350

Gln Gly Gly Cys Asp Asn Ile Asp Ser Gly Ala Val Trp Lys Gln Ile
        355                 360                 365

Tyr Met Asp Leu Gly Ile Pro Ile Leu Asn Ser Ala Ala Ser Tyr Asn
    370                 375                 380

Val Lys Thr Ala Tyr Arg Lys Tyr Leu Tyr Gly Phe Glu Glu Tyr Cys
385                 390                 395                 400

Arg Ser Ala Asn Ile Gln Phe Arg Thr Val His His His Glu Pro Lys
                405                 410                 415

Val Lys Glu Glu Lys Lys Asp Leu Glu Glu Ser Met Glu Glu Ala Leu
            420                 425                 430
```

```
Lys Leu Asp Gln Glu Met Pro Leu Thr Glu Val Lys Ser Glu Pro Glu
        435                 440                 445

Glu Asn Ile Asp Ser Asn Ser Glu Ser Glu Arg Glu Glu Ile Glu Leu
    450                 455                 460

Lys Ser Pro Arg Gly Arg Arg Arg Ile Ala Arg Asp Val Asn Ser Ile
465                 470                 475                 480

Lys Lys Glu Ile Glu Glu Glu Lys Thr Glu Asp Lys Leu Lys Asp Asn
                485                 490                 495

Asp Thr Glu Asn Lys Asp Val Asp Asp Asp Tyr Glu Thr Ala Glu Lys
            500                 505                 510

Lys Glu Asn Glu Leu Leu Leu Gly Arg Lys Asn Thr Pro Lys Gln Lys
        515                 520                 525

Glu Lys Lys Ile Lys Lys Gln Glu Asp Ser Asp Lys Asp Ser Asp Glu
    530                 535                 540

Glu Glu Glu Lys Ser Gln Glu Arg Glu Glu Thr Glu Ser Lys Cys Asp
545                 550                 555                 560

Ser Glu Gly Glu Glu Asp Glu Glu Asp Met Glu Pro Cys Leu Thr Gly
                565                 570                 575

Thr Lys Val Lys Val Lys Tyr Gly Arg Gly Lys Thr Gln Lys Ile Tyr
            580                 585                 590

Glu Ala Ser Ile Lys Ser Thr Glu Ile Asp Asp Gly Glu Val Leu Tyr
        595                 600                 605

Leu Val His Tyr Tyr Gly Trp Asn Val Arg Tyr Asp Glu Trp Val Lys
    610                 615                 620

Ala Asp Arg Ile Ile Trp Pro Leu Asp Lys Gly Gly Pro Lys Lys Lys
625                 630                 635                 640

Gln Lys Lys Lys Ala Lys Asn Lys Glu Asp Ser Glu Lys Asp Glu Lys
                645                 650                 655
```

Arg Asp Glu Glu Arg Gln Lys Ser Lys Arg Gly Arg Pro Pro Leu Lys
660 665 670

Ser Thr Leu Ser Ser Asn Met Pro Tyr Gly Leu Ser Lys Thr Ala Asn
675 680 685

Ser Glu Gly Lys Ser Asp Ser Cys Ser Ser Asp Ser Glu Thr Glu Asp
690 695 700

Ala Leu Glu Lys Asn Leu Ile Asn Glu Glu Leu Ser Leu Lys Asp Glu
705 710 715 720

Leu Glu Lys Asn Glu Asn Leu Asn Asp Asp Lys Leu Asp Glu Glu Asn
725 730 735

Pro Lys Ile Ser Ala His Ile Leu Lys Glu Asn Asp Arg Thr Gln Met
740 745 750

Gln Pro Leu Glu Thr Leu Lys Leu Glu Val Gly Glu Asn Glu Gln Ile
755 760 765

Val Gln Ile Phe Gly Asn Lys Met Glu Lys Thr Glu Glu Val Lys Lys
770 775 780

Glu Ala Glu Lys Ser Pro Lys Gly Lys Gly Arg Arg Ser Lys Thr Lys
785 790 795 800

Asp Leu Ser Leu Glu Ile Ile Lys Ile Ser Ser Phe Gly Gln Asn Glu
805 810 815

Ala Gly Ser Glu Pro His Ile Glu Ala His Ser Leu Glu Leu Ser Ser
820 825 830

Leu Asp Asn Lys Asn Phe Ser Ser Ala Thr Glu Asp Glu Ile Asp Gln
835 840 845

Cys Val Lys Glu Lys Lys Leu Lys Arg Lys Ile Leu Gly Gln Ser Ser
850 855 860

Pro Glu Lys Lys Ile Arg Ile Glu Asn Gly Met Glu Met Thr Asn Thr
865 870 875 880

```
Val Ser Gln Glu Arg Thr Ser Asp Cys Ile Gly Ser Glu Gly Met Lys
                885                 890                 895

Asn Leu Asn Phe Glu Gln His Phe Glu Arg Glu Asn Glu Gly Met Pro
            900                 905                 910

Ser Leu Ile Ala Glu Ser Asn Gln Cys Ile Gln Gln Leu Thr Ser Glu
        915                 920                 925

Arg Phe Asp Ser Pro Ala Glu Glu Thr Val Asn Ile Pro Leu Lys Glu
    930                 935                 940

Asp Glu Asp Ala Met Pro Leu Ile Gly Pro Glu Thr Leu Val Cys His
945                 950                 955                 960

Glu Val Asp Leu Asp Asp Leu Asp Glu Lys Asp Lys Thr Ser Ile Glu
                965                 970                 975

Asp Val Ala Val Glu Ser Ser Glu Ser Asn Ser Leu Val Ser Ile Pro
            980                 985                 990

Pro Ala Leu Pro Pro Val Val Gln  His Asn Phe Ser Val  Ala Ser
Pro
        995                 1000                1005

Leu Thr  Leu Ser Gln Asp Glu  Ser Arg Ser Val Lys  Ser Glu Ser
    1010                1015                1020

Asp Ile  Thr Ile Glu Val Asp  Ser Ile Ala Glu Glu  Ser Gln Glu
    1025                1030                1035

Gly Leu  Cys Glu Arg Glu Ser  Ala Asn Gly Phe Glu  Thr Asn Val
    1040                1045                1050

Ala Ser  Gly Thr Cys Ser Ile  Ile Val Gln Glu Arg  Glu Ser Arg
    1055                1060                1065

Glu Lys  Gly Gln Lys Arg Pro  Ser Asp Gly Asn Ser  Gly Leu Met
    1070                1075                1080

Ala Lys  Lys Gln Lys Arg Thr  Pro Lys Arg Thr Ser  Ala Ala Ala
    1085                1090                1095
```

```
Lys Asn  Glu Lys Asn Gly Thr  Gly Gln Ser Ser Asp  Ser Glu Asp
    1100                1105                1110

Leu Pro  Val Leu Asp Asn Ser  Asn Glu Leu Asp Asn  Met Asn Ser
    1115                1120                1125

Thr Glu  Arg Ile Ser Phe Leu  Gln Glu Lys Leu Gln  Glu Ile Arg
    1130                1135                1140

Lys Tyr  Tyr Met Ser Leu Lys  Ser Glu Val Ala Thr  Ile Asp Arg
    1145                1150                1155

Arg Arg  Lys Arg Leu Lys Lys  Lys Asp Arg Glu Val  Ser His Ala
    1160                1165                1170

Gly Ala  Ser Met Ser Ser Ala  Ser Ser Asp Thr Gly  Met Ser Pro
    1175                1180                1185

Ser Ser  Ser Ser Pro Pro Gln  Asn Val Leu Ala Val  Glu Cys Arg
    1190                1195                1200


<210> 6831
<211> 265
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1467; "

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<221> source
<223> /note="Gene Symbol: ARID4A; "

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      AT rich interactive domain 4A (RBP
      1-like); "

<220>
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<223> /note="ENSP ID: ENSP00000392567"

<400> 6831
Met Lys Val Leu Leu Lys Gln Asp Asn Thr Thr Gln Leu Val Gln Asp
1               5                  10                  15


Asp Gln Val Lys Gly Pro Leu Arg Val Gly Ala Ile Val Glu Thr Arg
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```
            20                  25                  30

Thr Ser Asp Gly Ser Phe Gln Glu Ala Ile Ile Ser Lys Leu Thr Asp
        35                  40                  45

Ala Ser Trp Tyr Thr Val Val Phe Asp Asp Gly Asp Glu Arg Thr Leu
    50                  55                  60

Arg Arg Thr Ser Leu Cys Leu Lys Gly Glu Arg His Phe Ala Glu Ser
65                  70                  75                  80

Glu Thr Leu Asp Gln Leu Pro Leu Thr Asn Pro Glu His Phe Gly Thr
                85                  90                  95

Pro Val Ile Ala Lys Lys Thr Asn Arg Gly Arg Arg Ser Ser Leu Pro
            100                 105                 110

Val Thr Glu Asp Glu Lys Glu Glu Glu Ser Ser Glu Glu Glu Asp Glu
        115                 120                 125

Asp Lys Arg Arg Leu Asn Asp Glu Leu Leu Gly Lys Val Val Ser Val
    130                 135                 140

Val Ser Ala Thr Glu Arg Thr Glu Trp Tyr Pro Ala Leu Val Ile Ser
145                 150                 155                 160

Pro Ser Cys Asn Asp Asp Ile Thr Val Lys Lys Asp Gln Cys Leu Val
                165                 170                 175

Arg Ser Phe Ile Asp Ser Lys Phe Tyr Ser Ile Ala Arg Lys Asp Ile
            180                 185                 190

Lys Glu Val Asp Ile Leu Asn Leu Pro Glu Ser Glu Leu Ser Thr Lys
        195                 200                 205

Pro Gly Leu Gln Lys Ala Ser Ile Phe Leu Lys Thr Arg Val Val Pro
    210                 215                 220

Asp Asn Trp Lys Met Asp Ile Ser Glu Ile Leu Glu Ser Ser Ser Ser
225                 230                 235                 240

Asp Asp Glu Asp Gly Pro Ala Glu Glu Asn Asp Glu Glu Lys Glu Lys
                245                 250                 255
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Glu Ala Lys Lys Thr Glu Glu Glu Val
260 265

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AT rich interactive domain 4A (RBP
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Met Lys Ala Ala Asp Glu Pro Ala Tyr Leu Thr Val Gly Thr Asp Val
1 5 10 15

Ser Ala Lys Tyr Arg Gly Ala Phe Cys Glu Ala Lys Ile Lys Thr Val
20 25 30

Lys Arg Leu Val Lys Val Lys Val Leu Leu Lys Gln Asp Asn Thr Thr
35 40 45

Gln Leu Val Gln Asp Asp Gln Val Lys Gly Pro Leu Arg Val Gly Ala
50 55 60

Ile Val Glu Thr Arg Thr Ser Asp Gly Ser Phe Gln Glu Ala Ile Ile
65 70 75 80

Ser Lys Leu Thr Asp Ala Ser Trp Tyr Thr Val Val Phe Asp Asp Gly
85 90 95

```
Asp Glu Arg Thr Leu Arg Arg Thr Ser Leu Cys Leu Lys Gly Glu Arg
            100                 105                 110

His Phe Ala Glu Ser Glu Thr Leu Asp Gln Leu Pro Leu Thr Asn Pro
        115                 120                 125

Glu His Phe Gly Thr Pro Val Ile Ala Lys Lys Thr Asn Arg Gly Arg
    130                 135                 140

Arg Ser Ser Leu Pro Val Thr Glu Asp Glu Lys Glu Glu Glu Ser Ser
145                 150                 155                 160

Glu Glu Glu Asp Glu Asp Lys Arg Arg Leu Asn Asp Glu Leu Leu Gly
                165                 170                 175

Lys Val Val Ser Val Val Ser Ala Thr Glu Arg Thr Glu Trp Tyr Pro
            180                 185                 190

Ala Leu Val Ile Ser Pro Ser Cys Asn Asp Asp Ile Thr Val Lys Lys
        195                 200                 205

Asp Gln Cys Leu Val Arg Ser Phe Ile Asp Ser Lys Phe Tyr Ser Ile
    210                 215                 220

Ala Arg Lys Asp Ile Lys Glu Val Asp Ile Leu Asn Leu Pro Glu Ser
225                 230                 235                 240

Glu Leu Ser Thr Lys Pro Gly Leu Gln Lys Ala Ser Ile Phe Leu Lys
                245                 250                 255

Thr Arg Val Val Pro Asp Asn Trp Lys Met Asp Ile Ser Glu Ile Leu
            260                 265                 270

Glu Ser Ser Ser Ser Asp Asp Glu Asp Gly Pro Ala Glu Glu Asn Asp
        275                 280                 285

Glu Glu Lys Glu Lys Glu Ala Lys Lys Thr Glu Glu Glu Val Pro Glu
    290                 295                 300

Glu Glu Leu Asp Pro Glu Glu Arg Asp Asn Phe Leu Gln Gln Leu Tyr
305                 310                 315                 320
```

```
Lys Phe Met Glu Asp Arg Gly Thr Pro Ile Asn Lys Pro Pro Val Leu
                325                 330                 335

Gly Tyr Lys Asp Leu Asn Leu Phe Lys Leu Phe Arg Leu Val Tyr His
            340                 345                 350

Gln Gly Gly Cys Asp Asn Ile Asp Ser Gly Ala Val Trp Lys Gln Ile
        355                 360                 365

Tyr Met Asp Leu Gly Ile Pro Ile Leu Asn Ser Ala Ala Ser Tyr Asn
    370                 375                 380

Val Lys Thr Ala Tyr Arg Lys Tyr Leu Tyr Gly Phe Glu Glu Tyr Cys
385                 390                 395                 400

Arg Ser Ala Asn Ile Gln Phe Arg Thr Val His His His Glu Pro Lys
                405                 410                 415

Val Lys Glu Glu Lys Lys Asp Leu Glu Glu Ser Met Glu Glu Ala Leu
            420                 425                 430

Lys Leu Asp Gln Glu Met Pro Leu Thr Glu Val Lys Ser Glu Pro Glu
        435                 440                 445

Glu Asn Ile Asp Ser Asn Ser Glu Ser Glu Arg Glu Glu Ile Glu Leu
    450                 455                 460

Lys Ser Pro Arg Gly Arg Arg Arg Ile Ala Arg Asp Val Asn Ser Ile
465                 470                 475                 480

Lys Lys Glu Ile Glu Glu Glu Lys Thr Glu Asp Lys Leu Lys Asp Asn
                485                 490                 495

Asp Thr Glu Asn Lys Asp Val Asp Asp Asp Tyr Glu Thr Ala Glu Lys
            500                 505                 510

Lys Glu Asn Glu Leu Leu Leu Gly Arg Lys Asn Thr Pro Lys Gln Lys
        515                 520                 525

Glu Lys Lys Ile Lys Lys Gln Glu Asp Ser Asp Lys Asp Ser Asp Glu
    530                 535                 540

Glu Glu Glu Lys Ser Gln Glu Arg Glu Glu Thr Glu Ser Lys Cys Asp
```

545 550 555 560

Ser Glu Gly Glu Glu Asp Glu Glu Asp Met Glu Pro Cys Leu Thr Gly
565 570 575

Thr Lys Val Lys Val Lys Tyr Gly Arg Gly Lys Thr Gln Lys Ile Tyr
580 585 590

Glu Ala Ser Ile Lys Ser Thr Glu Ile Asp Asp Gly Glu Val Leu Tyr
595 600 605

Leu Val His Tyr Tyr Gly Trp Asn Val Arg Tyr Asp Glu Trp Val Lys
610 615 620

Ala Asp Arg Ile Ile Trp Pro Leu Asp Lys Gly Gly Pro Lys Lys Lys
625 630 635 640

Gln Lys Lys Lys Ala Lys Asn Lys Glu Asp Ser Glu Lys Asp Glu Lys
645 650 655

Arg Asp Glu Glu Arg Gln Lys Ser Lys Arg Gly Arg Pro Pro Leu Lys
660 665 670

Ser Thr Leu Ser Ser Asn Met Pro Tyr Gly Leu Ser Lys Thr Ala Asn
675 680 685

Ser Glu Gly Lys Ser Asp Ser Cys Ser Ser Asp Ser Glu Thr Glu Asp
690 695 700

Ala Leu Glu Lys Asn Leu Ile Asn Glu Glu Leu Ser Leu Lys Asp Glu
705 710 715 720

Leu Glu Lys Asn Glu Asn Leu Asn Asp Asp Lys Leu Asp Glu Glu Asn
725 730 735

Pro Lys Ile Ser Ala His Ile Leu Lys Glu Asn Asp Arg Thr Gln Met
740 745 750

Gln Pro Leu Glu Thr Leu Lys Leu Glu Val Gly Glu Asn Glu Gln Ile
755 760 765

Val Gln Ile Phe Gly Asn Lys Met Glu Lys Thr Glu Glu Val Lys Lys
770 775 780

```
Glu Ala Glu Lys Ser Pro Lys Gly Lys Gly Arg Arg Ser Lys Thr Lys
785                 790                 795                 800

Asp Leu Ser Leu Glu Ile Ile Lys Ile Ser Ser Phe Gly Gln Asn Glu
                805                 810                 815

Ala Gly Ser Glu Pro His Ile Glu Ala His Ser Leu Glu Leu Ser Ser
            820                 825                 830

Leu Asp Asn Lys Asn Phe Ser Ser Ala Thr Glu Asp Glu Ile Asp Gln
        835                 840                 845

Cys Val Lys Glu Lys Lys Leu Lys Arg Lys Ile Leu Gly Gln Ser Ser
    850                 855                 860

Pro Glu Lys Lys Ile Arg Ile Glu Asn Gly Met Glu Met Thr Asn Thr
865                 870                 875                 880

Val Ser Gln Glu Arg Thr Ser Asp Cys Ile Gly Ser Glu Gly Met Lys
                885                 890                 895

Asn Leu Asn Phe Glu Gln His Phe Glu Arg Glu Asn Glu Gly Met Pro
            900                 905                 910

Ser Leu Ile Ala Glu Ser Asn Gln Cys Ile Gln Gln Leu Thr Ser Glu
        915                 920                 925

Arg Phe Asp Ser Pro Ala Glu Glu Thr Val Asn Ile Pro Leu Lys Glu
    930                 935                 940

Asp Glu Asp Ala Met Pro Leu Ile Gly Pro Glu Thr Leu Val Cys His
945                 950                 955                 960

Glu Val Asp Leu Asp Asp Leu Asp Glu Lys Asp Lys Thr Ser Ile Glu
                965                 970                 975

Asp Val Ala Val Glu Ser Ser Glu Ser Asn Ser Leu Val Ser Ile Pro
            980                 985                 990

Pro Ala Leu Pro Pro Val Val Gln  His Asn Phe Ser Val  Ala Ser
Pro
        995                 1000                1005
```

```
Leu Thr  Leu Ser Gln Asp Glu  Ser Arg Ser Val Lys  Ser Glu Ser
    1010                1015                1020

Asp Ile  Thr Ile Glu Val Asp  Ser Ile Ala Glu Glu  Ser Gln Glu
    1025                1030                1035

Gly Leu  Cys Glu Arg Glu Ser  Ala Asn Gly Phe Glu  Thr Asn Val
    1040                1045                1050

Ala Ser  Gly Thr Cys Ser Ile  Ile Val Gln Glu Arg  Glu Ser Arg
    1055                1060                1065

Glu Lys  Gly Gln Lys Arg Pro  Ser Asp Gly Asn Ser  Gly Leu Met
    1070                1075                1080

Ala Lys  Lys Gln Lys Arg Thr  Pro Lys Arg Thr Ser  Ala Ala Ala
    1085                1090                1095

Lys Asn  Glu Lys Asn Gly Thr  Asp Glu Leu Asp Asn  Met Asn Ser
    1100                1105                1110

Thr Glu  Arg Ile Ser Phe Leu  Gln Glu Lys Leu Gln  Glu Ile Arg
    1115                1120                1125

Lys Tyr  Tyr Met Ser Leu Lys  Ser Glu Val Ala Thr  Ile Asp Arg
    1130                1135                1140

Arg Arg  Lys Arg Leu Lys Lys  Lys Asp Arg Glu Val  Ser His Ala
    1145                1150                1155

Gly Ala  Ser Met Ser Ser Ala  Ser Ser Asp Thr Gly  Met Ser Pro
    1160                1165                1170

Ser Ser  Ser Ser Pro Pro Gln  Asn Val Leu Ala Val  Glu Cys Arg
    1175                1180                1185
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<220>
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<223> /note="ENSP ID: ENSP00000410417"

<400> 6833
Met Lys Ala Ala Asp Glu Pro Ala Tyr Leu Thr Val Gly Thr Asp Val
1 5 10 15

Ser Ala Lys Tyr Arg Gly Ala Phe Cys Glu Ala Lys Ile Lys Thr Val
20 25 30

Lys Arg Leu Val Lys Val Lys Asn
35 40

<210> 6834
<211> 54
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1467; "

<220>
<221> source
<223> /note="Gene Symbol: ARID4A; "

<220>
<221> source
<223> /note="Gene Name:
AT rich interactive domain 4A (RBP
1-like); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000415872"

<400> 6834
Met Lys Ala Ala Asp Glu Pro Ala Tyr Leu Thr Val Gly Thr Asp Val
1 5 10 15

```
Ser Ala Lys Tyr Arg Gly Ala Phe Cys Glu Ala Lys Ile Lys Thr Val
            20                  25                  30

Lys Arg Leu Val Lys Val Lys Val Leu Leu Lys Gln Asp Asn Thr Thr
        35                  40                  45

Gln Leu Val Gln Asp Asp
    50
```

<210> 6835
<211> 748
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1467; "

<220>
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<220>
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AT rich interactive domain 4A (RBP
1-like); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000416053"

<400> 6835

```
Met Glu Asp Arg Gly Thr Pro Ile Asn Lys Pro Pro Val Leu Gly Tyr
1               5                   10                  15

Lys Asp Leu Asn Leu Phe Lys Leu Phe Arg Leu Val Tyr His Gln Gly
            20                  25                  30

Gly Cys Asp Asn Ile Asp Ser Gly Ala Val Trp Lys Gln Ile Tyr Met
        35                  40                  45

Asp Leu Gly Ile Pro Ile Leu Asn Ser Ala Ala Ser Tyr Asn Val Lys
    50                  55                  60

Thr Ala Tyr Arg Lys Tyr Leu Tyr Gly Phe Glu Glu Tyr Cys Arg Ser
65                  70                  75                  80

Ala Asn Ile Gln Phe Arg Thr Val His His His Glu Pro Lys Val Lys
```

```
                85                  90                  95

Glu Glu Lys Lys Asp Leu Glu Glu Ser Met Glu Glu Ala Leu Lys Leu
            100                 105                 110

Asp Gln Glu Met Pro Leu Thr Glu Val Lys Ser Glu Pro Glu Glu Asn
        115                 120                 125

Ile Asp Ser Asn Ser Glu Ser Glu Arg Glu Glu Ile Glu Leu Lys Ser
    130                 135                 140

Pro Arg Gly Arg Arg Arg Ile Ala Arg Asp Val Asn Ser Ile Lys Lys
145                 150                 155                 160

Glu Ile Glu Glu Glu Lys Thr Glu Asp Lys Leu Lys Asp Asn Asp Thr
                165                 170                 175

Glu Asn Lys Asp Val Asp Asp Asp Tyr Glu Thr Ala Glu Lys Lys Glu
            180                 185                 190

Asn Glu Leu Leu Leu Gly Arg Lys Asn Thr Pro Lys Gln Lys Glu Lys
        195                 200                 205

Lys Ile Lys Lys Gln Glu Asp Ser Asp Lys Asp Ser Asp Glu Glu Glu
    210                 215                 220

Glu Lys Ser Gln Glu Arg Glu Glu Thr Glu Ser Lys Cys Asp Ser Glu
225                 230                 235                 240

Gly Glu Glu Asp Glu Glu Asp Met Glu Pro Cys Leu Thr Gly Thr Lys
                245                 250                 255

Val Lys Val Lys Tyr Gly Arg Gly Lys Thr Gln Lys Ile Tyr Glu Ala
            260                 265                 270

Ser Ile Lys Ser Thr Glu Ile Asp Asp Gly Glu Val Leu Tyr Leu Val
        275                 280                 285

His Tyr Tyr Gly Trp Asn Val Arg Tyr Asp Glu Trp Val Lys Ala Asp
    290                 295                 300

Arg Ile Ile Trp Pro Leu Asp Lys Gly Gly Pro Lys Lys Lys Gln Lys
305                 310                 315                 320
```

Lys Lys Ala Lys Asn Lys Glu Asp Ser Glu Lys Asp Glu Lys Arg Asp
325 330 335

Glu Glu Arg Gln Lys Ser Lys Arg Gly Arg Pro Pro Leu Lys Ser Thr
340 345 350

Leu Ser Ser Asn Met Pro Tyr Gly Leu Ser Lys Thr Ala Asn Ser Glu
355 360 365

Gly Lys Ser Asp Ser Cys Ser Ser Asp Ser Glu Thr Glu Asp Ala Leu
370 375 380

Glu Lys Asn Leu Ile Asn Glu Glu Leu Ser Leu Lys Asp Glu Leu Glu
385 390 395 400

Lys Asn Glu Asn Leu Asn Asp Asp Lys Leu Asp Glu Glu Asn Pro Lys
405 410 415

Ile Ser Ala His Ile Leu Lys Glu Asn Asp Arg Thr Gln Met Gln Pro
420 425 430

Leu Glu Thr Leu Lys Leu Glu Val Gly Glu Asn Glu Gln Ile Val Gln
435 440 445

Ile Phe Gly Asn Lys Met Glu Lys Thr Glu Glu Val Lys Lys Glu Ala
450 455 460

Glu Lys Ser Pro Lys Gly Lys Gly Arg Arg Ser Lys Thr Lys Asp Leu
465 470 475 480

Ser Leu Glu Ile Ile Lys Ile Ser Ser Phe Gly Gln Asn Glu Ala Gly
485 490 495

Ser Glu Pro His Ile Glu Ala His Ser Leu Glu Leu Ser Ser Leu Asp
500 505 510

Asn Lys Asn Phe Ser Ser Ala Thr Glu Asp Glu Ile Asp Gln Cys Val
515 520 525

Lys Glu Lys Lys Leu Lys Arg Lys Ile Leu Gly Gln Ser Ser Pro Glu
530 535 540

```
Lys Lys Ile Arg Ile Glu Asn Gly Met Glu Met Thr Asn Thr Val Ser
545                 550                 555                 560

Gln Glu Arg Thr Ser Asp Cys Ile Gly Ser Glu Gly Met Lys Asn Leu
                565                 570                 575

Asn Phe Glu Gln His Phe Glu Arg Glu Asn Glu Gly Met Pro Ser Leu
            580                 585                 590

Ile Ala Glu Ser Asn Gln Cys Ile Gln Gln Leu Thr Ser Glu Arg Phe
        595                 600                 605

Asp Ser Pro Ala Glu Glu Thr Val Asn Ile Pro Leu Lys Glu Asp Glu
    610                 615                 620

Asp Ala Met Pro Leu Ile Gly Pro Glu Thr Leu Val Cys His Glu Val
625                 630                 635                 640

Asp Leu Asp Asp Leu Asp Glu Lys Asp Lys Thr Ser Ile Glu Asp Val
                645                 650                 655

Ala Val Glu Ser Ser Glu Ser Asn Ser Leu Val Ser Ile Pro Pro Ala
            660                 665                 670

Leu Pro Pro Val Val Gln His Asn Phe Ser Val Ala Ser Pro Leu Thr
        675                 680                 685

Leu Ser Gln Asp Glu Ser Arg Ser Val Lys Ser Glu Ser Asp Ile Thr
    690                 695                 700

Ile Glu Val Asp Ser Ile Ala Glu Glu Ser Gln Glu Gly Leu Cys Glu
705                 710                 715                 720

Arg Glu Ser Ala Asn Gly Phe Glu Thr Asn Val Ala Ser Gly Thr Cys
                725                 730                 735

Ser Ile Ile Val Gln Glu Arg Glu Ser Arg Glu Lys
            740                 745
```

<210> 6836
<211> 1312
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1468; "

<220>
<221> source
<223> /note="Gene Symbol: ARID4B; "

<220>
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<223> /note="Gene Name:
AT rich interactive domain 4B (RBP
1-like); "

<220>
<221> source
<223> /note="Uniprot ID: Q4LE39; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000264183"

<400> 6836
Met Lys Ala Leu Asp Glu Pro Pro Tyr Leu Thr Val Gly Thr Asp Val
1   5   10   15

Ser Ala Lys Tyr Arg Gly Ala Phe Cys Glu Ala Lys Ile Lys Thr Ala
            20   25   30

Lys Arg Leu Val Lys Val Lys Val Thr Phe Arg His Asp Ser Ser Thr
        35   40   45

Val Glu Val Gln Asp Asp His Ile Lys Gly Pro Leu Lys Val Gly Ala
    50   55   60

Ile Val Glu Val Lys Asn Leu Asp Gly Ala Tyr Gln Glu Ala Val Ile
65   70   75   80

Asn Lys Leu Thr Asp Ala Ser Trp Tyr Thr Val Val Phe Asp Asp Gly
                85   90   95

Asp Glu Lys Thr Leu Arg Arg Ser Ser Leu Cys Leu Lys Gly Glu Arg
            100   105   110

His Phe Ala Glu Ser Glu Thr Leu Asp Gln Leu Pro Leu Thr Asn Pro
        115   120   125

Glu His Phe Gly Thr Pro Val Ile Gly Lys Lys Thr Asn Arg Gly Arg

```
    130                 135                 140

Arg Ser Asn His Ile Pro Glu Glu Glu Ser Ser Ser Ser Ser Ser Asp
145                 150                 155                 160

Glu Asp Glu Asp Asp Arg Lys Gln Ile Asp Glu Leu Leu Gly Lys Val
                165                 170                 175

Val Cys Val Asp Tyr Ile Ser Leu Asp Lys Lys Lys Ala Leu Trp Phe
            180                 185                 190

Pro Ala Leu Val Val Cys Pro Asp Cys Ser Asp Glu Ile Ala Val Lys
        195                 200                 205

Lys Asp Asn Ile Leu Val Arg Ser Phe Lys Asp Gly Lys Phe Thr Ser
    210                 215                 220

Val Pro Arg Lys Asp Val His Glu Ile Thr Ser Asp Thr Ala Pro Lys
225                 230                 235                 240

Pro Asp Ala Val Leu Lys Gln Ala Phe Glu Gln Ala Leu Glu Phe His
                245                 250                 255

Lys Ser Arg Thr Ile Pro Ala Asn Trp Lys Thr Glu Leu Lys Glu Asp
            260                 265                 270

Ser Ser Ser Ser Glu Ala Glu Glu Glu Glu Glu Glu Glu Asp Asp Glu
        275                 280                 285

Lys Glu Lys Glu Asp Asn Ser Ser Glu Glu Glu Glu Glu Ile Glu Pro
    290                 295                 300

Phe Pro Glu Glu Arg Glu Asn Phe Leu Gln Gln Leu Tyr Lys Phe Met
305                 310                 315                 320

Glu Asp Arg Gly Thr Pro Ile Asn Lys Arg Pro Val Leu Gly Tyr Arg
                325                 330                 335

Asn Leu Asn Leu Phe Lys Leu Phe Arg Leu Val His Lys Leu Gly Gly
            340                 345                 350

Phe Asp Asn Ile Glu Ser Gly Ala Val Trp Lys Gln Val Tyr Gln Asp
        355                 360                 365
```

```
Leu Gly Ile Pro Val Leu Asn Ser Ala Ala Gly Tyr Asn Val Lys Cys
    370                 375                 380

Ala Tyr Lys Lys Tyr Leu Tyr Gly Phe Glu Glu Tyr Cys Arg Ser Ala
385                 390                 395                 400

Asn Ile Glu Phe Gln Met Ala Leu Pro Glu Lys Val Val Asn Lys Gln
                405                 410                 415

Cys Lys Glu Cys Glu Asn Val Lys Glu Ile Lys Val Lys Glu Glu Asn
            420                 425                 430

Glu Thr Glu Ile Lys Glu Ile Lys Met Glu Glu Glu Arg Asn Ile Ile
        435                 440                 445

Pro Arg Glu Glu Lys Pro Ile Glu Asp Glu Ile Glu Arg Lys Glu Asn
    450                 455                 460

Ile Lys Pro Ser Leu Gly Ser Lys Lys Asn Leu Leu Glu Ser Ile Pro
465                 470                 475                 480

Thr His Ser Asp Gln Glu Lys Glu Val Asn Ile Lys Lys Pro Glu Asp
                485                 490                 495

Asn Glu Asn Leu Asp Asp Lys Asp Asp Asp Thr Thr Arg Val Asp Glu
            500                 505                 510

Ser Leu Asn Ile Lys Val Glu Ala Glu Glu Glu Lys Ala Lys Ser Gly
        515                 520                 525

Asp Glu Thr Asn Lys Glu Glu Asp Glu Asp Asp Glu Glu Ala Glu Glu
    530                 535                 540

Glu Glu Glu Glu Glu Glu Glu Glu Glu Asp Glu Asp Asp Asp Asp Asn
545                 550                 555                 560

Asn Glu Glu Glu Glu Phe Glu Cys Tyr Pro Pro Gly Met Lys Val Gln
                565                 570                 575

Val Arg Tyr Gly Arg Gly Lys Asn Gln Lys Met Tyr Glu Ala Ser Ile
            580                 585                 590
```

```
Lys Asp Ser Asp Val Glu Gly Gly Glu Val Leu Tyr Leu Val His Tyr
        595                 600                 605

Cys Gly Trp Asn Val Arg Tyr Asp Glu Trp Ile Lys Ala Asp Lys Ile
    610                 615                 620

Val Arg Pro Ala Asp Lys Asn Val Pro Lys Ile Lys His Arg Lys Lys
625                 630                 635                 640

Ile Lys Asn Lys Leu Asp Lys Glu Lys Asp Lys Asp Glu Lys Tyr Ser
                645                 650                 655

Pro Lys Asn Cys Lys Leu Arg Arg Leu Ser Lys Pro Pro Phe Gln Thr
            660                 665                 670

Asn Pro Ser Pro Glu Met Val Ser Lys Leu Asp Leu Thr Asp Ala Lys
        675                 680                 685

Asn Ser Asp Thr Ala His Ile Lys Ser Ile Glu Ile Thr Ser Ile Leu
    690                 695                 700

Asn Gly Leu Gln Ala Ser Glu Ser Ser Ala Glu Asp Ser Glu Gln Glu
705                 710                 715                 720

Asp Glu Arg Gly Ala Gln Asp Met Asp Asn Asn Gly Lys Glu Glu Ser
                725                 730                 735

Lys Ile Asp His Leu Thr Asn Asn Arg Asn Asp Leu Ile Ser Lys Glu
            740                 745                 750

Glu Gln Asn Ser Ser Ser Leu Leu Glu Glu Asn Lys Val His Ala Asp
        755                 760                 765

Leu Val Ile Ser Lys Pro Val Ser Lys Ser Pro Glu Arg Leu Arg Lys
    770                 775                 780

Asp Ile Glu Val Leu Ser Glu Asp Thr Asp Tyr Glu Glu Asp Glu Val
785                 790                 795                 800

Thr Lys Lys Arg Lys Asp Val Lys Lys Asp Thr Thr Asp Lys Ser Ser
                805                 810                 815
```

```
Lys Pro Gln Ile Lys Arg Gly Lys Arg Arg Tyr Cys Asn Thr Glu Glu
            820                 825                 830

Cys Leu Lys Thr Gly Ser Pro Gly Lys Lys Glu Glu Lys Ala Lys Asn
        835                 840                 845

Lys Glu Ser Leu Cys Met Glu Asn Ser Ser Asn Ser Ser Ser Asp Glu
    850                 855                 860

Asp Glu Glu Glu Thr Lys Ala Lys Met Thr Pro Thr Lys Lys Tyr Asn
865                 870                 875                 880

Gly Leu Glu Glu Lys Arg Lys Ser Leu Arg Thr Thr Gly Phe Tyr Ser
                885                 890                 895

Gly Phe Ser Glu Val Ala Glu Lys Arg Ile Lys Leu Leu Asn Asn Ser
            900                 905                 910

Asp Glu Arg Leu Gln Asn Ser Arg Ala Lys Asp Arg Lys Asp Val Trp
        915                 920                 925

Ser Ser Ile Gln Gly Gln Trp Pro Lys Lys Thr Leu Lys Glu Leu Phe
    930                 935                 940

Ser Asp Ser Asp Thr Glu Ala Ala Ala Ser Pro Pro His Pro Ala Pro
945                 950                 955                 960

Glu Glu Gly Val Ala Glu Glu Ser Leu Gln Thr Val Ala Glu Glu Glu
                965                 970                 975

Ser Cys Ser Pro Ser Val Glu Leu Glu Lys Pro Pro Pro Val Asn Val
            980                 985                 990

Asp Ser Lys Pro Ile Glu Glu Lys  Thr Val Glu Val Asn  Asp Arg
Lys
        995                 1000                1005

Ala Glu  Phe Pro Ser Ser Gly  Ser Asn Ser Val Leu  Asn Thr Pro
    1010                1015                1020

Pro Thr  Thr Pro Glu Ser Pro  Ser Ser Val Thr Val  Thr Glu Gly
    1025                1030                1035
```

```
Ser Arg  Gln Gln Ser Ser Val  Thr Val Ser Glu Pro  Leu Ala Pro
    1040                1045                1050

Asn Gln  Glu Glu Val Arg Ser  Ile Lys Ser Glu Thr  Asp Ser Thr
    1055                1060                1065

Ile Glu  Val Asp Ser Val Ala  Gly Glu Leu Gln Asp  Leu Gln Ser
    1070                1075                1080

Glu Gly  Asn Ser Ser Pro Ala  Gly Phe Asp Ala Ser  Val Ser Ser
    1085                1090                1095

Ser Ser  Ser Asn Gln Pro Glu  Pro Glu His Pro Glu  Lys Ala Cys
    1100                1105                1110

Thr Gly  Gln Lys Arg Val Lys  Asp Ala Gln Gly Gly  Gly Ser Ser
    1115                1120                1125

Ser Lys  Lys Gln Lys Arg Ser  His Lys Ala Thr Val  Val Asn Asn
    1130                1135                1140

Lys Lys  Lys Gly Lys Gly Thr  Asn Ser Ser Asp Ser  Glu Glu Leu
    1145                1150                1155

Ser Ala  Gly Glu Ser Ile Thr  Lys Ser Gln Pro Val  Lys Ser Val
    1160                1165                1170

Ser Thr  Gly Met Lys Ser His  Ser Thr Lys Ser Pro  Ala Arg Thr
    1175                1180                1185

Gln Ser  Pro Gly Lys Cys Gly  Lys Asn Gly Asp Lys  Asp Pro Asp
    1190                1195                1200

Leu Lys  Glu Pro Ser Asn Arg  Leu Pro Lys Val Tyr  Lys Trp Ser
    1205                1210                1215

Phe Gln  Met Ser Asp Leu Glu  Asn Met Thr Ser Ala  Glu Arg Ile
    1220                1225                1230

Thr Ile  Leu Gln Glu Lys Leu  Gln Glu Ile Arg Lys  His Tyr Leu
    1235                1240                1245

Ser Leu  Lys Ser Glu Val Ala  Ser Ile Asp Arg Arg  Arg Lys Arg
```

```
    1250                1255                1260

Leu Lys  Lys Lys Glu Arg Glu  Ser Ala Ala Thr Ser  Ser Ser Ser
    1265                1270                1275

Ser Ser  Pro Ser Ser Ser Ser  Ile Thr Ala Ala Val  Met Leu Thr
    1280                1285                1290

Leu Ala  Glu Pro Ser Met Ser  Ser Ala Ser Gln Asn  Gly Met Ser
    1295                1300                1305

Val Glu  Cys Arg
    1310


<210> 6837
<211> 1226
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1468; "

<220>
<221> source
<223> /note="Gene Symbol: ARID4B; "

<220>
<221> source
<223> /note="Gene Name:
      AT rich interactive domain 4B (RBP
      1-like); "

<220>
<221> source
<223> /note="Uniprot ID:  Q4LE39; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000264184"

<400> 6837
Met Lys Ala Leu Asp Glu Pro Pro Tyr Leu Thr Val Gly Thr Asp Val
1               5                  10                  15

Ser Ala Lys Tyr Arg Gly Ala Phe Cys Glu Ala Lys Ile Lys Thr Ala
            20                  25                  30

Lys Arg Leu Val Lys Val Lys Val Thr Phe Arg His Asp Ser Ser Thr
        35                  40                  45
```

```
Val Glu Val Gln Asp Asp His Ile Lys Gly Pro Leu Lys Val Gly Ala
    50                  55                  60

Ile Val Glu Val Lys Asn Leu Asp Gly Ala Tyr Gln Glu Ala Val Ile
65                  70                  75                  80

Asn Lys Leu Thr Asp Ala Ser Trp Tyr Thr Val Val Phe Asp Asp Gly
                85                  90                  95

Asp Glu Lys Thr Leu Arg Arg Ser Ser Leu Cys Leu Lys Gly Glu Arg
            100                 105                 110

His Phe Ala Glu Ser Glu Thr Leu Asp Gln Leu Pro Leu Thr Asn Pro
        115                 120                 125

Glu His Phe Gly Thr Pro Val Ile Gly Lys Lys Thr Asn Arg Gly Arg
    130                 135                 140

Arg Ser Asn His Ile Pro Glu Glu Glu Ser Ser Ser Ser Ser Ser Asp
145                 150                 155                 160

Glu Asp Glu Asp Asp Arg Lys Gln Ile Asp Glu Leu Leu Gly Lys Val
                165                 170                 175

Val Cys Val Asp Tyr Ile Ser Leu Asp Lys Lys Lys Ala Leu Trp Phe
            180                 185                 190

Pro Ala Leu Val Val Cys Pro Asp Cys Ser Asp Glu Ile Ala Val Lys
        195                 200                 205

Lys Asp Asn Ile Leu Val Arg Ser Phe Lys Asp Gly Lys Phe Thr Ser
    210                 215                 220

Val Pro Arg Lys Asp Val His Glu Ile Thr Ser Asp Thr Ala Pro Lys
225                 230                 235                 240

Pro Asp Ala Val Leu Lys Gln Ala Phe Glu Gln Ala Leu Glu Phe His
                245                 250                 255

Lys Ser Arg Thr Ile Pro Ala Asn Trp Lys Thr Glu Leu Lys Glu Asp
            260                 265                 270
```

```
Ser Ser Ser Ser Glu Ala Glu Glu Glu Glu Glu Glu Glu Asp Asp Glu
        275                 280                 285

Lys Glu Lys Glu Asp Asn Ser Ser Glu Glu Glu Glu Glu Ile Glu Pro
    290                 295                 300

Phe Pro Glu Glu Arg Glu Asn Phe Leu Gln Gln Leu Tyr Lys Phe Met
305                 310                 315                 320

Glu Asp Arg Gly Thr Pro Ile Asn Lys Arg Pro Val Leu Gly Tyr Arg
                325                 330                 335

Asn Leu Asn Leu Phe Lys Leu Phe Arg Leu Val His Lys Leu Gly Gly
            340                 345                 350

Phe Asp Asn Ile Glu Ser Gly Ala Val Trp Lys Gln Val Tyr Gln Asp
        355                 360                 365

Leu Gly Ile Pro Val Leu Asn Ser Ala Ala Gly Tyr Asn Val Lys Cys
    370                 375                 380

Ala Tyr Lys Lys Tyr Leu Tyr Gly Phe Glu Glu Tyr Cys Arg Ser Ala
385                 390                 395                 400

Asn Ile Glu Phe Gln Met Ala Leu Pro Glu Lys Val Val Asn Lys Gln
                405                 410                 415

Cys Lys Glu Cys Glu Asn Val Lys Glu Ile Lys Val Lys Glu Glu Asn
            420                 425                 430

Glu Thr Glu Ile Lys Glu Ile Lys Met Glu Glu Glu Arg Asn Ile Ile
        435                 440                 445

Pro Arg Glu Glu Lys Pro Ile Glu Asp Glu Ile Glu Arg Lys Glu Asn
    450                 455                 460

Ile Lys Pro Ser Leu Gly Ser Lys Lys Asn Leu Leu Glu Ser Ile Pro
465                 470                 475                 480

Thr His Ser Asp Gln Glu Lys Glu Val Asn Ile Lys Lys Pro Glu Asp
                485                 490                 495
```

```
Asn Glu Asn Leu Asp Asp Lys Asp Asp Asp Thr Thr Arg Val Asp Glu
            500                 505                 510

Ser Leu Asn Ile Lys Val Glu Ala Glu Glu Glu Lys Ala Lys Ser Gly
        515                 520                 525

Tyr Asp Glu Trp Ile Lys Ala Asp Lys Ile Val Arg Pro Ala Asp Lys
    530                 535                 540

Asn Val Pro Lys Ile Lys His Arg Lys Lys Ile Lys Asn Lys Leu Asp
545                 550                 555                 560

Lys Glu Lys Asp Lys Asp Glu Lys Tyr Ser Pro Lys Asn Cys Lys Leu
                565                 570                 575

Arg Arg Leu Ser Lys Pro Pro Phe Gln Thr Asn Pro Ser Pro Glu Met
            580                 585                 590

Val Ser Lys Leu Asp Leu Thr Asp Ala Lys Asn Ser Asp Thr Ala His
        595                 600                 605

Ile Lys Ser Ile Glu Ile Thr Ser Ile Leu Asn Gly Leu Gln Ala Ser
    610                 615                 620

Glu Ser Ser Ala Glu Asp Ser Glu Gln Glu Asp Glu Arg Gly Ala Gln
625                 630                 635                 640

Asp Met Asp Asn Asn Gly Lys Glu Glu Ser Lys Ile Asp His Leu Thr
                645                 650                 655

Asn Asn Arg Asn Asp Leu Ile Ser Lys Glu Glu Gln Asn Ser Ser Ser
            660                 665                 670

Leu Leu Glu Glu Asn Lys Val His Ala Asp Leu Val Ile Ser Lys Pro
        675                 680                 685

Val Ser Lys Ser Pro Glu Arg Leu Arg Lys Asp Ile Glu Val Leu Ser
    690                 695                 700

Glu Asp Thr Asp Tyr Glu Glu Asp Glu Val Thr Lys Lys Arg Lys Asp
705                 710                 715                 720

Val Lys Lys Asp Thr Thr Asp Lys Ser Ser Lys Pro Gln Ile Lys Arg
```

```
                725                 730                 735

Gly Lys Arg Arg Tyr Cys Asn Thr Glu Glu Cys Leu Lys Thr Gly Ser
            740                 745                 750

Pro Gly Lys Lys Glu Glu Lys Ala Lys Asn Lys Glu Ser Leu Cys Met
        755                 760                 765

Glu Asn Ser Ser Asn Ser Ser Ser Asp Glu Asp Glu Glu Glu Thr Lys
    770                 775                 780

Ala Lys Met Thr Pro Thr Lys Lys Tyr Asn Gly Leu Glu Glu Lys Arg
785                 790                 795                 800

Lys Ser Leu Arg Thr Thr Gly Phe Tyr Ser Gly Phe Ser Glu Val Ala
                805                 810                 815

Glu Lys Arg Ile Lys Leu Leu Asn Asn Ser Asp Glu Arg Leu Gln Asn
            820                 825                 830

Ser Arg Ala Lys Asp Arg Lys Asp Val Trp Ser Ser Ile Gln Gly Gln
        835                 840                 845

Trp Pro Lys Lys Thr Leu Lys Glu Leu Phe Ser Asp Ser Asp Thr Glu
    850                 855                 860

Ala Ala Ala Ser Pro Pro His Pro Ala Pro Glu Glu Gly Val Ala Glu
865                 870                 875                 880

Glu Ser Leu Gln Thr Val Ala Glu Glu Glu Ser Cys Ser Pro Ser Val
                885                 890                 895

Glu Leu Glu Lys Pro Pro Pro Val Asn Val Asp Ser Lys Pro Ile Glu
            900                 905                 910

Glu Lys Thr Val Glu Val Asn Asp Arg Lys Ala Glu Phe Pro Ser Ser
        915                 920                 925

Gly Ser Asn Ser Val Leu Asn Thr Pro Pro Thr Thr Pro Glu Ser Pro
    930                 935                 940

Ser Ser Val Thr Val Thr Glu Gly Ser Arg Gln Gln Ser Ser Val Thr
945                 950                 955                 960
```

```
Val Ser Glu Pro Leu Ala Pro Asn Gln Glu Glu Val Arg Ser Ile Lys
                965                 970                 975

Ser Glu Thr Asp Ser Thr Ile Glu Val Asp Ser Val Ala Gly Glu Leu
            980                 985                 990

Gln Asp Leu Gln Ser Glu Gly Asn  Ser Ser Pro Ala Gly  Phe Asp
Ala
        995                 1000                1005

Ser Val  Ser Ser Ser Ser Ser  Asn Gln Pro Glu Pro  Glu His Pro
    1010                1015                1020

Glu Lys  Ala Cys Thr Gly Gln  Lys Arg Val Lys Asp  Ala Gln Gly
    1025                1030                1035

Gly Gly  Ser Ser Ser Lys Lys  Gln Lys Arg Ser His  Lys Ala Thr
    1040                1045                1050

Val Val  Asn Asn Lys Lys Lys  Gly Lys Gly Thr Asn  Ser Ser Asp
    1055                1060                1065

Ser Glu  Glu Leu Ser Ala Gly  Glu Ser Ile Thr Lys  Ser Gln Pro
    1070                1075                1080

Val Lys  Ser Val Ser Thr Gly  Met Lys Ser His Ser  Thr Lys Ser
    1085                1090                1095

Pro Ala  Arg Thr Gln Ser Pro  Gly Lys Cys Gly Lys  Asn Gly Asp
    1100                1105                1110

Lys Asp  Pro Asp Leu Lys Glu  Pro Ser Asn Arg Leu  Pro Lys Val
    1115                1120                1125

Tyr Lys  Trp Ser Phe Gln Met  Ser Asp Leu Glu Asn  Met Thr Ser
    1130                1135                1140

Ala Glu  Arg Ile Thr Ile Leu  Gln Glu Lys Leu Gln  Glu Ile Arg
    1145                1150                1155

Lys His  Tyr Leu Ser Leu Lys  Ser Glu Val Ala Ser  Ile Asp Arg
    1160                1165                1170
```

```
Arg Arg  Lys Arg Leu Lys Lys  Lys Glu Arg Glu Ser  Ala Ala Thr
    1175                1180                1185


Ser Ser  Ser Ser Ser Ser Pro  Ser Ser Ser Ser Ile  Thr Ala Ala
    1190                1195                1200


Val Met  Leu Thr Leu Ala Glu  Pro Ser Met Ser Ser  Ala Ser Gln
    1205                1210                1215


Asn Gly  Met Ser Val Glu Cys  Arg
    1220                1225


<210> 6838
<211> 1312
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1468; "

<220>
<221> source
<223> /note="Gene Symbol: ARID4B; "

<220>
<221> source
<223> /note="Gene Name:
      AT rich interactive domain 4B (RBP
      1-like); "

<220>
<221> source
<223> /note="Uniprot ID:  Q4LE39; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000355562"

<400> 6838
Met Lys Ala Leu Asp Glu Pro Pro Tyr Leu Thr Val Gly Thr Asp Val
1               5                  10                  15


Ser Ala Lys Tyr Arg Gly Ala Phe Cys Glu Ala Lys Ile Lys Thr Ala
            20                  25                  30


Lys Arg Leu Val Lys Val Lys Val Thr Phe Arg His Asp Ser Ser Thr
        35                  40                  45
```

```
Val Glu Val Gln Asp Asp His Ile Lys Gly Pro Leu Lys Val Gly Ala
    50                  55                  60

Ile Val Glu Val Lys Asn Leu Asp Gly Ala Tyr Gln Glu Ala Val Ile
65                  70                  75                  80

Asn Lys Leu Thr Asp Ala Ser Trp Tyr Thr Val Val Phe Asp Asp Gly
                85                  90                  95

Asp Glu Lys Thr Leu Arg Arg Ser Ser Leu Cys Leu Lys Gly Glu Arg
            100                 105                 110

His Phe Ala Glu Ser Glu Thr Leu Asp Gln Leu Pro Leu Thr Asn Pro
        115                 120                 125

Glu His Phe Gly Thr Pro Val Ile Gly Lys Lys Thr Asn Arg Gly Arg
    130                 135                 140

Arg Ser Asn His Ile Pro Glu Glu Glu Ser Ser Ser Ser Ser Ser Asp
145                 150                 155                 160

Glu Asp Glu Asp Asp Arg Lys Gln Ile Asp Glu Leu Leu Gly Lys Val
                165                 170                 175

Val Cys Val Asp Tyr Ile Ser Leu Asp Lys Lys Lys Ala Leu Trp Phe
            180                 185                 190

Pro Ala Leu Val Val Cys Pro Asp Cys Ser Asp Glu Ile Ala Val Lys
        195                 200                 205

Lys Asp Asn Ile Leu Val Arg Ser Phe Lys Asp Gly Lys Phe Thr Ser
    210                 215                 220

Val Pro Arg Lys Asp Val His Glu Ile Thr Ser Asp Thr Ala Pro Lys
225                 230                 235                 240

Pro Asp Ala Val Leu Lys Gln Ala Phe Glu Gln Ala Leu Glu Phe His
                245                 250                 255

Lys Ser Arg Thr Ile Pro Ala Asn Trp Lys Thr Glu Leu Lys Glu Asp
            260                 265                 270
```

Ser Ser Ser Ser Glu Ala Glu Glu Glu Glu Glu Glu Glu Asp Asp Glu
275 280 285

Lys Glu Lys Glu Asp Asn Ser Ser Glu Glu Glu Glu Glu Ile Glu Pro
290 295 300

Phe Pro Glu Glu Arg Glu Asn Phe Leu Gln Gln Leu Tyr Lys Phe Met
305 310 315 320

Glu Asp Arg Gly Thr Pro Ile Asn Lys Arg Pro Val Leu Gly Tyr Arg
325 330 335

Asn Leu Asn Leu Phe Lys Leu Phe Arg Leu Val His Lys Leu Gly Gly
340 345 350

Phe Asp Asn Ile Glu Ser Gly Ala Val Trp Lys Gln Val Tyr Gln Asp
355 360 365

Leu Gly Ile Pro Val Leu Asn Ser Ala Ala Gly Tyr Asn Val Lys Cys
370 375 380

Ala Tyr Lys Lys Tyr Leu Tyr Gly Phe Glu Glu Tyr Cys Arg Ser Ala
385 390 395 400

Asn Ile Glu Phe Gln Met Ala Leu Pro Glu Lys Val Val Asn Lys Gln
405 410 415

Cys Lys Glu Cys Glu Asn Val Lys Glu Ile Lys Val Lys Glu Glu Asn
420 425 430

Glu Thr Glu Ile Lys Glu Ile Lys Met Glu Glu Glu Arg Asn Ile Ile
435 440 445

Pro Arg Glu Glu Lys Pro Ile Glu Asp Glu Ile Glu Arg Lys Glu Asn
450 455 460

Ile Lys Pro Ser Leu Gly Ser Lys Lys Asn Leu Leu Glu Ser Ile Pro
465 470 475 480

Thr His Ser Asp Gln Glu Lys Glu Val Asn Ile Lys Lys Pro Glu Asp
485 490 495

Asn Glu Asn Leu Asp Asp Lys Asp Asp Asp Thr Thr Arg Val Asp Glu

```
            500                 505                 510

Ser Leu Asn Ile Lys Val Glu Ala Glu Glu Glu Lys Ala Lys Ser Gly
        515                 520                 525

Asp Glu Thr Asn Lys Glu Glu Asp Glu Asp Asp Glu Glu Ala Glu Glu
    530                 535                 540

Glu Glu Glu Glu Glu Glu Glu Glu Glu Asp Glu Asp Asp Asp Asp Asn
545                 550                 555                 560

Asn Glu Glu Glu Glu Phe Glu Cys Tyr Pro Pro Gly Met Lys Val Gln
                565                 570                 575

Val Arg Tyr Gly Arg Gly Lys Asn Gln Lys Met Tyr Glu Ala Ser Ile
            580                 585                 590

Lys Asp Ser Asp Val Glu Gly Gly Glu Val Leu Tyr Leu Val His Tyr
        595                 600                 605

Cys Gly Trp Asn Val Arg Tyr Asp Glu Trp Ile Lys Ala Asp Lys Ile
    610                 615                 620

Val Arg Pro Ala Asp Lys Asn Val Pro Lys Ile Lys His Arg Lys Lys
625                 630                 635                 640

Ile Lys Asn Lys Leu Asp Lys Glu Lys Asp Lys Asp Glu Lys Tyr Ser
                645                 650                 655

Pro Lys Asn Cys Lys Leu Arg Arg Leu Ser Lys Pro Pro Phe Gln Thr
            660                 665                 670

Asn Pro Ser Pro Glu Met Val Ser Lys Leu Asp Leu Thr Asp Ala Lys
        675                 680                 685

Asn Ser Asp Thr Ala His Ile Lys Ser Ile Glu Ile Thr Ser Ile Leu
    690                 695                 700

Asn Gly Leu Gln Ala Ser Glu Ser Ser Ala Glu Asp Ser Glu Gln Glu
705                 710                 715                 720

Asp Glu Arg Gly Ala Gln Asp Met Asp Asn Asn Gly Lys Glu Glu Ser
                725                 730                 735
```

```
Lys Ile Asp His Leu Thr Asn Asn Arg Asn Asp Leu Ile Ser Lys Glu
            740                 745                 750

Glu Gln Asn Ser Ser Ser Leu Leu Glu Glu Asn Lys Val His Ala Asp
        755                 760                 765

Leu Val Ile Ser Lys Pro Val Ser Lys Ser Pro Glu Arg Leu Arg Lys
    770                 775                 780

Asp Ile Glu Val Leu Ser Glu Asp Thr Asp Tyr Glu Glu Asp Glu Val
785                 790                 795                 800

Thr Lys Lys Arg Lys Asp Val Lys Lys Asp Thr Thr Asp Lys Ser Ser
                805                 810                 815

Lys Pro Gln Ile Lys Arg Gly Lys Arg Arg Tyr Cys Asn Thr Glu Glu
            820                 825                 830

Cys Leu Lys Thr Gly Ser Pro Gly Lys Lys Glu Glu Lys Ala Lys Asn
        835                 840                 845

Lys Glu Ser Leu Cys Met Glu Asn Ser Ser Asn Ser Ser Ser Asp Glu
    850                 855                 860

Asp Glu Glu Glu Thr Lys Ala Lys Met Thr Pro Thr Lys Lys Tyr Asn
865                 870                 875                 880

Gly Leu Glu Glu Lys Arg Lys Ser Leu Arg Thr Thr Gly Phe Tyr Ser
                885                 890                 895

Gly Phe Ser Glu Val Ala Glu Lys Arg Ile Lys Leu Leu Asn Asn Ser
            900                 905                 910

Asp Glu Arg Leu Gln Asn Ser Arg Ala Lys Asp Arg Lys Asp Val Trp
        915                 920                 925

Ser Ser Ile Gln Gly Gln Trp Pro Lys Lys Thr Leu Lys Glu Leu Phe
    930                 935                 940

Ser Asp Ser Asp Thr Glu Ala Ala Ala Ser Pro Pro His Pro Ala Pro
945                 950                 955                 960
```

```
Glu Glu Gly Val Ala Glu Glu Ser Leu Gln Thr Val Ala Glu Glu Glu
               965                 970                 975

Ser Cys Ser Pro Ser Val Glu Leu Glu Lys Pro Pro Pro Val Asn Val
           980                 985                 990

Asp Ser Lys Pro Ile Glu Glu Lys  Thr Val Glu Val Asn  Asp Arg
Lys
        995                1000                1005

Ala Glu  Phe Pro Ser Ser Gly  Ser Asn Ser Val Leu  Asn Thr Pro
    1010                1015                1020

Pro Thr  Thr Pro Glu Ser Pro  Ser Ser Val Thr Val  Thr Glu Gly
    1025                1030                1035

Ser Arg  Gln Gln Ser Ser Val  Thr Val Ser Glu Pro  Leu Ala Pro
    1040                1045                1050

Asn Gln  Glu Glu Val Arg Ser  Ile Lys Ser Glu Thr  Asp Ser Thr
    1055                1060                1065

Ile Glu  Val Asp Ser Val Ala  Gly Glu Leu Gln Asp  Leu Gln Ser
    1070                1075                1080

Glu Gly  Asn Ser Ser Pro Ala  Gly Phe Asp Ala Ser  Val Ser Ser
    1085                1090                1095

Ser Ser  Ser Asn Gln Pro Glu  Pro Glu His Pro Glu  Lys Ala Cys
    1100                1105                1110

Thr Gly  Gln Lys Arg Val Lys  Asp Ala Gln Gly Gly  Gly Ser Ser
    1115                1120                1125

Ser Lys  Lys Gln Lys Arg Ser  His Lys Ala Thr Val  Val Asn Asn
    1130                1135                1140

Lys Lys  Lys Gly Lys Gly Thr  Asn Ser Ser Asp Ser  Glu Glu Leu
    1145                1150                1155

Ser Ala  Gly Glu Ser Ile Thr  Lys Ser Gln Pro Val  Lys Ser Val
    1160                1165                1170
```

```
Ser Thr  Gly Met Lys Ser His  Ser Thr Lys Ser Pro  Ala Arg Thr
    1175                1180                1185

Gln Ser  Pro Gly Lys Cys Gly  Lys Asn Gly Asp Lys  Asp Pro Asp
    1190                1195                1200

Leu Lys  Glu Pro Ser Asn Arg  Leu Pro Lys Val Tyr  Lys Trp Ser
    1205                1210                1215

Phe Gln  Met Ser Asp Leu Glu  Asn Met Thr Ser Ala  Glu Arg Ile
    1220                1225                1230

Thr Ile  Leu Gln Glu Lys Leu  Gln Glu Ile Arg Lys  His Tyr Leu
    1235                1240                1245

Ser Leu  Lys Ser Glu Val Ala  Ser Ile Asp Arg Arg  Arg Lys Arg
    1250                1255                1260

Leu Lys  Lys Lys Glu Arg Glu  Ser Ala Ala Thr Ser  Ser Ser Ser
    1265                1270                1275

Ser Ser  Pro Ser Ser Ser Ser  Ile Thr Ala Ala Val  Met Leu Thr
    1280                1285                1290

Leu Ala  Glu Pro Ser Met Ser  Ser Ala Ser Gln Asn  Gly Met Ser
    1295                1300                1305

Val Glu  Cys Arg
    1310


<210> 6839
<211> 483
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1468; "

<220>
<221> source
<223> /note="Gene Symbol: ARID4B; "

<220>
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<223> /note="Gene Name:
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AT rich interactive domain 4B (RBP
1-like); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000391497"

<400> 6839

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Met Lys Ala Leu Asp Glu Pro Pro Tyr Leu Thr Val Gly Thr Asp Val
1               5                  10                  15

Ser Ala Lys Tyr Arg Gly Ala Phe Cys Glu Ala Lys Ile Lys Thr Ala
            20                  25                  30

Lys Arg Leu Val Lys Val Lys Val Thr Phe Arg His Asp Ser Ser Thr
        35                  40                  45

Val Glu Val Gln Asp Asp His Ile Lys Gly Pro Leu Lys Val Gly Ala
    50                  55                  60

Ile Val Glu Val Lys Asn Leu Asp Gly Ala Tyr Gln Glu Ala Val Ile
65                  70                  75                  80

Asn Lys Leu Thr Asp Ala Ser Trp Tyr Thr Val Val Phe Asp Asp Gly
                85                  90                  95

Asp Glu Lys Thr Leu Arg Arg Ser Ser Leu Cys Leu Lys Gly Glu Arg
            100                 105                 110

His Phe Ala Glu Ser Glu Thr Leu Asp Gln Leu Pro Leu Thr Asn Pro
        115                 120                 125

Glu His Phe Gly Thr Pro Val Ile Gly Lys Lys Thr Asn Arg Gly Arg
    130                 135                 140

Arg Ser Asn His Ile Pro Glu Glu Glu Ser Ser Ser Ser Ser Ser Asp
145                 150                 155                 160

Glu Asp Glu Asp Asp Arg Lys Gln Ile Asp Glu Leu Leu Gly Lys Val
                165                 170                 175

Val Cys Val Asp Tyr Ile Ser Leu Asp Lys Lys Lys Ala Leu Trp Phe
            180                 185                 190

Pro Ala Leu Val Val Cys Pro Asp Cys Ser Asp Glu Ile Ala Val Lys
```

```
        195                 200                 205

Lys Asp Asn Ile Leu Val Arg Ser Phe Lys Asp Gly Lys Phe Thr Ser
    210                 215                 220

Val Pro Arg Lys Asp Val His Glu Ile Thr Ser Asp Thr Ala Pro Lys
225                 230                 235                 240

Pro Asp Ala Val Leu Lys Gln Ala Phe Glu Gln Ala Leu Glu Phe His
                245                 250                 255

Lys Ser Arg Thr Ile Pro Ala Asn Trp Lys Thr Glu Leu Lys Glu Asp
            260                 265                 270

Ser Ser Ser Ser Glu Ala Glu Glu Glu Glu Glu Glu Glu Asp Asp Glu
        275                 280                 285

Lys Glu Lys Glu Asp Asn Ser Ser Glu Glu Glu Glu Glu Ile Glu Pro
    290                 295                 300

Phe Pro Glu Glu Arg Glu Asn Phe Leu Gln Gln Leu Tyr Lys Phe Met
305                 310                 315                 320

Glu Asp Arg Gly Thr Pro Ile Asn Lys Arg Pro Val Leu Gly Tyr Arg
                325                 330                 335

Asn Leu Asn Leu Phe Lys Leu Phe Arg Leu Val His Lys Leu Gly Gly
            340                 345                 350

Phe Asp Asn Ile Glu Ser Gly Ala Val Trp Lys Gln Val Tyr Gln Asp
        355                 360                 365

Leu Gly Ile Pro Val Leu Asn Ser Ala Ala Gly Tyr Asn Val Lys Cys
    370                 375                 380

Ala Tyr Lys Lys Tyr Leu Tyr Gly Phe Glu Glu Tyr Cys Arg Ser Ala
385                 390                 395                 400

Asn Ile Glu Phe Gln Met Ala Leu Pro Glu Lys Val Val Asn Lys Gln
                405                 410                 415

Cys Lys Glu Cys Glu Asn Val Lys Glu Ile Lys Val Lys Glu Glu Asn
            420                 425                 430
```

```
Glu Thr Glu Ile Lys Glu Ile Lys Met Glu Glu Glu Arg Asn Ile Ile
        435                 440                 445

Pro Arg Glu Glu Lys Pro Ile Glu Asp Glu Ile Glu Arg Lys Glu Asn
    450                 455                 460

Ile Lys Pro Ser Leu Gly Ser Lys Lys Asn Leu Leu Glu Ser Ile Pro
465                 470                 475                 480

Thr His Ser
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<210> 6840
<211> 1153
<212> PRT
<213> Homo sapiens

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<220>
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<223> /note="Gene Name:
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1-like); "

<220>
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<223> /note="Uniprot ID: Q4LE39; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000394663"

<400> 6840

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Met Lys Ala Leu Asp Glu Pro Pro Tyr Leu Thr Val Gly Thr Asp Val
1               5                  10                  15

Ser Ala Lys Tyr Arg Gly Ala Phe Cys Glu Ala Lys Ile Lys Thr Ala
            20                  25                  30

Lys Arg Leu Val Lys Val Lys Val Thr Phe Arg His Asp Ser Ser Thr
        35                  40                  45
```

```
Val Glu Val Gln Asp Asp His Ile Lys Gly Pro Leu Lys Val Gly Ala
    50                  55                  60

Ile Val Glu Val Lys Asn Leu Asp Gly Ala Tyr Gln Glu Ala Val Ile
65                  70                  75                  80

Asn Lys Leu Thr Asp Ala Ser Trp Tyr Thr Val Val Phe Asp Asp Gly
                85                  90                  95

Asp Glu Lys Thr Leu Arg Arg Ser Ser Leu Cys Leu Lys Gly Glu Arg
            100                 105                 110

His Phe Ala Glu Ser Glu Thr Leu Asp Gln Leu Pro Leu Thr Asn Pro
        115                 120                 125

Glu His Phe Gly Thr Pro Val Ile Gly Lys Lys Thr Asn Arg Gly Arg
    130                 135                 140

Arg Ser Asn His Ile Pro Glu Glu Glu Ser Ser Ser Ser Ser Ser Asp
145                 150                 155                 160

Glu Asp Glu Asp Asp Arg Lys Gln Ile Asp Glu Leu Leu Gly Lys Val
                165                 170                 175

Val Cys Val Asp Tyr Ile Ser Leu Asp Lys Lys Lys Ala Leu Trp Phe
            180                 185                 190

Pro Ala Leu Val Val Cys Pro Asp Cys Ser Asp Glu Ile Ala Val Lys
        195                 200                 205

Lys Asp Asn Ile Leu Val Arg Ser Phe Lys Asp Gly Lys Phe Thr Ser
    210                 215                 220

Val Pro Arg Lys Asp Val His Glu Ile Thr Ser Asp Thr Ala Pro Lys
225                 230                 235                 240

Pro Asp Ala Val Leu Lys Gln Ala Phe Glu Gln Ala Leu Glu Phe His
                245                 250                 255

Lys Ser Arg Thr Ile Pro Ala Asn Trp Lys Thr Glu Leu Lys Glu Asp
            260                 265                 270
```

```
Ser Ser Ser Ser Glu Ala Glu Glu Glu Glu Glu Glu Glu Asp Asp Glu
        275                 280                 285

Lys Glu Lys Glu Asp Asn Ser Ser Glu Glu Glu Glu Glu Ile Glu Pro
    290                 295                 300

Phe Pro Glu Glu Arg Glu Asn Phe Leu Gln Gln Leu Tyr Lys Phe Met
305                 310                 315                 320

Glu Asp Arg Gly Thr Pro Ile Asn Lys Arg Pro Val Leu Gly Tyr Arg
                325                 330                 335

Asn Leu Asn Leu Phe Lys Leu Phe Arg Leu Val His Lys Leu Gly Gly
            340                 345                 350

Phe Asp Asn Ile Glu Ser Gly Ala Val Trp Lys Gln Val Tyr Gln Asp
        355                 360                 365

Leu Gly Ile Pro Val Leu Asn Ser Ala Ala Gly Tyr Asn Val Lys Cys
    370                 375                 380

Ala Tyr Lys Lys Tyr Leu Tyr Gly Phe Glu Glu Tyr Cys Arg Ser Ala
385                 390                 395                 400

Asn Ile Glu Phe Gln Met Ala Leu Pro Glu Lys Val Val Asn Lys Gln
                405                 410                 415

Cys Lys Glu Cys Glu Asn Val Lys Glu Ile Lys Val Lys Glu Glu Asn
            420                 425                 430

Glu Thr Glu Ile Lys Glu Ile Lys Met Glu Glu Glu Arg Asn Ile Ile
        435                 440                 445

Pro Arg Glu Glu Lys Pro Ile Glu Asp Glu Ile Glu Arg Lys Glu Asn
    450                 455                 460

Ile Lys Pro Ser Leu Gly Ser Lys Lys Asn Leu Leu Glu Ser Ile Pro
465                 470                 475                 480

Thr His Ser Asp Gln Glu Lys Glu Val Asn Ile Lys Lys Pro Glu Asp
                485                 490                 495

Asn Glu Asn Leu Asp Asp Lys Asp Asp Asp Thr Thr Arg Val Asp Glu
```

```
            500                 505                 510

Ser Leu Asn Ile Lys Val Glu Ala Glu Glu Glu Lys Ala Lys Ser Gly
        515                 520                 525

Asp Glu Thr Asn Lys Glu Glu Asp Glu Asp Asp Glu Glu Ala Glu Glu
    530                 535                 540

Glu Glu Glu Glu Glu Glu Glu Glu Glu Asp Glu Asp Asp Asp Asp Asn
545                 550                 555                 560

Asn Glu Glu Glu Glu Phe Glu Cys Tyr Pro Pro Gly Met Lys Val Gln
                565                 570                 575

Val Arg Tyr Gly Arg Gly Lys Asn Gln Lys Met Tyr Glu Ala Ser Ile
            580                 585                 590

Lys Asp Ser Asp Val Glu Gly Gly Glu Val Leu Tyr Leu Val His Tyr
        595                 600                 605

Cys Gly Trp Asn Val Arg Tyr Asp Glu Trp Ile Lys Ala Asp Lys Ile
    610                 615                 620

Val Arg Pro Ala Asp Lys Asn Val Pro Lys Ile Lys His Arg Lys Lys
625                 630                 635                 640

Ile Lys Asn Lys Leu Asp Lys Glu Lys Asp Lys Asp Glu Lys Tyr Ser
                645                 650                 655

Pro Lys Asn Cys Lys Leu Arg Arg Leu Ser Lys Pro Pro Phe Gln Thr
            660                 665                 670

Asn Pro Ser Pro Glu Met Val Ser Lys Leu Asp Leu Thr Asp Ala Lys
        675                 680                 685

Asn Ser Asp Thr Ala His Ile Lys Ser Ile Glu Ile Thr Ser Ile Leu
    690                 695                 700

Asn Gly Leu Gln Ala Ser Glu Ser Ser Ala Glu Asp Ser Glu Gln Glu
705                 710                 715                 720

Asp Glu Arg Gly Ala Gln Asp Met Asp Asn Asn Gly Lys Glu Glu Ser
                725                 730                 735
```

```
Lys Ile Asp His Leu Thr Asn Asn Arg Asn Asp Leu Ile Ser Lys Glu
            740                 745                 750

Glu Gln Asn Ser Ser Ser Leu Leu Glu Glu Asn Lys Val His Ala Asp
        755                 760                 765

Leu Val Ile Ser Lys Pro Val Ser Lys Ser Pro Glu Arg Leu Arg Lys
    770                 775                 780

Asp Ile Glu Val Leu Ser Glu Asp Thr Asp Tyr Glu Glu Asp Glu Val
785                 790                 795                 800

Thr Lys Lys Arg Lys Asp Val Lys Lys Asp Thr Thr Asp Lys Ser Ser
                805                 810                 815

Lys Pro Gln Ile Lys Arg Gly Lys Arg Arg Tyr Cys Asn Thr Glu Glu
            820                 825                 830

Cys Leu Lys Thr Gly Ser Pro Gly Lys Lys Glu Glu Lys Ala Lys Asn
        835                 840                 845

Lys Glu Ser Leu Cys Met Glu Asn Ser Ser Asn Ser Ser Ser Asp Glu
    850                 855                 860

Asp Glu Glu Glu Thr Lys Ala Lys Met Thr Pro Thr Lys Lys Tyr Asn
865                 870                 875                 880

Gly Leu Glu Glu Lys Arg Lys Ser Leu Arg Thr Thr Gly Phe Tyr Ser
                885                 890                 895

Gly Phe Ser Glu Val Ala Glu Lys Arg Ile Lys Leu Leu Asn Asn Ser
            900                 905                 910

Asp Glu Arg Leu Gln Asn Ser Arg Ala Lys Asp Arg Lys Asp Val Trp
        915                 920                 925

Ser Ser Ile Gln Gly Gln Trp Pro Lys Lys Thr Leu Lys Glu Leu Phe
    930                 935                 940

Ser Asp Ser Asp Thr Glu Ala Ala Ala Ser Pro Pro His Pro Ala Pro
945                 950                 955                 960
```

```
Glu Glu Gly Val Ala Glu Glu Ser Leu Gln Thr Val Ala Glu Glu Glu
                965                 970                 975

Ser Cys Ser Pro Ser Val Glu Leu Glu Lys Pro Pro Pro Val Asn Val
            980                 985                 990

Asp Ser Lys Pro Ile Glu Glu Lys  Thr Val Glu Val Asn  Asp Arg
Lys
        995                 1000                1005

Ala Glu  Phe Pro Ser Ser Gly  Ser Asn Ser Val Leu  Asn Thr Pro
    1010                1015                1020

Pro Thr  Thr Pro Glu Ser Pro  Ser Ser Val Thr Val  Thr Glu Gly
    1025                1030                1035

Ser Arg  Gln Gln Ser Ser Val  Thr Val Ser Glu Pro  Leu Ala Pro
    1040                1045                1050

Asn Gln  Glu Glu Val Arg Ser  Ile Lys Ser Glu Thr  Asp Ser Thr
    1055                1060                1065

Ile Glu  Val Asp Ser Val Ala  Gly Glu Leu Gln Asp  Leu Gln Ser
    1070                1075                1080

Glu Gly  Asn Ser Ser Pro Ala  Gly Phe Asp Ala Ser  Val Ser Ser
    1085                1090                1095

Ser Ser  Ser Asn Gln Pro Glu  Pro Glu His Pro Glu  Lys Ala Cys
    1100                1105                1110

Thr Gly  Gln Lys Arg Val Lys  Asp Ala Gln Gly Gly  Gly Ser Ser
    1115                1120                1125

Ser Lys  Lys Gln Lys Arg Ser  His Lys Ala Thr Val  Val Asn Asn
    1130                1135                1140

Lys Lys  Lys Gly Lys Gly Ser  Ala Pro His
    1145                1150
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<210> 6841
<211> 553
<212> PRT

<213> Homo sapiens

<220>
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<220>
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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 6841
Xaa Phe Glu Cys Tyr Pro Pro Gly Met Lys Val Gln Val Arg Tyr Asp
1 5 10 15

Glu Trp Ile Lys Ala Asp Lys Ile Val Arg Pro Ala Asp Lys Asn Val
20 25 30

Pro Lys Ile Lys His Arg Lys Lys Ile Lys Asn Lys Leu Asp Lys Glu
35 40 45

Lys Asp Lys Asp Glu Lys Tyr Ser Pro Lys Asn Cys Lys Leu Arg Arg
50 55 60

Leu Ser Lys Pro Pro Phe Gln Thr Asn Pro Ser Pro Glu Met Val Ser
65 70 75 80

Lys Leu Asp Leu Thr Asp Ala Lys Asn Ser Asp Thr Ala His Ile Lys
85 90 95

Ser Ile Glu Ile Thr Ser Ile Leu Asn Gly Leu Gln Ala Ser Glu Ser
100 105 110

Ser Ala Glu Asp Ser Glu Gln Glu Asp Glu Arg Gly Ala Gln Asp Met
115 120 125

```
Asp Asn Asn Gly Lys Glu Glu Ser Lys Ile Asp His Leu Thr Asn Asn
    130                 135                 140

Arg Asn Asp Leu Ile Ser Lys Glu Glu Gln Asn Ser Ser Ser Leu Leu
145                 150                 155                 160

Glu Glu Asn Lys Val His Ala Asp Leu Val Ile Ser Lys Pro Val Ser
                165                 170                 175

Lys Ser Pro Glu Arg Leu Arg Lys Asp Ile Glu Val Leu Ser Glu Asp
            180                 185                 190

Thr Asp Tyr Glu Glu Asp Glu Val Thr Lys Lys Arg Lys Asp Val Lys
        195                 200                 205

Lys Asp Thr Thr Asp Lys Ser Ser Lys Pro Gln Ile Lys Arg Gly Lys
    210                 215                 220

Arg Arg Tyr Cys Asn Thr Glu Glu Cys Leu Lys Thr Gly Ser Pro Gly
225                 230                 235                 240

Lys Lys Glu Glu Lys Ala Lys Asn Lys Glu Ser Leu Cys Met Glu Asn
                245                 250                 255

Ser Ser Asn Ser Ser Ser Asp Glu Asp Glu Glu Glu Thr Lys Ala Lys
            260                 265                 270

Met Thr Pro Thr Lys Lys Tyr Asn Gly Leu Glu Glu Lys Arg Lys Ser
        275                 280                 285

Leu Arg Thr Thr Gly Phe Tyr Ser Gly Phe Ser Glu Val Ala Glu Lys
    290                 295                 300

Arg Ile Lys Leu Leu Asn Asn Ser Asp Glu Arg Leu Gln Asn Ser Arg
305                 310                 315                 320

Ala Lys Asp Arg Lys Asp Val Trp Ser Ser Ile Gln Gly Gln Trp Pro
                325                 330                 335

Lys Lys Thr Leu Lys Glu Leu Phe Ser Asp Ser Asp Thr Glu Ala Ala
            340                 345                 350
```

```
Ala Ser Pro Pro His Pro Ala Pro Glu Glu Gly Val Ala Glu Glu Ser
        355                 360                 365

Leu Gln Thr Val Ala Glu Glu Glu Ser Cys Ser Pro Ser Val Glu Leu
    370                 375                 380

Glu Lys Pro Pro Pro Val Asn Val Asp Ser Lys Pro Ile Glu Glu Lys
385                 390                 395                 400

Thr Val Glu Val Asn Asp Arg Lys Ala Glu Phe Pro Ser Ser Gly Ser
                405                 410                 415

Asn Ser Val Leu Asn Thr Pro Pro Thr Thr Pro Glu Ser Pro Ser Ser
            420                 425                 430

Val Thr Val Thr Glu Gly Ser Arg Gln Gln Ser Ser Val Thr Val Ser
        435                 440                 445

Glu Pro Leu Ala Pro Asn Gln Glu Glu Val Arg Ser Ile Lys Ser Glu
    450                 455                 460

Thr Asp Ser Thr Ile Glu Val Asp Ser Val Ala Gly Glu Leu Gln Asp
465                 470                 475                 480

Leu Gln Ser Glu Gly Asn Ser Ser Pro Ala Gly Phe Asp Ala Ser Val
                485                 490                 495

Ser Ser Ser Ser Ser Asn Gln Pro Glu Pro Glu His Pro Glu Lys Ala
            500                 505                 510

Cys Thr Gly Gln Lys Arg Val Lys Asp Ala Gln Gly Gly Gly Ser Ser
        515                 520                 525

Ser Lys Lys Gln Lys Arg Ser His Lys Ala Thr Val Val Asn Asn Lys
    530                 535                 540

Lys Lys Gly Lys Gly Ser Lys Cys Glu
545                 550
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<210> 6842
<211> 696
<212> PRT
<213> Homo sapiens

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1-like); "

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<223> /note="ENSP ID: ENSP00000420620"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6842
Xaa Lys Asn Ser Asp Thr Ala His Ile Lys Ser Ile Glu Ile Thr Ser
1 5 10 15

Ile Leu Asn Gly Leu Gln Ala Ser Glu Ser Ser Ala Glu Asp Ser Glu
20 25 30

Gln Glu Asp Glu Arg Gly Ala Gln Asp Met Asp Asn Asn Gly Lys Glu
35 40 45

Glu Ser Lys Ile Asp His Leu Thr Asn Asn Arg Asn Asp Leu Ile Ser
50 55 60

Lys Glu Glu Gln Asn Ser Ser Ser Leu Leu Glu Glu Asn Lys Val His
65 70 75 80

Ala Asp Leu Val Ile Ser Lys Pro Val Ser Lys Ser Pro Glu Arg Leu
85 90 95

Arg Lys Asp Ile Glu Val Leu Ser Glu Asp Thr Asp Tyr Glu Glu Asp
100 105 110

Glu Val Thr Lys Lys Arg Lys Asp Val Lys Lys Asp Thr Thr Asp Lys
115 120 125

```
Ser Ser Lys Pro Gln Ile Lys Arg Gly Lys Arg Arg Tyr Cys Asn Thr
    130                 135                 140

Glu Glu Cys Leu Lys Thr Gly Ser Pro Gly Lys Lys Glu Glu Lys Ala
145                 150                 155                 160

Lys Asn Lys Glu Ser Leu Cys Met Glu Asn Ser Ser Asn Ser Ser Ser
                165                 170                 175

Asp Glu Asp Glu Glu Glu Thr Lys Ala Lys Met Thr Pro Thr Lys Lys
            180                 185                 190

Tyr Asn Gly Leu Glu Glu Lys Arg Lys Ser Leu Arg Thr Thr Gly Phe
        195                 200                 205

Tyr Ser Gly Phe Ser Glu Val Ala Glu Lys Arg Ile Lys Leu Leu Asn
    210                 215                 220

Asn Ser Asp Glu Arg Leu Gln Asn Ser Arg Ala Lys Asp Arg Lys Asp
225                 230                 235                 240

Val Trp Ser Ser Ile Gln Gly Gln Trp Pro Lys Lys Thr Leu Lys Glu
                245                 250                 255

Leu Phe Ser Asp Ser Asp Thr Glu Ala Ala Ala Ser Pro Pro His Pro
            260                 265                 270

Ala Pro Glu Glu Gly Val Ala Glu Glu Ser Leu Gln Thr Val Ala Glu
        275                 280                 285

Glu Glu Ser Cys Ser Pro Ser Val Glu Leu Glu Lys Pro Pro Pro Val
    290                 295                 300

Asn Val Asp Ser Lys Pro Ile Glu Glu Lys Thr Val Glu Val Asn Asp
305                 310                 315                 320

Arg Lys Ala Glu Phe Pro Ser Ser Gly Ser Asn Ser Val Leu Asn Thr
                325                 330                 335

Pro Pro Thr Thr Pro Glu Ser Pro Ser Ser Val Thr Val Thr Glu Gly
            340                 345                 350
```

```
Ser Arg Gln Gln Ser Ser Val Thr Val Ser Glu Pro Leu Ala Pro Asn
        355                 360                 365

Gln Glu Glu Val Arg Ser Ile Lys Ser Glu Thr Asp Ser Thr Ile Glu
    370                 375                 380

Val Asp Ser Val Ala Gly Glu Leu Gln Asp Leu Gln Ser Glu Gly Asn
385                 390                 395                 400

Ser Ser Pro Ala Gly Phe Asp Ala Ser Val Ser Ser Ser Ser Ser Asn
                405                 410                 415

Gln Pro Glu Pro Glu His Pro Glu Lys Ala Cys Thr Gly Gln Lys Arg
            420                 425                 430

Val Lys Asp Ala Gln Gly Gly Gly Ser Ser Ser Lys Lys Gln Lys Arg
        435                 440                 445

Ser His Lys Ala Thr Val Val Asn Asn Lys Lys Lys Gly Lys Gly Thr
    450                 455                 460

Asn Ser Ser Asp Ser Glu Glu Leu Ser Ala Gly Glu Ser Ile Thr Lys
465                 470                 475                 480

Ser Gln Pro Val Lys Ser Val Ser Thr Gly Met Lys Ser His Ser Thr
                485                 490                 495

Lys Ser Pro Ala Arg Thr Gln Ser Pro Gly Lys Cys Gly Lys Asn Gly
            500                 505                 510

Asp Lys Asp Pro Asp Leu Lys Glu Pro Ser Asn Arg Leu Pro Lys Val
        515                 520                 525

Tyr Lys Trp Ser Phe Gln Met Ser Asp Leu Glu Asn Met Thr Ser Ala
    530                 535                 540

Glu Arg Ile Thr Ile Leu Gln Glu Lys Leu Gln Glu Ile Arg Lys His
545                 550                 555                 560

Tyr Leu Ser Leu Lys Ser Glu Val Ala Ser Ile Asp Arg Arg Arg Lys
                565                 570                 575

Arg Leu Lys Lys Lys Glu Arg Glu Ser Ala Ala Thr Ser Ser Ser Ser
```

```
            580                 585                 590

Ser Ser Pro Ser Ser Ser Ser Ile Thr Ala Ala Val Met Leu Thr Leu
        595                 600                 605

Ala Glu Pro Ser Met Ser Ser Ala Ser Gln Asn Gly Met Leu Gln Pro
    610                 615                 620

Leu Pro Glu Asp Val Leu His Ser Gln Asn Glu Ala Phe Leu Lys Arg
625                 630                 635                 640

Arg Gly Pro Pro Thr Asp Gly Asp Lys Pro Ala Pro Ser Pro Ser Ala
                645                 650                 655

Ser Leu Arg Arg Arg Pro Ala Ala Asp Cys Arg Arg Gly Gly Gly Val
            660                 665                 670

Ala Arg Glu Arg Lys Cys Pro Glu Pro Gly Ser Ala Ser Trp Arg Ala
        675                 680                 685

Ala Ala Val Trp Glu Ser Leu Glu
    690                 695
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<210> 6843
<211> 594
<212> PRT
<213> Homo sapiens

<220>
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<221> source
<223> /note="Gene Symbol: ARID5A; "

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<223> /note="Gene Name:
AT rich interactive domain 5A (MRF
1-like); "

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<223> /note="Uniprot ID: Q03989; "

<220>
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<400> 6843
Met Ala Ala Pro Val Lys Gly Asn Arg Lys Gln Ser Thr Glu Gly Asp
1 5 10 15

Ala Leu Asp Pro Pro Ala Ser Pro Lys Pro Ala Gly Lys Gln Asn Gly
20 25 30

Ile Gln Asn Pro Ile Ser Leu Glu Asp Ser Pro Glu Ala Gly Gly Glu
35 40 45

Arg Glu Glu Glu Gln Glu Arg Glu Glu Glu Gln Ala Phe Leu Val Ser
50 55 60

Leu Tyr Lys Phe Met Lys Glu Arg His Thr Pro Ile Glu Arg Val Pro
65 70 75 80

His Leu Gly Phe Lys Gln Ile Asn Leu Trp Lys Ile Tyr Lys Ala Val
85 90 95

Glu Lys Leu Gly Ala Tyr Glu Leu Val Thr Gly Arg Arg Leu Trp Lys
100 105 110

Asn Val Tyr Asp Glu Leu Gly Gly Ser Pro Gly Ser Thr Ser Ala Ala
115 120 125

Thr Cys Thr Arg Arg His Tyr Glu Arg Leu Val Leu Pro Tyr Val Arg
130 135 140

His Leu Lys Gly Glu Asp Asp Lys Pro Leu Pro Thr Ser Lys Pro Arg
145 150 155 160

Lys Gln Tyr Lys Met Ala Lys Glu Asn Arg Gly Asp Asp Gly Ala Thr
165 170 175

Glu Arg Pro Lys Lys Ala Lys Glu Glu Arg Arg Met Asp Gln Met Met
180 185 190

Pro Gly Lys Thr Lys Ala Asp Ala Ala Asp Pro Ala Pro Leu Pro Ser
195 200 205

Gln Glu Pro Pro Arg Asn Ser Thr Glu Gln Gln Gly Leu Ala Ser Gly
210 215 220

```
Ser Ser Val Ser Phe Val Gly Ala Ser Gly Cys Pro Glu Ala Tyr Lys
225                 230                 235                 240

Arg Leu Leu Ser Ser Phe Tyr Cys Lys Gly Thr His Gly Ile Met Ser
                245                 250                 255

Pro Leu Ala Lys Lys Lys Leu Leu Ala Gln Val Ser Lys Val Glu Ala
            260                 265                 270

Leu Gln Cys Gln Glu Glu Gly Cys Arg His Gly Ala Glu Pro Gln Ala
        275                 280                 285

Ser Pro Ala Val His Leu Pro Glu Ser Pro Gln Ser Pro Lys Gly Leu
    290                 295                 300

Thr Glu Asn Ser Arg His Arg Leu Thr Pro Gln Glu Gly Leu Gln Ala
305                 310                 315                 320

Pro Gly Gly Ser Leu Arg Glu Glu Ala Gln Ala Gly Pro Cys Pro Ala
                325                 330                 335

Ala Pro Ile Phe Lys Gly Cys Phe Tyr Thr His Pro Thr Glu Val Leu
            340                 345                 350

Lys Pro Val Ser Gln His Pro Arg Asp Phe Phe Ser Arg Leu Lys Asp
        355                 360                 365

Gly Val Leu Leu Gly Pro Pro Gly Lys Glu Gly Leu Ser Val Lys Glu
    370                 375                 380

Pro Gln Leu Val Trp Gly Gly Asp Ala Asn Arg Pro Ser Ala Phe His
385                 390                 395                 400

Lys Gly Gly Ser Arg Lys Gly Ile Leu Tyr Pro Lys Pro Lys Ala Cys
                405                 410                 415

Trp Val Ser Pro Met Ala Lys Val Pro Ala Glu Ser Pro Thr Leu Pro
            420                 425                 430

Pro Thr Phe Pro Ser Ser Pro Gly Leu Gly Ser Lys Arg Ser Leu Glu
        435                 440                 445
```

```
Glu Glu Gly Ala Ala His Ser Gly Lys Arg Leu Arg Ala Val Ser Pro
    450                 455                 460

Phe Leu Lys Glu Ala Asp Ala Lys Lys Cys Gly Ala Lys Pro Ala Gly
465                 470                 475                 480

Ser Gly Leu Val Ser Cys Leu Leu Gly Pro Ala Leu Gly Pro Val Pro
                485                 490                 495

Pro Glu Ala Tyr Arg Gly Thr Met Leu His Cys Pro Leu Asn Phe Thr
            500                 505                 510

Gly Thr Pro Gly Pro Leu Lys Gly Gln Ala Ala Leu Pro Phe Ser Pro
        515                 520                 525

Leu Val Ile Pro Ala Phe Pro Ala His Phe Leu Ala Thr Ala Gly Pro
    530                 535                 540

Ser Pro Met Ala Ala Gly Leu Met His Phe Pro Pro Thr Ser Phe Asp
545                 550                 555                 560

Ser Ala Leu Arg His Arg Leu Cys Pro Ala Ser Ser Ala Trp His Ala
                565                 570                 575

Pro Pro Val Thr Thr Tyr Ala Ala Pro His Phe Phe His Leu Asn Thr
            580                 585                 590

Lys Leu
```

<210> 6844
<211> 58
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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AT rich interactive domain 5A (MRF

1-like); "

<220>
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<400> 6844
Met Ala Ala Pro Val Lys Gly Asn Arg Lys Gln Ser Thr Glu Gly Asp
1 5 10 15

Ala Leu Asp Pro Pro Ala Ser Pro Lys Pro Ala Gly Lys Gln Asn Gly
            20 25 30

Ile Gln Asn Pro Ile Ser Leu Glu Leu Thr Cys Gly Arg Ser Thr Lys
        35 40 45

Gln Trp Arg Ser Trp Gly Pro Met Ser Trp
    50 55

<210> 6845
<211> 526
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
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AT rich interactive domain 5A (MRF
1-like); "

<220>
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<400> 6845
Met Lys Glu Arg His Thr Pro Ile Glu Arg Val Pro His Leu Gly Phe
1 5 10 15

Lys Gln Ile Asn Leu Trp Lys Ile Tyr Lys Ala Val Glu Lys Leu Gly
            20 25 30

Ala Tyr Glu Leu Val Thr Gly Arg Arg Leu Trp Lys Asn Val Tyr Asp
        35 40 45

```
Glu Leu Gly Gly Ser Pro Gly Ser Thr Ser Ala Ala Thr Cys Thr Arg
    50                  55                  60

Arg His Tyr Glu Arg Leu Val Leu Pro Tyr Val Arg His Leu Lys Gly
65                  70                  75                  80

Glu Asp Asp Lys Pro Leu Pro Thr Ser Lys Pro Arg Lys Gln Tyr Lys
                85                  90                  95

Met Ala Lys Glu Asn Arg Gly Asp Asp Gly Ala Thr Glu Arg Pro Lys
            100                 105                 110

Lys Ala Lys Glu Glu Arg Arg Met Asp Gln Met Met Pro Gly Lys Thr
        115                 120                 125

Lys Ala Asp Ala Ala Asp Pro Ala Pro Leu Pro Ser Gln Glu Pro Pro
    130                 135                 140

Arg Asn Ser Thr Glu Gln Gln Gly Leu Ala Ser Gly Ser Ser Val Ser
145                 150                 155                 160

Phe Val Gly Ala Ser Gly Cys Pro Glu Ala Tyr Lys Arg Leu Leu Ser
                165                 170                 175

Ser Phe Tyr Cys Lys Gly Thr His Gly Ile Met Ser Pro Leu Ala Lys
            180                 185                 190

Lys Lys Leu Leu Ala Gln Val Ser Lys Val Glu Ala Leu Gln Cys Gln
        195                 200                 205

Glu Glu Gly Cys Arg His Gly Ala Glu Pro Gln Ala Ser Pro Ala Val
    210                 215                 220

His Leu Pro Glu Ser Pro Gln Ser Pro Lys Gly Leu Thr Glu Asn Ser
225                 230                 235                 240

Arg His Arg Leu Thr Pro Gln Glu Gly Leu Gln Ala Pro Gly Gly Ser
                245                 250                 255

Leu Arg Glu Glu Ala Gln Ala Gly Pro Cys Pro Ala Ala Pro Ile Phe
            260                 265                 270
```

```
Lys Gly Cys Phe Tyr Thr His Pro Thr Glu Val Leu Lys Pro Val Ser
        275                 280                 285

Gln His Pro Arg Asp Phe Phe Ser Arg Leu Lys Asp Gly Val Leu Leu
    290                 295                 300

Gly Pro Pro Gly Lys Glu Gly Leu Ser Val Lys Glu Pro Gln Leu Val
305                 310                 315                 320

Trp Gly Gly Asp Ala Asn Arg Pro Ser Ala Phe His Lys Gly Gly Ser
                325                 330                 335

Arg Lys Gly Ile Leu Tyr Pro Lys Pro Lys Ala Cys Trp Val Ser Pro
            340                 345                 350

Met Ala Lys Val Pro Ala Glu Ser Pro Thr Leu Pro Pro Thr Phe Pro
        355                 360                 365

Ser Ser Pro Gly Leu Gly Ser Lys Arg Ser Leu Glu Glu Glu Gly Ala
    370                 375                 380

Ala His Ser Gly Lys Arg Leu Arg Ala Val Ser Pro Phe Leu Lys Glu
385                 390                 395                 400

Ala Asp Ala Lys Lys Cys Gly Ala Lys Pro Ala Gly Ser Gly Leu Val
                405                 410                 415

Ser Cys Leu Leu Gly Pro Ala Leu Gly Pro Val Pro Pro Glu Ala Tyr
            420                 425                 430

Arg Gly Thr Met Leu His Cys Pro Leu Asn Phe Thr Gly Thr Pro Gly
        435                 440                 445

Pro Leu Lys Gly Gln Ala Ala Leu Pro Phe Ser Pro Leu Val Ile Pro
    450                 455                 460

Ala Phe Pro Ala His Phe Leu Ala Thr Ala Gly Pro Ser Pro Met Ala
465                 470                 475                 480

Ala Gly Leu Met His Phe Pro Pro Thr Ser Phe Asp Ser Ala Leu Arg
                485                 490                 495
```

```
His Arg Leu Cys Pro Ala Ser Ser Ala Trp His Ala Pro Pro Val Thr
            500                 505                 510

Thr Tyr Ala Ala Pro His Phe Phe His Leu Asn Thr Lys Leu
        515                 520                 525


<210> 6846
<211> 1188
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1470; "

<220>
<221> source
<223> /note="Gene Symbol: ARID5B; "

<220>
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<223> /note="Gene Name:
      AT rich interactive domain 5B (MRF
      1-like); "

<220>
<221> source
<223> /note="Uniprot ID:  Q14865; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000279873"

<400> 6846
Met Glu Pro Asn Ser Leu Gln Trp Val Gly Ser Pro Cys Gly Leu His
1               5                  10                  15

Gly Pro Tyr Ile Phe Tyr Lys Ala Phe Gln Phe His Leu Glu Gly Lys
            20                  25                  30

Pro Arg Ile Leu Ser Leu Gly Asp Phe Phe Phe Val Arg Cys Thr Pro
        35                  40                  45

Lys Asp Pro Ile Cys Ile Ala Glu Leu Gln Leu Leu Trp Glu Glu Arg
    50                  55                  60

Thr Ser Arg Gln Leu Leu Ser Ser Ser Lys Leu Tyr Phe Leu Pro Glu
65                  70                  75                  80

Asp Thr Pro Gln Gly Arg Asn Ser Asp His Gly Glu Asp Glu Val Ile
```

```
                85                  90                  95

Ala Val Ser Glu Lys Val Ile Val Lys Leu Glu Asp Leu Val Lys Trp
            100                 105                 110

Val His Ser Asp Phe Ser Lys Trp Arg Cys Gly Phe His Ala Gly Pro
        115                 120                 125

Val Lys Thr Glu Ala Leu Gly Arg Asn Gly Gln Lys Glu Ala Leu Leu
    130                 135                 140

Lys Tyr Arg Gln Ser Thr Leu Asn Ser Gly Leu Asn Phe Lys Asp Val
145                 150                 155                 160

Leu Lys Glu Lys Ala Asp Leu Gly Glu Asp Glu Glu Glu Thr Asn Val
                165                 170                 175

Ile Val Leu Ser Tyr Pro Gln Tyr Cys Arg Tyr Arg Ser Met Leu Lys
            180                 185                 190

Arg Ile Gln Asp Lys Pro Ser Ser Ile Leu Thr Asp Gln Phe Ala Leu
        195                 200                 205

Ala Leu Gly Gly Ile Ala Val Val Ser Arg Asn Pro Gln Ile Leu Tyr
    210                 215                 220

Cys Arg Asp Thr Phe Asp His Pro Thr Leu Ile Glu Asn Glu Ser Ile
225                 230                 235                 240

Cys Asp Glu Phe Ala Pro Asn Leu Lys Gly Arg Pro Arg Lys Lys Lys
                245                 250                 255

Pro Cys Pro Gln Arg Arg Asp Ser Phe Ser Gly Val Lys Asp Ser Asn
            260                 265                 270

Asn Asn Ser Asp Gly Lys Ala Val Ala Lys Val Lys Cys Glu Ala Arg
        275                 280                 285

Ser Ala Leu Thr Lys Pro Lys Asn Asn His Asn Cys Lys Lys Val Ser
    290                 295                 300

Asn Glu Glu Lys Pro Lys Val Ala Ile Gly Glu Glu Cys Arg Ala Asp
305                 310                 315                 320
```

```
Glu Gln Ala Phe Leu Val Ala Leu Tyr Lys Tyr Met Lys Glu Arg Lys
                325                 330                 335

Thr Pro Ile Glu Arg Ile Pro Tyr Leu Gly Phe Lys Gln Ile Asn Leu
            340                 345                 350

Trp Thr Met Phe Gln Ala Ala Gln Lys Leu Gly Gly Tyr Glu Thr Ile
        355                 360                 365

Thr Ala Arg Arg Gln Trp Lys His Ile Tyr Asp Glu Leu Gly Gly Asn
    370                 375                 380

Pro Gly Ser Thr Ser Ala Ala Thr Cys Thr Arg Arg His Tyr Glu Arg
385                 390                 395                 400

Leu Ile Leu Pro Tyr Glu Arg Phe Ile Lys Gly Glu Glu Asp Lys Pro
                405                 410                 415

Leu Pro Pro Ile Lys Pro Arg Lys Gln Glu Asn Ser Ser Gln Glu Asn
            420                 425                 430

Glu Asn Lys Thr Lys Val Ser Gly Thr Lys Arg Ile Lys His Glu Ile
        435                 440                 445

Pro Lys Ser Lys Lys Glu Lys Glu Asn Ala Pro Lys Pro Gln Asp Ala
    450                 455                 460

Ala Glu Val Ser Ser Glu Gln Glu Lys Glu Gln Glu Thr Leu Ile Ser
465                 470                 475                 480

Gln Lys Ser Ile Pro Glu Pro Leu Pro Ala Ala Asp Met Lys Lys Lys
                485                 490                 495

Ile Glu Gly Tyr Gln Glu Phe Ser Ala Lys Pro Leu Ala Ser Arg Val
            500                 505                 510

Asp Pro Glu Lys Asp Asn Glu Thr Asp Gln Gly Ser Asn Ser Glu Lys
        515                 520                 525

Val Ala Glu Glu Ala Gly Glu Lys Gly Pro Thr Pro Pro Leu Pro Ser
    530                 535                 540
```

```
Ala Pro Leu Ala Pro Glu Lys Asp Ser Ala Leu Val Pro Gly Ala Ser
545                 550                 555                 560

Lys Gln Pro Leu Thr Ser Pro Ser Ala Leu Val Asp Ser Lys Gln Glu
                565                 570                 575

Ser Lys Leu Cys Cys Phe Thr Glu Ser Pro Glu Ser Glu Pro Gln Glu
            580                 585                 590

Ala Ser Phe Pro Ser Phe Pro Thr Thr Gln Pro Pro Leu Ala Asn Gln
        595                 600                 605

Asn Glu Thr Glu Asp Asp Lys Leu Pro Ala Met Ala Asp Tyr Ile Ala
    610                 615                 620

Asn Cys Thr Val Lys Val Asp Gln Leu Gly Ser Asp Asp Ile His Asn
625                 630                 635                 640

Ala Leu Lys Gln Thr Pro Lys Val Leu Val Val Gln Ser Phe Asp Met
                645                 650                 655

Phe Lys Asp Lys Asp Leu Thr Gly Pro Met Asn Glu Asn His Gly Leu
            660                 665                 670

Asn Tyr Thr Pro Leu Leu Tyr Ser Arg Gly Asn Pro Gly Ile Met Ser
        675                 680                 685

Pro Leu Ala Lys Lys Lys Leu Leu Ser Gln Val Ser Gly Ala Ser Leu
    690                 695                 700

Ser Ser Ser Tyr Pro Tyr Gly Ser Pro Pro Pro Leu Ile Ser Lys Lys
705                 710                 715                 720

Lys Leu Ile Ala Arg Asp Asp Leu Cys Ser Ser Leu Ser Gln Thr His
                725                 730                 735

His Gly Gln Ser Thr Asp His Met Ala Val Ser Arg Pro Ser Val Ile
            740                 745                 750

Gln His Val Gln Ser Phe Arg Ser Lys Pro Ser Glu Glu Arg Lys Thr
        755                 760                 765
```

```
Ile Asn Asp Ile Phe Lys His Glu Lys Leu Ser Arg Ser Asp Pro His
    770                 775                 780

Arg Cys Ser Phe Ser Lys His His Leu Asn Pro Leu Ala Asp Ser Tyr
785                 790                 795                 800

Val Leu Lys Gln Glu Ile Gln Glu Gly Lys Asp Lys Leu Leu Glu Lys
                805                 810                 815

Arg Ala Leu Pro His Ser His Met Pro Ser Phe Leu Ala Asp Phe Tyr
            820                 825                 830

Ser Ser Pro His Leu His Ser Leu Tyr Arg His Thr Glu His His Leu
        835                 840                 845

His Asn Glu Gln Thr Ser Lys Tyr Pro Ser Arg Asp Met Tyr Arg Glu
    850                 855                 860

Ser Glu Asn Ser Ser Phe Pro Ser His Arg His Gln Glu Lys Leu His
865                 870                 875                 880

Val Asn Tyr Leu Thr Ser Leu His Leu Gln Asp Lys Lys Ser Ala Ala
                885                 890                 895

Ala Glu Ala Pro Thr Asp Asp Gln Pro Thr Asp Leu Ser Leu Pro Lys
            900                 905                 910

Asn Pro His Lys Pro Thr Gly Lys Val Leu Gly Leu Ala His Ser Thr
        915                 920                 925

Thr Gly Pro Gln Glu Ser Lys Gly Ile Ser Gln Phe Gln Val Leu Gly
    930                 935                 940

Ser Gln Ser Arg Asp Cys His Pro Lys Ala Cys Arg Val Ser Pro Met
945                 950                 955                 960

Thr Met Ser Gly Pro Lys Lys Tyr Pro Glu Ser Leu Ser Arg Ser Gly
                965                 970                 975

Lys Pro His His Val Arg Leu Glu Asn Phe Arg Lys Met Glu Gly Met
            980                 985                 990

Val His Pro Ile Leu His Arg Lys  Met Ser Pro Gln Asn  Ile Gly
```

Ala
995 1000 1005

Ala Arg Pro Ile Lys Arg Ser Leu Glu Asp Leu Asp Leu Val Ile
1010 1015 1020

Ala Gly Lys Lys Ala Arg Ala Val Ser Pro Leu Asp Pro Ser Lys
1025 1030 1035

Glu Val Ser Gly Lys Glu Lys Ala Ser Glu Gln Glu Ser Glu Gly
1040 1045 1050

Ser Lys Ala Ala His Gly Gly His Ser Gly Gly Gly Ser Glu Gly
1055 1060 1065

His Lys Leu Pro Leu Ser Ser Pro Ile Phe Pro Gly Leu Tyr Ser
1070 1075 1080

Gly Ser Leu Cys Asn Ser Gly Leu Asn Ser Arg Leu Pro Ala Gly
1085 1090 1095

Tyr Ser His Ser Leu Gln Tyr Leu Lys Asn Gln Thr Val Leu Ser
1100 1105 1110

Pro Leu Met Gln Pro Leu Ala Phe His Ser Leu Val Met Gln Arg
1115 1120 1125

Gly Ile Phe Thr Ser Pro Thr Asn Ser Gln Gln Leu Tyr Arg His
1130 1135 1140

Leu Ala Ala Ala Thr Pro Val Gly Ser Ser Tyr Gly Asp Leu Leu
1145 1150 1155

His Asn Ser Ile Tyr Pro Leu Ala Ala Ile Asn Pro Gln Ala Ala
1160 1165 1170

Phe Pro Ser Ser Gln Leu Ser Ser Val His Pro Ser Thr Lys Leu
1175 1180 1185

<210> 6847
<211> 945
<212> PRT
<213> Homo sapiens

<220>
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<221> source
<223> /note="Gene Symbol: ARID5B; "

<220>
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<223> /note="Gene Name:
AT rich interactive domain 5B (MRF
1-like); "

<220>
<221> source
<223> /note="Uniprot ID: Q14865; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000308862"

<400> 6847
Met Ala Pro Asn Leu Lys Gly Arg Pro Arg Lys Lys Lys Pro Cys Pro
1   5   10   15

Gln Arg Arg Asp Ser Phe Ser Gly Val Lys Asp Ser Asn Asn Asn Ser
            20   25   30

Asp Gly Lys Ala Val Ala Lys Val Lys Cys Glu Ala Arg Ser Ala Leu
        35   40   45

Thr Lys Pro Lys Asn Asn His Asn Cys Lys Lys Val Ser Asn Glu Glu
    50   55   60

Lys Pro Lys Val Ala Ile Gly Glu Glu Cys Arg Ala Asp Glu Gln Ala
65   70   75   80

Phe Leu Val Ala Leu Tyr Lys Tyr Met Lys Glu Arg Lys Thr Pro Ile
                85   90   95

Glu Arg Ile Pro Tyr Leu Gly Phe Lys Gln Ile Asn Leu Trp Thr Met
            100   105   110

Phe Gln Ala Ala Gln Lys Leu Gly Gly Tyr Glu Thr Ile Thr Ala Arg
        115   120   125

Arg Gln Trp Lys His Ile Tyr Asp Glu Leu Gly Gly Asn Pro Gly Ser
    130   135   140

```
Thr Ser Ala Ala Thr Cys Thr Arg Arg His Tyr Glu Arg Leu Ile Leu
145                 150                 155                 160

Pro Tyr Glu Arg Phe Ile Lys Gly Glu Glu Asp Lys Pro Leu Pro Pro
                165                 170                 175

Ile Lys Pro Arg Lys Gln Glu Asn Ser Ser Gln Glu Asn Glu Asn Lys
            180                 185                 190

Thr Lys Val Ser Gly Thr Lys Arg Ile Lys His Glu Ile Pro Lys Ser
        195                 200                 205

Lys Lys Glu Lys Glu Asn Ala Pro Lys Pro Gln Asp Ala Ala Glu Val
    210                 215                 220

Ser Ser Glu Gln Glu Lys Glu Gln Glu Thr Leu Ile Ser Gln Lys Ser
225                 230                 235                 240

Ile Pro Glu Pro Leu Pro Ala Ala Asp Met Lys Lys Lys Ile Glu Gly
                245                 250                 255

Tyr Gln Glu Phe Ser Ala Lys Pro Leu Ala Ser Arg Val Asp Pro Glu
            260                 265                 270

Lys Asp Asn Glu Thr Asp Gln Gly Ser Asn Ser Glu Lys Val Ala Glu
        275                 280                 285

Glu Ala Gly Glu Lys Gly Pro Thr Pro Pro Leu Pro Ser Ala Pro Leu
    290                 295                 300

Ala Pro Glu Lys Asp Ser Ala Leu Val Pro Gly Ala Ser Lys Gln Pro
305                 310                 315                 320

Leu Thr Ser Pro Ser Ala Leu Val Asp Ser Lys Gln Glu Ser Lys Leu
                325                 330                 335

Cys Cys Phe Thr Glu Ser Pro Glu Ser Glu Pro Gln Glu Ala Ser Phe
            340                 345                 350

Pro Ser Phe Pro Thr Thr Gln Pro Pro Leu Ala Asn Gln Asn Glu Thr
        355                 360                 365
```

```
Glu Asp Asp Lys Leu Pro Ala Met Ala Asp Tyr Ile Ala Asn Cys Thr
    370                 375                 380

Val Lys Val Asp Gln Leu Gly Ser Asp Asp Ile His Asn Ala Leu Lys
385                 390                 395                 400

Gln Thr Pro Lys Val Leu Val Val Gln Ser Phe Asp Met Phe Lys Asp
                405                 410                 415

Lys Asp Leu Thr Gly Pro Met Asn Glu Asn His Gly Leu Asn Tyr Thr
            420                 425                 430

Pro Leu Leu Tyr Ser Arg Gly Asn Pro Gly Ile Met Ser Pro Leu Ala
        435                 440                 445

Lys Lys Lys Leu Leu Ser Gln Val Ser Gly Ala Ser Leu Ser Ser Ser
    450                 455                 460

Tyr Pro Tyr Gly Ser Pro Pro Pro Leu Ile Ser Lys Lys Lys Leu Ile
465                 470                 475                 480

Ala Arg Asp Asp Leu Cys Ser Ser Leu Ser Gln Thr His His Gly Gln
                485                 490                 495

Ser Thr Asp His Met Ala Val Ser Arg Pro Ser Val Ile Gln His Val
            500                 505                 510

Gln Ser Phe Arg Ser Lys Pro Ser Glu Glu Arg Lys Thr Ile Asn Asp
        515                 520                 525

Ile Phe Lys His Glu Lys Leu Ser Arg Ser Asp Pro His Arg Cys Ser
    530                 535                 540

Phe Ser Lys His His Leu Asn Pro Leu Ala Asp Ser Tyr Val Leu Lys
545                 550                 555                 560

Gln Glu Ile Gln Glu Gly Lys Asp Lys Leu Leu Glu Lys Arg Ala Leu
                565                 570                 575

Pro His Ser His Met Pro Ser Phe Leu Ala Asp Phe Tyr Ser Ser Pro
            580                 585                 590
```

```
His Leu His Ser Leu Tyr Arg His Thr Glu His His Leu His Asn Glu
        595                 600                 605

Gln Thr Ser Lys Tyr Pro Ser Arg Asp Met Tyr Arg Glu Ser Glu Asn
    610                 615                 620

Ser Ser Phe Pro Ser His Arg His Gln Glu Lys Leu His Val Asn Tyr
625                 630                 635                 640

Leu Thr Ser Leu His Leu Gln Asp Lys Lys Ser Ala Ala Ala Glu Ala
                645                 650                 655

Pro Thr Asp Asp Gln Pro Thr Asp Leu Ser Leu Pro Lys Asn Pro His
            660                 665                 670

Lys Pro Thr Gly Lys Val Leu Gly Leu Ala His Ser Thr Thr Gly Pro
        675                 680                 685

Gln Glu Ser Lys Gly Ile Ser Gln Phe Gln Val Leu Gly Ser Gln Ser
    690                 695                 700

Arg Asp Cys His Pro Lys Ala Cys Arg Val Ser Pro Met Thr Met Ser
705                 710                 715                 720

Gly Pro Lys Lys Tyr Pro Glu Ser Leu Ser Arg Ser Gly Lys Pro His
                725                 730                 735

His Val Arg Leu Glu Asn Phe Arg Lys Met Glu Gly Met Val His Pro
            740                 745                 750

Ile Leu His Arg Lys Met Ser Pro Gln Asn Ile Gly Ala Ala Arg Pro
        755                 760                 765

Ile Lys Arg Ser Leu Glu Asp Leu Asp Leu Val Ile Ala Gly Lys Lys
    770                 775                 780

Ala Arg Ala Val Ser Pro Leu Asp Pro Ser Lys Glu Val Ser Gly Lys
785                 790                 795                 800

Glu Lys Ala Ser Glu Gln Glu Ser Glu Gly Ser Lys Ala Ala His Gly
                805                 810                 815

Gly His Ser Gly Gly Gly Ser Glu Gly His Lys Leu Pro Leu Ser Ser
```

```
            820                 825                 830

Pro Ile Phe Pro Gly Leu Tyr Ser Gly Ser Leu Cys Asn Ser Gly Leu
        835                 840                 845

Asn Ser Arg Leu Pro Ala Gly Tyr Ser His Ser Leu Gln Tyr Leu Lys
    850                 855                 860

Asn Gln Thr Val Leu Ser Pro Leu Met Gln Pro Leu Ala Phe His Ser
865                 870                 875                 880

Leu Val Met Gln Arg Gly Ile Phe Thr Ser Pro Thr Asn Ser Gln Gln
                885                 890                 895

Leu Tyr Arg His Leu Ala Ala Ala Thr Pro Val Gly Ser Ser Tyr Gly
            900                 905                 910

Asp Leu Leu His Asn Ser Ile Tyr Pro Leu Ala Ala Ile Asn Pro Gln
        915                 920                 925

Ala Ala Phe Pro Ser Ser Gln Leu Ser Ser Val His Pro Ser Thr Lys
    930                 935                 940

Leu
945


<210> 6848
<211> 371
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1471; "

<220>
<221> source
<223> /note="Gene Symbol: ATCAY; "

<220>
<221> source
<223> /note="Gene Name:
      ataxia, cerebellar, Cayman type; "

<220>
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<223> /note="Uniprot ID:  Q86WG3; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000390941"

<400> 6848
Met Gly Thr Thr Glu Ala Thr Leu Arg Met Glu Asn Val Asp Val Lys
1   5   10   15

Glu Glu Trp Gln Asp Glu Asp Leu Pro Arg Pro Leu Pro Glu Glu Thr
            20   25   30

Gly Val Glu Leu Leu Gly Ser Pro Val Glu Asp Thr Ser Ser Pro Pro
        35   40   45

Asn Thr Leu Asn Phe Asn Gly Ala His Arg Lys Arg Lys Thr Leu Val
    50   55   60

Ala Pro Glu Ile Asn Ile Ser Leu Asp Gln Ser Glu Gly Ser Leu Leu
65   70   75   80

Ser Asp Asp Phe Leu Asp Thr Pro Asp Asp Leu Asp Ile Asn Val Asp
                85   90   95

Asp Ile Glu Thr Pro Asp Glu Thr Asp Ser Leu Glu Phe Leu Gly Asn
            100   105   110

Gly Asn Glu Leu Glu Trp Glu Asp Asp Thr Pro Val Ala Thr Ala Lys
        115   120   125

Asn Met Pro Gly Asp Ser Ala Asp Leu Phe Gly Asp Gly Thr Thr Glu
    130   135   140

Asp Gly Ser Ala Ala Asn Gly Arg Leu Trp Arg Thr Val Ile Ile Gly
145   150   155   160

Glu Gln Glu His Arg Ile Asp Leu His Met Ile Arg Pro Tyr Met Lys
                165   170   175

Val Val Thr His Gly Gly Tyr Tyr Gly Glu Gly Leu Asn Ala Ile Ile
            180   185   190

Val Phe Ala Ala Cys Phe Leu Pro Asp Ser Ser Leu Pro Asp Tyr His
        195   200   205

```
Tyr Ile Met Glu Asn Leu Phe Leu Tyr Val Ile Ser Ser Leu Glu Leu
    210                 215                 220

Leu Val Ala Glu Asp Tyr Met Ile Val Tyr Leu Asn Gly Ala Thr Pro
225                 230                 235                 240

Arg Arg Arg Met Pro Gly Ile Gly Trp Leu Lys Lys Cys Tyr Gln Met
                245                 250                 255

Ile Asp Arg Arg Leu Arg Lys Asn Leu Lys Ser Leu Ile Ile Val His
            260                 265                 270

Pro Ser Trp Phe Ile Arg Thr Val Leu Ala Ile Ser Arg Pro Phe Ile
        275                 280                 285

Ser Val Lys Phe Ile Asn Lys Ile Gln Tyr Val His Ser Leu Glu Asp
    290                 295                 300

Leu Glu Gln Leu Ile Pro Met Glu His Val Gln Ile Pro Asp Cys Val
305                 310                 315                 320

Leu Gln Tyr Glu Glu Glu Arg Leu Lys Ala Arg Arg Glu Ser Ala Arg
                325                 330                 335

Pro Gln Pro Glu Phe Val Leu Pro Arg Ser Glu Glu Lys Pro Glu Val
            340                 345                 350

Ala Pro Val Glu Asn Arg Ser Ala Leu Val Ser Glu Asp Gln Glu Thr
        355                 360                 365

Ser Met Ser
    370


<210> 6849
<211> 377
<212> PRT
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<223> /note="Gene Symbol: ATCAY; "
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<223> /note="Gene Name:
ataxia, cerebellar, Cayman type; "

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<400> 6849
Met Gly Thr Thr Glu Ala Thr Leu Arg Met Glu Asn Val Asp Val Lys
1   5   10   15

Glu Glu Trp Gln Asp Glu Asp Leu Pro Arg Pro Leu Pro Glu Glu Thr
            20   25   30

Gly Val Glu Leu Leu Gly Ser Pro Val Glu Asp Thr Ser Ser Pro Pro
        35   40   45

Asn Thr Leu Asn Phe Asn Gly Ala His Arg Lys Arg Lys Thr Leu Val
    50   55   60

Ala Pro Glu Ile Asn Ile Ser Leu Asp Gln Ser Glu Gly Ser Leu Leu
65   70   75   80

Ser Asp Asp Phe Leu Asp Thr Pro Asp Asp Leu Asp Ile Asn Val Asp
                85   90   95

Asp Ile Glu Thr Pro Asp Glu Thr Asp Ser Leu Glu Phe Leu Gly Asn
            100   105   110

Gly Asn Glu Leu Glu Trp Glu Asp Asp Thr Pro Val Ala Thr Ala Lys
        115   120   125

Asn Met Pro Gly Asp Ser Ala Asp Leu Phe Gly Asp Gly Thr Thr Glu
    130   135   140

Asp Gly Ser Ala Ala Asn Gly Arg Leu Trp Arg Thr Val Ile Ile Gly
145   150   155   160

Glu Gln Glu His Arg Ile Asp Leu His Met Ile Arg Pro Tyr Met Lys
                165   170   175

```
Val Val Thr His Gly Gly Tyr Tyr Gly Glu Gly Leu Asn Ala Ile Ile
            180                 185                 190

Val Phe Ala Ala Cys Phe Leu Pro Asp Ser Ser Leu Pro Asp Tyr His
        195                 200                 205

Tyr Ile Met Glu Asn Leu Phe Leu Tyr Val Ile Ser Ser Leu Glu Leu
    210                 215                 220

Leu Val Ala Glu Asp Tyr Met Ile Val Tyr Leu Asn Gly Ala Thr Pro
225                 230                 235                 240

Arg Arg Arg Met Pro Gly Ile Gly Trp Leu Lys Lys Cys Tyr Gln Met
                245                 250                 255

Ile Asp Arg Arg Leu Arg Lys Asn Leu Lys Ser Leu Ile Ile Val His
            260                 265                 270

Pro Ser Trp Phe Ile Arg Thr Val Leu Ala Ile Ser Arg Pro Phe Ile
        275                 280                 285

Ser Val Lys Phe Ile Asn Lys Ile Gln Tyr Val His Ser Leu Glu Asp
    290                 295                 300

Leu Glu Gln Leu Ile Pro Met Glu His Val Gln Ile Pro Asp Cys Val
305                 310                 315                 320

Leu Gln Tyr Glu Glu Glu Arg Leu Lys Ala Arg Arg Glu Ser Ala Arg
                325                 330                 335

Pro Gln Pro Glu Phe Val Leu Pro Arg Ser Glu Glu Lys Pro Glu Val
            340                 345                 350

Ala Pro Val Glu Asn Arg Ser Ala Leu Val Ser Glu Asp Gln Glu Thr
        355                 360                 365

Ser Leu Gln Pro Leu His Arg Ser Ser
    370                 375
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<210> 6850
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<400> 6850
Met Gly Thr Thr Glu Ala Thr Leu Arg Met Glu Asn Val Asp Val Lys
1 5 10 15

Glu Glu Trp Gln Asp Glu Asp Leu Pro Arg Pro Leu Pro Glu Glu Thr
20 25 30

Gly Val Glu Leu Leu Gly Ser Pro Val Glu Asp Thr Ser Ser Pro Pro
35 40 45

Asn Thr Leu Asn Phe Asn Gly Ala His Arg Lys Arg Lys Thr Leu Val
50 55 60

Ala Pro Glu Ile Asn Ile Ser Leu Asp Gln Ser Glu Gly Ser Leu Leu
65 70 75 80

Ser Asp Asp Phe Leu Asp Thr Pro Asp Asp Leu Asp Ile Asn Val Asp
85 90 95

Asp Ile Glu

<210> 6851
<211> 74
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ataxia, cerebellar, Cayman type; "

<220>
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<400> 6851
Met Gly Thr Thr Glu Ala Thr Leu Arg Met Glu Asn Val Asp Val Lys
1 5 10 15

Glu Glu Trp Gln Asp Glu Asp Leu Pro Ser Gln Glu Leu Leu Cys Thr
20 25 30

Ile Leu Gly Thr Thr Lys Ser Lys Ile His Arg Ala Gly Trp Lys Leu
35 40 45

Ser Gly His Ser Gln Lys Arg Arg Gly Trp Asn Cys Leu Ala Ala Arg
50 55 60

Trp Lys Thr His Pro Leu Leu Pro Thr Arg
65 70

<210> 6852
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<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATXN1; "

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="Uniprot ID: P54253; "

<220>
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<223> /note="ENSP ID: ENSP00000244769"

<400> 6852

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Met Lys Ser Asn Gln Glu Arg Ser Asn Glu Cys Leu Pro Pro Lys Lys
1               5                  10                  15

Arg Glu Ile Pro Ala Thr Ser Arg Ser Ser Glu Glu Lys Ala Pro Thr
            20                  25                  30

Leu Pro Ser Asp Asn His Arg Val Glu Gly Thr Ala Trp Leu Pro Gly
        35                  40                  45

Asn Pro Gly Gly Arg Gly His Gly Gly Gly Arg His Gly Pro Ala Gly
    50                  55                  60

Thr Ser Val Glu Leu Gly Leu Gln Gln Gly Ile Gly Leu His Lys Ala
65                  70                  75                  80

Leu Ser Thr Gly Leu Asp Tyr Ser Pro Pro Ser Ala Pro Arg Ser Val
                85                  90                  95

Pro Val Ala Thr Thr Leu Pro Ala Ala Tyr Ala Thr Pro Gln Pro Gly
            100                 105                 110

Thr Pro Val Ser Pro Val Gln Tyr Ala His Leu Pro His Thr Phe Gln
        115                 120                 125

Phe Ile Gly Ser Ser Gln Tyr Ser Gly Thr Tyr Ala Ser Phe Ile Pro
    130                 135                 140

Ser Gln Leu Ile Pro Pro Thr Ala Asn Pro Val Thr Ser Ala Val Ala
145                 150                 155                 160

Ser Ala Ala Gly Ala Thr Thr Pro Ser Gln Arg Ser Gln Leu Glu Ala
                165                 170                 175

Tyr Ser Thr Leu Leu Ala Asn Met Gly Ser Leu Ser Gln Thr Pro Gly
            180                 185                 190

His Lys Ala Glu Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln
        195                 200                 205

His Gln His Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln
    210                 215                 220
```

```
Gln His Leu Ser Arg Ala Pro Gly Leu Ile Thr Pro Gly Ser Pro Pro
225                 230                 235                 240

Pro Ala Gln Gln Asn Gln Tyr Val His Ile Ser Ser Ser Pro Gln Asn
                245                 250                 255

Thr Gly Arg Thr Ala Ser Pro Pro Ala Ile Pro Val His Leu His Pro
            260                 265                 270

His Gln Thr Met Ile Pro His Thr Leu Thr Leu Gly Pro Pro Ser Gln
        275                 280                 285

Val Val Met Gln Tyr Ala Asp Ser Gly Ser His Phe Val Pro Arg Glu
    290                 295                 300

Ala Thr Lys Lys Ala Glu Ser Ser Arg Leu Gln Gln Ala Ile Gln Ala
305                 310                 315                 320

Lys Glu Val Leu Asn Gly Glu Met Glu Lys Ser Arg Arg Tyr Gly Ala
                325                 330                 335

Pro Ser Ser Ala Asp Leu Gly Leu Gly Lys Ala Gly Gly Lys Ser Val
            340                 345                 350

Pro His Pro Tyr Glu Ser Arg His Val Val Val His Pro Ser Pro Ser
        355                 360                 365

Asp Tyr Ser Ser Arg Asp Pro Ser Gly Val Arg Ala Ser Val Met Val
    370                 375                 380

Leu Pro Asn Ser Asn Thr Pro Ala Ala Asp Leu Glu Val Gln Gln Ala
385                 390                 395                 400

Thr His Arg Glu Ala Ser Pro Ser Thr Leu Asn Asp Lys Ser Gly Leu
                405                 410                 415

His Leu Gly Lys Pro Gly His Arg Ser Tyr Ala Leu Ser Pro His Thr
            420                 425                 430

Val Ile Gln Thr Thr His Ser Ala Ser Glu Pro Leu Pro Val Gly Leu
        435                 440                 445
```

```
Pro Ala Thr Ala Phe Tyr Ala Gly Thr Gln Pro Pro Val Ile Gly Tyr
    450                 455                 460

Leu Ser Gly Gln Gln Gln Ala Ile Thr Tyr Ala Gly Ser Leu Pro Gln
465                 470                 475                 480

His Leu Val Ile Pro Gly Thr Gln Pro Leu Leu Ile Pro Val Gly Ser
                485                 490                 495

Thr Asp Met Glu Ala Ser Gly Ala Ala Pro Ala Ile Val Thr Ser Ser
            500                 505                 510

Pro Gln Phe Ala Ala Val Pro His Thr Phe Val Thr Thr Ala Leu Pro
        515                 520                 525

Lys Ser Glu Asn Phe Asn Pro Glu Ala Leu Val Thr Gln Ala Ala Tyr
    530                 535                 540

Pro Ala Met Val Gln Ala Gln Ile His Leu Pro Val Val Gln Ser Val
545                 550                 555                 560

Ala Ser Pro Ala Ala Ala Pro Pro Thr Leu Pro Pro Tyr Phe Met Lys
                565                 570                 575

Gly Ser Ile Ile Gln Leu Ala Asn Gly Glu Leu Lys Lys Val Glu Asp
            580                 585                 590

Leu Lys Thr Glu Asp Phe Ile Gln Ser Ala Glu Ile Ser Asn Asp Leu
        595                 600                 605

Lys Ile Asp Ser Ser Thr Val Glu Arg Ile Glu Asp Ser His Ser Pro
    610                 615                 620

Gly Val Ala Val Ile Gln Phe Ala Val Gly Glu His Arg Ala Gln Val
625                 630                 635                 640

Ser Val Glu Val Leu Val Glu Tyr Pro Phe Phe Val Phe Gly Gln Gly
                645                 650                 655

Trp Ser Ser Cys Cys Pro Glu Arg Thr Ser Gln Leu Phe Asp Leu Pro
            660                 665                 670
```

```
Cys Ser Lys Leu Ser Val Gly Asp Val Cys Ile Ser Leu Thr Leu Lys
        675                 680                 685

Asn Leu Lys Asn Gly Ser Val Lys Lys Gly Gln Pro Val Asp Pro Ala
    690                 695                 700

Ser Val Leu Leu Lys His Ser Lys Ala Asp Gly Leu Ala Gly Ser Arg
705                 710                 715                 720

His Arg Tyr Ala Glu Gln Glu Asn Gly Ile Asn Gln Gly Ser Ala Gln
                725                 730                 735

Met Leu Ser Glu Asn Gly Glu Leu Lys Phe Pro Glu Lys Met Gly Leu
            740                 745                 750

Pro Ala Ala Pro Phe Leu Thr Lys Ile Glu Pro Ser Lys Pro Ala Ala
        755                 760                 765

Thr Arg Lys Arg Arg Trp Ser Ala Pro Glu Ser Arg Lys Leu Glu Lys
    770                 775                 780

Ser Glu Asp Glu Pro Pro Leu Thr Leu Pro Lys Pro Ser Leu Ile Pro
785                 790                 795                 800

Gln Glu Val Lys Ile Cys Ile Glu Gly Arg Ser Asn Val Gly Lys
                805                 810                 815
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<210> 6853
<211> 815
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1472; "

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<400> 6853
Met Lys Ser Asn Gln Glu Arg Ser Asn Glu Cys Leu Pro Pro Lys Lys
1   5   10   15

Arg Glu Ile Pro Ala Thr Ser Arg Ser Ser Glu Glu Lys Ala Pro Thr
            20   25   30

Leu Pro Ser Asp Asn His Arg Val Glu Gly Thr Ala Trp Leu Pro Gly
        35   40   45

Asn Pro Gly Gly Arg Gly His Gly Gly Gly Arg His Gly Pro Ala Gly
    50   55   60

Thr Ser Val Glu Leu Gly Leu Gln Gln Gly Ile Gly Leu His Lys Ala
65   70   75   80

Leu Ser Thr Gly Leu Asp Tyr Ser Pro Pro Ser Ala Pro Arg Ser Val
                85   90   95

Pro Val Ala Thr Thr Leu Pro Ala Ala Tyr Ala Thr Pro Gln Pro Gly
            100   105   110

Thr Pro Val Ser Pro Val Gln Tyr Ala His Leu Pro His Thr Phe Gln
        115   120   125

Phe Ile Gly Ser Ser Gln Tyr Ser Gly Thr Tyr Ala Ser Phe Ile Pro
    130   135   140

Ser Gln Leu Ile Pro Pro Thr Ala Asn Pro Val Thr Ser Ala Val Ala
145   150   155   160

Ser Ala Ala Gly Ala Thr Thr Pro Ser Gln Arg Ser Gln Leu Glu Ala
                165   170   175

Tyr Ser Thr Leu Leu Ala Asn Met Gly Ser Leu Ser Gln Thr Pro Gly
            180   185   190

His Lys Ala Glu Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln
        195   200   205

```
His Gln His Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln
    210                 215                 220

Gln His Leu Ser Arg Ala Pro Gly Leu Ile Thr Pro Gly Ser Pro Pro
225                 230                 235                 240

Pro Ala Gln Gln Asn Gln Tyr Val His Ile Ser Ser Ser Pro Gln Asn
                245                 250                 255

Thr Gly Arg Thr Ala Ser Pro Pro Ala Ile Pro Val His Leu His Pro
            260                 265                 270

His Gln Thr Met Ile Pro His Thr Leu Thr Leu Gly Pro Pro Ser Gln
        275                 280                 285

Val Val Met Gln Tyr Ala Asp Ser Gly Ser His Phe Val Pro Arg Glu
    290                 295                 300

Ala Thr Lys Lys Ala Glu Ser Ser Arg Leu Gln Gln Ala Ile Gln Ala
305                 310                 315                 320

Lys Glu Val Leu Asn Gly Glu Met Glu Lys Ser Arg Arg Tyr Gly Ala
                325                 330                 335

Pro Ser Ser Ala Asp Leu Gly Leu Gly Lys Ala Gly Gly Lys Ser Val
            340                 345                 350

Pro His Pro Tyr Glu Ser Arg His Val Val Val His Pro Ser Pro Ser
        355                 360                 365

Asp Tyr Ser Ser Arg Asp Pro Ser Gly Val Arg Ala Ser Val Met Val
    370                 375                 380

Leu Pro Asn Ser Asn Thr Pro Ala Ala Asp Leu Glu Val Gln Gln Ala
385                 390                 395                 400

Thr His Arg Glu Ala Ser Pro Ser Thr Leu Asn Asp Lys Ser Gly Leu
                405                 410                 415

His Leu Gly Lys Pro Gly His Arg Ser Tyr Ala Leu Ser Pro His Thr
            420                 425                 430
```

```
Val Ile Gln Thr Thr His Ser Ala Ser Glu Pro Leu Pro Val Gly Leu
        435                 440                 445

Pro Ala Thr Ala Phe Tyr Ala Gly Thr Gln Pro Pro Val Ile Gly Tyr
    450                 455                 460

Leu Ser Gly Gln Gln Gln Ala Ile Thr Tyr Ala Gly Ser Leu Pro Gln
465                 470                 475                 480

His Leu Val Ile Pro Gly Thr Gln Pro Leu Leu Ile Pro Val Gly Ser
                485                 490                 495

Thr Asp Met Glu Ala Ser Gly Ala Ala Pro Ala Ile Val Thr Ser Ser
            500                 505                 510

Pro Gln Phe Ala Ala Val Pro His Thr Phe Val Thr Thr Ala Leu Pro
        515                 520                 525

Lys Ser Glu Asn Phe Asn Pro Glu Ala Leu Val Thr Gln Ala Ala Tyr
    530                 535                 540

Pro Ala Met Val Gln Ala Gln Ile His Leu Pro Val Val Gln Ser Val
545                 550                 555                 560

Ala Ser Pro Ala Ala Ala Pro Pro Thr Leu Pro Pro Tyr Phe Met Lys
                565                 570                 575

Gly Ser Ile Ile Gln Leu Ala Asn Gly Glu Leu Lys Lys Val Glu Asp
            580                 585                 590

Leu Lys Thr Glu Asp Phe Ile Gln Ser Ala Glu Ile Ser Asn Asp Leu
        595                 600                 605

Lys Ile Asp Ser Ser Thr Val Glu Arg Ile Glu Asp Ser His Ser Pro
    610                 615                 620

Gly Val Ala Val Ile Gln Phe Ala Val Gly Glu His Arg Ala Gln Val
625                 630                 635                 640

Ser Val Glu Val Leu Val Glu Tyr Pro Phe Phe Val Phe Gly Gln Gly
                645                 650                 655

Trp Ser Ser Cys Cys Pro Glu Arg Thr Ser Gln Leu Phe Asp Leu Pro
```

660 665 670

Cys Ser Lys Leu Ser Val Gly Asp Val Cys Ile Ser Leu Thr Leu Lys
675 680 685

Asn Leu Lys Asn Gly Ser Val Lys Lys Gly Gln Pro Val Asp Pro Ala
690 695 700

Ser Val Leu Leu Lys His Ser Lys Ala Asp Gly Leu Ala Gly Ser Arg
705 710 715 720

His Arg Tyr Ala Glu Gln Glu Asn Gly Ile Asn Gln Gly Ser Ala Gln
725 730 735

Met Leu Ser Glu Asn Gly Glu Leu Lys Phe Pro Glu Lys Met Gly Leu
740 745 750

Pro Ala Ala Pro Phe Leu Thr Lys Ile Glu Pro Ser Lys Pro Ala Ala
755 760 765

Thr Arg Lys Arg Arg Trp Ser Ala Pro Glu Ser Arg Lys Leu Glu Lys
770 775 780

Ser Glu Asp Glu Pro Pro Leu Thr Leu Pro Lys Pro Ser Leu Ile Pro
785 790 795 800

Gln Glu Val Lys Ile Cys Ile Glu Gly Arg Ser Asn Val Gly Lys
805 810 815

<210> 6854
<211> 475
<212> PRT
<213> Homo sapiens

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<400> 6854
Met Ala Ala Pro Arg Pro Pro Pro Ala Arg Leu Ser Gly Val Met Val
1   5   10   15

Pro Ala Pro Ile Gln Asp Leu Glu Ala Leu Arg Ala Leu Thr Ala Leu
            20   25   30

Phe Lys Glu Gln Arg Asn Arg Glu Thr Ala Pro Arg Thr Ile Phe Gln
        35   40   45

Arg Val Leu Asp Ile Leu Lys Lys Ser Ser His Ala Val Glu Leu Ala
    50   55   60

Cys Arg Asp Pro Ser Gln Val Glu Asn Leu Ala Ser Ser Leu Gln Leu
65   70   75   80

Ile Thr Glu Cys Phe Arg Cys Leu Arg Asn Ala Cys Ile Glu Cys Ser
                85   90   95

Val Asn Gln Asn Ser Ile Arg Asn Leu Asp Thr Ile Gly Val Ala Val
            100   105   110

Asp Leu Ile Leu Leu Phe Arg Glu Leu Arg Val Glu Gln Glu Ser Leu
        115   120   125

Leu Thr Ala Phe Arg Cys Gly Leu Gln Phe Leu Gly Asn Ile Ala Ser
    130   135   140

Arg Asn Glu Asp Ser Gln Ser Ile Val Trp Val His Ala Phe Pro Glu
145   150   155   160

Leu Phe Leu Ser Cys Leu Asn His Pro Asp Lys Lys Ile Val Ala Tyr
                165   170   175

Ser Ser Met Ile Leu Phe Thr Ser Leu Asn His Glu Arg Met Lys Glu
            180   185   190

```
Leu Glu Glu Asn Leu Asn Ile Ala Ile Asp Val Ile Asp Ala Tyr Gln
        195                 200                 205

Lys His Pro Glu Ser Glu Trp Pro Phe Leu Ile Ile Thr Asp Leu Phe
    210                 215                 220

Leu Lys Ser Pro Glu Leu Val Gln Ala Met Phe Pro Lys Leu Asn Asn
225                 230                 235                 240

Gln Glu Arg Val Thr Leu Leu Asp Leu Met Ile Ala Lys Ile Thr Ser
                245                 250                 255

Asp Glu Pro Leu Thr Lys Asp Asp Ile Pro Val Phe Leu Arg His Ala
            260                 265                 270

Glu Leu Ile Ala Ser Thr Phe Val Asp Gln Cys Lys Thr Val Leu Lys
        275                 280                 285

Leu Ala Ser Glu Glu Pro Pro Asp Asp Glu Glu Ala Leu Ala Thr Ile
    290                 295                 300

Arg Leu Leu Asp Val Leu Cys Glu Met Thr Val Asn Thr Glu Leu Leu
305                 310                 315                 320

Gly Tyr Leu Gln Val Phe Pro Gly Leu Leu Glu Arg Val Ile Asp Leu
                325                 330                 335

Leu Arg Val Ile His Val Ala Gly Lys Glu Thr Thr Asn Ile Phe Ser
            340                 345                 350

Asn Cys Gly Cys Val Arg Ala Glu Gly Asp Ile Ser Asn Val Ala Asn
        355                 360                 365

Gly Phe Lys Ser His Leu Ile Arg Leu Ile Gly Asn Leu Cys Tyr Lys
    370                 375                 380

Asn Lys Asp Asn Gln Asp Lys Val Asn Glu Leu Asp Gly Ile Pro Leu
385                 390                 395                 400

Ile Leu Asp Asn Cys Asn Ile Ser Asp Ser Asn Pro Phe Leu Thr Gln
                405                 410                 415

Trp Val Ile Tyr Ala Ile Arg Asn Leu Thr Glu Asp Asn Ser Gln Asn
```

420 425 430

Gln Asp Leu Ile Ala Lys Met Glu Glu Gln Gly Leu Ala Asp Ala Ser
435 440 445

Leu Leu Lys Lys Val Gly Phe Glu Val Glu Lys Lys Gly Glu Lys Leu
450 455 460

Ile Leu Lys Ser Thr Arg Asp Thr Pro Lys Pro
465 470 475

<210> 6855
<211> 411
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Uniprot ID: Q9UBB4; "

<220>
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<400> 6855
Met Ala Ala Pro Arg Pro Pro Pro Ala Arg Leu Ser Gly Val Met Val
1 5 10 15

Pro Ala Pro Ile Gln Asp Leu Glu Ala Leu Arg Ala Leu Thr Ala Leu
20 25 30

Phe Lys Glu Gln Arg Asn Arg Asn Leu Asp Thr Ile Gly Val Ala Val
35 40 45

Asp Leu Ile Leu Leu Phe Arg Glu Leu Arg Val Glu Gln Glu Ser Leu
50 55 60

```
Leu Thr Ala Phe Arg Cys Gly Leu Gln Phe Leu Gly Asn Ile Ala Ser
65                  70                  75                  80

Arg Asn Glu Asp Ser Gln Ser Ile Val Trp Val His Ala Phe Pro Glu
                85                  90                  95

Leu Phe Leu Ser Cys Leu Asn His Pro Asp Lys Lys Ile Val Ala Tyr
            100                 105                 110

Ser Ser Met Ile Leu Phe Thr Ser Leu Asn His Glu Arg Met Lys Glu
        115                 120                 125

Leu Glu Glu Asn Leu Asn Ile Ala Ile Asp Val Ile Asp Ala Tyr Gln
    130                 135                 140

Lys His Pro Glu Ser Glu Trp Pro Phe Leu Ile Ile Thr Asp Leu Phe
145                 150                 155                 160

Leu Lys Ser Pro Glu Leu Val Gln Ala Met Phe Pro Lys Leu Asn Asn
                165                 170                 175

Gln Glu Arg Val Thr Leu Leu Asp Leu Met Ile Ala Lys Ile Thr Ser
            180                 185                 190

Asp Glu Pro Leu Thr Lys Asp Asp Ile Pro Val Phe Leu Arg His Ala
        195                 200                 205

Glu Leu Ile Ala Ser Thr Phe Val Asp Gln Cys Lys Thr Val Leu Lys
    210                 215                 220

Leu Ala Ser Glu Glu Pro Pro Asp Asp Glu Glu Ala Leu Ala Thr Ile
225                 230                 235                 240

Arg Leu Leu Asp Val Leu Cys Glu Met Thr Val Asn Thr Glu Leu Leu
                245                 250                 255

Gly Tyr Leu Gln Val Phe Pro Gly Leu Leu Glu Arg Val Ile Asp Leu
            260                 265                 270

Leu Arg Val Ile His Val Ala Gly Lys Glu Thr Thr Asn Ile Phe Ser
        275                 280                 285
```

```
Asn Cys Gly Cys Val Arg Ala Glu Gly Asp Ile Ser Asn Val Ala Asn
    290                 295                 300

Gly Phe Lys Ser His Leu Ile Arg Leu Ile Gly Asn Leu Cys Tyr Lys
305                 310                 315                 320

Asn Lys Asp Asn Gln Asp Lys Val Asn Glu Leu Asp Gly Ile Pro Leu
                325                 330                 335

Ile Leu Asp Asn Cys Asn Ile Ser Asp Ser Asn Pro Phe Leu Thr Gln
            340                 345                 350

Trp Val Ile Tyr Ala Ile Arg Asn Leu Thr Glu Asp Asn Ser Gln Asn
        355                 360                 365

Gln Asp Leu Ile Ala Lys Met Glu Glu Gln Gly Leu Ala Asp Ala Ser
    370                 375                 380

Leu Leu Lys Lys Val Gly Phe Glu Val Glu Lys Lys Gly Glu Lys Leu
385                 390                 395                 400

Ile Leu Lys Ser Thr Arg Asp Thr Pro Lys Pro
                405                 410


<210> 6856
<211> 126
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1473; "

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<223> /note="Gene Name:
      ataxin 10; "

<220>
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<223> /note="ENSP ID: ENSP00000385624"

<400> 6856
Met Gln Val Pro Gln His Leu Lys Arg Ser His Gln Ser His Ser Ser
1               5                   10                  15
```

```
Met Leu Arg Pro Ser Cys Leu Leu Leu Arg Ser Ser Cys His Pro Arg
            20                  25                  30

Phe Leu Pro Phe Pro Ser Asp Ala Gly Gln Val Asn Glu Leu Asp Gly
        35                  40                  45

Ile Pro Leu Ile Leu Asp Asn Cys Asn Ile Ser Asp Ser Asn Pro Phe
    50                  55                  60

Leu Thr Gln Trp Val Ile Tyr Ala Ile Arg Asn Leu Thr Glu Asp Asn
65                  70                  75                  80

Ser Gln Asn Gln Asp Leu Ile Ala Lys Met Glu Glu Gln Gly Leu Ala
                85                  90                  95

Asp Ala Ser Leu Leu Lys Lys Val Gly Phe Glu Val Glu Lys Lys Gly
            100                 105                 110

Glu Lys Leu Ile Leu Lys Ser Thr Arg Asp Thr Pro Lys Pro
        115                 120                 125
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<210> 6857
<211> 197
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="ENSP ID: ENSP00000391117"

<400> 6857

```
Leu Met Ile Ala Lys Ile Thr Ser Asp Glu Pro Leu Thr Lys Asp Asp
1               5                   10                  15
```

```
Ile Pro Val Phe Leu Arg His Ala Glu Leu Ile Ala Ser Thr Phe Val
            20                  25                  30

Asp Gln Cys Lys Thr Val Leu Lys Leu Ala Ser Glu Glu Pro Pro Asp
        35                  40                  45

Asp Glu Glu Ala Leu Ala Thr Ile Arg Leu Leu Asp Val Leu Cys Glu
    50                  55                  60

Met Thr Val Asn Thr Glu Leu Leu Gly Tyr Leu Gln Val Phe Pro Gly
65                  70                  75                  80

Leu Leu Glu Arg Val Ile Asp Leu Leu Arg Val Ile His Val Ala Gly
                85                  90                  95

Lys Glu Thr Thr Asn Ile Phe Ser Asn Cys Gly Cys Val Arg Ala Glu
            100                 105                 110

Gly Asp Ile Ser Asn Val Ala Asn Gly Phe Lys Ser His Leu Ile Arg
        115                 120                 125

Leu Ile Gly Asn Leu Cys Tyr Lys Asn Lys Asp Asn Gln Asp Lys Val
    130                 135                 140

Asn Glu Leu Asp Gly Ile Pro Leu Ile Leu Asp Asn Cys Asn Ile Ser
145                 150                 155                 160

Asp Ser Asn Pro Tyr Val Cys Thr His His Pro Asp Gly Asn Thr Glu
                165                 170                 175

His Ala His Leu Pro Arg Arg Leu Leu Glu Cys Pro Val Ser Leu Thr
            180                 185                 190

Ala Asn Pro Gln Met
        195


<210> 6858
<211> 689
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1474; "
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ataxin
1-like; "

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<400> 6858
Met Lys Pro Val His Glu Arg Ser Gln Glu Cys Leu Pro Pro Lys Lys
1   5   10   15

Arg Asp Leu Pro Val Thr Ser Glu Asp Met Gly Arg Thr Thr Ser Cys
            20   25   30

Ser Thr Asn His Thr Pro Ser Ser Asp Ala Ser Glu Trp Ser Arg Gly
        35   40   45

Val Val Val Ala Gly Gln Ser Gln Ala Gly Ala Arg Val Ser Leu Gly
    50   55   60

Gly Asp Gly Ala Glu Ala Ile Thr Gly Leu Thr Val Asp Gln Tyr Gly
65   70   75   80

Met Leu Tyr Lys Val Ala Val Pro Pro Ala Thr Phe Ser Pro Thr Gly
                85   90   95

Leu Pro Ser Val Val Asn Met Ser Pro Leu Pro Pro Thr Phe Asn Val
            100   105   110

Ala Ser Ser Leu Ile Gln His Pro Gly Ile His Tyr Pro Pro Leu His
        115   120   125

Tyr Ala Gln Leu Pro Ser Thr Ser Leu Gln Phe Ile Gly Ser Pro Tyr
    130   135   140

Ser Leu Pro Tyr Ala Val Pro Pro Asn Phe Leu Pro Ser Pro Leu Leu
145   150   155   160

```
Ser Pro Ser Ala Asn Leu Ala Thr Ser His Leu Pro His Phe Val Pro
                165                 170                 175

Tyr Ala Ser Leu Leu Ala Glu Gly Ala Thr Pro Pro Pro Gln Ala Pro
            180                 185                 190

Ser Pro Ala His Ser Phe Asn Lys Ala Pro Ser Ala Thr Ser Pro Ser
        195                 200                 205

Gly Gln Leu Pro His His Ser Ser Thr Gln Pro Leu Asp Leu Ala Pro
    210                 215                 220

Gly Arg Met Pro Ile Tyr Tyr Gln Met Ser Arg Leu Pro Ala Gly Tyr
225                 230                 235                 240

Thr Leu His Glu Thr Pro Pro Ala Gly Ala Ser Pro Val Leu Thr Pro
                245                 250                 255

Gln Glu Ser Gln Ser Ala Leu Glu Ala Ala Ala Ala Asn Gly Gly Gln
            260                 265                 270

Arg Pro Arg Glu Arg Asn Leu Val Arg Arg Glu Ser Glu Ala Leu Asp
        275                 280                 285

Ser Pro Asn Ser Lys Gly Glu Gly Gln Gly Leu Val Pro Val Val Glu
    290                 295                 300

Cys Val Val Asp Gly Gln Leu Phe Ser Gly Ser Gln Thr Pro Arg Val
305                 310                 315                 320

Glu Val Ala Ala Pro Ala His Arg Gly Thr Pro Asp Thr Asp Leu Glu
                325                 330                 335

Val Gln Arg Val Val Gly Ala Leu Ala Ser Gln Asp Tyr Arg Val Val
            340                 345                 350

Ala Ala Gln Arg Lys Glu Glu Pro Ser Pro Leu Asn Leu Ser His His
        355                 360                 365

Thr Pro Asp His Gln Gly Glu Gly Arg Gly Ser Ala Arg Asn Pro Ala
    370                 375                 380
```

```
Glu Leu Ala Glu Lys Ser Gln Ala Arg Gly Phe Tyr Pro Gln Ser His
385                 390                 395                 400

Gln Glu Pro Val Lys His Arg Pro Leu Pro Lys Ala Met Val Val Ala
                405                 410                 415

Asn Gly Asn Leu Val Pro Thr Gly Thr Asp Ser Gly Leu Leu Pro Val
            420                 425                 430

Gly Ser Glu Ile Leu Val Ala Ser Ser Leu Asp Val Gln Ala Arg Ala
        435                 440                 445

Thr Phe Pro Asp Lys Glu Pro Thr Pro Pro Pro Ile Thr Ser Ser His
    450                 455                 460

Leu Pro Ser His Phe Met Lys Gly Ala Ile Ile Gln Leu Ala Thr Gly
465                 470                 475                 480

Glu Leu Lys Arg Val Glu Asp Leu Gln Thr Gln Asp Phe Val Arg Ser
                485                 490                 495

Ala Glu Val Ser Gly Gly Leu Lys Ile Asp Ser Ser Thr Val Val Asp
            500                 505                 510

Ile Gln Glu Ser Gln Trp Pro Gly Phe Val Met Leu His Phe Val Val
        515                 520                 525

Gly Glu Gln Gln Ser Lys Val Ser Ile Glu Val Pro Pro Glu His Pro
    530                 535                 540

Phe Phe Val Tyr Gly Gln Gly Trp Ser Ser Cys Ser Pro Gly Arg Thr
545                 550                 555                 560

Thr Gln Leu Phe Ser Leu Pro Cys His Arg Leu Gln Val Gly Asp Val
                565                 570                 575

Cys Ile Ser Ile Ser Leu Gln Ser Leu Asn Ser Asn Ser Val Ser Gln
            580                 585                 590

Ala Ser Cys Ala Pro Pro Ser Gln Leu Gly Pro Pro Arg Glu Arg Pro
        595                 600                 605
```

```
Glu Arg Thr Val Leu Gly Ser Arg Glu Leu Cys Asp Ser Glu Gly Lys
    610                 615                 620

Ser Gln Pro Ala Gly Glu Gly Ser Arg Val Val Glu Pro Ser Gln Pro
625                 630                 635                 640

Glu Ser Gly Ala Gln Ala Cys Trp Pro Ala Pro Ser Phe Gln Arg Tyr
                645                 650                 655

Ser Met Gln Gly Glu Glu Ala Arg Ala Ala Leu Leu Arg Pro Ser Phe
            660                 665                 670

Ile Pro Gln Glu Val Lys Leu Ser Ile Glu Gly Arg Ser Asn Ala Gly
        675                 680                 685

Lys
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<210> 6859
<211> 1313
<212> PRT
<213> Homo sapiens

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<221> source
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ataxin 2; "

<220>
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<400> 6859

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Met Arg Ser Ala Ala Ala Ala Pro Arg Ser Pro Ala Val Ala Thr Glu
1               5                   10                  15

Ser Arg Arg Phe Ala Ala Ala Arg Trp Pro Gly Trp Arg Ser Leu Gln
            20                  25                  30
```

```
Arg Pro Ala Arg Arg Ser Gly Arg Gly Gly Gly Gly Ala Ala Pro Gly
        35                  40                  45

Pro Tyr Pro Ser Ala Ala Pro Pro Pro Pro Gly Pro Gly Pro Pro Pro
    50                  55                  60

Ser Arg Gln Ser Ser Pro Pro Ser Ala Ser Asp Cys Phe Gly Ser Asn
65                  70                  75                  80

Gly Asn Gly Gly Gly Ala Phe Arg Pro Gly Ser Arg Arg Leu Leu Gly
                85                  90                  95

Leu Gly Gly Pro Pro Arg Pro Phe Val Val Leu Leu Leu Pro Leu Ala
            100                 105                 110

Ser Pro Gly Ala Pro Pro Ala Ala Pro Thr Arg Ala Ser Pro Leu Gly
        115                 120                 125

Ala Arg Ala Ser Pro Pro Arg Ser Gly Val Ser Leu Ala Arg Pro Ala
    130                 135                 140

Pro Gly Cys Pro Arg Pro Ala Cys Glu Pro Val Tyr Gly Pro Leu Thr
145                 150                 155                 160

Met Ser Leu Lys Pro Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln
                165                 170                 175

Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Pro Pro Pro Ala Ala
            180                 185                 190

Ala Ala Asn Val Arg Lys Pro Gly Gly Ser Gly Leu Leu Ala Ser Pro
        195                 200                 205

Ala Ala Ala Pro Ser Pro Ser Ser Ser Ser Val Ser Ser Ser Ser Ala
    210                 215                 220

Thr Ala Pro Ser Ser Val Val Ala Ala Thr Ser Gly Gly Gly Arg Pro
225                 230                 235                 240

Gly Leu Gly Arg Gly Arg Asn Ser Asn Lys Gly Leu Pro Gln Ser Thr
                245                 250                 255
```

```
Ile Ser Phe Asp Gly Ile Tyr Ala Asn Met Arg Met Val His Ile Leu
            260                 265                 270

Thr Ser Val Val Gly Ser Lys Cys Glu Val Gln Val Lys Asn Gly Gly
        275                 280                 285

Ile Tyr Glu Gly Val Phe Lys Thr Tyr Ser Pro Lys Cys Asp Leu Val
    290                 295                 300

Leu Asp Ala Ala His Glu Lys Ser Thr Glu Ser Ser Ser Gly Pro Lys
305                 310                 315                 320

Arg Glu Glu Ile Met Glu Ser Ile Leu Phe Lys Cys Ser Asp Phe Val
                325                 330                 335

Val Val Gln Phe Lys Asp Met Asp Ser Ser Tyr Ala Lys Arg Asp Ala
            340                 345                 350

Phe Thr Asp Ser Ala Ile Ser Ala Lys Val Asn Gly Glu His Lys Glu
        355                 360                 365

Lys Asp Leu Glu Pro Trp Asp Ala Gly Glu Leu Thr Ala Asn Glu Glu
    370                 375                 380

Leu Glu Ala Leu Glu Asn Asp Val Ser Asn Gly Trp Asp Pro Asn Asp
385                 390                 395                 400

Met Phe Arg Tyr Asn Glu Glu Asn Tyr Gly Val Val Ser Thr Tyr Asp
                405                 410                 415

Ser Ser Leu Ser Ser Tyr Thr Val Pro Leu Glu Arg Asp Asn Ser Glu
            420                 425                 430

Glu Phe Leu Lys Arg Glu Ala Arg Ala Asn Gln Leu Ala Glu Glu Ile
        435                 440                 445

Glu Ser Ser Ala Gln Tyr Lys Ala Arg Val Ala Leu Glu Asn Asp Asp
    450                 455                 460

Arg Ser Glu Glu Glu Lys Tyr Thr Ala Val Gln Arg Asn Ser Ser Glu
465                 470                 475                 480
```

```
Arg Glu Gly His Ser Ile Asn Thr Arg Glu Asn Lys Tyr Ile Pro Pro
                485                 490                 495

Gly Gln Arg Asn Arg Glu Val Ile Ser Trp Gly Ser Gly Arg Gln Asn
            500                 505                 510

Ser Pro Arg Met Gly Gln Pro Gly Ser Gly Ser Met Pro Ser Arg Ser
        515                 520                 525

Thr Ser His Thr Ser Asp Phe Asn Pro Asn Ser Gly Ser Asp Gln Arg
    530                 535                 540

Val Val Asn Gly Gly Val Pro Trp Pro Ser Pro Cys Pro Ser Pro Ser
545                 550                 555                 560

Ser Arg Pro Pro Ser Arg Tyr Gln Ser Gly Pro Asn Ser Leu Pro Pro
                565                 570                 575

Arg Ala Ala Thr Pro Thr Arg Pro Pro Ser Arg Pro Pro Ser Arg Pro
            580                 585                 590

Ser Arg Pro Pro Ser His Pro Ser Ala His Gly Ser Pro Ala Pro Val
        595                 600                 605

Ser Thr Met Pro Lys Arg Met Ser Ser Glu Gly Pro Pro Arg Met Ser
    610                 615                 620

Pro Lys Ala Gln Arg His Pro Arg Asn His Arg Val Ser Ala Gly Arg
625                 630                 635                 640

Gly Ser Ile Ser Ser Gly Leu Glu Phe Val Ser His Asn Pro Pro Ser
                645                 650                 655

Glu Ala Ala Thr Pro Pro Val Ala Arg Thr Ser Pro Ser Gly Gly Thr
            660                 665                 670

Trp Ser Ser Val Val Ser Gly Val Pro Arg Leu Ser Pro Lys Thr His
        675                 680                 685

Arg Pro Arg Ser Pro Arg Gln Asn Ser Ile Gly Asn Thr Pro Ser Gly
    690                 695                 700

Pro Val Leu Ala Ser Pro Gln Ala Gly Ile Ile Pro Thr Glu Ala Val
```

705 710 715 720

Ala Met Pro Ile Pro Ala Ala Ser Pro Thr Pro Ala Ser Pro Ala Ser
725 730 735

Asn Arg Ala Val Thr Pro Ser Ser Glu Ala Lys Asp Ser Arg Leu Gln
740 745 750

Asp Gln Arg Gln Asn Ser Pro Ala Gly Asn Lys Glu Asn Ile Lys Pro
755 760 765

Asn Glu Thr Ser Pro Ser Phe Ser Lys Ala Glu Asn Lys Gly Ile Ser
770 775 780

Pro Val Val Ser Glu His Arg Lys Gln Ile Asp Asp Leu Lys Lys Phe
785 790 795 800

Lys Asn Asp Phe Arg Leu Gln Pro Ser Ser Thr Ser Glu Ser Met Asp
805 810 815

Gln Leu Leu Asn Lys Asn Arg Glu Gly Glu Lys Ser Arg Asp Leu Ile
820 825 830

Lys Asp Lys Ile Glu Pro Ser Ala Lys Asp Ser Phe Ile Glu Asn Ser
835 840 845

Ser Ser Asn Cys Thr Ser Gly Ser Ser Lys Pro Asn Ser Pro Ser Ile
850 855 860

Ser Pro Ser Ile Leu Ser Asn Thr Glu His Lys Arg Gly Pro Glu Val
865 870 875 880

Thr Ser Gln Gly Val Gln Thr Ser Ser Pro Ala Cys Lys Gln Glu Lys
885 890 895

Asp Asp Lys Glu Glu Lys Lys Asp Ala Ala Glu Gln Val Arg Lys Ser
900 905 910

Thr Leu Asn Pro Asn Ala Lys Glu Phe Asn Pro Arg Ser Phe Ser Gln
915 920 925

Pro Lys Pro Ser Thr Thr Pro Thr Ser Pro Arg Pro Gln Ala Gln Pro
930 935 940

```
Ser Pro Ser Met Val Gly His Gln Gln Pro Thr Pro Val Tyr Thr Gln
945                 950                 955                 960

Pro Val Cys Phe Ala Pro Asn Met Met Tyr Pro Val Pro Val Ser Pro
                965                 970                 975

Gly Val Gln Pro Leu Tyr Pro Ile Pro Met Thr Pro Met Pro Val Asn
            980                 985                 990

Gln Ala Lys Thr Tyr Arg Ala Val  Pro Asn Met Pro Gln  Gln Arg
Gln
        995                 1000                1005

Asp Gln  His His Gln Ser Ala  Met Met His Pro Ala  Ser Ala Ala
    1010                1015                1020

Gly Pro  Pro Ile Ala Ala Thr  Pro Pro Ala Tyr Ser  Thr Gln Tyr
    1025                1030                1035

Val Ala  Tyr Ser Pro Gln Gln  Phe Pro Asn Gln Pro  Leu Val Gln
    1040                1045                1050

His Val  Pro His Tyr Gln Ser  Gln His Pro His Val  Tyr Ser Pro
    1055                1060                1065

Val Ile  Gln Gly Asn Ala Arg  Met Met Ala Pro Pro  Thr His Ala
    1070                1075                1080

Gln Pro  Gly Leu Val Ser Ser  Ser Ala Thr Gln Tyr  Gly Ala His
    1085                1090                1095

Glu Gln  Thr His Ala Met Tyr  Ala Cys Pro Lys Leu  Pro Tyr Asn
    1100                1105                1110

Lys Glu  Thr Ser Pro Ser Phe  Tyr Phe Ala Ile Ser  Thr Gly Ser
    1115                1120                1125

Leu Ala  Gln Gln Tyr Ala His  Pro Asn Ala Thr Leu  His Pro His
    1130                1135                1140

Thr Pro  His Pro Gln Pro Ser  Ala Thr Pro Thr Gly  Gln Gln Gln
    1145                1150                1155
```

```
Ser Gln  His Gly Gly Ser His  Pro Ala Pro Ser Pro  Val Gln His
    1160                1165                1170

His Gln  His Gln Ala Ala Gln  Ala Leu His Leu Ala  Ser Pro Gln
    1175                1180                1185

Gln Gln  Ser Ala Ile Tyr His  Ala Gly Leu Ala Pro  Thr Pro Pro
    1190                1195                1200

Ser Met  Thr Pro Ala Ser Asn  Thr Gln Ser Pro Gln  Asn Ser Phe
    1205                1210                1215

Pro Ala  Ala Gln Gln Thr Val  Phe Thr Ile His Pro  Ser His Val
    1220                1225                1230

Gln Pro  Ala Tyr Thr Asn Pro  Pro His Met Ala His  Val Pro Gln
    1235                1240                1245

Ala His  Val Gln Ser Gly Met  Val Pro Ser His Pro  Thr Ala His
    1250                1255                1260

Ala Pro  Met Met Leu Met Thr  Thr Gln Pro Pro Gly  Gly Pro Gln
    1265                1270                1275

Ala Ala  Leu Ala Gln Ser Ala  Leu Gln Pro Ile Pro  Val Ser Thr
    1280                1285                1290

Thr Ala  His Phe Pro Tyr Met  Thr His Pro Ser Val  Gln Ala His
    1295                1300                1305

His Gln  Gln Gln Leu
    1310


<210> 6860
<211> 1050
<212> PRT
<213> Homo sapiens

<220>
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<220>
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ataxin 2; "

<220>
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<400> 6860

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Met Arg Met Val His Ile Leu Thr Ser Val Val Gly Ser Lys Cys Glu
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Val Gln Val Lys Asn Gly Gly Ile Tyr Glu Gly Val Phe Lys Thr Tyr
            20                  25                  30

Ser Pro Lys Cys Asp Leu Val Leu Asp Ala Ala His Glu Lys Ser Thr
        35                  40                  45

Glu Ser Ser Ser Gly Pro Lys Arg Glu Glu Ile Met Glu Ser Ile Leu
    50                  55                  60

Phe Lys Cys Ser Asp Phe Val Val Val Gln Phe Lys Asp Met Asp Ser
65                  70                  75                  80

Ser Tyr Ala Lys Arg Asp Ala Phe Thr Asp Ser Ala Ile Ser Ala Lys
                85                  90                  95

Val Asn Gly Glu His Lys Glu Lys Asp Leu Glu Pro Trp Asp Ala Gly
            100                 105                 110

Glu Leu Thr Ala Asn Glu Glu Leu Glu Ala Leu Glu Asn Asp Val Ser
        115                 120                 125

Asn Gly Trp Asp Pro Asn Asp Met Phe Arg Tyr Asn Glu Glu Asn Tyr
    130                 135                 140

Gly Val Val Ser Thr Tyr Asp Ser Ser Leu Ser Ser Tyr Thr Val Pro
145                 150                 155                 160

Leu Glu Arg Asp Asn Ser Glu Glu Phe Leu Lys Arg Glu Ala Arg Ala
                165                 170                 175

Asn Gln Leu Ala Glu Glu Ile Glu Ser Ser Ala Gln Tyr Lys Ala Arg
```

```
            180                 185                 190

Val Ala Leu Glu Asn Asp Asp Arg Ser Glu Glu Glu Lys Tyr Thr Ala
        195                 200                 205

Val Gln Arg Asn Ser Ser Glu Arg Glu Gly His Ser Ile Asn Thr Arg
    210                 215                 220

Glu Asn Lys Tyr Ile Pro Pro Gly Gln Arg Asn Arg Glu Val Ile Ser
225                 230                 235                 240

Trp Gly Ser Gly Arg Gln Asn Ser Pro Arg Met Gly Gln Pro Gly Ser
                245                 250                 255

Gly Ser Met Pro Ser Arg Ser Thr Ser His Thr Ser Asp Phe Asn Pro
            260                 265                 270

Asn Ser Gly Ser Asp Gln Arg Val Val Asn Gly Gly Val Pro Trp Pro
        275                 280                 285

Ser Pro Cys Pro Ser Pro Ser Ser Arg Pro Pro Ser Arg Tyr Gln Ser
    290                 295                 300

Gly Pro Asn Ser Leu Pro Pro Arg Ala Ala Thr Pro Thr Arg Pro Pro
305                 310                 315                 320

Ser Arg Pro Pro Ser Arg Pro Ser Arg Pro Pro Ser His Pro Ser Ala
                325                 330                 335

His Gly Ser Pro Ala Pro Val Ser Thr Met Pro Lys Arg Met Ser Ser
            340                 345                 350

Glu Gly Pro Pro Arg Met Ser Pro Lys Ala Gln Arg His Pro Arg Asn
        355                 360                 365

His Arg Val Ser Ala Gly Arg Gly Ser Ile Ser Ser Gly Leu Glu Phe
    370                 375                 380

Val Ser His Asn Pro Pro Ser Glu Ala Ala Thr Pro Pro Val Ala Arg
385                 390                 395                 400

Thr Ser Pro Ser Gly Gly Thr Trp Ser Ser Val Val Ser Gly Val Pro
                405                 410                 415
```

```
Arg Leu Ser Pro Lys Thr His Arg Pro Arg Ser Pro Arg Gln Asn Ser
            420                 425                 430

Ile Gly Asn Thr Pro Ser Gly Pro Val Leu Ala Ser Pro Gln Ala Gly
        435                 440                 445

Ile Ile Pro Thr Glu Ala Val Ala Met Pro Ile Pro Ala Ala Ser Pro
    450                 455                 460

Thr Pro Ala Ser Pro Ala Ser Asn Arg Ala Val Thr Pro Ser Ser Glu
465                 470                 475                 480

Ala Lys Asp Ser Arg Leu Gln Asp Gln Arg Gln Asn Ser Pro Ala Gly
                485                 490                 495

Asn Lys Glu Asn Ile Lys Pro Asn Glu Thr Ser Pro Ser Phe Ser Lys
            500                 505                 510

Ala Glu Asn Lys Gly Ile Ser Pro Val Val Ser Glu His Arg Lys Gln
        515                 520                 525

Ile Asp Asp Leu Lys Lys Phe Lys Asn Asp Phe Arg Leu Gln Pro Ser
    530                 535                 540

Ser Thr Ser Glu Ser Met Asp Gln Leu Leu Asn Lys Asn Arg Glu Gly
545                 550                 555                 560

Glu Lys Ser Arg Asp Leu Ile Lys Asp Lys Ile Glu Pro Ser Ala Lys
                565                 570                 575

Asp Ser Phe Ile Glu Asn Ser Ser Ser Asn Cys Thr Ser Gly Ser Ser
            580                 585                 590

Lys Pro Asn Ser Pro Ser Ile Ser Pro Ser Ile Leu Ser Asn Thr Glu
        595                 600                 605

His Lys Arg Gly Pro Glu Val Thr Ser Gln Gly Val Gln Thr Ser Ser
    610                 615                 620

Pro Ala Cys Lys Gln Glu Lys Asp Asp Lys Glu Glu Lys Lys Asp Ala
625                 630                 635                 640
```

```
Ala Glu Gln Val Arg Lys Ser Thr Leu Asn Pro Asn Ala Lys Glu Phe
                645                 650                 655

Asn Pro Arg Ser Phe Ser Gln Pro Lys Pro Ser Thr Thr Pro Thr Ser
            660                 665                 670

Pro Arg Pro Gln Ala Gln Pro Ser Pro Ser Met Val Gly His Gln Gln
        675                 680                 685

Pro Thr Pro Val Tyr Thr Gln Pro Val Cys Phe Ala Pro Asn Met Met
    690                 695                 700

Tyr Pro Val Pro Val Ser Pro Gly Val Gln Pro Leu Tyr Pro Ile Pro
705                 710                 715                 720

Met Thr Pro Met Pro Val Asn Gln Ala Lys Thr Tyr Arg Ala Gly Lys
                725                 730                 735

Val Pro Asn Met Pro Gln Gln Arg Gln Asp Gln His His Gln Ser Ala
            740                 745                 750

Met Met His Pro Ala Ser Ala Ala Gly Pro Pro Ile Ala Ala Thr Pro
        755                 760                 765

Pro Ala Tyr Ser Thr Gln Tyr Val Ala Tyr Ser Pro Gln Gln Phe Pro
    770                 775                 780

Asn Gln Pro Leu Val Gln His Val Pro His Tyr Gln Ser Gln His Pro
785                 790                 795                 800

His Val Tyr Ser Pro Val Ile Gln Gly Asn Ala Arg Met Met Ala Pro
                805                 810                 815

Pro Thr His Ala Gln Pro Gly Leu Val Ser Ser Ser Ala Thr Gln Tyr
            820                 825                 830

Gly Ala His Glu Gln Thr His Ala Met Tyr Ala Cys Pro Lys Leu Pro
        835                 840                 845

Tyr Asn Lys Glu Thr Ser Pro Ser Phe Tyr Phe Ala Ile Ser Thr Gly
    850                 855                 860
```

```
Ser Leu Ala Gln Gln Tyr Ala His Pro Asn Ala Thr Leu His Pro His
865                 870                 875                 880

Thr Pro His Pro Gln Pro Ser Ala Thr Pro Thr Gly Gln Gln Gln Ser
                885                 890                 895

Gln His Gly Gly Ser His Pro Ala Pro Ser Pro Val Gln His His Gln
            900                 905                 910

His Gln Ala Ala Gln Ala Leu His Leu Ala Ser Pro Gln Gln Gln Ser
        915                 920                 925

Ala Ile Tyr His Ala Gly Leu Ala Pro Thr Pro Pro Ser Met Thr Pro
    930                 935                 940

Ala Ser Asn Thr Gln Ser Pro Gln Asn Ser Phe Pro Ala Ala Gln Gln
945                 950                 955                 960

Thr Val Phe Thr Ile His Pro Ser His Val Gln Pro Ala Tyr Thr Asn
                965                 970                 975

Pro Pro His Met Ala His Val Pro Gln Ala His Val Gln Ser Gly Met
            980                 985                 990

Val Pro Ser His Pro Thr Ala His  Ala Pro Met Met Leu  Met Thr
Thr
        995                 1000                1005

Gln Pro  Pro Gly Gly Pro Gln  Ala Ala Leu Ala Gln  Ser Ala Leu
    1010                1015                1020

Gln Pro  Ile Pro Val Ser Thr  Thr Ala His Phe Pro  Tyr Met Thr
    1025                1030                1035

His Pro  Ser Val Gln Ala His  His Gln Gln Gln Leu
    1040                1045                1050


<210> 6861
<211> 424
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
ataxin 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000373806"

<400> 6861

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Pro Ser Ile Ser Pro Ser Ile Leu Ser Asn Thr Glu His Lys Arg Gly
1               5                  10                  15

Pro Glu Val Thr Ser Gln Gly Val Gln Thr Ser Ser Pro Ala Cys Lys
            20                  25                  30

Gln Glu Lys Asp Asp Lys Glu Glu Lys Lys Asp Ala Ala Glu Gln Val
        35                  40                  45

Arg Lys Ser Thr Leu Asn Pro Asn Ala Lys Glu Phe Asn Pro Arg Ser
    50                  55                  60

Phe Ser Gln Pro Lys Pro Ser Thr Thr Pro Thr Ser Pro Arg Pro Gln
65                  70                  75                  80

Ala Gln Pro Ser Pro Ser Met Val Gly His Gln Gln Pro Thr Pro Val
                85                  90                  95

Tyr Thr Gln Pro Val Cys Phe Ala Pro Asn Met Met Tyr Pro Val Pro
            100                 105                 110

Val Ser Pro Gly Val Gln Pro Leu Tyr Pro Ile Pro Met Thr Pro Met
        115                 120                 125

Pro Val Asn Gln Ala Lys Thr Tyr Arg Ala Gly Lys Val Pro Asn Met
    130                 135                 140

Pro Gln Gln Arg Gln Asp Gln His His Gln Ser Ala Met Met His Pro
145                 150                 155                 160

Ala Ser Ala Ala Gly Pro Pro Ile Ala Ala Thr Pro Pro Ala Tyr Ser
                165                 170                 175
```

```
Thr Gln Tyr Val Ala Tyr Ser Pro Gln Gln Phe Pro Asn Gln Pro Leu
            180                 185                 190

Val Gln His Val Pro His Tyr Gln Ser Gln His Pro His Val Tyr Ser
        195                 200                 205

Pro Val Ile Gln Gly Asn Ala Arg Met Met Ala Pro Pro Thr His Ala
    210                 215                 220

Gln Pro Gly Leu Val Ser Ser Ser Ala Thr Gln Tyr Gly Ala His Glu
225                 230                 235                 240

Gln Thr His Ala Met Tyr Ala Cys Pro Lys Leu Pro Tyr Asn Lys Glu
                245                 250                 255

Thr Ser Pro Ser Phe Tyr Phe Ala Ile Ser Thr Gly Ser Leu Ala Gln
            260                 265                 270

Gln Tyr Ala His Pro Asn Ala Thr Leu His Pro His Thr Pro His Pro
        275                 280                 285

Gln Pro Ser Ala Thr Pro Thr Gly Gln Gln Gln Ser Gln His Gly Gly
    290                 295                 300

Ser His Pro Ala Pro Ser Pro Val Gln His His Gln His Gln Ala Ala
305                 310                 315                 320

Gln Ala Leu His Leu Ala Ser Pro Gln Gln Gln Ser Ala Ile Tyr His
                325                 330                 335

Ala Gly Leu Ala Pro Thr Pro Pro Ser Met Thr Pro Ala Ser Asn Thr
            340                 345                 350

Gln Ser Pro Gln Asn Ser Phe Pro Ala Ala Gln Gln Thr Val Phe Thr
        355                 360                 365

Ile His Pro Ser His Val Gln Pro Ala Tyr Thr Asn Pro Pro His Met
    370                 375                 380

Ala His Val Pro Gln Tyr Lys Pro Thr Thr Asn Ser Ser Cys Lys Ala
385                 390                 395                 400
```

```
Ala Leu Glu Glu Pro Lys Gly Gln Ile Pro Ser Ser Leu Leu Leu Leu
                405                 410                 415


Leu Pro Thr Gly Ser Thr Glu Asn
            420


<210> 6862
<211> 1006
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<400> 6862
Met Arg Met Val His Ile Leu Thr Ser Val Val Cys Asp Leu Val Leu
1               5                   10                  15


Asp Ala Ala His Glu Lys Ser Thr Glu Ser Ser Ser Gly Pro Lys Arg
            20                  25                  30


Glu Glu Ile Met Glu Ser Ile Leu Phe Lys Cys Ser Asp Phe Val Val
        35                  40                  45


Val Gln Phe Lys Asp Met Asp Ser Ser Tyr Ala Lys Arg Asp Ala Phe
    50                  55                  60


Thr Asp Ser Ala Ile Ser Ala Lys Val Asn Gly Glu His Lys Glu Lys
65                  70                  75                  80


Asp Leu Glu Pro Trp Asp Ala Gly Glu Leu Thr Ala Asn Glu Glu Leu
```

```
                85                  90                  95

Glu Ala Leu Glu Asn Asp Val Ser Asn Gly Trp Asp Pro Asn Asp Met
            100                 105                 110

Phe Arg Tyr Asn Glu Glu Asn Tyr Gly Val Val Ser Thr Tyr Asp Ser
        115                 120                 125

Ser Leu Ser Ser Tyr Thr Val Pro Leu Glu Arg Asp Asn Ser Glu Glu
    130                 135                 140

Phe Leu Lys Arg Glu Ala Arg Ala Asn Gln Leu Ala Glu Glu Ile Glu
145                 150                 155                 160

Ser Ser Ala Gln Tyr Lys Ala Arg Val Ala Leu Glu Asn Asp Asp Arg
                165                 170                 175

Ser Glu Glu Glu Lys Tyr Thr Ala Val Gln Arg Asn Ser Ser Glu Arg
            180                 185                 190

Glu Gly His Ser Ile Asn Thr Arg Glu Asn Lys Tyr Ile Pro Pro Gly
        195                 200                 205

Gln Arg Asn Arg Glu Val Ile Ser Trp Gly Ser Gly Arg Gln Asn Ser
    210                 215                 220

Pro Arg Met Gly Gln Pro Gly Ser Gly Ser Met Pro Ser Arg Ser Thr
225                 230                 235                 240

Ser His Thr Ser Asp Phe Asn Pro Asn Ser Gly Ser Asp Gln Arg Val
                245                 250                 255

Val Asn Gly Gly Val Pro Trp Pro Ser Pro Cys Pro Ser Pro Ser Ser
            260                 265                 270

Arg Pro Pro Ser Arg Tyr Gln Ser Gly Pro Asn Ser Leu Pro Pro Arg
        275                 280                 285

Ala Ala Thr Pro Thr Arg Pro Pro Ser Arg Pro Pro Ser Arg Pro Ser
    290                 295                 300

Arg Pro Pro Ser His Pro Ser Ala His Gly Ser Pro Ala Pro Val Ser
305                 310                 315                 320
```

```
Thr Met Pro Lys Arg Met Ser Ser Glu Gly Pro Pro Arg Met Ser Pro
                325                 330                 335

Lys Ala Gln Arg His Pro Arg Asn His Arg Val Ser Ala Gly Arg Gly
            340                 345                 350

Ser Ile Ser Ser Gly Leu Glu Phe Val Ser His Asn Pro Pro Ser Glu
        355                 360                 365

Ala Ala Thr Pro Pro Val Ala Arg Thr Ser Pro Ser Gly Gly Thr Trp
    370                 375                 380

Ser Ser Val Val Ser Gly Val Pro Arg Leu Ser Pro Lys Thr His Arg
385                 390                 395                 400

Pro Arg Ser Pro Arg Gln Asn Ser Ile Gly Asn Thr Pro Ser Gly Pro
                405                 410                 415

Val Leu Ala Ser Pro Gln Ala Gly Ile Ile Pro Thr Glu Ala Val Ala
            420                 425                 430

Met Pro Ile Pro Ala Ala Ser Pro Thr Pro Ala Ser Pro Ala Ser Asn
        435                 440                 445

Arg Ala Val Thr Pro Ser Ser Glu Ala Lys Asp Ser Arg Leu Gln Asp
    450                 455                 460

Gln Arg Gln Asn Ser Pro Ala Gly Asn Lys Glu Asn Ile Lys Pro Asn
465                 470                 475                 480

Glu Thr Ser Pro Ser Phe Ser Lys Ala Glu Asn Lys Gly Ile Ser Pro
                485                 490                 495

Val Val Ser Glu His Arg Lys Gln Ile Asp Asp Leu Lys Lys Phe Lys
            500                 505                 510

Asn Asp Phe Arg Leu Gln Pro Ser Ser Thr Ser Glu Ser Met Asp Gln
        515                 520                 525

Leu Leu Asn Lys Asn Arg Glu Gly Glu Lys Ser Arg Asp Leu Ile Lys
    530                 535                 540
```

```
Asp Lys Ile Glu Pro Ser Ala Lys Asp Ser Phe Ile Glu Asn Ser Ser
545                 550                 555                 560

Ser Asn Cys Thr Ser Gly Ser Ser Lys Pro Asn Ser Pro Ser Ile Ser
                565                 570                 575

Pro Ser Ile Leu Ser Asn Thr Glu His Lys Arg Gly Pro Glu Val Thr
            580                 585                 590

Ser Gln Gly Val Gln Thr Ser Ser Pro Ala Cys Lys Gln Glu Lys Asp
        595                 600                 605

Asp Lys Glu Glu Lys Lys Asp Ala Ala Glu Gln Val Arg Lys Ser Thr
    610                 615                 620

Leu Asn Pro Asn Ala Lys Glu Phe Asn Pro Arg Ser Phe Ser Gln Pro
625                 630                 635                 640

Lys Pro Ser Thr Thr Pro Thr Ser Pro Arg Pro Gln Ala Gln Pro Ser
                645                 650                 655

Pro Ser Met Val Gly His Gln Gln Pro Thr Pro Val Tyr Thr Gln Pro
            660                 665                 670

Val Cys Phe Ala Pro Asn Met Met Tyr Pro Val Pro Val Ser Pro Gly
        675                 680                 685

Val Gln Pro Leu Tyr Pro Ile Pro Met Thr Pro Met Pro Val Asn Gln
    690                 695                 700

Ala Lys Thr Tyr Arg Ala Val Pro Asn Met Pro Gln Gln Arg Gln Asp
705                 710                 715                 720

Gln His His Gln Ser Ala Met Met His Pro Ala Ser Ala Ala Gly Pro
                725                 730                 735

Pro Ile Ala Ala Thr Pro Pro Ala Tyr Ser Thr Gln Tyr Val Ala Tyr
            740                 745                 750

Ser Pro Gln Gln Phe Pro Asn Gln Pro Leu Val Gln His Val Pro His
        755                 760                 765
```

```
Tyr Gln Ser Gln His Pro His Val Tyr Ser Pro Val Ile Gln Gly Asn
    770                 775                 780

Ala Arg Met Met Ala Pro Pro Thr His Ala Gln Pro Gly Leu Val Ser
785                 790                 795                 800

Ser Ser Ala Thr Gln Tyr Gly Ala His Glu Gln Thr His Ala Met Tyr
                805                 810                 815

Val Ser Thr Gly Ser Leu Ala Gln Gln Tyr Ala His Pro Asn Ala Thr
            820                 825                 830

Leu His Pro His Thr Pro His Pro Gln Pro Ser Ala Thr Pro Thr Gly
        835                 840                 845

Gln Gln Gln Ser Gln His Gly Gly Ser His Pro Ala Pro Ser Pro Val
    850                 855                 860

Gln His His Gln His Gln Ala Ala Gln Ala Leu His Leu Ala Ser Pro
865                 870                 875                 880

Gln Gln Gln Ser Ala Ile Tyr His Ala Gly Leu Ala Pro Thr Pro Pro
                885                 890                 895

Ser Met Thr Pro Ala Ser Asn Thr Gln Ser Pro Gln Asn Ser Phe Pro
            900                 905                 910

Ala Ala Gln Gln Thr Val Phe Thr Ile His Pro Ser His Val Gln Pro
        915                 920                 925

Ala Tyr Thr Asn Pro Pro His Met Ala His Val Pro Gln Ala His Val
    930                 935                 940

Gln Ser Gly Met Val Pro Ser His Pro Thr Ala His Ala Pro Met Met
945                 950                 955                 960

Leu Met Thr Thr Gln Pro Pro Gly Gly Pro Gln Ala Ala Leu Ala Gln
                965                 970                 975

Ser Ala Leu Gln Pro Ile Pro Val Ser Thr Thr Ala His Phe Pro Tyr
            980                 985                 990

Met Thr His Pro Ser Val Gln Ala  His His Gln Gln Gln  Leu
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995 1000 1005

<210> 6863
<211> 1073
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
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<223> /note="Gene Name:
ataxin 2; "

<220>
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<400> 6863
Met Arg Met Val His Ile Leu Thr Ser Val Val Gly Ser Lys Cys Glu
1 5 10 15

Val Gln Val Lys Asn Gly Gly Ile Tyr Glu Gly Val Phe Lys Thr Tyr
20 25 30

Ser Pro Lys Cys Asp Leu Val Leu Asp Ala Ala His Glu Lys Ser Thr
35 40 45

Glu Ser Ser Ser Gly Pro Lys Arg Glu Glu Ile Met Glu Ser Ile Leu
50 55 60

Phe Lys Cys Ser Asp Phe Val Val Val Gln Phe Lys Asp Met Asp Ser
65 70 75 80

Ser Tyr Ala Lys Arg Asp Ala Phe Thr Asp Ser Ala Ile Ser Ala Lys
85 90 95

Val Asn Gly Glu His Lys Glu Lys Asp Leu Glu Pro Trp Asp Ala Gly
100 105 110

Glu Leu Thr Ala Asn Glu Glu Leu Glu Ala Leu Glu Asn Asp Val Ser
115 120 125

```
Asn Gly Trp Asp Pro Asn Asp Met Phe Arg Tyr Asn Glu Glu Asn Tyr
    130                 135                 140

Gly Val Val Ser Thr Tyr Asp Ser Ser Leu Ser Ser Tyr Thr Val Pro
145                 150                 155                 160

Leu Glu Arg Asp Asn Ser Glu Glu Phe Leu Lys Arg Glu Ala Arg Ala
                165                 170                 175

Asn Gln Leu Ala Glu Glu Ile Glu Ser Ser Ala Gln Tyr Lys Ala Arg
            180                 185                 190

Val Ala Leu Glu Asn Asp Asp Arg Ser Glu Glu Glu Lys Tyr Thr Ala
        195                 200                 205

Val Gln Arg Asn Ser Ser Glu Arg Glu Gly His Ser Ile Asn Thr Arg
    210                 215                 220

Glu Asn Lys Tyr Ile Pro Pro Gly Gln Arg Asn Arg Glu Val Ile Ser
225                 230                 235                 240

Trp Gly Ser Gly Arg Gln Asn Ser Pro Arg Met Gly Gln Pro Gly Ser
                245                 250                 255

Gly Ser Met Pro Ser Arg Ser Thr Ser His Thr Ser Asp Phe Asn Pro
            260                 265                 270

Asn Ser Gly Ser Asp Gln Arg Val Val Asn Gly Gly Val Pro Trp Pro
        275                 280                 285

Ser Pro Cys Pro Ser Pro Ser Ser Arg Pro Pro Ser Arg Tyr Gln Ser
    290                 295                 300

Gly Pro Asn Ser Leu Pro Pro Arg Ala Ala Thr Pro Thr Arg Pro Pro
305                 310                 315                 320

Ser Arg Pro Pro Ser Arg Pro Ser Arg Pro Pro Ser His Pro Ser Ala
                325                 330                 335

His Gly Ser Pro Ala Pro Val Ser Thr Met Pro Lys Arg Met Ser Ser
            340                 345                 350
```

```
Glu Gly Pro Pro Arg Met Ser Pro Lys Ala Gln Arg His Pro Arg Asn
        355                 360                 365

His Arg Val Ser Ala Gly Arg Gly Ser Ile Ser Ser Gly Leu Glu Phe
    370                 375                 380

Val Ser His Asn Pro Pro Ser Glu Ala Ala Thr Pro Pro Val Ala Arg
385                 390                 395                 400

Thr Ser Pro Ser Gly Gly Thr Trp Ser Ser Val Val Ser Gly Val Pro
                405                 410                 415

Arg Leu Ser Pro Lys Thr His Arg Pro Arg Ser Pro Arg Gln Asn Ser
            420                 425                 430

Ile Gly Asn Thr Pro Ser Gly Pro Val Leu Ala Ser Pro Gln Ala Gly
        435                 440                 445

Ile Ile Pro Thr Glu Ala Val Ala Met Pro Ile Pro Ala Ala Ser Pro
    450                 455                 460

Thr Pro Ala Ser Pro Ala Ser Asn Arg Ala Val Thr Pro Ser Ser Glu
465                 470                 475                 480

Ala Lys Asp Ser Arg Leu Gln Asp Gln Arg Gln Asn Ser Pro Ala Gly
                485                 490                 495

Asn Lys Glu Asn Ile Lys Pro Asn Glu Thr Ser Pro Ser Phe Ser Lys
            500                 505                 510

Ala Glu Asn Lys Gly Ile Ser Pro Val Val Ser Glu His Arg Lys Gln
        515                 520                 525

Ile Asp Asp Leu Lys Lys Phe Lys Asn Asp Phe Arg Leu Gln Pro Ser
    530                 535                 540

Ser Thr Ser Glu Ser Met Asp Gln Leu Leu Asn Lys Asn Arg Glu Gly
545                 550                 555                 560

Glu Lys Ser Arg Asp Leu Ile Lys Asp Lys Ile Glu Pro Ser Ala Lys
                565                 570                 575

Asp Ser Phe Ile Glu Asn Ser Ser Ser Asn Cys Thr Ser Gly Ser Ser
```

580 585 590

Lys Pro Asn Ser Pro Ser Ile Ser Pro Ser Ile Leu Ser Asn Thr Glu
595 600 605

His Lys Arg Gly Pro Glu Val Thr Ser Gln Gly Val Gln Thr Ser Ser
610 615 620

Pro Ala Cys Lys Gln Glu Lys Asp Asp Lys Glu Glu Lys Lys Asp Ala
625 630 635 640

Ala Glu Gln Val Arg Lys Ser Thr Leu Asn Pro Asn Ala Lys Glu Phe
645 650 655

Asn Pro Arg Ser Phe Ser Gln Pro Lys Pro Ser Thr Thr Pro Thr Ser
660 665 670

Pro Arg Pro Gln Ala Gln Pro Ser Pro Ser Met Val Gly His Gln Gln
675 680 685

Pro Thr Pro Val Tyr Thr Gln Pro Val Cys Phe Ala Pro Asn Met Met
690 695 700

Tyr Pro Val Pro Val Ser Pro Gly Val Gln Pro Leu Tyr Pro Ile Pro
705 710 715 720

Met Thr Pro Met Pro Val Asn Gln Ala Lys Thr Tyr Arg Ala Val Pro
725 730 735

Asn Met Pro Gln Gln Arg Gln Asp Gln His His Gln Ser Ala Met Met
740 745 750

His Pro Ala Ser Ala Ala Gly Pro Pro Ile Ala Ala Thr Pro Pro Ala
755 760 765

Tyr Ser Thr Gln Tyr Val Ala Tyr Ser Pro Gln Gln Phe Pro Asn Gln
770 775 780

Pro Leu Val Gln His Val Pro His Tyr Gln Ser Gln His Pro His Val
785 790 795 800

Tyr Ser Pro Val Ile Gln Gly Asn Ala Arg Met Met Ala Pro Pro Thr
805 810 815

```
His Ala Gln Pro Gly Leu Val Ser Ser Ser Ala Thr Gln Tyr Gly Ala
            820                 825                 830

His Glu Gln Thr His Ala Met Tyr Ala Cys Pro Lys Leu Pro Tyr Asn
        835                 840                 845

Lys Glu Thr Ser Pro Ser Phe Tyr Phe Ala Ile Ser Thr Gly Ser Leu
    850                 855                 860

Ala Gln Gln Tyr Ala His Pro Asn Ala Thr Leu His Pro His Thr Pro
865                 870                 875                 880

His Pro Gln Pro Ser Ala Thr Pro Thr Gly Gln Gln Gln Ser Gln His
                885                 890                 895

Gly Gly Ser His Pro Ala Pro Ser Pro Val Gln His His Gln His Gln
            900                 905                 910

Ala Ala Gln Ala Leu His Leu Ala Ser Pro Gln Gln Gln Ser Ala Ile
        915                 920                 925

Tyr His Ala Gly Leu Ala Pro Thr Pro Pro Ser Met Thr Pro Ala Ser
    930                 935                 940

Asn Thr Gln Ser Pro Gln Asn Ser Phe Pro Ala Ala Gln Gln Thr Val
945                 950                 955                 960

Phe Thr Ile His Pro Ser His Val Gln Pro Ala Tyr Thr Asn Pro Pro
                965                 970                 975

His Met Ala His Val Pro Gln Cys Ala Ser Glu Ala Leu Ala Arg Cys
            980                 985                 990

Gly Leu Glu Met Arg Leu Ser Trp  Ile Tyr Leu Ser Glu  Gly Tyr
Leu
        995                 1000                1005

Ala His  Val Gln Ser Gly Met  Val Pro Ser His Pro  Thr Ala His
    1010                1015                1020

Ala Pro  Met Met Leu Met Thr  Thr Gln Pro Pro Gly  Gly Pro Gln
    1025                1030                1035
```

```
Ala Ala  Leu Ala Gln Ser Ala  Leu Gln Pro Ile Pro  Val Ser Thr
    1040                1045                1050


Thr Ala  His Phe Pro Tyr Met  Thr His Pro Ser Val  Gln Ala His
    1055                1060                1065


His Gln  Gln Gln Leu
    1070


<210> 6864
<211> 916
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ATXN2; "

<220>
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<223> /note="Gene Name:
      ataxin 2; "

<220>
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<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 6864
Xaa Gly Asn Gly Gly Gly Ala Phe Arg Pro Gly Ser Arg Arg Leu Leu
1               5                   10                  15


Gly Leu Gly Gly Pro Pro Arg Pro Phe Val Val Leu Leu Leu Pro Leu
            20                  25                  30


Ala Ser Pro Gly Ala Pro Pro Ala Ala Pro Thr Arg Ala Ser Pro Leu
        35                  40                  45


Gly Ala Arg Ala Ser Pro Pro Arg Ser Gly Val Ser Leu Ala Arg Pro
    50                  55                  60
```

```
Ala Pro Gly Cys Pro Arg Pro Ala Cys Glu Pro Val Tyr Gly Pro Leu
65                  70                  75                  80

Thr Met Ser Leu Lys Pro Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln
                85                  90                  95

Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Pro Pro Pro
            100                 105                 110

Ala Ala Ala Asn Val Arg Lys Pro Gly Gly Ser Gly Leu Leu Ala Ser
        115                 120                 125

Pro Ala Ala Ala Pro Ser Pro Ser Ser Ser Ser Val Ser Ser Ser Ser
    130                 135                 140

Ala Thr Ala Pro Ser Ser Val Val Ala Ala Thr Ser Gly Gly Gly Arg
145                 150                 155                 160

Pro Gly Leu Gly Arg Gly Arg Asn Ser Asn Lys Gly Leu Pro Gln Ser
                165                 170                 175

Thr Ile Ser Phe Asp Gly Ile Tyr Ala Asn Met Arg Met Val His Ile
            180                 185                 190

Leu Thr Ser Val Val Gly Ser Lys Cys Glu Val Gln Val Lys Asn Gly
        195                 200                 205

Gly Ile Tyr Glu Gly Val Phe Lys Thr Tyr Ser Pro Lys Cys Asp Leu
    210                 215                 220

Val Leu Asp Ala Ala His Glu Lys Ser Thr Glu Ser Ser Ser Gly Pro
225                 230                 235                 240

Lys Arg Glu Glu Ile Met Glu Ser Ile Leu Phe Lys Cys Ser Asp Phe
                245                 250                 255

Val Val Val Gln Phe Lys Asp Met Asp Ser Ser Tyr Ala Lys Arg Asp
            260                 265                 270

Ala Phe Thr Asp Ser Ala Ile Ser Ala Lys Val Asn Gly Glu His Lys
        275                 280                 285
```

```
Glu Lys Asp Leu Glu Pro Trp Asp Ala Gly Glu Leu Thr Ala Asn Glu
    290                 295                 300

Glu Leu Glu Ala Leu Glu Asn Asp Val Ser Asn Gly Trp Asp Pro Asn
305                 310                 315                 320

Asp Met Phe Arg Tyr Asn Glu Glu Asn Tyr Gly Val Val Ser Thr Tyr
                325                 330                 335

Asp Ser Ser Leu Ser Ser Tyr Thr Val Pro Leu Glu Arg Asp Asn Ser
            340                 345                 350

Glu Glu Phe Leu Lys Arg Glu Ala Arg Ala Asn Gln Leu Ala Glu Glu
        355                 360                 365

Ile Glu Ser Ser Ala Gln Tyr Lys Ala Arg Val Ala Leu Glu Asn Asp
    370                 375                 380

Asp Arg Ser Glu Glu Glu Lys Tyr Thr Ala Val Gln Arg Asn Ser Ser
385                 390                 395                 400

Glu Arg Glu Gly His Ser Ile Asn Thr Arg Glu Asn Lys Tyr Ile Pro
                405                 410                 415

Pro Gly Gln Arg Asn Arg Glu Val Ile Ser Trp Gly Ser Gly Arg Gln
            420                 425                 430

Asn Ser Pro Arg Met Gly Gln Pro Gly Ser Gly Ser Met Pro Ser Arg
        435                 440                 445

Ser Thr Ser His Thr Ser Asp Phe Asn Pro Asn Ser Gly Ser Asp Gln
    450                 455                 460

Arg Val Val Asn Gly Gly Val Pro Trp Pro Ser Pro Cys Pro Ser Pro
465                 470                 475                 480

Ser Ser Arg Pro Pro Ser Arg Tyr Gln Ser Gly Pro Asn Ser Leu Pro
                485                 490                 495

Pro Arg Ala Ala Thr Pro Thr Arg Pro Pro Ser Arg Pro Pro Ser Arg
            500                 505                 510
```

```
Pro Ser Arg Pro Pro Ser His Pro Ser Ala His Gly Ser Pro Ala Pro
        515                 520                 525

Val Ser Thr Met Pro Lys Arg Met Ser Ser Glu Gly Pro Pro Arg Met
    530                 535                 540

Ser Pro Lys Ala Gln Arg His Pro Arg Asn His Arg Val Ser Ala Gly
545                 550                 555                 560

Arg Gly Ser Ile Ser Ser Gly Leu Glu Phe Val Ser His Asn Pro Pro
                565                 570                 575

Ser Glu Ala Ala Thr Pro Pro Val Ala Arg Thr Ser Pro Ser Gly Gly
            580                 585                 590

Thr Trp Ser Ser Val Val Ser Gly Val Pro Arg Leu Ser Pro Lys Thr
        595                 600                 605

His Arg Pro Arg Ser Pro Arg Gln Asn Ser Ile Gly Asn Thr Pro Ser
    610                 615                 620

Gly Pro Val Leu Ala Ser Pro Gln Ala Gly Ile Ile Pro Thr Glu Ala
625                 630                 635                 640

Val Ala Met Pro Ile Pro Ala Ala Ser Pro Thr Pro Ala Ser Pro Ala
                645                 650                 655

Ser Asn Arg Ala Val Thr Pro Ser Ser Glu Ala Lys Asp Ser Arg Leu
            660                 665                 670

Gln Asp Gln Arg Gln Asn Ser Pro Ala Gly Asn Lys Glu Asn Ile Lys
        675                 680                 685

Pro Asn Glu Thr Ser Pro Ser Phe Ser Lys Ala Glu Asn Lys Gly Ile
    690                 695                 700

Ser Pro Val Val Ser Glu His Arg Lys Gln Ile Asp Asp Leu Lys Lys
705                 710                 715                 720

Phe Lys Asn Asp Phe Arg Leu Gln Pro Ser Ser Thr Ser Glu Ser Met
                725                 730                 735

Asp Gln Leu Leu Asn Lys Asn Arg Glu Gly Glu Lys Ser Arg Asp Leu
```

```
            740                 745                 750

Ile Lys Asp Lys Ile Glu Pro Ser Ala Lys Asp Ser Phe Ile Glu Asn
        755                 760                 765

Ser Ser Ser Asn Cys Thr Ser Gly Ser Ser Lys Pro Asn Ser Pro Ser
    770                 775                 780

Ile Ser Pro Ser Ile Leu Ser Asn Thr Glu His Lys Arg Gly Pro Glu
785                 790                 795                 800

Val Thr Ser Gln Gly Val Gln Thr Ser Ser Pro Ala Cys Lys Gln Glu
                805                 810                 815

Lys Asp Asp Lys Glu Glu Lys Lys Asp Ala Ala Glu Gln Val Arg Lys
            820                 825                 830

Ser Thr Leu Asn Pro Asn Ala Lys Glu Phe Asn Pro Arg Ser Phe Ser
        835                 840                 845

Gln Pro Lys Pro Ser Thr Thr Pro Thr Ser Pro Arg Pro Gln Ala Gln
    850                 855                 860

Pro Ser Pro Ser Met Val Gly His Gln Gln Pro Thr Pro Val Tyr Thr
865                 870                 875                 880

Gln Pro Val Cys Phe Ala Pro Asn Met Met Tyr Pro Val Pro Val Ser
                885                 890                 895

Pro Gly Val Gln Tyr Gln Ile Cys Pro Asn Ser Gly Lys Thr Ser Ile
            900                 905                 910

Ile Arg Val Pro
        915


<210> 6865
<211> 1313
<212> PRT
<213> Homo sapiens

<220>
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ataxin 2; "

<220>
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<220>
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<223> /note="ENSP ID: ENSP00000446576"

<400> 6865

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Met Arg Ser Ala Ala Ala Ala Pro Arg Ser Pro Ala Val Ala Thr Glu
1               5                  10                  15

Ser Arg Arg Phe Ala Ala Ala Arg Trp Pro Gly Trp Arg Ser Leu Gln
            20                  25                  30

Arg Pro Ala Arg Arg Ser Gly Arg Gly Gly Gly Gly Ala Ala Pro Gly
        35                  40                  45

Pro Tyr Pro Ser Ala Ala Pro Pro Pro Pro Gly Pro Gly Pro Pro Pro
    50                  55                  60

Ser Arg Gln Ser Ser Pro Pro Ser Ala Ser Asp Cys Phe Gly Ser Asn
65                  70                  75                  80

Gly Asn Gly Gly Gly Ala Phe Arg Pro Gly Ser Arg Arg Leu Leu Gly
                85                  90                  95

Leu Gly Gly Pro Pro Arg Pro Phe Val Val Leu Leu Leu Pro Leu Ala
            100                 105                 110

Ser Pro Gly Ala Pro Pro Ala Ala Pro Thr Arg Ala Ser Pro Leu Gly
        115                 120                 125

Ala Arg Ala Ser Pro Pro Arg Ser Gly Val Ser Leu Ala Arg Pro Ala
    130                 135                 140

Pro Gly Cys Pro Arg Pro Ala Cys Glu Pro Val Tyr Gly Pro Leu Thr
145                 150                 155                 160
```

```
Met Ser Leu Lys Pro Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln
                165                 170                 175

Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Pro Pro Pro Ala
            180                 185                 190

Ala Ala Asn Val Arg Lys Pro Gly Gly Ser Gly Leu Leu Ala Ser Pro
        195                 200                 205

Ala Ala Ala Pro Ser Pro Ser Ser Ser Ser Val Ser Ser Ser Ser Ala
    210                 215                 220

Thr Ala Pro Ser Ser Val Val Ala Ala Thr Ser Gly Gly Gly Arg Pro
225                 230                 235                 240

Gly Leu Gly Arg Gly Arg Asn Ser Asn Lys Gly Leu Pro Gln Ser Thr
                245                 250                 255

Ile Ser Phe Asp Gly Ile Tyr Ala Asn Met Arg Met Val His Ile Leu
            260                 265                 270

Thr Ser Val Val Gly Ser Lys Cys Glu Val Gln Val Lys Asn Gly Gly
        275                 280                 285

Ile Tyr Glu Gly Val Phe Lys Thr Tyr Ser Pro Lys Cys Asp Leu Val
    290                 295                 300

Leu Asp Ala Ala His Glu Lys Ser Thr Glu Ser Ser Ser Gly Pro Lys
305                 310                 315                 320

Arg Glu Glu Ile Met Glu Ser Ile Leu Phe Lys Cys Ser Asp Phe Val
                325                 330                 335

Val Val Gln Phe Lys Asp Met Asp Ser Ser Tyr Ala Lys Arg Asp Ala
            340                 345                 350

Phe Thr Asp Ser Ala Ile Ser Ala Lys Val Asn Gly Glu His Lys Glu
        355                 360                 365

Lys Asp Leu Glu Pro Trp Asp Ala Gly Glu Leu Thr Ala Asn Glu Glu
    370                 375                 380

Leu Glu Ala Leu Glu Asn Asp Val Ser Asn Gly Trp Asp Pro Asn Asp
```

385 390 395 400

Met Phe Arg Tyr Asn Glu Glu Asn Tyr Gly Val Val Ser Thr Tyr Asp
405 410 415

Ser Ser Leu Ser Ser Tyr Thr Val Pro Leu Glu Arg Asp Asn Ser Glu
420 425 430

Glu Phe Leu Lys Arg Glu Ala Arg Ala Asn Gln Leu Ala Glu Glu Ile
435 440 445

Glu Ser Ser Ala Gln Tyr Lys Ala Arg Val Ala Leu Glu Asn Asp Asp
450 455 460

Arg Ser Glu Glu Glu Lys Tyr Thr Ala Val Gln Arg Asn Ser Ser Glu
465 470 475 480

Arg Glu Gly His Ser Ile Asn Thr Arg Glu Asn Lys Tyr Ile Pro Pro
485 490 495

Gly Gln Arg Asn Arg Glu Val Ile Ser Trp Gly Ser Gly Arg Gln Asn
500 505 510

Ser Pro Arg Met Gly Gln Pro Gly Ser Gly Ser Met Pro Ser Arg Ser
515 520 525

Thr Ser His Thr Ser Asp Phe Asn Pro Asn Ser Gly Ser Asp Gln Arg
530 535 540

Val Val Asn Gly Gly Val Pro Trp Pro Ser Pro Cys Pro Ser Pro Ser
545 550 555 560

Ser Arg Pro Pro Ser Arg Tyr Gln Ser Gly Pro Asn Ser Leu Pro Pro
565 570 575

Arg Ala Ala Thr Pro Thr Arg Pro Pro Ser Arg Pro Pro Ser Arg Pro
580 585 590

Ser Arg Pro Pro Ser His Pro Ser Ala His Gly Ser Pro Ala Pro Val
595 600 605

Ser Thr Met Pro Lys Arg Met Ser Ser Glu Gly Pro Pro Arg Met Ser
610 615 620

```
Pro Lys Ala Gln Arg His Pro Arg Asn His Arg Val Ser Ala Gly Arg
625                 630                 635                 640

Gly Ser Ile Ser Ser Gly Leu Glu Phe Val Ser His Asn Pro Pro Ser
                645                 650                 655

Glu Ala Ala Thr Pro Pro Val Ala Arg Thr Ser Pro Ser Gly Gly Thr
            660                 665                 670

Trp Ser Ser Val Val Ser Gly Val Pro Arg Leu Ser Pro Lys Thr His
        675                 680                 685

Arg Pro Arg Ser Pro Arg Gln Asn Ser Ile Gly Asn Thr Pro Ser Gly
    690                 695                 700

Pro Val Leu Ala Ser Pro Gln Ala Gly Ile Ile Pro Thr Glu Ala Val
705                 710                 715                 720

Ala Met Pro Ile Pro Ala Ala Ser Pro Thr Pro Ala Ser Pro Ala Ser
                725                 730                 735

Asn Arg Ala Val Thr Pro Ser Ser Glu Ala Lys Asp Ser Arg Leu Gln
            740                 745                 750

Asp Gln Arg Gln Asn Ser Pro Ala Gly Asn Lys Glu Asn Ile Lys Pro
        755                 760                 765

Asn Glu Thr Ser Pro Ser Phe Ser Lys Ala Glu Asn Lys Gly Ile Ser
    770                 775                 780

Pro Val Val Ser Glu His Arg Lys Gln Ile Asp Asp Leu Lys Lys Phe
785                 790                 795                 800

Lys Asn Asp Phe Arg Leu Gln Pro Ser Ser Thr Ser Glu Ser Met Asp
                805                 810                 815

Gln Leu Leu Asn Lys Asn Arg Glu Gly Glu Lys Ser Arg Asp Leu Ile
            820                 825                 830

Lys Asp Lys Ile Glu Pro Ser Ala Lys Asp Ser Phe Ile Glu Asn Ser
        835                 840                 845
```

```
Ser Ser Asn Cys Thr Ser Gly Ser Ser Lys Pro Asn Ser Pro Ser Ile
    850                 855                 860

Ser Pro Ser Ile Leu Ser Asn Thr Glu His Lys Arg Gly Pro Glu Val
865                 870                 875                 880

Thr Ser Gln Gly Val Gln Thr Ser Ser Pro Ala Cys Lys Gln Glu Lys
                885                 890                 895

Asp Asp Lys Glu Glu Lys Lys Asp Ala Ala Glu Gln Val Arg Lys Ser
            900                 905                 910

Thr Leu Asn Pro Asn Ala Lys Glu Phe Asn Pro Arg Ser Phe Ser Gln
        915                 920                 925

Pro Lys Pro Ser Thr Thr Pro Thr Ser Pro Arg Pro Gln Ala Gln Pro
    930                 935                 940

Ser Pro Ser Met Val Gly His Gln Gln Pro Thr Pro Val Tyr Thr Gln
945                 950                 955                 960

Pro Val Cys Phe Ala Pro Asn Met Met Tyr Pro Val Pro Val Ser Pro
                965                 970                 975

Gly Val Gln Pro Leu Tyr Pro Ile Pro Met Thr Pro Met Pro Val Asn
            980                 985                 990

Gln Ala Lys Thr Tyr Arg Ala Val  Pro Asn Met Pro Gln  Gln Arg
Gln
        995                 1000                1005

Asp Gln  His His Gln Ser Ala  Met Met His Pro Ala  Ser Ala Ala
    1010                1015                1020

Gly Pro  Pro Ile Ala Ala Thr  Pro Pro Ala Tyr Ser  Thr Gln Tyr
    1025                1030                1035

Val Ala  Tyr Ser Pro Gln Gln  Phe Pro Asn Gln Pro  Leu Val Gln
    1040                1045                1050

His Val  Pro His Tyr Gln Ser  Gln His Pro His Val  Tyr Ser Pro
    1055                1060                1065
```

```
Val Ile  Gln Gly Asn Ala Arg  Met Met Ala Pro Pro  Thr His Ala
    1070                1075                1080

Gln Pro  Gly Leu Val Ser Ser  Ser Ala Thr Gln Tyr  Gly Ala His
    1085                1090                1095

Glu Gln  Thr His Ala Met Tyr  Ala Cys Pro Lys Leu  Pro Tyr Asn
    1100                1105                1110

Lys Glu  Thr Ser Pro Ser Phe  Tyr Phe Ala Ile Ser  Thr Gly Ser
    1115                1120                1125

Leu Ala  Gln Gln Tyr Ala His  Pro Asn Ala Thr Leu  His Pro His
    1130                1135                1140

Thr Pro  His Pro Gln Pro Ser  Ala Thr Pro Thr Gly  Gln Gln Gln
    1145                1150                1155

Ser Gln  His Gly Gly Ser His  Pro Ala Pro Ser Pro  Val Gln His
    1160                1165                1170

His Gln  His Gln Ala Ala Gln  Ala Leu His Leu Ala  Ser Pro Gln
    1175                1180                1185

Gln Gln  Ser Ala Ile Tyr His  Ala Gly Leu Ala Pro  Thr Pro Pro
    1190                1195                1200

Ser Met  Thr Pro Ala Ser Asn  Thr Gln Ser Pro Gln  Asn Ser Phe
    1205                1210                1215

Pro Ala  Ala Gln Gln Thr Val  Phe Thr Ile His Pro  Ser His Val
    1220                1225                1230

Gln Pro  Ala Tyr Thr Asn Pro  Pro His Met Ala His  Val Pro Gln
    1235                1240                1245

Ala His  Val Gln Ser Gly Met  Val Pro Ser His Pro  Thr Ala His
    1250                1255                1260

Ala Pro  Met Met Leu Met Thr  Thr Gln Pro Pro Gly  Gly Pro Gln
    1265                1270                1275
```

```
Ala Ala  Leu Ala Gln Ser Ala  Leu Gln Pro Ile Pro  Val Ser Thr
    1280                 1285                 1290


Thr Ala  His Phe Pro Tyr Met  Thr His Pro Ser Val  Gln Ala His
    1295                 1300                 1305


His Gln  Gln Gln Leu
    1310


<210> 6866
<211> 296
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1475; "

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<221> source
<223> /note="Gene Symbol: ATXN2; "

<220>
<221> source
<223> /note="Gene Name:
      ataxin 2; "

<220>
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<223> /note="ENSP ID: ENSP00000447225"


<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 6866
Xaa Ser Pro Ser Ser Arg Pro Pro Ser Arg Tyr Gln Ser Gly Pro Asn
1               5                  10                  15


Ser Leu Pro Pro Arg Ala Ala Thr Pro Thr Arg Pro Pro Ser Arg Pro
            20                  25                  30


Pro Ser Arg Pro Ser Arg Pro Pro Ser His Pro Ser Ala His Gly Ser
        35                  40                  45


Pro Ala Pro Val Ser Thr Met Pro Lys Arg Met Ser Ser Glu Gly Pro
    50                  55                  60
```

```
Pro Arg Met Ser Pro Lys Ala Gln Arg His Pro Arg Asn His Arg Val
65                  70                  75                  80

Ser Ala Gly Arg Gly Ser Ile Ser Ser Gly Leu Glu Phe Val Ser His
                85                  90                  95

Asn Pro Pro Ser Glu Ala Ala Thr Pro Pro Val Ala Arg Thr Ser Pro
            100                 105                 110

Ser Gly Gly Thr Trp Ser Ser Val Val Ser Gly Ala Lys Asp Ser Arg
        115                 120                 125

Leu Gln Asp Gln Arg Gln Asn Ser Pro Ala Gly Asn Lys Glu Asn Ile
    130                 135                 140

Lys Pro Asn Glu Thr Ser Pro Ser Phe Ser Lys Ala Glu Asn Lys Gly
145                 150                 155                 160

Ile Ser Pro Val Val Ser Glu His Arg Lys Gln Ile Asp Asp Leu Lys
                165                 170                 175

Lys Phe Lys Asn Asp Phe Arg Leu Gln Pro Ser Ser Thr Ser Glu Ser
            180                 185                 190

Met Asp Gln Leu Leu Asn Lys Asn Arg Glu Gly Glu Lys Ser Arg Asp
        195                 200                 205

Leu Ile Lys Asp Lys Ile Glu Pro Ser Ala Lys Asp Ser Phe Ile Glu
    210                 215                 220

Asn Ser Ser Ser Asn Cys Thr Ser Gly Ser Ser Lys Pro Asn Ser Pro
225                 230                 235                 240

Ser Ile Ser Pro Ser Ile Leu Ser Asn Thr Glu His Lys Arg Gly Pro
                245                 250                 255

Glu Val Thr Ser Gln Gly Val Gln Thr Ser Ser Pro Ala Cys Lys Gln
            260                 265                 270

Glu Lys Asp Asp Lys Glu Glu Lys Lys Asp Ala Ala Glu Gln Val Arg
        275                 280                 285

Lys Ser Thr Leu Asn Pro Asn Ala
```

290 295

<210> 6867
<211> 196
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1475; "

<220>
<221> source
<223> /note="Gene Symbol: ATXN2; "

<220>
<221> source
<223> /note="Gene Name:
ataxin 2; "

<220>
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<223> /note="ENSP ID: ENSP00000447741"

<400> 6867
His Pro His Val Tyr Ser Pro Val Ile Gln Gly Asn Ala Arg Met Met
1 5 10 15

Ala Pro Pro Thr His Ala Gln Pro Gly Leu Val Ser Ser Ser Ala Thr
20 25 30

Gln Tyr Gly Ala His Glu Gln Thr His Ala Met Tyr Ala Cys Pro Lys
35 40 45

Leu Pro Tyr Asn Lys Glu Thr Ser Pro Ser Phe Tyr Phe Ala Ile Ser
50 55 60

Thr Gly Ser Leu Ala Gln Gln Tyr Ala His Pro Asn Ala Thr Leu His
65 70 75 80

Pro His Thr Pro His Pro Gln Pro Ser Ala Thr Pro Thr Gly Gln Gln
85 90 95

Gln Ser Gln His Gly Gly Ser His Pro Ala Pro Ser Pro Val Gln His
100 105 110

His Gln His Gln Ala Ala Gln Ala Leu His Leu Ala Ser Pro Gln Gln
115 120 125

```
Gln Ser Ala Ile Tyr His Ala Gly Leu Ala Pro Thr Pro Pro Ser Met
    130                 135                 140

Thr Pro Ala Ser Asn Thr Gln Ser Pro Gln Asn Ser Phe Pro Ala Ala
145                 150                 155                 160

Gln Gln Thr Val Phe Thr Ile His Pro Ser His Val Gln Pro Ala Tyr
                165                 170                 175

Thr Asn Pro Pro His Met Ala His Val Pro Gln Val Ile Pro Ala Leu
            180                 185                 190

Ala Asn Phe Leu
        195


<210> 6868
<211> 235
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1475; "

<220>
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<220>
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<223> /note="Gene Name:
      ataxin 2; "

<220>
<221> source
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<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6868
Xaa Arg Tyr Asn Glu Glu Asn Tyr Gly Val Val Ser Thr Tyr Asp Ser
1               5                   10                  15

Ser Leu Ser Ser Tyr Thr Val Pro Leu Glu Arg Asp Asn Ser Glu Glu
            20                  25                  30
```

```
Phe Leu Lys Arg Glu Ala Arg Ala Asn Gln Leu Ala Glu Glu Ile Glu
        35                  40                  45

Ser Ser Ala Gln Tyr Lys Ala Arg Val Ala Leu Glu Asn Asp Asp Arg
    50                  55                  60

Ser Glu Glu Glu Lys Tyr Thr Ala Val Gln Arg Asn Ser Ser Glu Arg
65                  70                  75                  80

Glu Gly His Ser Ile Asn Thr Arg Glu Asn Lys Tyr Ile Pro Pro Gly
                85                  90                  95

Gln Arg Asn Arg Glu Val Ile Ser Trp Gly Ser Gly Arg Gln Asn Ser
            100                 105                 110

Pro Arg Met Gly Gln Pro Gly Ser Gly Ser Met Pro Ser Arg Ser Thr
        115                 120                 125

Ser His Thr Ser Asp Phe Asn Pro Asn Ser Gly Ser Asp Gln Arg Val
    130                 135                 140

Val Asn Gly Gly Pro Pro Arg Met Ser Pro Lys Ala Gln Arg His Pro
145                 150                 155                 160

Arg Asn His Arg Val Ser Ala Gly Arg Gly Ser Ile Ser Ser Gly Leu
                165                 170                 175

Glu Phe Val Ser His Asn Pro Pro Ser Glu Ala Ala Thr Pro Pro Val
            180                 185                 190

Ala Arg Thr Ser Pro Ser Gly Gly Thr Trp Ser Ser Val Val Ser Gly
        195                 200                 205

Ala Lys Asp Ser Arg Leu Gln Asp Gln Arg Gln Asn Ser Pro Ala Gly
    210                 215                 220

Asn Lys Glu Asn Ile Lys Pro Asn Glu Thr Ser
225                 230                 235
```

<210> 6869
<211> 184
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATXN2; "

<220>
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<223> /note="Gene Name:
ataxin 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000449566"

<400> 6869

```
Met Leu Gly Glu Arg Asp Cys Ser Arg Gly Arg Gly Arg Val Pro Glu
1               5                  10                  15

Gly Arg Lys Gly Ser Lys Cys Glu Val Gln Val Lys Asn Gly Gly Ile
            20                  25                  30

Tyr Glu Gly Val Phe Lys Thr Tyr Ser Pro Lys Cys Asp Leu Val Leu
        35                  40                  45

Asp Ala Ala His Glu Lys Ser Thr Glu Ser Ser Ser Gly Pro Lys Arg
    50                  55                  60

Glu Glu Ile Met Glu Ser Ile Leu Phe Lys Cys Ser Asp Phe Val Val
65                  70                  75                  80

Val Gln Phe Lys Asp Met Asp Ser Ser Tyr Ala Lys Arg Asp Ala Phe
                85                  90                  95

Thr Asp Ser Ala Ile Ser Ala Lys Val Asn Gly Glu His Lys Glu Lys
            100                 105                 110

Asp Leu Glu Pro Trp Asp Ala Gly Glu Leu Thr Ala Asn Glu Glu Leu
        115                 120                 125

Glu Ala Leu Glu Asn Asp Val Ser Asn Gly Trp Asp Pro Asn Asp Met
    130                 135                 140

Phe Arg Tyr Asn Glu Glu Asn Tyr Gly Val Val Ser Thr Tyr Asp Ser
145                 150                 155                 160
```

Ser Leu Ser Ser Tyr Thr Val Pro Leu Glu Arg Asp Asn Ser Glu Glu
165 170 175

Phe Leu Lys Arg Glu Ala Arg Ala
180

<210> 6870
<211> 107
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1475; "

<220>
<221> source
<223> /note="Gene Symbol: ATXN2; "

<220>
<221> source
<223> /note="Gene Name:
ataxin 2; "

<220>
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<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6870
Xaa Gln Val Arg Lys Ser Thr Leu Asn Pro Asn Ala Lys Glu Phe Asn
1 5 10 15

Pro Arg Ser Phe Ser Gln Pro Lys Pro Ser Thr Thr Pro Thr Ser Pro
20 25 30

Arg Pro Gln Ala Gln Pro Ser Pro Ser Met Val Gly His Gln Gln Pro
35 40 45

Thr Pro Val Tyr Thr Gln Pro Val Cys Phe Ala Pro Asn Met Met Tyr
50 55 60

Pro Val Pro Val Ser Pro Gly Val Gln Pro Leu Tyr Pro Ile Pro Met
65 70 75 80

Thr Pro Met Pro Val Asn Gln Ala Lys Thr Tyr Arg Ala Ala Leu Glu
85 90 95

His Met Asn Leu Leu Lys Glu Leu Cys Leu Lys
100 105

<210> 6871
<211> 119
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1475; "

<220>
<221> source
<223> /note="Gene Symbol: ATXN2; "

<220>
<221> source
<223> /note="Gene Name:
ataxin 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000474645"

<400> 6871
Ala Gln Gln Thr Val Phe Thr Ile His Pro Ser His Val Gln Pro Ala
1 5 10 15

Tyr Thr Asn Pro Pro His Met Ala His Val Pro Gln Ala His Val Gln
20 25 30

Ser Gly Met Val Pro Ser His Pro Thr Ala His Ala Pro Met Met Leu
35 40 45

Met Thr Thr Gln Pro Pro Gly Gly Pro Gln Ala Ala Leu Ala Gln Ser
50 55 60

Ala Leu Gln Pro Ile Pro Val Ser Thr Thr Ala His Phe Pro Tyr Met
65 70 75 80

Thr His Pro Ser Gly Glu Ala Cys Val Cys Arg Gly Arg Arg Gly Thr
85 90 95

Pro Lys His Ser Ala Arg Thr Gly Gly Met Ala Gly Arg Ala Ser Ala
100 105 110

Ser Ser Pro Ala Phe Glu Asn
115

<210> 6872
<211> 1153
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1475; "

<220>
<221> source
<223> /note="Gene Symbol: ATXN2; "

<220>
<221> source
<223> /note="Gene Name:
ataxin 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000476504"

<400> 6872
Met Ser Leu Lys Pro Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln
1 5 10 15

Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Pro Pro Pro Ala
20 25 30

Ala Ala Asn Val Arg Lys Pro Gly Gly Ser Gly Leu Leu Ala Ser Pro
35 40 45

Ala Ala Ala Pro Ser Pro Ser Ser Ser Ser Val Ser Ser Ser Ser Ala
50 55 60

Thr Ala Pro Ser Ser Val Val Ala Ala Thr Ser Gly Gly Gly Arg Pro
65 70 75 80

Gly Leu Gly Arg Gly Arg Asn Ser Asn Lys Gly Leu Pro Gln Ser Thr
85 90 95

Ile Ser Phe Asp Gly Ile Tyr Ala Asn Met Arg Met Val His Ile Leu
100 105 110

```
Thr Ser Val Val Gly Ser Lys Cys Glu Val Gln Val Lys Asn Gly Gly
        115                 120                 125

Ile Tyr Glu Gly Val Phe Lys Thr Tyr Ser Pro Lys Cys Asp Leu Val
    130                 135                 140

Leu Asp Ala Ala His Glu Lys Ser Thr Glu Ser Ser Ser Gly Pro Lys
145                 150                 155                 160

Arg Glu Glu Ile Met Glu Ser Ile Leu Phe Lys Cys Ser Asp Phe Val
                165                 170                 175

Val Val Gln Phe Lys Asp Met Asp Ser Ser Tyr Ala Lys Arg Asp Ala
            180                 185                 190

Phe Thr Asp Ser Ala Ile Ser Ala Lys Val Asn Gly Glu His Lys Glu
        195                 200                 205

Lys Asp Leu Glu Pro Trp Asp Ala Gly Glu Leu Thr Ala Asn Glu Glu
    210                 215                 220

Leu Glu Ala Leu Glu Asn Asp Val Ser Asn Gly Trp Asp Pro Asn Asp
225                 230                 235                 240

Met Phe Arg Tyr Asn Glu Glu Asn Tyr Gly Val Val Ser Thr Tyr Asp
                245                 250                 255

Ser Ser Leu Ser Ser Tyr Thr Val Pro Leu Glu Arg Asp Asn Ser Glu
            260                 265                 270

Glu Phe Leu Lys Arg Glu Ala Arg Ala Asn Gln Leu Ala Glu Glu Ile
        275                 280                 285

Glu Ser Ser Ala Gln Tyr Lys Ala Arg Val Ala Leu Glu Asn Asp Asp
    290                 295                 300

Arg Ser Glu Glu Glu Lys Tyr Thr Ala Val Gln Arg Asn Ser Ser Glu
305                 310                 315                 320

Arg Glu Gly His Ser Ile Asn Thr Arg Glu Asn Lys Tyr Ile Pro Pro
                325                 330                 335
```

```
Gly Gln Arg Asn Arg Glu Val Ile Ser Trp Gly Ser Gly Arg Gln Asn
            340                 345                 350

Ser Pro Arg Met Gly Gln Pro Gly Ser Gly Ser Met Pro Ser Arg Ser
        355                 360                 365

Thr Ser His Thr Ser Asp Phe Asn Pro Asn Ser Gly Ser Asp Gln Arg
    370                 375                 380

Val Val Asn Gly Gly Val Pro Trp Pro Ser Pro Cys Pro Ser Pro Ser
385                 390                 395                 400

Ser Arg Pro Pro Ser Arg Tyr Gln Ser Gly Pro Asn Ser Leu Pro Pro
                405                 410                 415

Arg Ala Ala Thr Pro Thr Arg Pro Pro Ser Arg Pro Pro Ser Arg Pro
            420                 425                 430

Ser Arg Pro Pro Ser His Pro Ser Ala His Gly Ser Pro Ala Pro Val
        435                 440                 445

Ser Thr Met Pro Lys Arg Met Ser Ser Glu Gly Pro Pro Arg Met Ser
    450                 455                 460

Pro Lys Ala Gln Arg His Pro Arg Asn His Arg Val Ser Ala Gly Arg
465                 470                 475                 480

Gly Ser Ile Ser Ser Gly Leu Glu Phe Val Ser His Asn Pro Pro Ser
                485                 490                 495

Glu Ala Ala Thr Pro Pro Val Ala Arg Thr Ser Pro Ser Gly Gly Thr
            500                 505                 510

Trp Ser Ser Val Val Ser Gly Val Pro Arg Leu Ser Pro Lys Thr His
        515                 520                 525

Arg Pro Arg Ser Pro Arg Gln Asn Ser Ile Gly Asn Thr Pro Ser Gly
    530                 535                 540

Pro Val Leu Ala Ser Pro Gln Ala Gly Ile Ile Pro Thr Glu Ala Val
545                 550                 555                 560
```

```
Ala Met Pro Ile Pro Ala Ala Ser Pro Thr Pro Ala Ser Pro Ala Ser
                565                 570                 575

Asn Arg Ala Val Thr Pro Ser Ser Glu Ala Lys Asp Ser Arg Leu Gln
            580                 585                 590

Asp Gln Arg Gln Asn Ser Pro Ala Gly Asn Lys Glu Asn Ile Lys Pro
        595                 600                 605

Asn Glu Thr Ser Pro Ser Phe Ser Lys Ala Glu Asn Lys Gly Ile Ser
    610                 615                 620

Pro Val Val Ser Glu His Arg Lys Gln Ile Asp Asp Leu Lys Lys Phe
625                 630                 635                 640

Lys Asn Asp Phe Arg Leu Gln Pro Ser Ser Thr Ser Glu Ser Met Asp
                645                 650                 655

Gln Leu Leu Asn Lys Asn Arg Glu Gly Glu Lys Ser Arg Asp Leu Ile
            660                 665                 670

Lys Asp Lys Ile Glu Pro Ser Ala Lys Asp Ser Phe Ile Glu Asn Ser
        675                 680                 685

Ser Ser Asn Cys Thr Ser Gly Ser Ser Lys Pro Asn Ser Pro Ser Ile
    690                 695                 700

Ser Pro Ser Ile Leu Ser Asn Thr Glu His Lys Arg Gly Pro Glu Val
705                 710                 715                 720

Thr Ser Gln Gly Val Gln Thr Ser Ser Pro Ala Cys Lys Gln Glu Lys
                725                 730                 735

Asp Asp Lys Glu Glu Lys Lys Asp Ala Ala Glu Gln Val Arg Lys Ser
            740                 745                 750

Thr Leu Asn Pro Asn Ala Lys Glu Phe Asn Pro Arg Ser Phe Ser Gln
        755                 760                 765

Pro Lys Pro Ser Thr Thr Pro Thr Ser Pro Arg Pro Gln Ala Gln Pro
    770                 775                 780

Ser Pro Ser Met Val Gly His Gln Gln Pro Thr Pro Val Tyr Thr Gln
```

785 790 795 800

Pro Val Cys Phe Ala Pro Asn Met Met Tyr Pro Val Pro Val Ser Pro
805 810 815

Gly Val Gln Pro Leu Tyr Pro Ile Pro Met Thr Pro Met Pro Val Asn
820 825 830

Gln Ala Lys Thr Tyr Arg Ala Val Pro Asn Met Pro Gln Gln Arg Gln
835 840 845

Asp Gln His His Gln Ser Ala Met Met His Pro Ala Ser Ala Ala Gly
850 855 860

Pro Pro Ile Ala Ala Thr Pro Pro Ala Tyr Ser Thr Gln Tyr Val Ala
865 870 875 880

Tyr Ser Pro Gln Gln Phe Pro Asn Gln Pro Leu Val Gln His Val Pro
885 890 895

His Tyr Gln Ser Gln His Pro His Val Tyr Ser Pro Val Ile Gln Gly
900 905 910

Asn Ala Arg Met Met Ala Pro Pro Thr His Ala Gln Pro Gly Leu Val
915 920 925

Ser Ser Ser Ala Thr Gln Tyr Gly Ala His Glu Gln Thr His Ala Met
930 935 940

Tyr Ala Cys Pro Lys Leu Pro Tyr Asn Lys Glu Thr Ser Pro Ser Phe
945 950 955 960

Tyr Phe Ala Ile Ser Thr Gly Ser Leu Ala Gln Gln Tyr Ala His Pro
965 970 975

Asn Ala Thr Leu His Pro His Thr Pro His Pro Gln Pro Ser Ala Thr
980 985 990

Pro Thr Gly Gln Gln Gln Ser Gln His Gly Gly Ser His Pro Ala
Pro
995 1000 1005

Ser Pro Val Gln His His Gln His Gln Ala Ala Gln Ala Leu His

```
    1010                1015                1020

Leu Ala  Ser Pro Gln Gln Gln  Ser Ala Ile Tyr His  Ala Gly Leu
    1025                1030                1035

Ala Pro  Thr Pro Pro Ser Met  Thr Pro Ala Ser Asn  Thr Gln Ser
    1040                1045                1050

Pro Gln  Asn Ser Phe Pro Ala  Ala Gln Gln Thr Val  Phe Thr Ile
    1055                1060                1065

His Pro  Ser His Val Gln Pro  Ala Tyr Thr Asn Pro  Pro His Met
    1070                1075                1080

Ala His  Val Pro Gln Ala His  Val Gln Ser Gly Met  Val Pro Ser
    1085                1090                1095

His Pro  Thr Ala His Ala Pro  Met Met Leu Met Thr  Thr Gln Pro
    1100                1105                1110

Pro Gly  Gly Pro Gln Ala Ala  Leu Ala Gln Ser Ala  Leu Gln Pro
    1115                1120                1125

Ile Pro  Val Ser Thr Thr Ala  His Phe Pro Tyr Met  Thr His Pro
    1130                1135                1140

Ser Val  Gln Ala His His Gln  Gln Gln Leu
    1145                1150


<210> 6873
<211> 1006
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1475; "

<220>
<221> source
<223> /note="Gene Symbol: ATXN2; "

<220>
<221> source
<223> /note="Gene Name:
      ataxin 2; "
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<220>
<221> source
<223> /note="Uniprot ID: Q99700; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000481448"

<400> 6873
Met Arg Met Val His Ile Leu Thr Ser Val Val Cys Asp Leu Val Leu
1   5   10   15

Asp Ala Ala His Glu Lys Ser Thr Glu Ser Ser Ser Gly Pro Lys Arg
            20   25   30

Glu Glu Ile Met Glu Ser Ile Leu Phe Lys Cys Ser Asp Phe Val Val
        35   40   45

Val Gln Phe Lys Asp Met Asp Ser Ser Tyr Ala Lys Arg Asp Ala Phe
    50   55   60

Thr Asp Ser Ala Ile Ser Ala Lys Val Asn Gly Glu His Lys Glu Lys
65   70   75   80

Asp Leu Glu Pro Trp Asp Ala Gly Glu Leu Thr Ala Asn Glu Glu Leu
                85   90   95

Glu Ala Leu Glu Asn Asp Val Ser Asn Gly Trp Asp Pro Asn Asp Met
            100   105   110

Phe Arg Tyr Asn Glu Glu Asn Tyr Gly Val Val Ser Thr Tyr Asp Ser
        115   120   125

Ser Leu Ser Ser Tyr Thr Val Pro Leu Glu Arg Asp Asn Ser Glu Glu
    130   135   140

Phe Leu Lys Arg Glu Ala Arg Ala Asn Gln Leu Ala Glu Glu Ile Glu
145   150   155   160

Ser Ser Ala Gln Tyr Lys Ala Arg Val Ala Leu Glu Asn Asp Asp Arg
                165   170   175

Ser Glu Glu Glu Lys Tyr Thr Ala Val Gln Arg Asn Ser Ser Glu Arg
            180   185   190

```
Glu Gly His Ser Ile Asn Thr Arg Glu Asn Lys Tyr Ile Pro Pro Gly
        195                 200                 205

Gln Arg Asn Arg Glu Val Ile Ser Trp Gly Ser Gly Arg Gln Asn Ser
    210                 215                 220

Pro Arg Met Gly Gln Pro Gly Ser Gly Ser Met Pro Ser Arg Ser Thr
225                 230                 235                 240

Ser His Thr Ser Asp Phe Asn Pro Asn Ser Gly Ser Asp Gln Arg Val
                245                 250                 255

Val Asn Gly Gly Val Pro Trp Pro Ser Pro Cys Pro Ser Pro Ser Ser
            260                 265                 270

Arg Pro Pro Ser Arg Tyr Gln Ser Gly Pro Asn Ser Leu Pro Pro Arg
        275                 280                 285

Ala Ala Thr Pro Thr Arg Pro Pro Ser Arg Pro Pro Ser Arg Pro Ser
    290                 295                 300

Arg Pro Pro Ser His Pro Ser Ala His Gly Ser Pro Ala Pro Val Ser
305                 310                 315                 320

Thr Met Pro Lys Arg Met Ser Ser Glu Gly Pro Pro Arg Met Ser Pro
                325                 330                 335

Lys Ala Gln Arg His Pro Arg Asn His Arg Val Ser Ala Gly Arg Gly
            340                 345                 350

Ser Ile Ser Ser Gly Leu Glu Phe Val Ser His Asn Pro Pro Ser Glu
        355                 360                 365

Ala Ala Thr Pro Pro Val Ala Arg Thr Ser Pro Ser Gly Gly Thr Trp
    370                 375                 380

Ser Ser Val Val Ser Gly Val Pro Arg Leu Ser Pro Lys Thr His Arg
385                 390                 395                 400

Pro Arg Ser Pro Arg Gln Asn Ser Ile Gly Asn Thr Pro Ser Gly Pro
                405                 410                 415

Val Leu Ala Ser Pro Gln Ala Gly Ile Ile Pro Thr Glu Ala Val Ala
```

```
            420                 425                 430

Met Pro Ile Pro Ala Ala Ser Pro Thr Pro Ala Ser Pro Ala Ser Asn
        435                 440                 445

Arg Ala Val Thr Pro Ser Ser Glu Ala Lys Asp Ser Arg Leu Gln Asp
    450                 455                 460

Gln Arg Gln Asn Ser Pro Ala Gly Asn Lys Glu Asn Ile Lys Pro Asn
465                 470                 475                 480

Glu Thr Ser Pro Ser Phe Ser Lys Ala Glu Asn Lys Gly Ile Ser Pro
                485                 490                 495

Val Val Ser Glu His Arg Lys Gln Ile Asp Asp Leu Lys Lys Phe Lys
            500                 505                 510

Asn Asp Phe Arg Leu Gln Pro Ser Ser Thr Ser Glu Ser Met Asp Gln
        515                 520                 525

Leu Leu Asn Lys Asn Arg Glu Gly Glu Lys Ser Arg Asp Leu Ile Lys
    530                 535                 540

Asp Lys Ile Glu Pro Ser Ala Lys Asp Ser Phe Ile Glu Asn Ser Ser
545                 550                 555                 560

Ser Asn Cys Thr Ser Gly Ser Ser Lys Pro Asn Ser Pro Ser Ile Ser
                565                 570                 575

Pro Ser Ile Leu Ser Asn Thr Glu His Lys Arg Gly Pro Glu Val Thr
            580                 585                 590

Ser Gln Gly Val Gln Thr Ser Ser Pro Ala Cys Lys Gln Glu Lys Asp
        595                 600                 605

Asp Lys Glu Glu Lys Lys Asp Ala Ala Glu Gln Val Arg Lys Ser Thr
    610                 615                 620

Leu Asn Pro Asn Ala Lys Glu Phe Asn Pro Arg Ser Phe Ser Gln Pro
625                 630                 635                 640

Lys Pro Ser Thr Thr Pro Thr Ser Pro Arg Pro Gln Ala Gln Pro Ser
                645                 650                 655
```

```
Pro Ser Met Val Gly His Gln Gln Pro Thr Pro Val Tyr Thr Gln Pro
            660                 665                 670

Val Cys Phe Ala Pro Asn Met Met Tyr Pro Val Pro Val Ser Pro Gly
        675                 680                 685

Val Gln Pro Leu Tyr Pro Ile Pro Met Thr Pro Met Pro Val Asn Gln
    690                 695                 700

Ala Lys Thr Tyr Arg Ala Val Pro Asn Met Pro Gln Gln Arg Gln Asp
705                 710                 715                 720

Gln His His Gln Ser Ala Met Met His Pro Ala Ser Ala Ala Gly Pro
                725                 730                 735

Pro Ile Ala Ala Thr Pro Pro Ala Tyr Ser Thr Gln Tyr Val Ala Tyr
            740                 745                 750

Ser Pro Gln Gln Phe Pro Asn Gln Pro Leu Val Gln His Val Pro His
        755                 760                 765

Tyr Gln Ser Gln His Pro His Val Tyr Ser Pro Val Ile Gln Gly Asn
    770                 775                 780

Ala Arg Met Met Ala Pro Pro Thr His Ala Gln Pro Gly Leu Val Ser
785                 790                 795                 800

Ser Ser Ala Thr Gln Tyr Gly Ala His Glu Gln Thr His Ala Met Tyr
                805                 810                 815

Val Ser Thr Gly Ser Leu Ala Gln Gln Tyr Ala His Pro Asn Ala Thr
            820                 825                 830

Leu His Pro His Thr Pro His Pro Gln Pro Ser Ala Thr Pro Thr Gly
        835                 840                 845

Gln Gln Gln Ser Gln His Gly Gly Ser His Pro Ala Pro Ser Pro Val
    850                 855                 860

Gln His His Gln His Gln Ala Ala Gln Ala Leu His Leu Ala Ser Pro
865                 870                 875                 880
```

```
Gln Gln Gln Ser Ala Ile Tyr His Ala Gly Leu Ala Pro Thr Pro Pro
                885                 890                 895

Ser Met Thr Pro Ala Ser Asn Thr Gln Ser Pro Gln Asn Ser Phe Pro
            900                 905                 910

Ala Ala Gln Gln Thr Val Phe Thr Ile His Pro Ser His Val Gln Pro
        915                 920                 925

Ala Tyr Thr Asn Pro Pro His Met Ala His Val Pro Gln Ala His Val
    930                 935                 940

Gln Ser Gly Met Val Pro Ser His Pro Thr Ala His Ala Pro Met Met
945                 950                 955                 960

Leu Met Thr Thr Gln Pro Pro Gly Gly Pro Gln Ala Ala Leu Ala Gln
                965                 970                 975

Ser Ala Leu Gln Pro Ile Pro Val Ser Thr Thr Ala His Phe Pro Tyr
            980                 985                 990

Met Thr His Pro Ser Val Gln Ala  His His Gln Gln Gln  Leu
        995                 1000                1005


<210> 6874
<211> 1062
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1476; "

<220>
<221> source
<223> /note="Gene Symbol: ATXN2L; "

<220>
<221> source
<223> /note="Gene Name:
      ataxin 2-like; "

<220>
<221> source
<223> /note="Uniprot ID:  Q8WWM7; "

<220>
<221> source
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<223> /note="ENSP ID: ENSP00000315650"

<400> 6874

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Met Leu Lys Pro Gln Pro Leu Gln Gln Pro Ser Gln Pro Gln Gln Pro
1               5                  10                  15

Pro Pro Thr Gln Gln Ala Val Ala Arg Arg Pro Pro Gly Gly Thr Ser
            20                  25                  30

Pro Pro Asn Gly Gly Leu Pro Gly Pro Leu Ala Thr Ser Ala Ala Pro
        35                  40                  45

Pro Gly Pro Pro Ala Ala Ala Ser Pro Cys Leu Gly Pro Val Ala Ala
    50                  55                  60

Ala Gly Ser Gly Leu Arg Arg Gly Ala Glu Gly Ile Leu Ala Pro Gln
65                  70                  75                  80

Pro Pro Pro Pro Gln Gln His Gln Glu Arg Pro Gly Ala Ala Ala Ile
                85                  90                  95

Gly Ser Ala Arg Gly Gln Ser Thr Gly Lys Gly Pro Pro Gln Ser Pro
            100                 105                 110

Val Phe Glu Gly Val Tyr Asn Asn Ser Arg Met Leu His Phe Leu Thr
        115                 120                 125

Ala Val Val Gly Ser Thr Cys Asp Val Lys Val Lys Asn Gly Thr Thr
    130                 135                 140

Tyr Glu Gly Ile Phe Lys Thr Leu Ser Ser Lys Phe Glu Leu Ala Val
145                 150                 155                 160

Asp Ala Val His Arg Lys Ala Ser Glu Pro Ala Gly Gly Pro Arg Arg
                165                 170                 175

Glu Asp Ile Val Asp Thr Met Val Phe Lys Pro Ser Asp Val Met Leu
            180                 185                 190

Val His Phe Arg Asn Val Asp Phe Asn Tyr Ala Thr Lys Asp Lys Phe
        195                 200                 205

Thr Asp Ser Ala Ile Ala Met Asn Ser Lys Val Asn Gly Glu His Lys
    210                 215                 220
```

```
Glu Lys Val Leu Gln Arg Trp Glu Gly Gly Asp Ser Asn Ser Asp Asp
225                 230                 235                 240

Tyr Asp Leu Glu Ser Asp Met Ser Asn Gly Trp Asp Pro Asn Glu Met
                245                 250                 255

Phe Lys Phe Asn Glu Glu Asn Tyr Gly Val Lys Thr Thr Tyr Asp Ser
            260                 265                 270

Ser Leu Ser Ser Tyr Thr Val Pro Leu Glu Lys Asp Asn Ser Glu Glu
        275                 280                 285

Phe Arg Gln Arg Glu Leu Arg Ala Ala Gln Leu Ala Arg Glu Ile Glu
    290                 295                 300

Ser Ser Pro Gln Tyr Arg Leu Arg Ile Ala Met Glu Asn Asp Asp Gly
305                 310                 315                 320

Arg Thr Glu Glu Glu Lys His Ser Ala Val Gln Arg Gln Gly Ser Gly
                325                 330                 335

Arg Glu Ser Pro Ser Leu Ala Ser Arg Glu Gly Lys Tyr Ile Pro Leu
            340                 345                 350

Pro Gln Arg Val Arg Glu Gly Pro Arg Gly Gly Val Arg Cys Ser Ser
        355                 360                 365

Ser Arg Gly Gly Arg Pro Gly Leu Ser Ser Leu Pro Pro Arg Gly Pro
    370                 375                 380

His His Leu Asp Asn Ser Ser Pro Gly Pro Gly Ser Glu Ala Arg Gly
385                 390                 395                 400

Ile Asn Gly Gly Pro Ser Arg Met Ser Pro Lys Ala Gln Arg Pro Leu
                405                 410                 415

Arg Gly Ala Lys Thr Leu Ser Ser Pro Ser Asn Arg Pro Ser Gly Glu
            420                 425                 430

Thr Ser Val Pro Pro Pro Pro Ala Val Gly Arg Met Tyr Pro Pro Arg
        435                 440                 445
```

```
Ser Pro Lys Ser Ala Ala Pro Ala Pro Ile Ser Ala Ser Cys Pro Glu
    450                 455                 460

Pro Pro Ile Gly Ser Ala Val Pro Thr Ser Ser Ala Ser Ile Pro Val
465                 470                 475                 480

Thr Ser Ser Val Ser Asp Pro Gly Val Gly Ser Ile Ser Pro Ala Ser
                485                 490                 495

Pro Lys Ile Ser Leu Ala Pro Thr Asp Val Lys Glu Leu Ser Thr Lys
            500                 505                 510

Glu Pro Gly Arg Thr Leu Glu Pro Gln Glu Leu Ala Arg Ile Ala Gly
        515                 520                 525

Lys Val Pro Gly Leu Gln Asn Glu Gln Lys Arg Phe Gln Leu Glu Glu
    530                 535                 540

Leu Arg Lys Phe Gly Ala Gln Phe Lys Leu Gln Pro Ser Ser Ser Pro
545                 550                 555                 560

Glu Asn Ser Leu Asp Pro Phe Pro Pro Arg Ile Leu Lys Glu Glu Pro
                565                 570                 575

Lys Gly Lys Glu Lys Glu Val Asp Gly Leu Leu Thr Ser Glu Pro Met
            580                 585                 590

Gly Ser Pro Val Ser Ser Lys Thr Glu Ser Val Ser Asp Lys Glu Asp
        595                 600                 605

Lys Pro Pro Leu Ala Pro Ser Gly Gly Thr Glu Gly Pro Glu Gln Pro
    610                 615                 620

Pro Pro Pro Cys Pro Ser Gln Thr Gly Ser Pro Pro Val Gly Leu Ile
625                 630                 635                 640

Lys Gly Glu Asp Lys Asp Glu Gly Pro Val Ala Glu Gln Val Lys Lys
                645                 650                 655

Ser Thr Leu Asn Pro Asn Ala Lys Glu Phe Asn Pro Thr Lys Pro Leu
            660                 665                 670
```

```
Leu Ser Val Asn Lys Ser Thr Ser Thr Pro Thr Ser Pro Gly Pro Arg
        675                 680                 685

Thr His Ser Thr Pro Ser Ile Pro Val Leu Thr Ala Gly Gln Ser Gly
    690                 695                 700

Leu Tyr Ser Pro Gln Tyr Ile Ser Tyr Ile Pro Gln Ile His Met Gly
705                 710                 715                 720

Pro Ala Val Gln Ala Pro Gln Met Tyr Pro Tyr Pro Val Ser Asn Ser
                725                 730                 735

Val Pro Gly Gln Gln Gly Lys Tyr Arg Gly Ala Lys Gly Ser Leu Pro
            740                 745                 750

Pro Gln Arg Ser Asp Gln His Gln Pro Ala Ser Ala Pro Pro Met Met
        755                 760                 765

Gln Ala Ala Ala Ala Ala Gly Pro Pro Leu Val Ala Ala Thr Pro Tyr
    770                 775                 780

Ser Ser Tyr Ile Pro Tyr Asn Pro Gln Gln Phe Pro Gly Gln Pro Ala
785                 790                 795                 800

Met Met Gln Pro Met Ala His Tyr Pro Ser Gln Pro Val Phe Ala Pro
                805                 810                 815

Met Leu Gln Ser Asn Pro Arg Met Leu Thr Ser Gly Ser His Pro Gln
            820                 825                 830

Ala Ile Val Ser Ser Ser Thr Pro Gln Tyr Pro Ser Ala Glu Gln Pro
        835                 840                 845

Thr Pro Gln Ala Leu Tyr Ala Thr Val His Gln Ser Tyr Pro His His
    850                 855                 860

Ala Thr Gln Leu His Ala His Gln Pro Gln Pro Ala Thr Thr Pro Thr
865                 870                 875                 880

Gly Ser Gln Pro Gln Ser Gln His Ala Ala Pro Ser Pro Val Gln His
                885                 890                 895

Gln Ala Gly Gln Ala Pro His Leu Gly Ser Gly Gln Pro Gln Gln Asn
```

900 905 910

Leu Tyr His Pro Gly Ala Leu Thr Gly Thr Pro Pro Ser Leu Pro Pro
915 920 925

Gly Pro Ser Ala Gln Ser Pro Gln Ser Ser Phe Pro Gln Pro Ala Ala
930 935 940

Val Tyr Ala Ile His His Gln Gln Leu Pro His Gly Phe Thr Asn Met
945 950 955 960

Ala His Val Thr Gln Ala His Val Gln Thr Gly Ile Thr Ala Ala Pro
965 970 975

Pro Pro His Pro Gly Ala Pro His Pro Pro Gln Val Met Leu Leu His
980 985 990

Pro Pro Gln Ser His Gly Gly Pro Pro Gln Gly Ala Val Pro Gln
Ser
995 1000 1005

Gly Val Pro Ala Leu Ser Ala Ser Thr Pro Ser Pro Tyr Pro Tyr
1010 1015 1020

Ile Gly His Pro Gln Gly Glu Gln Pro Gly Gln Ala Pro Gly Phe
1025 1030 1035

Pro Gly Gly Ala Asp Asp Arg Ile Pro Pro Leu Pro Pro Pro Gly
1040 1045 1050

Glu Leu Lys Ile Val Leu Ala Ala Thr
1055 1060

<210> 6875
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<212> PRT
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<400> 6875

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Met Leu Lys Pro Gln Pro Leu Gln Gln Pro Ser Gln Pro Gln Gln Pro
1               5                  10                  15

Pro Pro Thr Gln Gln Ala Val Ala Arg Arg Pro Pro Gly Gly Thr Ser
            20                  25                  30

Pro Pro Asn Gly Gly Leu Pro Gly Pro Leu Ala Thr Ser Ala Ala Pro
        35                  40                  45

Pro Gly Pro Pro Ala Ala Ala Ser Pro Cys Leu Gly Pro Val Ala Ala
    50                  55                  60

Ala Gly Ser Gly Leu Arg Arg Gly Ala Glu Gly Ile Leu Ala Pro Gln
65                  70                  75                  80

Pro Pro Pro Pro Gln Gln His Gln Glu Arg Pro Gly Ala Ala Ala Ile
                85                  90                  95

Gly Ser Ala Arg Gly Gln Ser Thr Gly Lys Gly Pro Pro Gln Ser Pro
            100                 105                 110

Val Phe Glu Gly Val Tyr Asn Asn Ser Arg Met Leu His Phe Leu Thr
        115                 120                 125

Ala Val Val Gly Ser Thr Cys Asp Val Lys Val Lys Asn Gly Thr Thr
    130                 135                 140

Tyr Glu Gly Ile Phe Lys Thr Leu Ser Ser Lys Phe Glu Leu Ala Val
145                 150                 155                 160

Asp Ala Val His Arg Lys Ala Ser Glu Pro Ala Gly Gly Pro Arg Arg
                165                 170                 175
```

```
Glu Asp Ile Val Asp Thr Met Val Phe Lys Pro Ser Asp Val Met Leu
            180                 185                 190

Val His Phe Arg Asn Val Asp Phe Asn Tyr Ala Thr Lys Asp Lys Phe
        195                 200                 205

Thr Asp Ser Ala Ile Ala Met Asn Ser Lys Val Asn Gly Glu His Lys
    210                 215                 220

Glu Lys Val Leu Gln Arg Trp Glu Gly Gly Asp Ser Asn Ser Asp Asp
225                 230                 235                 240

Tyr Asp Leu Glu Ser Asp Met Ser Asn Gly Trp Asp Pro Asn Glu Met
                245                 250                 255

Phe Lys Phe Asn Glu Glu Asn Tyr Gly Val Lys Thr Thr Tyr Asp Ser
            260                 265                 270

Ser Leu Ser Ser Tyr Thr Val Pro Leu Glu Lys Asp Asn Ser Glu Glu
        275                 280                 285

Phe Arg Gln Arg Glu Leu Arg Ala Ala Gln Leu Ala Arg Glu Ile Glu
    290                 295                 300

Ser Ser Pro Gln Tyr Arg Leu Arg Ile Ala Met Glu Asn Asp Asp Gly
305                 310                 315                 320

Arg Thr Glu Glu Glu Lys His Ser Ala Val Gln Arg Gln Gly Ser Gly
                325                 330                 335

Arg Glu Ser Pro Ser Leu Ala Ser Arg Glu Gly Lys Tyr Ile Pro Leu
            340                 345                 350

Pro Gln Arg Val Arg Glu Gly Pro Arg Gly Gly Val Arg Cys Ser Ser
        355                 360                 365

Ser Arg Gly Gly Arg Pro Gly Leu Ser Ser Leu Pro Pro Arg Gly Pro
    370                 375                 380

His His Leu Asp Asn Ser Ser Pro Gly Pro Gly Ser Glu Ala Arg Gly
385                 390                 395                 400
```

```
Ile Asn Gly Gly Pro Ser Arg Met Ser Pro Lys Ala Gln Arg Pro Leu
                405                 410                 415

Arg Gly Ala Lys Thr Leu Ser Ser Pro Ser Asn Arg Pro Ser Gly Glu
            420                 425                 430

Thr Ser Val Pro Pro Pro Pro Ala Val Gly Arg Met Tyr Pro Pro Arg
        435                 440                 445

Ser Pro Lys Ser Ala Ala Pro Ala Pro Ile Ser Ala Ser Cys Pro Glu
    450                 455                 460

Pro Pro Ile Gly Ser Ala Val Pro Thr Ser Ser Ala Ser Ile Pro Val
465                 470                 475                 480

Thr Ser Ser Val Ser Asp Pro Gly Val Gly Ser Ile Ser Pro Ala Ser
                485                 490                 495

Pro Lys Ile Ser Leu Ala Pro Thr Asp Val Lys Glu Leu Ser Thr Lys
            500                 505                 510

Glu Pro Gly Arg Thr Leu Glu Pro Gln Glu Leu Ala Arg Ile Ala Gly
        515                 520                 525

Lys Val Pro Gly Leu Gln Asn Glu Gln Lys Arg Phe Gln Leu Glu Glu
    530                 535                 540

Leu Arg Lys Phe Gly Ala Gln Phe Lys Leu Gln Pro Ser Ser Ser Pro
545                 550                 555                 560

Glu Asn Ser Leu Asp Pro Phe Pro Pro Arg Ile Leu Lys Glu Glu Pro
                565                 570                 575

Lys Gly Lys Glu Lys Glu Val Asp Gly Leu Leu Thr Ser Glu Pro Met
            580                 585                 590

Gly Ser Pro Val Ser Ser Lys Thr Glu Ser Val Ser Asp Lys Glu Asp
        595                 600                 605

Lys Pro Pro Leu Ala Pro Ser Gly Gly Thr Glu Gly Pro Glu Gln Pro
    610                 615                 620

Pro Pro Pro Cys Pro Ser Gln Thr Gly Ser Pro Pro Val Gly Leu Ile
```

625 630 635 640

Lys Gly Glu Asp Lys Asp Glu Gly Pro Val Ala Glu Gln Val Lys Lys
645 650 655

Ser Thr Leu Asn Pro Asn Ala Lys Glu Phe Asn Pro Thr Lys Pro Leu
660 665 670

Leu Ser Val Asn Lys Ser Thr Ser Thr Pro Thr Ser Pro Gly Pro Arg
675 680 685

Thr His Ser Thr Pro Ser Ile Pro Val Leu Thr Ala Gly Gln Ser Gly
690 695 700

Leu Tyr Ser Pro Gln Tyr Ile Ser Tyr Ile Pro Gln Ile His Met Gly
705 710 715 720

Pro Ala Val Gln Ala Pro Gln Met Tyr Pro Tyr Pro Val Ser Asn Ser
725 730 735

Val Pro Gly Gln Gln Gly Lys Tyr Arg Gly Ala Lys Gly Ser Leu Pro
740 745 750

Pro Gln Arg Ser Asp Gln His Gln Pro Ala Ser Ala Pro Pro Met Met
755 760 765

Gln Ala Ala Ala Ala Ala Gly Pro Pro Leu Val Ala Ala Thr Pro Tyr
770 775 780

Ser Ser Tyr Ile Pro Tyr Asn Pro Gln Gln Phe Pro Gly Gln Pro Ala
785 790 795 800

Met Met Gln Pro Met Ala His Tyr Pro Ser Gln Pro Val Phe Ala Pro
805 810 815

Met Leu Gln Ser Asn Pro Arg Met Leu Thr Ser Gly Ser His Pro Gln
820 825 830

Ala Ile Val Ser Ser Ser Thr Pro Gln Tyr Pro Ser Ala Glu Gln Pro
835 840 845

Thr Pro Gln Ala Leu Tyr Ala Thr Val His Gln Ser Tyr Pro His His
850 855 860

```
Ala Thr Gln Leu His Ala His Gln Pro Gln Pro Ala Thr Thr Pro Thr
865                 870                 875                 880

Gly Ser Gln Pro Gln Ser Gln His Ala Ala Pro Ser Pro Val Gln His
                885                 890                 895

Gln Ala Gly Gln Ala Pro His Leu Gly Ser Gly Gln Pro Gln Gln Asn
            900                 905                 910

Leu Tyr His Pro Gly Ala Leu Thr Gly Thr Pro Pro Ser Leu Pro Pro
        915                 920                 925

Gly Pro Ser Ala Gln Ser Pro Gln Ser Ser Phe Pro Gln Pro Ala Ala
    930                 935                 940

Val Tyr Ala Ile His His Gln Gln Leu Pro His Gly Phe Thr Asn Met
945                 950                 955                 960

Ala His Val Thr Gln Ala His Val Gln Thr Gly Ile Thr Ala Ala Pro
                965                 970                 975

Pro Pro His Pro Gly Ala Pro His Pro Pro Gln Val Met Leu Leu His
            980                 985                 990

Pro Pro Gln Ser His Gly Gly Pro  Pro Gln Gly Ala Val  Pro Gln
Ser
        995                 1000                1005

Gly Val  Pro Ala Leu Ser Ala  Ser Thr Pro Ser Pro  Tyr Pro Tyr
    1010                1015                1020

Ile Gly  His Pro Gln Gly Glu  Gln Pro Gly Gln Ala  Pro Gly Phe
    1025                1030                1035

Pro Gly  Gly Ala Asp Asp Arg  Ile Arg Glu Phe Ser  Leu Ala Gly
    1040                1045                1050

Gly Ile  Trp His Gly Arg Ala  Glu Gly Leu Gln Val  Gly Gln Asp
    1055                1060                1065

Ala Arg  Val Leu Gly Gly Glu
    1070                1075
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<210> 6876
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<220>
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ataxin 2-like; "

<220>
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<400> 6876
Met Leu Lys Pro Gln Pro Leu Gln Gln Pro Ser Gln Pro Gln Gln Pro
1   5   10   15

Pro Pro Thr Gln Gln Ala Val Ala Arg Arg Pro Pro Gly Gly Thr Ser
            20   25   30

Pro Pro Asn Gly Gly Leu Pro Gly Pro Leu Ala Thr Ser Ala Ala Pro
        35   40   45

Pro Gly Pro Pro Ala Ala Ala Ser Pro Cys Leu Gly Pro Val Ala Ala
    50   55   60

Ala Gly Ser Gly Leu Arg Arg Gly Ala Glu Gly Ile Leu Ala Pro Gln
65   70   75   80

Pro Pro Pro Pro Gln Gln His Gln Glu Arg Pro Gly Ala Ala Ala Ile
                85   90   95

Gly Ser Ala Arg Gly Gln Ser Thr Gly Lys Gly Pro Pro Gln Ser Pro
            100   105   110

```
Val Phe Glu Gly Val Tyr Asn Asn Ser Arg Met Leu His Phe Leu Thr
        115                 120                 125

Ala Val Val Gly Ser Thr Cys Asp Val Lys Val Lys Asn Gly Thr Thr
    130                 135                 140

Tyr Glu Gly Ile Phe Lys Thr Leu Ser Ser Lys Phe Glu Leu Ala Val
145                 150                 155                 160

Asp Ala Val His Arg Lys Ala Ser Glu Pro Ala Gly Gly Pro Arg Arg
                165                 170                 175

Glu Asp Ile Val Asp Thr Met Val Phe Lys Pro Ser Asp Val Met Leu
            180                 185                 190

Val His Phe Arg Asn Val Asp Phe Asn Tyr Ala Thr Lys Asp Lys Phe
        195                 200                 205

Thr Asp Ser Ala Ile Ala Met Asn Ser Lys Val Asn Gly Glu His Lys
    210                 215                 220

Glu Lys Val Leu Gln Arg Trp Glu Gly Gly Asp Ser Asn Ser Asp Asp
225                 230                 235                 240

Tyr Asp Leu Glu Ser Asp Met Ser Asn Gly Trp Asp Pro Asn Glu Met
                245                 250                 255

Phe Lys Phe Asn Glu Glu Asn Tyr Gly Val Lys Thr Thr Tyr Asp Ser
            260                 265                 270

Ser Leu Ser Ser Tyr Thr Val Pro Leu Glu Lys Asp Asn Ser Glu Glu
        275                 280                 285

Phe Arg Gln Arg Glu Leu Arg Ala Ala Gln Leu Ala Arg Glu Ile Glu
    290                 295                 300

Ser Ser Pro Gln Tyr Arg Leu Arg Ile Ala Met Glu Asn Asp Asp Gly
305                 310                 315                 320

Arg Thr Glu Glu Glu Lys His Ser Ala Val Gln Arg Gln Gly Ser Gly
                325                 330                 335

Arg Glu Ser Pro Ser Leu Ala Ser Arg Glu Gly Lys Tyr Ile Pro Leu
```

```
            340                 345                 350

Pro Gln Arg Val Arg Glu Gly Pro Arg Gly Gly Val Arg Cys Ser Ser
        355                 360                 365

Ser Arg Gly Gly Arg Pro Gly Leu Ser Ser Leu Pro Pro Arg Gly Pro
    370                 375                 380

His His Leu Asp Asn Ser Ser Pro Gly Pro Gly Ser Glu Ala Arg Gly
385                 390                 395                 400

Ile Asn Gly Gly Pro Ser Arg Met Ser Pro Lys Ala Gln Arg Pro Leu
                405                 410                 415

Arg Gly Ala Lys Thr Leu Ser Ser Pro Ser Asn Arg Pro Ser Gly Glu
            420                 425                 430

Thr Ser Val Pro Pro Pro Pro Ala Val Gly Arg Met Tyr Pro Pro Arg
        435                 440                 445

Ser Pro Lys Ser Ala Ala Pro Ala Pro Ile Ser Ala Ser Cys Pro Glu
    450                 455                 460

Pro Pro Ile Gly Ser Ala Val Pro Thr Ser Ser Ala Ser Ile Pro Val
465                 470                 475                 480

Thr Ser Ser Val Ser Asp Pro Gly Val Gly Ser Ile Ser Pro Ala Ser
                485                 490                 495

Pro Lys Ile Ser Leu Ala Pro Thr Asp Val Lys Glu Leu Ser Thr Lys
            500                 505                 510

Glu Pro Gly Arg Thr Leu Glu Pro Gln Glu Leu Ala Arg Ile Ala Gly
        515                 520                 525

Lys Val Pro Gly Leu Gln Asn Glu Gln Lys Arg Phe Gln Leu Glu Glu
    530                 535                 540

Leu Arg Lys Phe Gly Ala Gln Phe Lys Leu Gln Pro Ser Ser Ser Pro
545                 550                 555                 560

Glu Asn Ser Leu Asp Pro Phe Pro Pro Arg Ile Leu Lys Glu Glu Pro
                565                 570                 575
```

```
Lys Gly Lys Glu Lys Glu Val Asp Gly Leu Leu Thr Ser Glu Pro Met
            580                 585                 590

Gly Ser Pro Val Ser Ser Lys Thr Glu Ser Val Ser Asp Lys Glu Asp
        595                 600                 605

Lys Pro Pro Leu Ala Pro Ser Gly Gly Thr Glu Gly Pro Glu Gln Pro
    610                 615                 620

Pro Pro Pro Cys Pro Ser Gln Thr Gly Ser Pro Pro Val Gly Leu Ile
625                 630                 635                 640

Lys Gly Glu Asp Lys Asp Glu Gly Pro Val Ala Glu Gln Val Lys Lys
                645                 650                 655

Ser Thr Leu Asn Pro Asn Ala Lys Glu Phe Asn Pro Thr Lys Pro Leu
            660                 665                 670

Leu Ser Val Asn Lys Ser Thr Ser Thr Pro Thr Ser Pro Gly Pro Arg
        675                 680                 685

Thr His Ser Thr Pro Ser Ile Pro Val Leu Thr Ala Gly Gln Ser Gly
    690                 695                 700

Leu Tyr Ser Pro Gln Tyr Ile Ser Tyr Ile Pro Gln Ile His Met Gly
705                 710                 715                 720

Pro Ala Val Gln Ala Pro Gln Met Tyr Pro Tyr Pro Val Ser Asn Ser
                725                 730                 735

Val Pro Gly Gln Gln Gly Lys Tyr Arg Gly Ala Lys Gly Ser Leu Pro
            740                 745                 750

Pro Gln Arg Ser Asp Gln His Gln Pro Ala Ser Ala Pro Pro Met Met
        755                 760                 765

Gln Ala Ala Ala Ala Ala Gly Pro Pro Leu Val Ala Ala Thr Pro Tyr
    770                 775                 780

Ser Ser Tyr Ile Pro Tyr Asn Pro Gln Gln Phe Pro Gly Gln Pro Ala
785                 790                 795                 800
```

```
Met Met Gln Pro Met Ala His Tyr Pro Ser Gln Pro Val Phe Ala Pro
                805                 810                 815

Met Leu Gln Ser Asn Pro Arg Met Leu Thr Ser Gly Ser His Pro Gln
            820                 825                 830

Ala Ile Val Ser Ser Ser Thr Pro Gln Tyr Pro Ser Ala Glu Gln Pro
        835                 840                 845

Thr Pro Gln Ala Leu Tyr Ala Thr Val His Gln Ser Tyr Pro His His
    850                 855                 860

Ala Thr Gln Leu His Ala His Gln Pro Gln Pro Ala Thr Thr Pro Thr
865                 870                 875                 880

Gly Ser Gln Pro Gln Ser Gln His Ala Ala Pro Ser Pro Val Gln His
                885                 890                 895

Gln Ala Gly Gln Ala Pro His Leu Gly Ser Gly Gln Pro Gln Gln Asn
            900                 905                 910

Leu Tyr His Pro Gly Ala Leu Thr Gly Thr Pro Pro Ser Leu Pro Pro
        915                 920                 925

Gly Pro Ser Ala Gln Ser Pro Gln Ser Ser Phe Pro Gln Pro Ala Ala
    930                 935                 940

Val Tyr Ala Ile His His Gln Gln Leu Pro His Gly Phe Thr Asn Met
945                 950                 955                 960

Ala His Val Thr Gln Ala His Val Gln Thr Gly Ile Thr Ala Ala Pro
                965                 970                 975

Pro Pro His Pro Gly Ala Pro His Pro Pro Gln Val Met Leu Leu His
            980                 985                 990

Pro Pro Gln Ser His Gly Gly Pro  Pro Gln Gly Ala Val  Pro Gln
Ser
        995                 1000                1005

Gly Val  Pro Ala Leu Ser Ala  Ser Thr Pro Ser Pro  Tyr Pro Tyr
    1010                1015                1020
```

Ile Gly His Pro Gln Val Gln Ser His Pro Ser Gln Gln Leu Pro
1025 1030 1035

Phe His Pro Pro Gly Asn
1040

<210> 6877
<211> 1044
<212> PRT
<213> Homo sapiens

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<400> 6877
Met Leu Lys Pro Gln Pro Leu Gln Gln Pro Ser Gln Pro Gln Gln Pro
1 5 10 15

Pro Pro Thr Gln Gln Ala Val Ala Arg Arg Pro Pro Gly Gly Thr Ser
20 25 30

Pro Pro Asn Gly Gly Leu Pro Gly Pro Leu Ala Thr Ser Ala Ala Pro
35 40 45

Pro Gly Pro Pro Ala Ala Ala Ser Pro Cys Leu Gly Pro Val Ala Ala
50 55 60

Ala Gly Ser Gly Leu Arg Arg Gly Ala Glu Gly Ile Leu Ala Pro Gln
65 70 75 80

Pro Pro Pro Pro Gln Gln His Gln Glu Arg Pro Gly Ala Ala Ala Ile

```
                85                  90                  95

Gly Ser Ala Arg Gly Gln Ser Thr Gly Lys Gly Pro Pro Gln Ser Pro
            100                 105                 110

Val Phe Glu Gly Val Tyr Asn Asn Ser Arg Met Leu His Phe Leu Thr
        115                 120                 125

Ala Val Val Gly Ser Thr Cys Asp Val Lys Val Lys Asn Gly Thr Thr
    130                 135                 140

Tyr Glu Gly Ile Phe Lys Thr Leu Ser Ser Lys Phe Glu Leu Ala Val
145                 150                 155                 160

Asp Ala Val His Arg Lys Ala Ser Glu Pro Ala Gly Gly Pro Arg Arg
                165                 170                 175

Glu Asp Ile Val Asp Thr Met Val Phe Lys Pro Ser Asp Val Met Leu
            180                 185                 190

Val His Phe Arg Asn Val Asp Phe Asn Tyr Ala Thr Lys Asp Lys Phe
        195                 200                 205

Thr Asp Ser Ala Ile Ala Met Asn Ser Lys Val Asn Gly Glu His Lys
    210                 215                 220

Glu Lys Val Leu Gln Arg Trp Glu Gly Gly Asp Ser Asn Ser Asp Asp
225                 230                 235                 240

Tyr Asp Leu Glu Ser Asp Met Ser Asn Gly Trp Asp Pro Asn Glu Met
                245                 250                 255

Phe Lys Phe Asn Glu Glu Asn Tyr Gly Val Lys Thr Thr Tyr Asp Ser
            260                 265                 270

Ser Leu Ser Ser Tyr Thr Val Pro Leu Glu Lys Asp Asn Ser Glu Glu
        275                 280                 285

Phe Arg Gln Arg Glu Leu Arg Ala Ala Gln Leu Ala Arg Glu Ile Glu
    290                 295                 300

Ser Ser Pro Gln Tyr Arg Leu Arg Ile Ala Met Glu Asn Asp Asp Gly
305                 310                 315                 320
```

```
Arg Thr Glu Glu Glu Lys His Ser Ala Val Gln Arg Gln Gly Ser Gly
                325                 330                 335

Arg Glu Ser Pro Ser Leu Ala Ser Arg Glu Gly Lys Tyr Ile Pro Leu
            340                 345                 350

Pro Gln Arg Val Arg Glu Gly Pro Arg Gly Gly Val Arg Cys Ser Ser
        355                 360                 365

Ser Arg Gly Gly Arg Pro Gly Leu Ser Ser Leu Pro Pro Arg Gly Pro
    370                 375                 380

His His Leu Asp Asn Ser Ser Pro Gly Pro Gly Ser Glu Ala Arg Gly
385                 390                 395                 400

Ile Asn Gly Gly Pro Ser Arg Met Ser Pro Lys Ala Gln Arg Pro Leu
                405                 410                 415

Arg Gly Ala Lys Thr Leu Ser Ser Pro Ser Asn Arg Pro Ser Gly Glu
            420                 425                 430

Thr Ser Val Pro Pro Pro Pro Ala Val Gly Arg Met Tyr Pro Pro Arg
        435                 440                 445

Ser Pro Lys Ser Ala Ala Pro Ala Pro Ile Ser Ala Ser Cys Pro Glu
    450                 455                 460

Pro Pro Ile Gly Ser Ala Val Pro Thr Ser Ser Ala Ser Ile Pro Val
465                 470                 475                 480

Thr Ser Ser Val Ser Asp Pro Gly Val Gly Ser Ile Ser Pro Ala Ser
                485                 490                 495

Pro Lys Ile Ser Leu Ala Pro Thr Asp Val Lys Glu Leu Ser Thr Lys
            500                 505                 510

Glu Pro Gly Arg Thr Leu Glu Pro Gln Glu Leu Ala Arg Ile Ala Gly
        515                 520                 525

Lys Val Pro Gly Leu Gln Asn Glu Gln Lys Arg Phe Gln Leu Glu Glu
    530                 535                 540
```

```
Leu Arg Lys Phe Gly Ala Gln Phe Lys Leu Gln Pro Ser Ser Ser Pro
545                 550                 555                 560

Glu Asn Ser Leu Asp Pro Phe Pro Pro Arg Ile Leu Lys Glu Glu Pro
                565                 570                 575

Lys Gly Lys Glu Lys Glu Val Asp Gly Leu Leu Thr Ser Glu Pro Met
            580                 585                 590

Gly Ser Pro Val Ser Ser Lys Thr Glu Ser Val Ser Asp Lys Glu Asp
        595                 600                 605

Lys Pro Pro Leu Ala Pro Ser Gly Gly Thr Glu Gly Pro Glu Gln Pro
    610                 615                 620

Pro Pro Pro Cys Pro Ser Gln Thr Gly Ser Pro Pro Val Gly Leu Ile
625                 630                 635                 640

Lys Gly Glu Asp Lys Asp Glu Gly Pro Val Ala Glu Gln Val Lys Lys
                645                 650                 655

Ser Thr Leu Asn Pro Asn Ala Lys Glu Phe Asn Pro Thr Lys Pro Leu
            660                 665                 670

Leu Ser Val Asn Lys Ser Thr Ser Thr Pro Thr Ser Pro Gly Pro Arg
        675                 680                 685

Thr His Ser Thr Pro Ser Ile Pro Val Leu Thr Ala Gly Gln Ser Gly
    690                 695                 700

Leu Tyr Ser Pro Gln Tyr Ile Ser Tyr Ile Pro Gln Ile His Met Gly
705                 710                 715                 720

Pro Ala Val Gln Ala Pro Gln Met Tyr Pro Tyr Pro Val Ser Asn Ser
                725                 730                 735

Val Pro Gly Gln Gln Gly Lys Tyr Arg Gly Ala Lys Gly Ser Leu Pro
            740                 745                 750

Pro Gln Arg Ser Asp Gln His Gln Pro Ala Ser Ala Pro Pro Met Met
        755                 760                 765
```

```
Gln Ala Ala Ala Ala Ala Gly Pro Pro Leu Val Ala Ala Thr Pro Tyr
    770                 775                 780

Ser Ser Tyr Ile Pro Tyr Asn Pro Gln Gln Phe Pro Gly Gln Pro Ala
785                 790                 795                 800

Met Met Gln Pro Met Ala His Tyr Pro Ser Gln Pro Val Phe Ala Pro
                805                 810                 815

Met Leu Gln Ser Asn Pro Arg Met Leu Thr Ser Gly Ser His Pro Gln
            820                 825                 830

Ala Ile Val Ser Ser Ser Thr Pro Gln Tyr Pro Ser Ala Glu Gln Pro
        835                 840                 845

Thr Pro Gln Ala Leu Tyr Ala Thr Val His Gln Ser Tyr Pro His His
    850                 855                 860

Ala Thr Gln Leu His Ala His Gln Pro Gln Pro Ala Thr Thr Pro Thr
865                 870                 875                 880

Gly Ser Gln Pro Gln Ser Gln His Ala Ala Pro Ser Pro Val Gln His
                885                 890                 895

Gln Ala Gly Gln Ala Pro His Leu Gly Ser Gly Gln Pro Gln Gln Asn
            900                 905                 910

Leu Tyr His Pro Gly Ala Leu Thr Gly Thr Pro Pro Ser Leu Pro Pro
        915                 920                 925

Gly Pro Ser Ala Gln Ser Pro Gln Ser Ser Phe Pro Gln Pro Ala Ala
    930                 935                 940

Val Tyr Ala Ile His His Gln Gln Leu Pro His Gly Phe Thr Asn Met
945                 950                 955                 960

Ala His Val Thr Gln Ala His Val Gln Thr Gly Ile Thr Ala Ala Pro
                965                 970                 975

Pro Pro His Pro Gly Ala Pro His Pro Pro Gln Val Met Leu Leu His
            980                 985                 990

Pro Pro Gln Ser His Gly Gly Pro  Pro Gln Gly Ala Val  Pro Gln
```

Ser
995 1000 1005

Gly Val Pro Ala Leu Ser Ala Ser Thr Pro Ser Pro Tyr Pro Tyr
1010 1015 1020

Ile Gly His Pro Gln Ala Pro Leu Pro Pro Pro Gly Glu Leu Lys
1025 1030 1035

Ile Val Leu Ala Ala Thr
1040

<210> 6878
<211> 1097
<212> PRT
<213> Homo sapiens

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<223> /note="Gene Symbol: ATXN2L; "

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<223> /note="Uniprot ID: Q8WWM7; "

<220>
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<223> /note="ENSP ID: ENSP00000378917"

<400> 6878
Met Leu Lys Pro Gln Pro Leu Gln Gln Pro Ser Gln Pro Gln Gln Pro
1 5 10 15

Pro Pro Thr Gln Gln Ala Val Ala Arg Arg Pro Pro Gly Gly Thr Ser
20 25 30

Pro Pro Asn Gly Gly Leu Pro Gly Pro Leu Ala Thr Ser Ala Ala Pro
35 40 45

Pro Gly Pro Pro Ala Ala Ala Ser Pro Cys Leu Gly Pro Val Ala Ala
50 55 60

```
Ala Gly Ser Gly Leu Arg Arg Gly Ala Glu Gly Ile Leu Ala Pro Gln
65                  70                  75                  80

Pro Pro Pro Pro Gln Gln His Gln Glu Arg Pro Gly Ala Ala Ala Ile
                85                  90                  95

Gly Ser Ala Arg Gly Gln Ser Thr Gly Lys Gly Pro Pro Gln Ser Pro
            100                 105                 110

Val Phe Glu Gly Val Tyr Asn Asn Ser Arg Met Leu His Phe Leu Thr
        115                 120                 125

Ala Val Val Gly Ser Thr Cys Asp Val Lys Val Lys Asn Gly Thr Thr
    130                 135                 140

Tyr Glu Gly Ile Phe Lys Thr Leu Ser Ser Lys Phe Glu Leu Ala Val
145                 150                 155                 160

Asp Ala Val His Arg Lys Ala Ser Glu Pro Ala Gly Gly Pro Arg Arg
                165                 170                 175

Glu Asp Ile Val Asp Thr Met Val Phe Lys Pro Ser Asp Val Met Leu
            180                 185                 190

Val His Phe Arg Asn Val Asp Phe Asn Tyr Ala Thr Lys Asp Lys Phe
        195                 200                 205

Thr Asp Ser Ala Ile Ala Met Asn Ser Lys Val Asn Gly Glu His Lys
    210                 215                 220

Glu Lys Val Leu Gln Arg Trp Glu Gly Gly Asp Ser Asn Ser Asp Asp
225                 230                 235                 240

Tyr Asp Leu Glu Ser Asp Met Ser Asn Gly Trp Asp Pro Asn Glu Met
                245                 250                 255

Phe Lys Phe Asn Glu Glu Asn Tyr Gly Val Lys Thr Thr Tyr Asp Ser
            260                 265                 270

Ser Leu Ser Ser Tyr Thr Val Pro Leu Glu Lys Asp Asn Ser Glu Glu
        275                 280                 285
```

```
Phe Arg Gln Arg Glu Leu Arg Ala Ala Gln Leu Ala Arg Glu Ile Glu
    290                 295                 300

Ser Ser Pro Gln Tyr Arg Leu Arg Ile Ala Met Glu Asn Asp Asp Gly
305                 310                 315                 320

Arg Thr Glu Glu Glu Lys His Ser Ala Val Gln Arg Gln Gly Ser Gly
                325                 330                 335

Arg Glu Ser Pro Ser Leu Ala Ser Arg Glu Gly Lys Tyr Ile Pro Leu
            340                 345                 350

Pro Gln Arg Val Arg Glu Gly Pro Arg Gly Gly Val Arg Cys Ser Ser
        355                 360                 365

Ser Arg Gly Gly Arg Pro Gly Leu Ser Ser Leu Pro Pro Arg Gly Pro
    370                 375                 380

His His Leu Asp Asn Ser Ser Pro Gly Pro Gly Ser Glu Ala Arg Gly
385                 390                 395                 400

Ile Asn Gly Gly Pro Ser Arg Met Ser Pro Lys Ala Gln Arg Pro Leu
                405                 410                 415

Arg Gly Ala Lys Thr Leu Ser Ser Pro Ser Asn Arg Pro Ser Gly Glu
            420                 425                 430

Thr Ser Val Pro Pro Pro Pro Ala Val Gly Arg Met Tyr Pro Pro Arg
        435                 440                 445

Ser Pro Lys Ser Ala Ala Pro Ala Pro Ile Ser Ala Ser Cys Pro Glu
    450                 455                 460

Pro Pro Ile Gly Ser Ala Val Pro Thr Ser Ser Ala Ser Ile Pro Val
465                 470                 475                 480

Thr Ser Ser Val Ser Asp Pro Gly Val Gly Ser Ile Ser Pro Ala Ser
                485                 490                 495

Pro Lys Ile Ser Leu Ala Pro Thr Asp Val Lys Glu Leu Ser Thr Lys
            500                 505                 510
```

```
Glu Pro Gly Arg Thr Leu Glu Pro Gln Glu Leu Ala Arg Ile Ala Gly
        515                 520                 525

Lys Val Pro Gly Leu Gln Asn Glu Gln Lys Arg Phe Gln Leu Glu Glu
    530                 535                 540

Leu Arg Lys Phe Gly Ala Gln Phe Lys Leu Gln Pro Ser Ser Ser Pro
545                 550                 555                 560

Glu Asn Ser Leu Asp Pro Phe Pro Pro Arg Ile Leu Lys Glu Glu Pro
                565                 570                 575

Lys Gly Lys Glu Lys Glu Val Asp Gly Leu Leu Thr Ser Glu Pro Met
            580                 585                 590

Gly Ser Pro Val Ser Ser Lys Thr Glu Ser Val Ser Asp Lys Glu Asp
        595                 600                 605

Lys Pro Pro Leu Ala Pro Ser Gly Gly Thr Glu Gly Pro Glu Gln Pro
    610                 615                 620

Pro Pro Pro Cys Pro Ser Gln Thr Gly Ser Pro Pro Val Gly Leu Ile
625                 630                 635                 640

Lys Gly Glu Asp Lys Asp Glu Gly Pro Val Ala Glu Gln Val Lys Lys
                645                 650                 655

Ser Thr Leu Asn Pro Asn Ala Lys Glu Phe Asn Pro Thr Lys Pro Leu
            660                 665                 670

Leu Ser Val Asn Lys Ser Thr Ser Thr Pro Thr Ser Pro Gly Pro Arg
        675                 680                 685

Thr His Ser Thr Pro Ser Ile Pro Val Leu Thr Ala Gly Gln Ser Gly
    690                 695                 700

Leu Tyr Ser Pro Gln Tyr Ile Ser Tyr Ile Pro Gln Ile His Met Gly
705                 710                 715                 720

Pro Ala Val Gln Ala Pro Gln Met Tyr Pro Tyr Pro Val Ser Asn Ser
                725                 730                 735

Val Pro Gly Gln Gln Gly Lys Tyr Arg Gly Ala Lys Gly Ser Leu Pro
```

740 745 750

Pro Gln Arg Ser Asp Gln His Gln Pro Ala Ser Ala Pro Pro Met Met
755 760 765

Gln Ala Ala Ala Ala Ala Gly Pro Pro Leu Val Ala Ala Thr Pro Tyr
770 775 780

Ser Ser Tyr Ile Pro Tyr Asn Pro Gln Gln Phe Pro Gly Gln Pro Ala
785 790 795 800

Met Met Gln Pro Met Ala His Tyr Pro Ser Gln Pro Val Phe Ala Pro
805 810 815

Met Leu Gln Ser Asn Pro Arg Met Leu Thr Ser Gly Ser His Pro Gln
820 825 830

Ala Ile Val Ser Ser Ser Thr Pro Gln Tyr Pro Ser Ala Glu Gln Pro
835 840 845

Thr Pro Gln Ala Leu Tyr Ala Thr Val His Gln Ser Tyr Pro His His
850 855 860

Ala Thr Gln Leu His Ala His Gln Pro Gln Pro Ala Thr Thr Pro Thr
865 870 875 880

Gly Ser Gln Pro Gln Ser Gln His Ala Ala Pro Ser Pro Val Gln His
885 890 895

Gln Ala Gly Gln Ala Pro His Leu Gly Ser Gly Gln Pro Gln Gln Asn
900 905 910

Leu Tyr His Pro Gly Ala Leu Thr Gly Thr Pro Pro Ser Leu Pro Pro
915 920 925

Gly Pro Ser Ala Gln Ser Pro Gln Ser Ser Phe Pro Gln Pro Ala Ala
930 935 940

Val Tyr Ala Ile His His Gln Gln Leu Pro His Gly Phe Thr Asn Met
945 950 955 960

Ala His Val Thr Gln Ala His Val Gln Thr Gly Ile Thr Ala Ala Pro
965 970 975

```
Pro Pro His Pro Gly Ala Pro His Pro Pro Gln Val Met Leu Leu His
            980                 985                 990

Pro Pro Gln Ser His Gly Gly Pro  Pro Gln Gly Ala Val  Pro Gln
Ser
        995                 1000                1005

Gly Val  Pro Ala Leu Ser Ala  Ser Thr Pro Ser Pro  Tyr Pro Tyr
    1010                1015                1020

Ile Gly  His Pro Gln Gly Glu  Gln Pro Gly Gln Ala  Pro Gly Phe
    1025                1030                1035

Pro Gly  Gly Ala Asp Asp Arg  Ile Leu Cys Arg Val  Gly Arg Ser
    1040                1045                1050

His Ser  Arg Arg Arg Gln Gly  Leu Ala Pro Gly Ser  Val Leu Cys
    1055                1060                1065

Phe Pro  Pro Ser Ser Leu Ser  Cys Asp Pro Ala Ala  Pro Leu Pro
    1070                1075                1080

Thr Ala  Ser Pro Ala Leu Ser  Asp Pro Asp Cys Leu  Leu Thr
    1085                1090                1095


<210> 6879
<211> 1062
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1476; "

<220>
<221> source
<223> /note="Gene Symbol: ATXN2L; "

<220>
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<223> /note="Gene Name:
      ataxin 2-like; "

<220>
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<223> /note="Uniprot ID:  Q8WWM7; "
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<220>
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<223> /note="ENSP ID: ENSP00000454516"

<400> 6879
Met Leu Lys Pro Gln Pro Leu Gln Gln Pro Ser Gln Pro Gln Gln Pro
1 5 10 15

Pro Pro Thr Gln Gln Ala Val Ala Arg Arg Pro Pro Gly Gly Thr Ser
20 25 30

Pro Pro Asn Gly Gly Leu Pro Gly Pro Leu Ala Thr Ser Ala Ala Pro
35 40 45

Pro Gly Pro Pro Ala Ala Ala Ser Pro Cys Leu Gly Pro Val Ala Ala
50 55 60

Ala Gly Ser Gly Leu Arg Arg Gly Ala Glu Gly Ile Leu Ala Pro Gln
65 70 75 80

Pro Pro Pro Pro Gln Gln His Gln Glu Arg Pro Gly Ala Ala Ala Ile
85 90 95

Gly Ser Ala Arg Gly Gln Ser Thr Gly Lys Gly Pro Pro Gln Ser Pro
100 105 110

Val Phe Glu Gly Val Tyr Asn Asn Ser Arg Met Leu His Phe Leu Thr
115 120 125

Ala Val Val Gly Ser Thr Cys Asp Val Lys Val Lys Asn Gly Thr Thr
130 135 140

Tyr Glu Gly Ile Phe Lys Thr Leu Ser Ser Lys Phe Glu Leu Ala Val
145 150 155 160

Asp Ala Val His Arg Lys Ala Ser Glu Pro Ala Gly Gly Pro Arg Arg
165 170 175

Glu Asp Ile Val Asp Thr Met Val Phe Lys Pro Ser Asp Val Met Leu
180 185 190

Val His Phe Arg Asn Val Asp Phe Asn Tyr Ala Thr Lys Asp Lys Phe
195 200 205

```
Thr Asp Ser Ala Ile Ala Met Asn Ser Lys Val Asn Gly Glu His Lys
    210                 215                 220

Glu Lys Val Leu Gln Arg Trp Glu Gly Gly Asp Ser Asn Ser Asp Asp
225                 230                 235                 240

Tyr Asp Leu Glu Ser Asp Met Ser Asn Gly Trp Asp Pro Asn Glu Met
                245                 250                 255

Phe Lys Phe Asn Glu Glu Asn Tyr Gly Val Lys Thr Thr Tyr Asp Ser
            260                 265                 270

Ser Leu Ser Ser Tyr Thr Val Pro Leu Glu Lys Asp Asn Ser Glu Glu
        275                 280                 285

Phe Arg Gln Arg Glu Leu Arg Ala Ala Gln Leu Ala Arg Glu Ile Glu
    290                 295                 300

Ser Ser Pro Gln Tyr Arg Leu Arg Ile Ala Met Glu Asn Asp Asp Gly
305                 310                 315                 320

Arg Thr Glu Glu Glu Lys His Ser Ala Val Gln Arg Gln Gly Ser Gly
                325                 330                 335

Arg Glu Ser Pro Ser Leu Ala Ser Arg Glu Gly Lys Tyr Ile Pro Leu
            340                 345                 350

Pro Gln Arg Val Arg Glu Gly Pro Arg Gly Gly Val Arg Cys Ser Ser
        355                 360                 365

Ser Arg Gly Gly Arg Pro Gly Leu Ser Ser Leu Pro Pro Arg Gly Pro
    370                 375                 380

His His Leu Asp Asn Ser Ser Pro Gly Pro Gly Ser Glu Ala Arg Gly
385                 390                 395                 400

Ile Asn Gly Gly Pro Ser Arg Met Ser Pro Lys Ala Gln Arg Pro Leu
                405                 410                 415

Arg Gly Ala Lys Thr Leu Ser Ser Pro Ser Asn Arg Pro Ser Gly Glu
            420                 425                 430

Thr Ser Val Pro Pro Pro Pro Ala Val Gly Arg Met Tyr Pro Pro Arg
```

435 440 445

Ser Pro Lys Ser Ala Ala Pro Ala Pro Ile Ser Ala Ser Cys Pro Glu
450 455 460

Pro Pro Ile Gly Ser Ala Val Pro Thr Ser Ser Ala Ser Ile Pro Val
465 470 475 480

Thr Ser Ser Val Ser Asp Pro Gly Val Gly Ser Ile Ser Pro Ala Ser
485 490 495

Pro Lys Ile Ser Leu Ala Pro Thr Asp Val Lys Glu Leu Ser Thr Lys
500 505 510

Glu Pro Gly Arg Thr Leu Glu Pro Gln Glu Leu Ala Arg Ile Ala Gly
515 520 525

Lys Val Pro Gly Leu Gln Asn Glu Gln Lys Arg Phe Gln Leu Glu Glu
530 535 540

Leu Arg Lys Phe Gly Ala Gln Phe Lys Leu Gln Pro Ser Ser Ser Pro
545 550 555 560

Glu Asn Ser Leu Asp Pro Phe Pro Pro Arg Ile Leu Lys Glu Glu Pro
565 570 575

Lys Gly Lys Glu Lys Glu Val Asp Gly Leu Leu Thr Ser Glu Pro Met
580 585 590

Gly Ser Pro Val Ser Ser Lys Thr Glu Ser Val Ser Asp Lys Glu Asp
595 600 605

Lys Pro Pro Leu Ala Pro Ser Gly Gly Thr Glu Gly Pro Glu Gln Pro
610 615 620

Pro Pro Pro Cys Pro Ser Gln Thr Gly Ser Pro Pro Val Gly Leu Ile
625 630 635 640

Lys Gly Glu Asp Lys Asp Glu Gly Pro Val Ala Glu Gln Val Lys Lys
645 650 655

Ser Thr Leu Asn Pro Asn Ala Lys Glu Phe Asn Pro Thr Lys Pro Leu
660 665 670

```
Leu Ser Val Asn Lys Ser Thr Ser Thr Pro Thr Ser Pro Gly Pro Arg
        675                 680                 685

Thr His Ser Thr Pro Ser Ile Pro Val Leu Thr Ala Gly Gln Ser Gly
    690                 695                 700

Leu Tyr Ser Pro Gln Tyr Ile Ser Tyr Ile Pro Gln Ile His Met Gly
705                 710                 715                 720

Pro Ala Val Gln Ala Pro Gln Met Tyr Pro Tyr Pro Val Ser Asn Ser
                725                 730                 735

Val Pro Gly Gln Gln Gly Lys Tyr Arg Gly Ala Lys Gly Ser Leu Pro
            740                 745                 750

Pro Gln Arg Ser Asp Gln His Gln Pro Ala Ser Ala Pro Pro Met Met
        755                 760                 765

Gln Ala Ala Ala Ala Ala Gly Pro Pro Leu Val Ala Ala Thr Pro Tyr
    770                 775                 780

Ser Ser Tyr Ile Pro Tyr Asn Pro Gln Gln Phe Pro Gly Gln Pro Ala
785                 790                 795                 800

Met Met Gln Pro Met Ala His Tyr Pro Ser Gln Pro Val Phe Ala Pro
                805                 810                 815

Met Leu Gln Ser Asn Pro Arg Met Leu Thr Ser Gly Ser His Pro Gln
            820                 825                 830

Ala Ile Val Ser Ser Ser Thr Pro Gln Tyr Pro Ser Ala Glu Gln Pro
        835                 840                 845

Thr Pro Gln Ala Leu Tyr Ala Thr Val His Gln Ser Tyr Pro His His
    850                 855                 860

Ala Thr Gln Leu His Ala His Gln Pro Gln Pro Ala Thr Thr Pro Thr
865                 870                 875                 880

Gly Ser Gln Pro Gln Ser Gln His Ala Ala Pro Ser Pro Val Gln His
                885                 890                 895
```

```
Gln Ala Gly Gln Ala Pro His Leu Gly Ser Gly Gln Pro Gln Gln Asn
            900                 905                 910

Leu Tyr His Pro Gly Ala Leu Thr Gly Thr Pro Pro Ser Leu Pro Pro
        915                 920                 925

Gly Pro Ser Ala Gln Ser Pro Gln Ser Ser Phe Pro Gln Pro Ala Ala
    930                 935                 940

Val Tyr Ala Ile His His Gln Gln Leu Pro His Gly Phe Thr Asn Met
945                 950                 955                 960

Ala His Val Thr Gln Ala His Val Gln Thr Gly Ile Thr Ala Ala Pro
                965                 970                 975

Pro Pro His Pro Gly Ala Pro His Pro Pro Gln Val Met Leu Leu His
            980                 985                 990

Pro Pro Gln Ser His Gly Gly Pro  Pro Gln Gly Ala Val  Pro Gln
Ser
        995                 1000                1005

Gly Val  Pro Ala Leu Ser Ala  Ser Thr Pro Ser Pro  Tyr Pro Tyr
    1010                1015                1020

Ile Gly  His Pro Gln Gly Glu  Gln Pro Gly Gln Ala  Pro Gly Phe
    1025                1030                1035

Pro Gly  Gly Ala Asp Asp Arg  Ile Leu Gln Ser His  Pro Ser Gln
    1040                1045                1050

Gln Leu  Pro Phe His Pro Pro  Gly Asn
    1055                1060


<210> 6880
<211> 187
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1476; "

<220>
<221> source
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<223> /note="Gene Symbol: ATXN2L; "

<220>
<221> source
<223> /note="Gene Name:
ataxin 2-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000454588"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6880

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Xaa Thr Ser Gly Ser His Pro Gln Ala Ile Val Ser Ser Ser Thr Pro
1               5                  10                  15

Gln Tyr Pro Ser Ala Glu Gln Pro Thr Pro Gln Ala Leu Tyr Ala Thr
            20                  25                  30

Val His Gln Ser Tyr Pro His His Ala Thr Gln Leu His Ala His Gln
        35                  40                  45

Pro Gln Pro Ala Thr Thr Pro Thr Gly Ser Gln Pro Gln Ser Gln His
    50                  55                  60

Ala Ala Pro Ser Pro Val Gln Ala Gly Gln Ala Pro His Leu Gly Ser
65                  70                  75                  80

Gly Gln Pro Gln Gln Asn Leu Tyr His Pro Gly Ala Leu Thr Gly Thr
                85                  90                  95

Pro Pro Ser Leu Pro Pro Gly Pro Ser Ala Gln Ser Pro Gln Ser Ser
            100                 105                 110

Phe Pro Gln Pro Ala Ala Val Tyr Ala Ile His His Gln Gln Leu Pro
        115                 120                 125

His Gly Phe Thr Asn Met Ala His Val Thr Gln Ala His Val Gln Thr
    130                 135                 140

Gly Ile Thr Ala Ala Pro Pro Pro His Pro Gly Ala Pro His Pro Pro
145                 150                 155                 160
```

Gln Val Met Leu Leu His Pro Pro Gln Ser His Gly Gly Pro Pro Gln
165 170 175

Gly Ala Val Pro Gln Ser Gly Val Pro Ala Leu
180 185

<210> 6881
<211> 401
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1476; "

<220>
<221> source
<223> /note="Gene Symbol: ATXN2L; "

<220>
<221> source
<223> /note="Gene Name:
ataxin 2-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000454757"

<400> 6881
Asn Lys Ser Thr Ser Thr Pro Thr Ser Pro Gly Pro Arg Thr His Ser
1 5 10 15

Thr Pro Ser Ile Pro Val Leu Thr Ala Gly Gln Ser Gly Leu Tyr Ser
20 25 30

Pro Gln Tyr Ile Ser Tyr Ile Pro Gln Ile His Met Gly Pro Ala Val
35 40 45

Gln Ala Pro Gln Met Tyr Pro Tyr Pro Val Ser Asn Ser Val Pro Gly
50 55 60

Gln Gln Gly Lys Tyr Arg Gly Ala Lys Gly Ser Leu Pro Pro Gln Arg
65 70 75 80

Ser Asp Gln His Gln Pro Ala Ser Ala Pro Pro Met Met Gln Ala Ala
85 90 95

Ala Ala Ala Gly Pro Pro Leu Val Ala Ala Thr Pro Tyr Ser Ser Tyr

```
            100                 105                 110

Ile Pro Tyr Asn Pro Gln Gln Phe Pro Gly Gln Pro Ala Met Met Gln
        115                 120                 125

Pro Met Ala His Tyr Pro Ser Gln Pro Val Phe Ala Pro Met Leu Gln
    130                 135                 140

Ser Asn Pro Arg Met Leu Thr Ser Gly Ser His Pro Gln Ala Ile Val
145                 150                 155                 160

Ser Ser Ser Thr Pro Gln Tyr Pro Ser Ala Glu Gln Pro Thr Pro Gln
                165                 170                 175

Ala Leu Tyr Ala Thr Val His Gln Ser Tyr Pro His His Ala Thr Gln
            180                 185                 190

Leu His Ala His Gln Pro Gln Pro Ala Thr Thr Pro Thr Gly Ser Gln
        195                 200                 205

Pro Gln Ser Gln His Ala Ala Pro Ser Pro Val Gln Gln His Gln Ala
    210                 215                 220

Gly Gln Ala Pro His Leu Gly Ser Gly Gln Pro Gln Gln Asn Leu Tyr
225                 230                 235                 240

His Pro Gly Ala Leu Thr Gly Thr Pro Pro Ser Leu Pro Pro Gly Pro
                245                 250                 255

Ser Ala Gln Ser Pro Gln Ser Ser Phe Pro Gln Pro Ala Ala Val Tyr
            260                 265                 270

Ala Ile His His Gln Gln Leu Pro His Gly Phe Thr Asn Met Ala His
        275                 280                 285

Val Thr Gln Ala His Val Gln Thr Gly Ile Thr Ala Ala Pro Pro Pro
    290                 295                 300

His Pro Gly Ala Pro His Pro Pro Gln Val Met Leu Leu His Pro Pro
305                 310                 315                 320

Gln Ser His Gly Gly Pro Pro Gln Gly Ala Val Pro Gln Ser Gly Val
                325                 330                 335
```

```
Pro Ala Leu Ser Ala Ser Thr Pro Ser Pro Tyr Pro Tyr Ile Gly His
            340                 345                 350

Pro Gln Gly Glu Gln Pro Gly Gln Ala Pro Gly Phe Pro Gly Gly Ala
        355                 360                 365

Asp Asp Arg Ile Arg Glu Phe Ser Leu Ala Gly Gly Ile Trp His Gly
    370                 375                 380

Arg Ala Glu Gly Leu Gln Val Gly Gln Asp Ala Arg Val Leu Gly Gly
385                 390                 395                 400

Glu
```

<210> 6882
<211> 110
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ATXN2L; "

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<223> /note="Gene Name:
ataxin 2-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000455427"

<400> 6882

```
Gln Ser Ser Phe Pro Gln Pro Ala Ala Val Tyr Ala Ile His His Gln
1               5                   10                  15

Gln Leu Pro His Gly Phe Thr Asn Met Ala His Val Thr Gln Ala His
            20                  25                  30

Val Gln Thr Gly Ile Thr Ala Ala Pro Pro Pro His Pro Gly Ala Pro
        35                  40                  45
```

```
His Pro Pro Gln Val Met Leu Leu His Pro Pro Gln Ser His Gly Gly
    50                  55                  60

Pro Pro Gln Gly Ala Val Pro Gln Ser Gly Val Pro Ala Leu Ser Ala
65                  70                  75                  80

Ser Thr Pro Ser Pro Tyr Pro Tyr Ile Gly His Pro Gln Ala Ala Pro
                85                  90                  95

Leu Pro Pro Pro Gly Glu Leu Lys Ile Val Leu Ala Ala Thr
            100                 105                 110


<210> 6883
<211> 11
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1476; "

<220>
<221> source
<223> /note="Gene Symbol: ATXN2L; "

<220>
<221> source
<223> /note="Gene Name:
      ataxin 2-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000455560"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6883
Xaa Ala Leu Ser Asp Pro Asp Cys Leu Leu Thr
1               5                   10


<210> 6884
<211> 128
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1476; "
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<220>
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<223> /note="Gene Symbol: ATXN2L; "

<220>
<221> source
<223> /note="Gene Name:
ataxin 2-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000455981"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6884
Xaa Asn Leu Tyr His Pro Gly Ala Leu Thr Gly Thr Pro Pro Ser Leu
1 5 10 15

Pro Pro Gly Pro Ser Ala Gln Ser Pro Gln Ser Ser Phe Pro Gln Pro
20 25 30

Ala Ala Val Tyr Ala Ile His His Gln Gln Leu Pro His Gly Phe Thr
35 40 45

Asn Met Ala His Val Thr Gln Ala His Val Gln Thr Gly Ile Thr Ala
50 55 60

Ala Pro Pro Pro His Pro Gly Ala Pro His Pro Pro Gln Val Met Leu
65 70 75 80

Leu His Pro Pro Gln Ser His Gly Gly Pro Pro Gln Gly Ala Val Pro
85 90 95

Gln Ser Gly Val Pro Ala Leu Ser Ala Ser Thr Pro Ser Pro Tyr Pro
100 105 110

Tyr Ile Gly His Pro Gln Ala Leu Ser Asp Pro Asp Cys Leu Leu Thr
115 120 125

<210> 6885
<211> 400
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1476; "

<220>
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<220>
<221> source
<223> /note="Gene Name:
ataxin 2-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000456162"

<400> 6885
Asn Lys Ser Thr Ser Thr Pro Thr Ser Pro Gly Pro Arg Thr His Ser
1 5 10 15

Thr Pro Ser Ile Pro Val Leu Thr Ala Gly Gln Ser Gly Leu Tyr Ser
20 25 30

Pro Gln Tyr Ile Ser Tyr Ile Pro Gln Ile His Met Gly Pro Ala Val
35 40 45

Gln Ala Pro Gln Met Tyr Pro Tyr Pro Val Ser Asn Ser Val Pro Gly
50 55 60

Gln Gln Gly Lys Tyr Arg Gly Ala Lys Gly Ser Leu Pro Pro Gln Arg
65 70 75 80

Ser Asp Gln His Gln Pro Ala Ser Ala Pro Pro Met Met Gln Ala Ala
85 90 95

Ala Ala Ala Gly Pro Pro Leu Val Ala Ala Thr Pro Tyr Ser Ser Tyr
100 105 110

Ile Pro Tyr Asn Pro Gln Gln Phe Pro Gly Gln Pro Ala Met Met Gln
115 120 125

Pro Met Ala His Tyr Pro Ser Gln Pro Val Phe Ala Pro Met Leu Gln
130 135 140

Ser Asn Pro Arg Met Leu Thr Ser Gly Ser His Pro Gln Ala Ile Val
145 150 155 160

```
Ser Ser Ser Thr Pro Gln Tyr Pro Ser Ala Glu Gln Pro Thr Pro Gln
                165                 170                 175

Ala Leu Tyr Ala Thr Val His Gln Ser Tyr Pro His His Ala Thr Gln
            180                 185                 190

Leu His Ala His Gln Pro Gln Pro Ala Thr Thr Pro Thr Gly Ser Gln
        195                 200                 205

Pro Gln Ser Gln His Ala Ala Pro Ser Pro Val Gln His Gln Ala Gly
    210                 215                 220

Gln Ala Pro His Leu Gly Ser Gly Gln Pro Gln Gln Asn Leu Tyr His
225                 230                 235                 240

Pro Gly Ala Leu Thr Gly Thr Pro Pro Ser Leu Pro Pro Gly Pro Ser
                245                 250                 255

Ala Gln Ser Pro Gln Ser Ser Phe Pro Gln Pro Ala Ala Val Tyr Ala
            260                 265                 270

Ile His His Gln Gln Leu Pro His Gly Phe Thr Asn Met Ala His Val
        275                 280                 285

Thr Gln Ala His Val Gln Thr Gly Ile Thr Ala Ala Pro Pro Pro His
    290                 295                 300

Pro Gly Ala Pro His Pro Pro Gln Val Met Leu Leu His Pro Pro Gln
305                 310                 315                 320

Ser His Gly Gly Pro Pro Gln Gly Ala Val Pro Gln Ser Gly Val Pro
                325                 330                 335

Ala Leu Ser Ala Ser Thr Pro Ser Pro Tyr Pro Tyr Ile Gly His Pro
            340                 345                 350

Gln Gly Glu Gln Pro Gly Gln Ala Pro Gly Phe Pro Gly Gly Ala Asp
        355                 360                 365

Asp Arg Ile Arg Glu Phe Ser Leu Ala Gly Gly Ile Trp His Gly Arg
    370                 375                 380
```

```
Ala Glu Gly Leu Gln Val Gly Gln Asp Ala Arg Val Leu Gly Gly Glu
385                 390                 395                 400


<210> 6886
<211> 336
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
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<220>
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      ataxin 2-like; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000456752"

<400> 6886
Met Ala Phe Ala Ala Ala Leu Ser Pro Ser Pro Ala Ser Gly Pro Leu
1               5                   10                  15


Phe Ala Leu Asn Arg Arg Leu His Gln Pro Ala Thr Ser Arg Val Thr
            20                  25                  30


Trp Arg Leu Val Ile Pro Ala Glu Gly Gln Ser Thr Gly Lys Gly Pro
        35                  40                  45


Pro Gln Ser Pro Val Phe Glu Gly Val Tyr Asn Asn Ser Arg Met Leu
    50                  55                  60


His Phe Leu Thr Ala Val Val Gly Ser Thr Cys Asp Val Lys Val Lys
65                  70                  75                  80


Asn Gly Thr Thr Tyr Glu Gly Ile Phe Lys Thr Leu Ser Ser Lys Phe
                85                  90                  95


Glu Leu Ala Val Asp Ala Val His Arg Lys Ala Ser Glu Pro Ala Gly
            100                 105                 110


Gly Pro Arg Arg Glu Asp Ile Val Asp Thr Met Val Phe Lys Pro Ser
```

```
        115                 120                 125

Asp Val Met Leu Val His Phe Arg Asn Val Asp Phe Asn Tyr Ala Thr
    130                 135                 140

Lys Asp Lys Phe Thr Asp Ser Ala Ile Ala Met Asn Ser Lys Val Asn
145                 150                 155                 160

Gly Glu His Lys Glu Lys Val Leu Gln Arg Trp Glu Gly Gly Asp Ser
                165                 170                 175

Asn Ser Asp Asp Tyr Asp Leu Glu Ser Asp Met Ser Asn Gly Trp Asp
            180                 185                 190

Pro Asn Glu Met Phe Lys Phe Asn Glu Glu Asn Tyr Gly Val Lys Thr
        195                 200                 205

Thr Tyr Asp Ser Ser Leu Ser Ser Tyr Thr Val Pro Leu Glu Lys Asp
    210                 215                 220

Asn Ser Glu Glu Phe Arg Gln Arg Glu Leu Arg Ala Ala Gln Leu Ala
225                 230                 235                 240

Arg Glu Ile Glu Ser Ser Pro Gln Tyr Arg Leu Arg Ile Ala Met Glu
                245                 250                 255

Asn Asp Asp Gly Arg Thr Glu Glu Glu Lys His Ser Ala Val Gln Arg
            260                 265                 270

Gln Gly Ser Gly Arg Glu Ser Pro Ser Leu Ala Ser Arg Glu Gly Lys
        275                 280                 285

Tyr Ile Pro Leu Pro Gln Arg Val Arg Glu Gly Pro Arg Gly Gly Val
    290                 295                 300

Arg Cys Ser Ser Ser Arg Gly Gly Arg Pro Gly Leu Ser Ser Leu Pro
305                 310                 315                 320

Pro Arg Gly Pro His His Leu Asp Asn Ser Ser Pro Gly Pro Gly Ser
                325                 330                 335
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<210> 6887
<211> 91

<212> PRT
<213> Homo sapiens

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<220>
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<400> 6887
Met Leu His Phe Leu Thr Ala Val Val Gly Ser Thr Cys Asp Val Lys
1 5 10 15

Val Lys Asn Gly Thr Thr Tyr Glu Gly Ile Phe Lys Thr Leu Ser Ser
20 25 30

Lys Phe Glu Leu Ala Val Asp Ala Val His Arg Lys Ala Ser Glu Pro
35 40 45

Ala Gly Gly Pro Arg Arg Glu Asp Ile Val Asp Thr Met Val Phe Lys
50 55 60

Pro Ser Asp Val Met Leu Val His Phe Arg Asn Val Asp Phe Asn Tyr
65 70 75 80

Ala Thr Lys Asp Lys Phe Thr Asp Ser Ala Ile
85 90

<210> 6888
<211> 217
<212> PRT
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<400> 6888
Gly Ser Thr Cys Asp Val Lys Val Lys Asn Gly Thr Thr Tyr Glu Gly
1 5 10 15

Ile Phe Lys Thr Leu Ser Ser Lys Phe Glu Leu Ala Val Asp Ala Val
20 25 30

His Arg Lys Ala Ser Glu Pro Ala Gly Gly Pro Arg Arg Glu Asp Ile
35 40 45

Val Asp Thr Met Val Phe Lys Pro Ser Asp Val Met Leu Val His Phe
50 55 60

Arg Asn Val Asp Phe Asn Tyr Ala Thr Lys Asp Lys Phe Thr Asp Ser
65 70 75 80

Ala Ile Ala Met Asn Ser Lys Val Asn Gly Glu His Lys Glu Lys Lys
85 90 95

Arg Thr Thr Gln Lys Ser Phe Val Ser Glu Ser Cys Val Arg Pro Ser
100 105 110

Trp Leu Glu Arg Leu Asn Gln Ala Pro Ser Thr Ala Tyr Gly Ser Pro
115 120 125

Trp Arg Thr Thr Met Gly Ala Leu Lys Arg Arg Ser Thr Val Gln Ser
130 135 140

Ser Gly Arg Ala Gln Gly Gly Arg Ala Pro Ala Trp His Pro Gly Arg
145 150 155 160

Gly Ser Ile Ser Leu Cys Leu Asn Glu Ser Gly Lys Val Pro Gly Glu
165 170 175

Glu Phe Asp Ala Ala Ala Leu Gly Ala Val Gly Leu Ala Leu Ala Leu
180 185 190

```
Cys His Leu Val Ala Leu Thr Ile Trp Thr Thr Ala Ala Leu Ala Gln
        195                 200                 205


Val Leu Arg Pro Val Val Ser Met Glu
    210                 215


<210> 6889
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<220>
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<400> 6889
Met Leu Lys Pro Gln Pro Leu Gln Gln Pro Ser Gln Pro Gln Gln Pro
1               5                   10                  15


Pro Pro Thr Gln Gln Ala Val Ala Arg Arg Pro Pro Gly Gly Thr Ser
            20                  25                  30


Pro Pro Asn Gly Gly Leu Pro Gly Pro Leu Ala Thr Ser Ala Ala Pro
        35                  40                  45


Pro Gly Pro Pro Ala Ala Ala Ser Pro Cys Leu Gly Pro Val Ala Ala
    50                  55                  60


Ala Gly Ser Gly Leu Arg Arg Gly Ala Glu Gly Ile Leu Ala Pro Gln
65                  70                  75                  80


Pro Pro Pro Pro Gln Gln His Gln Glu Arg Pro Gly Ala Ala Ala Ile
                85                  90                  95
```

```
Gly Ser Ala Arg Gly Gln Ser Thr Gly Lys Gly Pro Pro Gln Ser Pro
            100                 105                 110

Val Phe Glu Gly Val Tyr Asn Asn Ser Arg Met Leu His Phe Leu Thr
        115                 120                 125

Ala Val Val Gly Ser Thr Cys Asp Val Lys Val Lys Asn Gly Thr Thr
    130                 135                 140

Tyr Glu Gly Ile Phe Lys Thr Leu Ser Ser Lys Phe Glu Leu Ala Val
145                 150                 155                 160

Asp Ala Val His Arg Lys Ala Ser Glu Pro Ala Gly Gly Pro Arg Arg
                165                 170                 175

Glu Asp Ile Val Asp Thr Met Val Phe Lys Pro Ser Asp Val Met Leu
            180                 185                 190

Val His Phe Arg Asn Val Asp Phe Asn Tyr Ala Thr Lys Asp Lys Phe
        195                 200                 205

Thr Asp Ser Ala Ile Ala Met Asn Ser Lys Val Asn Gly Glu His Lys
    210                 215                 220

Glu Lys Val Leu Gln Arg Trp Glu Gly Gly Asp Ser Asn Ser Asp Asp
225                 230                 235                 240

Tyr Asp Leu Glu Ser Asp Met Ser Asn Gly Trp Asp Pro Asn Glu Met
                245                 250                 255

Phe Lys Phe Asn Glu Glu Asn Tyr Gly Val Lys Thr Thr Tyr Asp Ser
            260                 265                 270

Ser Leu Ser Ser Tyr Thr Val Pro Leu Glu Lys Asp Asn Ser Glu Glu
        275                 280                 285

Phe Arg Gln Arg Glu Leu Arg Ala Ala Gln Leu Ala Arg Glu Ile Glu
    290                 295                 300

Ser Ser Pro Gln Tyr Arg Leu Arg Ile Ala Met Glu Asn Asp Asp Gly
305                 310                 315                 320

Arg Thr Glu Glu Glu Lys His Ser Ala Val Gln Arg Gln Gly Ser Gly
```

```
                325                 330                 335

Arg Glu Ser Pro Ser Leu Ala Ser Arg Glu Gly Lys Tyr Ile Pro Leu
            340                 345                 350

Pro Gln Arg Val Arg Glu Gly Pro Arg Gly Gly Val Arg Cys Ser Ser
        355                 360                 365

Ser Arg Gly Gly Arg Pro Gly Leu Ser Ser Leu Pro Pro Arg Gly Pro
    370                 375                 380

His His Leu Asp Asn Ser Ser Pro Gly Pro Gly Ser Glu Ala Arg Gly
385                 390                 395                 400

Ile Asn Gly Gly Pro Ser Arg Met Ser Pro Lys Ala Gln Arg Pro Leu
                405                 410                 415

Arg Gly Ala Lys Thr Leu Ser Ser Pro Ser Asn Arg Pro Ser Gly Glu
            420                 425                 430

Thr Ser Val Pro Pro Pro Pro Ala Ala Pro Pro Phe Leu Pro Val Gly
        435                 440                 445

Arg Met Tyr Pro Pro Arg Ser Pro Lys Ser Ala Ala Pro Ala Pro Ile
    450                 455                 460

Ser Ala Ser Cys Pro Glu Pro Pro Ile Gly Ser Ala Val Pro Thr Ser
465                 470                 475                 480

Ser Ala Ser Ile Pro Val Thr Ser Ser Val Ser Asp Pro Gly Val Gly
                485                 490                 495

Ser Ile Ser Pro Ala Ser Pro Lys Ile Ser Leu Ala Pro Thr Asp Val
            500                 505                 510

Lys Glu Leu Ser Thr Lys Glu Pro Gly Arg Thr Leu Glu Pro Gln Glu
        515                 520                 525

Leu Ala Arg Ile Ala Gly Lys Val Pro Gly Leu Gln Asn Glu Gln Lys
    530                 535                 540

Arg Phe Gln Leu Glu Glu Leu Arg Lys Phe Gly Ala Gln Phe Lys Leu
545                 550                 555                 560
```

```
Gln Pro Ser Ser Ser Pro Glu Asn Ser Leu Asp Pro Phe Pro Pro Arg
                565                 570                 575

Ile Leu Lys Glu Glu Pro Lys Gly Lys Glu Lys Glu Val Asp Gly Leu
            580                 585                 590

Leu Thr Ser Glu Pro Met Gly Ser Pro Val Ser Ser Lys Thr Glu Ser
        595                 600                 605

Val Ser Asp Lys Glu Asp Lys Pro Pro Leu Ala Pro Ser Gly Gly Thr
    610                 615                 620

Glu Gly Pro Glu Gln Pro Pro Pro Pro Cys Pro Ser Gln Thr Gly Ser
625                 630                 635                 640

Pro Pro Val Gly Leu Ile Lys Gly Glu Asp Lys Asp Glu Gly Pro Val
                645                 650                 655

Ala Glu Gln Val Lys Lys Ser Thr Leu Asn Pro Asn Ala Lys Glu Phe
            660                 665                 670

Asn Pro Thr Lys Pro Leu Leu Ser Val Asn Lys Ser Thr Ser Thr Pro
        675                 680                 685

Thr Ser Pro Gly Pro Arg Thr His Ser Thr Pro Ser Ile Pro Val Leu
    690                 695                 700

Thr Ala Gly Gln Ser Gly Leu Tyr Ser Pro Gln Tyr Ile Ser Tyr Ile
705                 710                 715                 720

Pro Gln Ile His Met Gly Pro Ala Val Gln Ala Pro Gln Met Tyr Pro
                725                 730                 735

Tyr Pro Val Ser Asn Ser Val Pro Gly Gln Gln Gly Lys Tyr Arg Gly
            740                 745                 750

Ala Lys Gly Ser Leu Pro Pro Gln Arg Ser Asp Gln His Gln Pro Ala
        755                 760                 765

Ser Ala Pro Pro Met Met Gln Ala Ala Ala Ala Ala Gly Pro Pro Leu
    770                 775                 780
```

```
Val Ala Ala Thr Pro Tyr Ser Ser Tyr Ile Pro Tyr Asn Pro Gln Gln
785                 790                 795                 800

Phe Pro Gly Gln Pro Ala Met Met Gln Pro Met Ala His Tyr Pro Ser
                805                 810                 815

Gln Pro Val Phe Ala Pro Met Leu Gln Ser Asn Pro Arg Met Leu Thr
            820                 825                 830

Ser Gly Ser His Pro Gln Ala Ile Val Ser Ser Ser Thr Pro Gln Tyr
        835                 840                 845

Pro Ser Ala Glu Gln Pro Thr Pro Gln Ala Leu Tyr Ala Thr Val His
    850                 855                 860

Gln Ser Tyr Pro His His Ala Thr Gln Leu His Ala His Gln Pro Gln
865                 870                 875                 880

Pro Ala Thr Thr Pro Thr Gly Ser Gln Pro Gln Ser Gln His Ala Ala
                885                 890                 895

Pro Ser Pro Val Gln His Gln Ala Gly Gln Ala Pro His Leu Gly Ser
            900                 905                 910

Gly Gln Pro Gln Gln Asn Leu Tyr His Pro Gly Ala Leu Thr Gly Thr
        915                 920                 925

Pro Pro Ser Leu Pro Pro Gly Pro Ser Ala Gln Ser Pro Gln Ser Ser
    930                 935                 940

Phe Pro Gln Pro Ala Ala Val Tyr Ala Ile His His Gln Gln Leu Pro
945                 950                 955                 960

His Gly Phe Thr Asn Met Ala His Val Thr Gln Ala His Val Gln Thr
                965                 970                 975

Gly Ile Thr Ala Ala Pro Pro Pro His Pro Gly Ala Pro His Pro Pro
            980                 985                 990

Gln Val Met Leu Leu His Pro Pro  Gln Ser His Gly Gly  Pro Pro
Gln
        995                 1000                1005
```

```
Gly Ala  Val Pro Gln Ser Gly  Val Pro Ala Leu Ser  Ala Ser Thr
    1010                1015                1020


Pro Ser  Pro Tyr Pro Tyr Ile  Gly His Pro Gln Gly  Glu Gln Pro
    1025                1030                1035


Gly Gln  Ala Pro Gly Phe Pro  Gly Gly Ala Asp Asp  Arg Ile Leu
    1040                1045                1050


Gln Ser  His Pro Ser Gln Gln  Leu Pro Phe His Pro  Pro Gly Asn
    1055                1060                1065


<210> 6890
<211> 306
<212> PRT
<213> Homo sapiens

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<223> /note="Gene Name:
      ataxin 3; "

<220>
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<223> /note="Uniprot ID:  P54252; "

<220>
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<223> /note="ENSP ID: ENSP00000339110"

<400> 6890
Met Glu Ser Ile Phe His Glu Lys Gln Pro Ser Gly Asn Met Asp Asp
1               5                  10                  15


Ser Gly Phe Phe Ser Ile Gln Val Ile Ser Asn Ala Leu Lys Val Trp
            20                  25                  30


Gly Leu Glu Leu Ile Leu Phe Asn Ser Pro Glu Tyr Gln Arg Leu Arg
        35                  40                  45


Ile Asp Pro Ile Asn Glu Arg Ser Phe Ile Cys Asn Tyr Lys Glu His
```

```
    50                  55                  60

Trp Phe Thr Val Arg Lys Leu Gly Lys Gln Trp Phe Asn Leu Asn Ser
65                  70                  75                  80

Leu Leu Thr Gly Pro Glu Leu Ile Ser Asp Thr Tyr Leu Ala Leu Phe
                85                  90                  95

Leu Ala Gln Leu Gln Gln Glu Gly Tyr Ser Ile Phe Val Val Lys Gly
            100                 105                 110

Asp Leu Pro Asp Cys Glu Ala Asp Gln Leu Leu Gln Met Ile Arg Val
        115                 120                 125

Gln Gln Met His Arg Pro Lys Leu Ile Gly Glu Glu Leu Ala Gln Leu
    130                 135                 140

Lys Glu Gln Arg Val His Lys Thr Asp Leu Glu Arg Val Leu Glu Ala
145                 150                 155                 160

Asn Asp Gly Ser Gly Met Leu Asp Glu Asp Glu Glu Asp Leu Gln Arg
                165                 170                 175

Ala Leu Ala Leu Ser Arg Gln Glu Ile Asp Met Glu Asp Glu Glu Ala
            180                 185                 190

Asp Leu Arg Arg Ala Ile Gln Leu Ser Met Gln Gly Ser Ser Arg Asn
        195                 200                 205

Ile Ser Gln Asp Met Thr Gln Thr Ser Gly Thr Asn Leu Thr Ser Glu
    210                 215                 220

Glu Leu Arg Lys Arg Arg Glu Ala Tyr Phe Glu Lys Gln Gln Gln Lys
225                 230                 235                 240

Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gly Asp Leu Ser Gly Gln
                245                 250                 255

Ser Ser His Pro Cys Glu Arg Pro Ala Thr Ser Ser Gly Ala Leu Gly
            260                 265                 270

Ser Asp Leu Gly Asp Ala Met Ser Glu Glu Asp Met Leu Gln Ala Ala
        275                 280                 285
```

Val Thr Met Ser Leu Glu Thr Val Arg Asn Asp Leu Lys Thr Glu Gly
290 295 300

Lys Lys
305

<210> 6891
<211> 79
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="ENSP ID: ENSP00000352324"

<400> 6891
Met Glu Ser Ile Phe His Glu Lys Gln Glu Gly Ser Leu Cys Ala Gln
1 5 10 15

His Cys Leu Asn Asn Leu Leu Gln Gly Glu Tyr Phe Ser Pro Val Glu
20 25 30

Leu Ser Ser Ile Ala His Gln Leu Asp Glu Glu Glu Arg Met Arg Met
35 40 45

Ala Glu Gly Gly Val Thr Ser Glu Asp Tyr Arg Thr Phe Leu Gln Gln
50 55 60

Pro Ser Gly Asn Met Asp Asp Ser Gly Phe Phe Ser Ile Gln Lys
65 70 75

<210> 6892
<211> 310
<212> PRT
<213> Homo sapiens

<220>
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<400> 6892
Met Glu Ser Ile Phe His Glu Lys Gln Glu Gly Ser Leu Cys Ala Gln
1 5 10 15

His Cys Leu Asn Asn Leu Leu Gln Gly Glu Tyr Phe Ser Pro Val Glu
20 25 30

Leu Ser Ser Ile Ala His Gln Leu Asp Glu Glu Glu Arg Met Arg Met
35 40 45

Ala Glu Gly Gly Val Thr Ser Glu Asp Tyr Arg Thr Phe Leu Gln Gln
50 55 60

Pro Ser Gly Asn Met Asp Asp Ser Gly Phe Phe Ser Ile Gln Trp Phe
65 70 75 80

Asn Leu Asn Ser Leu Leu Thr Gly Pro Glu Leu Ile Ser Asp Thr Tyr
85 90 95

Leu Ala Leu Phe Leu Ala Gln Leu Gln Gln Glu Gly Tyr Ser Ile Phe
100 105 110

Val Val Lys Gly Asp Leu Pro Asp Cys Glu Ala Asp Gln Leu Leu Gln
115 120 125

Met Ile Arg Val Gln Gln Met His Arg Pro Lys Leu Ile Gly Glu Glu
130 135 140

Leu Ala Gln Leu Lys Glu Gln Arg Val His Lys Thr Asp Leu Glu Arg
145 150 155 160

```
Val Leu Glu Ala Asn Asp Gly Ser Gly Met Leu Asp Glu Asp Glu Glu
                165                 170                 175

Asp Leu Gln Arg Ala Leu Ala Leu Ser Arg Gln Glu Ile Asp Met Glu
            180                 185                 190

Asp Glu Glu Ala Asp Leu Arg Arg Ala Ile Gln Leu Ser Met Gln Gly
        195                 200                 205

Ser Ser Arg Asn Ile Ser Gln Asp Met Thr Gln Thr Ser Gly Thr Asn
    210                 215                 220

Leu Thr Ser Glu Glu Leu Arg Lys Arg Arg Glu Ala Tyr Phe Glu Lys
225                 230                 235                 240

Gln Gln Gln Lys Gln Gln Gln Gln Gln Gln Gln Gln Gln Gly Asp
                245                 250                 255

Leu Ser Gly Gln Ser Ser His Pro Cys Glu Arg Pro Ala Thr Ser Ser
            260                 265                 270

Gly Ala Leu Gly Ser Asp Leu Gly Asp Ala Met Ser Glu Glu Asp Met
        275                 280                 285

Leu Gln Ala Ala Val Thr Met Ser Leu Glu Thr Val Arg Asn Asp Leu
    290                 295                 300

Lys Thr Glu Gly Lys Lys
305                 310


<210> 6893
<211> 291
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
ataxin 3; "

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<400> 6893

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Met Glu Ser Ile Phe His Glu Lys Val Ile Ser Asn Ala Leu Lys Val
1               5                  10                  15

Trp Gly Leu Glu Leu Ile Leu Phe Asn Ser Pro Glu Tyr Gln Arg Leu
            20                  25                  30

Arg Ile Asp Pro Ile Asn Glu Arg Ser Phe Ile Cys Asn Tyr Lys Glu
        35                  40                  45

His Trp Phe Thr Val Arg Lys Leu Gly Lys Gln Trp Phe Asn Leu Asn
    50                  55                  60

Ser Leu Leu Thr Gly Pro Glu Leu Ile Ser Asp Thr Tyr Leu Ala Leu
65                  70                  75                  80

Phe Leu Ala Gln Leu Gln Gln Glu Gly Tyr Ser Ile Phe Val Val Lys
                85                  90                  95

Gly Asp Leu Pro Asp Cys Glu Ala Asp Gln Leu Leu Gln Met Ile Arg
            100                 105                 110

Val Gln Gln Met His Arg Pro Lys Leu Ile Gly Glu Glu Leu Ala Gln
        115                 120                 125

Leu Lys Glu Gln Arg Val His Lys Thr Asp Leu Glu Arg Val Leu Glu
    130                 135                 140

Ala Asn Asp Gly Ser Gly Met Leu Asp Glu Asp Glu Glu Asp Leu Gln
145                 150                 155                 160

Arg Ala Leu Ala Leu Ser Arg Gln Glu Ile Asp Met Glu Asp Glu Glu
                165                 170                 175

Ala Asp Leu Arg Arg Ala Ile Gln Leu Ser Met Gln Gly Ser Ser Arg
            180                 185                 190

Asn Ile Ser Gln Asp Met Thr Gln Thr Ser Gly Thr Asn Leu Thr Ser
```

```
        195                 200                 205

Glu Glu Leu Arg Lys Arg Arg Glu Ala Tyr Phe Glu Lys Gln Gln Gln
    210                 215                 220

Lys Gln Gln Gln Gln Gln Gln Gln Gln Gln Gly Asp Leu Ser Gly
225                 230                 235                 240

Gln Ser Ser His Pro Cys Glu Arg Pro Ala Thr Ser Ser Gly Ala Leu
                245                 250                 255

Gly Ser Asp Leu Gly Asp Ala Met Ser Glu Glu Asp Met Leu Gln Ala
            260                 265                 270

Ala Val Thr Met Ser Leu Glu Thr Val Arg Asn Asp Leu Lys Thr Glu
        275                 280                 285

Gly Lys Lys
    290


<210> 6894
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<220>
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      ataxin 3; "

<220>
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<223> /note="ENSP ID: ENSP00000422073"

<400> 6894
Met Glu Ser Ile Phe His Glu Lys Gln Glu Gly Ser Leu Cys Ala Gln
1               5                   10                  15

His Cys Leu Asn Asn Leu Leu Gln Gly Glu Tyr Phe Ser Pro Val Glu
            20                  25                  30
```

```
Leu Ser Ser Ile Ala His Gln Leu Asp Glu Glu Glu Arg Met Arg Met
        35                  40                  45

Ala Glu Gly Gly Val Thr Ser Glu Asp Tyr Arg Thr Phe Leu Gln Gln
    50                  55                  60

Pro Ser Gly Asn Met Asp Asp Ser Gly Phe Phe Ser Ile Gln Val Ile
65                  70                  75                  80

Leu Tyr Leu Ser Leu Arg Val Ile Cys Gln Ile Ala Lys Leu Thr Asn
                85                  90                  95

Ser Cys Arg



<210> 6895
<211> 182
<212> PRT
<213> Homo sapiens

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<220>
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<223> /note="ENSP ID: ENSP00000425322"

<400> 6895
Met Ile Arg Val Gln Gln Met His Arg Pro Lys Leu Ile Gly Glu Glu
1               5                   10                  15

Leu Ala Gln Leu Lys Glu Gln Arg Val His Lys Thr Asp Leu Glu Arg
            20                  25                  30

Val Leu Glu Ala Asn Asp Gly Ser Gly Met Leu Asp Glu Asp Glu Glu
```

```
        35                  40                  45

Asp Leu Gln Arg Ala Leu Ala Leu Ser Arg Gln Glu Ile Asp Met Glu
    50                  55                  60

Asp Glu Glu Ala Asp Leu Arg Arg Ala Ile Gln Leu Ser Met Gln Gly
65                  70                  75                  80

Ser Ser Arg Asn Ile Ser Gln Asp Met Thr Gln Thr Ser Gly Thr Asn
                85                  90                  95

Leu Thr Ser Glu Glu Leu Arg Lys Arg Arg Glu Ala Tyr Phe Glu Lys
            100                 105                 110

Gln Gln Gln Lys Gln Gln Gln Gln Gln Gln Gln Gln Gln Gly Asp
        115                 120                 125

Leu Ser Gly Gln Ser Ser His Pro Cys Glu Arg Pro Ala Thr Ser Ser
    130                 135                 140

Gly Ala Leu Gly Ser Asp Leu Gly Asp Ala Met Ser Glu Glu Asp Met
145                 150                 155                 160

Leu Gln Ala Ala Val Thr Met Ser Leu Glu Thr Val Arg Asn Asp Leu
                165                 170                 175

Lys Thr Glu Gly Lys Lys
            180


<210> 6896
<211> 346
<212> PRT
<213> Homo sapiens

<220>
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<400> 6896
Met Glu Ser Ile Phe His Glu Lys Gln Glu Gly Ser Leu Cys Ala Gln
1   5   10   15

His Cys Leu Asn Asn Leu Leu Gln Gly Glu Tyr Phe Ser Pro Val Glu
            20   25   30

Leu Ser Ser Ile Ala His Gln Leu Asp Glu Glu Glu Arg Met Arg Met
        35   40   45

Ala Glu Gly Gly Val Thr Ser Glu Asp Tyr Arg Thr Phe Leu Gln Val
    50   55   60

Ile Ser Asn Ala Leu Lys Val Trp Gly Leu Glu Leu Ile Leu Phe Asn
65   70   75   80

Ser Pro Glu Tyr Gln Arg Leu Arg Ile Asp Pro Ile Asn Glu Arg Ser
                85   90   95

Phe Ile Cys Asn Tyr Lys Glu His Trp Phe Thr Val Arg Lys Leu Gly
            100   105   110

Lys Gln Trp Phe Asn Leu Asn Ser Leu Leu Thr Gly Pro Glu Leu Ile
        115   120   125

Ser Asp Thr Tyr Leu Ala Leu Phe Leu Ala Gln Leu Gln Gln Glu Gly
    130   135   140

Tyr Ser Ile Phe Val Val Lys Gly Asp Leu Pro Asp Cys Glu Ala Asp
145   150   155   160

Gln Leu Leu Gln Met Ile Arg Val Gln Gln Met His Arg Pro Lys Leu
                165   170   175

Ile Gly Glu Glu Leu Ala Gln Leu Lys Glu Gln Arg Val His Lys Thr
            180   185   190

```
Asp Leu Glu Arg Val Leu Glu Ala Asn Asp Gly Ser Gly Met Leu Asp
        195                 200                 205

Glu Asp Glu Glu Asp Leu Gln Arg Ala Leu Ala Leu Ser Arg Gln Glu
    210                 215                 220

Ile Asp Met Glu Asp Glu Glu Ala Asp Leu Arg Arg Ala Ile Gln Leu
225                 230                 235                 240

Ser Met Gln Gly Ser Ser Arg Asn Ile Ser Gln Asp Met Thr Gln Thr
                245                 250                 255

Ser Gly Thr Asn Leu Thr Ser Glu Glu Leu Arg Lys Arg Arg Glu Ala
            260                 265                 270

Tyr Phe Glu Lys Gln Gln Gln Lys Gln Gln Gln Gln Gln Gln Gln Gln
        275                 280                 285

Gln Gln Gly Asp Leu Ser Gly Gln Ser Ser His Pro Cys Glu Arg Pro
    290                 295                 300

Ala Thr Ser Ser Gly Ala Leu Gly Ser Asp Leu Gly Asp Ala Met Ser
305                 310                 315                 320

Glu Glu Asp Met Leu Gln Ala Ala Val Thr Met Ser Leu Glu Thr Val
                325                 330                 335

Arg Asn Asp Leu Lys Thr Glu Gly Lys Lys
            340                 345


<210> 6897
<211> 205
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1477; "

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<223> /note="Gene Name:
      ataxin 3; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000435571"

<400> 6897
Met Glu Ser Ile Phe His Glu Lys Gln Glu Gly Ser Leu Cys Ala Gln
1   5   10   15

His Cys Leu Asn Asn Leu Leu Gln Gly Glu Tyr Phe Ser Pro Val Glu
            20   25   30

Leu Ser Ser Ile Ala His Gln Leu Asp Glu Glu Glu Arg Met Arg Met
        35   40   45

Ala Glu Gly Gly Val Thr Ser Glu Asp Tyr Arg Thr Phe Leu Gln Trp
    50   55   60

Phe Asn Leu Asn Ser Leu Leu Thr Gly Pro Glu Leu Ile Ser Asp Thr
65   70   75   80

Tyr Leu Ala Leu Phe Leu Ala Gln Leu Gln Gln Glu Gly Tyr Ser Ile
                85   90   95

Phe Val Val Lys Gly Asp Leu Pro Asp Cys Glu Ala Asp Gln Leu Leu
            100   105   110

Gln Met Ile Arg Val Gln Gln Met His Arg Pro Lys Leu Ile Gly Glu
        115   120   125

Glu Leu Ala Gln Leu Lys Glu Gln Arg Val His Lys Thr Asp Leu Glu
    130   135   140

Arg Val Leu Glu Ala Asn Asp Gly Ser Gly Met Leu Asp Glu Asp Glu
145   150   155   160

Glu Asp Leu Gln Arg Ala Leu Ala Leu Ser Arg Gln Glu Ile Asp Met
                165   170   175

Glu Asp Glu Glu Ala Asp Leu Arg Arg Ala Ile Gln Leu Ser Met Gln
            180   185   190

Gly Ser Ser Arg Asn Ile Ser Gln Asp Met Thr Gln Thr
        195   200   205

<210> 6898
<211> 364
<212> PRT
<213> Homo sapiens

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<400> 6898
Met Glu Ser Ile Phe His Glu Lys Gln Glu Gly Ser Leu Cys Ala Gln
1   5   10   15

His Cys Leu Asn Asn Leu Leu Gln Gly Glu Tyr Phe Ser Pro Val Glu
            20   25   30

Leu Ser Ser Ile Ala His Gln Leu Asp Glu Glu Glu Arg Met Arg Met
        35   40   45

Ala Glu Gly Gly Val Thr Ser Glu Asp Tyr Arg Thr Phe Leu Gln Gln
    50   55   60

Pro Ser Gly Asn Met Asp Asp Ser Gly Phe Phe Ser Ile Gln Val Ile
65   70   75   80

Ser Asn Ala Leu Lys Val Trp Gly Leu Glu Leu Ile Leu Phe Asn Ser
                85   90   95

Pro Glu Tyr Gln Arg Leu Arg Ile Asp Pro Ile Asn Glu Arg Ser Phe
            100   105   110

Ile Cys Asn Tyr Lys Glu His Trp Phe Thr Val Arg Lys Leu Gly Lys

```
        115                 120                 125

Gln Trp Phe Asn Leu Asn Ser Leu Leu Thr Gly Pro Glu Leu Ile Ser
    130                 135                 140

Asp Thr Tyr Leu Ala Leu Phe Leu Ala Gln Leu Gln Gln Glu Gly Tyr
145                 150                 155                 160

Ser Ile Phe Val Val Lys Gly Asp Leu Pro Asp Cys Glu Ala Asp Gln
                165                 170                 175

Leu Leu Gln Met Ile Arg Val Gln Gln Met His Arg Pro Lys Leu Ile
            180                 185                 190

Gly Glu Glu Leu Ala Gln Leu Lys Glu Gln Arg Val His Lys Thr Asp
        195                 200                 205

Leu Glu Arg Val Leu Glu Ala Asn Asp Gly Ser Gly Met Leu Asp Glu
    210                 215                 220

Asp Glu Glu Asp Leu Gln Arg Ala Leu Ala Leu Ser Arg Gln Glu Ile
225                 230                 235                 240

Asp Met Glu Asp Glu Glu Ala Asp Leu Arg Arg Ala Ile Gln Leu Ser
                245                 250                 255

Met Gln Gly Ser Ser Arg Asn Ile Ser Gln Asp Met Thr Gln Thr Ser
            260                 265                 270

Gly Thr Asn Leu Thr Ser Glu Glu Leu Arg Lys Arg Arg Glu Ala Tyr
        275                 280                 285

Phe Glu Lys Gln Gln Gln Lys Gln Gln Gln Gln Gln Gln Gln Gln Gln
    290                 295                 300

Gln Gly Asp Leu Ser Gly Gln Ser Ser His Pro Cys Glu Arg Pro Ala
305                 310                 315                 320

Thr Ser Ser Gly Ala Leu Gly Ser Asp Leu Gly Lys Ala Cys Ser Pro
                325                 330                 335

Phe Ile Met Phe Ala Thr Phe Thr Leu Tyr Leu Thr Tyr Glu Leu His
            340                 345                 350
```

Val Ile Phe Ala Leu His Tyr Ser Ser Phe Pro Leu
355 360

<210> 6899
<211> 370
<212> PRT
<213> Homo sapiens

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<400> 6899
Met Glu Ser Ile Phe His Glu Lys Gln Glu Gly Ser Leu Cys Ala Gln
1 5 10 15

His Cys Leu Asn Asn Leu Leu Gln Gly Glu Tyr Phe Ser Pro Val Glu
20 25 30

Leu Ser Ser Ile Ala His Gln Leu Asp Glu Glu Glu Arg Met Arg Met
35 40 45

Ala Glu Gly Gly Val Thr Ser Glu Asp Tyr Arg Thr Phe Leu Gln Gln
50 55 60

Pro Ser Gly Asn Met Asp Asp Ser Gly Phe Phe Ser Ile Gln Val Ile
65 70 75 80

Ser Asn Ala Leu Lys Val Trp Gly Leu Glu Leu Ile Leu Phe Asn Ser
85 90 95

Pro Glu Tyr Gln Arg Leu Arg Ile Asp Pro Ile Asn Glu Arg Ser Phe
100 105 110

```
Ile Cys Asn Tyr Lys Glu His Trp Phe Thr Val Arg Lys Leu Gly Lys
        115                 120                 125

Gln Trp Phe Asn Leu Asn Ser Leu Leu Thr Gly Pro Glu Leu Ile Ser
    130                 135                 140

Asp Thr Tyr Leu Ala Leu Phe Leu Ala Gln Leu Gln Gln Glu Gly Tyr
145                 150                 155                 160

Ser Ile Phe Val Val Lys Gly Asp Leu Pro Asp Cys Glu Ala Asp Gln
                165                 170                 175

Leu Leu Gln Met Ile Arg Val Gln Gln Met His Arg Pro Lys Leu Ile
            180                 185                 190

Gly Glu Glu Leu Ala Gln Leu Lys Glu Gln Arg Val His Lys Thr Asp
        195                 200                 205

Leu Glu Arg Val Leu Glu Ala Asn Asp Gly Ser Gly Met Leu Asp Glu
    210                 215                 220

Asp Glu Glu Asp Leu Gln Arg Ala Leu Ala Leu Ser Arg Gln Glu Ile
225                 230                 235                 240

Asp Met Glu Asp Glu Glu Ala Asp Leu Arg Arg Ala Ile Gln Leu Ser
                245                 250                 255

Met Gln Gly Ser Ser Arg Asn Ile Ser Gln Asp Met Thr Gln Thr Ser
            260                 265                 270

Gly Thr Asn Leu Thr Ser Glu Glu Leu Arg Lys Arg Arg Glu Ala Tyr
        275                 280                 285

Phe Glu Lys Val Arg Leu Arg Leu Gln Lys Tyr Ile Gln Gln Gln Lys
    290                 295                 300

Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gly Asp Leu Ser Gly Gln
305                 310                 315                 320

Ser Ser His Pro Cys Glu Arg Pro Ala Thr Ser Ser Gly Ala Leu Gly
                325                 330                 335

Ser Asp Leu Gly Asp Ala Met Ser Glu Glu Asp Met Leu Gln Ala Ala
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340 345 350

Val Thr Met Ser Leu Glu Thr Val Arg Asn Asp Leu Lys Thr Glu Gly
355 360 365

Lys Lys
370

<210> 6900
<211> 79
<212> PRT
<213> Homo sapiens

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<400> 6900
Met Glu Ser Ile Phe His Glu Lys Gln Glu Gly Ser Leu Cys Ala Gln
1 5 10 15

His Cys Leu Asn Asn Leu Leu Gln Gly Glu Tyr Phe Ser Pro Val Glu
20 25 30

Leu Ser Ser Ile Ala His Gln Leu Asp Glu Glu Glu Arg Met Arg Met
35 40 45

Ala Glu Gly Gly Val Thr Ser Glu Asp Tyr Arg Thr Phe Leu Gln Gln
50 55 60

Pro Ser Gly Asn Met Asp Asp Ser Gly Phe Phe Ser Ile Gln Lys
65 70 75

<210> 6901
<211> 79
<212> PRT

<213> Homo sapiens

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<400> 6901
Met Glu Ser Ile Phe His Glu Lys Gln Glu Gly Ser Leu Cys Ala Gln
1 5 10 15

His Cys Leu Asn Asn Leu Leu Gln Gly Glu Tyr Phe Ser Pro Val Glu
20 25 30

Leu Ser Ser Ile Ala His Gln Leu Asp Glu Glu Glu Arg Met Arg Met
35 40 45

Ala Glu Gly Gly Val Thr Ser Glu Asp Tyr Arg Thr Phe Leu Gln Gln
50 55 60

Pro Ser Gly Asn Met Asp Asp Ser Gly Phe Phe Ser Ile Gln Lys
65 70 75

<210> 6902
<211> 223
<212> PRT
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<400> 6902
Met Glu Ser Ile Phe His Glu Lys Gln Pro Ser Gly Asn Met Asp Asp
1   5   10   15

Ser Gly Phe Phe Ser Ile Gln Trp Phe Asn Leu Asn Ser Leu Leu Thr
            20   25   30

Gly Pro Glu Leu Ile Ser Asp Thr Tyr Leu Ala Leu Phe Leu Ala Gln
        35   40   45

Leu Gln Gln Glu Gly Tyr Ser Ile Phe Val Val Lys Gly Asp Leu Pro
    50   55   60

Asp Cys Glu Ala Asp Gln Leu Leu Gln Met Ile Arg Val Gln Gln Met
65   70   75   80

His Arg Pro Lys Leu Ile Gly Glu Glu Leu Ala Gln Leu Lys Glu Gln
                85   90   95

Arg Val His Lys Thr Asp Leu Glu Arg Val Leu Glu Ala Asn Asp Gly
            100   105   110

Ser Gly Met Leu Asp Glu Asp Glu Glu Asp Leu Gln Arg Ala Leu Ala
        115   120   125

Leu Ser Arg Gln Glu Ile Asp Met Glu Asp Glu Glu Ala Asp Leu Arg
    130   135   140

Arg Ala Ile Gln Leu Ser Met Gln Gly Ser Ser Arg Asn Ile Ser Gln
145   150   155   160

Asp Met Thr Gln Thr Ser Gly Thr Asn Leu Thr Ser Glu Glu Leu Arg
                165   170   175

Lys Arg Arg Glu Ala Tyr Phe Glu Lys Gln Gln Gln Lys Gln Gln Gln
            180   185   190

Gln Gln Gln Gln Gln Gln Gln Gly Asp Leu Ser Gly Gln Ser Ser His
        195   200   205

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Pro Cys Glu Arg Pro Ala Thr Ser Ser Gly Ala Leu Gly Ser Asp
    210                 215                 220


<210> 6903
<211> 151
<212> PRT
<213> Homo sapiens

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<400> 6903
Met Ile Arg Val Gln Gln Met His Arg Pro Lys Leu Ile Gly Glu Glu
1               5                   10                  15


Leu Ala Gln Leu Lys Glu Gln Arg Val His Lys Thr Asp Leu Glu Arg
            20                  25                  30


Val Leu Glu Ala Asn Asp Gly Ser Gly Met Leu Asp Glu Asp Glu Glu
        35                  40                  45


Asp Leu Gln Arg Ala Leu Ala Leu Ser Arg Gln Glu Ile Asp Met Glu
    50                  55                  60


Asp Glu Glu Ala Asp Leu Arg Arg Ala Ile Gln Leu Ser Met Gln Gly
65                  70                  75                  80


Ser Ser Arg Asn Ile Ser Gln Asp Met Thr Gln Thr Ser Gly Thr Asn
                85                  90                  95


Leu Thr Ser Glu Glu Leu Arg Lys Arg Arg Glu Ala Tyr Phe Glu Lys
            100                 105                 110


Gln Gln Gln Lys Gln Gln Gln Gln Gln Gln Gln Gln Gln Gly Asp
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115 120 125

Leu Ser Gly Gln Ser Ser His Pro Cys Glu Arg Pro Ala Thr Ser Ser
130 135 140

Gly Ala Leu Gly Ser Asp Leu
145 150

<210> 6904
<211> 260
<212> PRT
<213> Homo sapiens

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<400> 6904
Met Glu Ser Ile Phe His Glu Lys Val Ile Ser Asn Ala Leu Lys Val
1 5 10 15

Trp Gly Leu Glu Leu Ile Leu Phe Asn Ser Pro Glu Tyr Gln Arg Leu
20 25 30

Arg Ile Asp Pro Ile Asn Glu Arg Ser Phe Ile Cys Asn Tyr Lys Glu
35 40 45

His Trp Phe Thr Val Arg Lys Leu Gly Lys Gln Trp Phe Asn Leu Asn
50 55 60

Ser Leu Leu Thr Gly Pro Glu Leu Ile Ser Asp Thr Tyr Leu Ala Leu
65 70 75 80

Phe Leu Ala Gln Leu Gln Gln Glu Gly Tyr Ser Ile Phe Val Val Lys
85 90 95

```
Gly Asp Leu Pro Asp Cys Glu Ala Asp Gln Leu Leu Gln Met Ile Arg
            100                 105                 110

Val Gln Gln Met His Arg Pro Lys Leu Ile Gly Glu Glu Leu Ala Gln
        115                 120                 125

Leu Lys Glu Gln Arg Val His Lys Thr Asp Leu Glu Arg Val Leu Glu
    130                 135                 140

Ala Asn Asp Gly Ser Gly Met Leu Asp Glu Asp Glu Glu Asp Leu Gln
145                 150                 155                 160

Arg Ala Leu Ala Leu Ser Arg Gln Glu Ile Asp Met Glu Asp Glu Glu
                165                 170                 175

Ala Asp Leu Arg Arg Ala Ile Gln Leu Ser Met Gln Gly Ser Ser Arg
            180                 185                 190

Asn Ile Ser Gln Asp Met Thr Gln Thr Ser Gly Thr Asn Leu Thr Ser
        195                 200                 205

Glu Glu Leu Arg Lys Arg Arg Glu Ala Tyr Phe Glu Lys Gln Gln Gln
    210                 215                 220

Lys Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gly Asp Leu Ser Gly
225                 230                 235                 240

Gln Ser Ser His Pro Cys Glu Arg Pro Ala Thr Ser Ser Gly Ala Leu
                245                 250                 255

Gly Ser Asp Leu
            260
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<210> 6905
<211> 110
<212> PRT
<213> Homo sapiens

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<400> 6905
Met Glu Ser Ile Phe His Glu Lys Gln Glu Gly Ser Leu Cys Ala Gln
1 5 10 15

His Cys Leu Asn Asn Leu Leu Gln Gly Glu Tyr Phe Ser Pro Val Glu
20 25 30

Leu Ser Ser Ile Ala His Gln Leu Asp Glu Glu Glu Arg Met Arg Met
35 40 45

Ala Glu Gly Gly Val Thr Ser Glu Asp Tyr Arg Thr Phe Leu Gln Gln
50 55 60

Pro Ser Gly Asn Met Asp Asp Ser Gly Phe Phe Ser Ile Gln Val Ile
65 70 75 80

Ser Asn Ala Leu Lys Val Trp Gly Leu Glu Leu Ile Leu Phe Asn Ser
85 90 95

Pro Glu Tyr Gln Arg Leu Arg Ile Asp Pro Ile Gly Leu Thr
100 105 110

<210> 6906
<211> 78
<212> PRT
<213> Homo sapiens

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<400> 6906
Met Glu Ser Ile Phe His Glu Lys Gln Glu Gly Ser Leu Cys Ala Gln
1   5   10   15

His Cys Leu Asn Asn Leu Leu Gln Gly Glu Tyr Phe Ser Pro Val Glu
            20   25   30

Leu Ser Ser Ile Ala His Gln Leu Asp Glu Glu Glu Arg Met Arg Met
        35   40   45

Ala Glu Gly Gly Val Thr Ser Glu Asp Tyr Arg Thr Phe Leu Gln Pro
    50   55   60

Ser Gly Asn Met Asp Asp Ser Gly Phe Phe Ser Ile Gln Lys
65   70   75

<210> 6907
<211> 329
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="ENSP ID: ENSP00000451385"

<400> 6907
Met Glu Ser Ile Phe His Glu Lys Gln Glu Gly Ser Leu Cys Ala Gln
1   5   10   15

His Cys Leu Asn Asn Leu Leu Gln Gly Glu Tyr Phe Ser Pro Val Glu
            20   25   30

Leu Ser Ser Ile Ala His Gln Leu Asp Glu Glu Glu Arg Met Arg Met

```
        35                  40                  45

Ala Glu Gly Gly Val Thr Ser Glu Asp Tyr Arg Thr Phe Leu Gln Pro
    50                  55                  60

Ser Gly Asn Met Asp Asp Ser Gly Phe Phe Ser Ile Gln Val Ile Ser
65                  70                  75                  80

Asn Ala Leu Lys Val Trp Gly Leu Glu Leu Ile Leu Phe Asn Ser Pro
                85                  90                  95

Glu Tyr Gln Arg Leu Arg Ile Asp Pro Ile Asn Glu Arg Ser Phe Ile
            100                 105                 110

Cys Asn Tyr Lys Glu His Trp Phe Thr Val Arg Lys Leu Gly Lys Gln
        115                 120                 125

Trp Phe Asn Leu Asn Ser Leu Leu Thr Gly Pro Glu Leu Ile Ser Asp
    130                 135                 140

Thr Tyr Leu Ala Leu Phe Leu Ala Gln Leu Gln Gln Glu Gly Tyr Ser
145                 150                 155                 160

Ile Phe Val Val Lys Gly Asp Leu Pro Asp Cys Glu Ala Asp Gln Leu
                165                 170                 175

Leu Gln Met Ile Arg Val Gln Gln Met His Arg Pro Lys Leu Ile Gly
            180                 185                 190

Glu Glu Leu Ala Gln Leu Lys Glu Gln Arg Val His Lys Thr Asp Leu
        195                 200                 205

Glu Arg Val Leu Glu Ala Asn Asp Gly Ser Gly Met Leu Asp Glu Asp
    210                 215                 220

Glu Glu Asp Leu Gln Arg Ala Leu Ala Leu Ser Arg Gln Glu Ile Asp
225                 230                 235                 240

Met Glu Asp Glu Glu Ala Asp Leu Arg Arg Ala Ile Gln Leu Ser Met
                245                 250                 255

Gln Gly Ser Ser Arg Asn Ile Ser Gln Asp Met Thr Gln Thr Ser Gly
            260                 265                 270
```

Thr Asn Leu Thr Ser Glu Glu Leu Arg Lys Arg Arg Glu Ala Tyr Phe
        275   280   285

Glu Lys Gln Gln Gln Lys Gln Gln Gln Gln Gln Gln Gln Gln Gln
    290   295   300

Gly Asp Leu Ser Gly Gln Ser Ser His Pro Cys Glu Arg Pro Ala Thr
305   310   315   320

Ser Ser Gly Ala Leu Gly Ser Asp Leu
                325

<210> 6908
<211> 114
<212> PRT
<213> Homo sapiens

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<220>
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<223> /note="ENSP ID: ENSP00000451399"

<400> 6908
Met Glu Ser Ile Phe His Glu Lys Gln Glu Gly Ser Leu Cys Ala Gln
1   5   10   15

His Cys Leu Asn Asn Leu Leu Gln Gly Glu Tyr Phe Ser Pro Val Glu
            20   25   30

Leu Ser Ser Ile Ala His Gln Leu Asp Glu Glu Glu Arg Met Arg Met
        35   40   45

Ala Glu Gly Gly Val Thr Ser Glu Asp Tyr Arg Thr Phe Leu Gln Gln
    50   55   60

```
Pro Ser Gly Asn Met Asp Asp Ser Gly Phe Phe Ser Ile Gln Leu Leu
65                  70                  75                  80

Phe Phe Leu Thr Gly Tyr Lys Gln Cys Leu Glu Ser Leu Gly Phe Arg
                85                  90                  95

Thr Asn Pro Val Gln Gln Ser Arg Val Ser Glu Ala Gln Asp Arg Ser
            100                 105                 110

Tyr Lys
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<210> 6909
<211> 95
<212> PRT
<213> Homo sapiens

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<400> 6909

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Met Glu Ser Ile Phe His Glu Lys Gln Pro Ser Gly Asn Met Asp Asp
1               5                   10                  15

Ser Gly Phe Phe Ser Ile Gln Val Ile Ser Asn Ala Leu Lys Val Trp
            20                  25                  30

Gly Leu Glu Leu Ile Leu Phe Asn Ser Pro Glu Tyr Gln Arg Leu Arg
        35                  40                  45

Ile Asp Pro Ile Asn Glu Arg Ser Phe Ile Cys Asn Tyr Lys Glu His
    50                  55                  60

Trp Phe Thr Val Arg Lys Leu Gly Lys Gln Val Ile Leu Tyr Leu Ser
65                  70                  75                  80
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Leu Arg Val Ile Cys Gln Ile Ala Lys Leu Thr Asn Ser Cys Arg
85 90 95

<210> 6910
<211> 232
<212> PRT
<213> Homo sapiens

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<400> 6910
Met Thr Val Val Phe Ser Leu Phe Arg Asn Glu Arg Ser Phe Ile Cys
1 5 10 15

Asn Tyr Lys Glu His Trp Phe Thr Val Arg Lys Leu Gly Lys Gln Trp
20 25 30

Phe Asn Leu Asn Ser Leu Leu Thr Gly Pro Glu Leu Ile Ser Asp Thr
35 40 45

Tyr Leu Ala Leu Phe Leu Ala Gln Leu Gln Gln Glu Gly Tyr Ser Ile
50 55 60

Phe Val Val Lys Gly Asp Leu Pro Asp Cys Glu Ala Asp Gln Leu Leu
65 70 75 80

Gln Met Ile Arg Val Gln Gln Met His Arg Pro Lys Leu Ile Gly Glu
85 90 95

Glu Leu Ala Gln Leu Lys Glu Gln Arg Val His Lys Thr Asp Leu Glu
100 105 110

```
Arg Val Leu Glu Ala Asn Asp Gly Ser Gly Met Leu Asp Glu Asp Glu
        115                 120                 125

Glu Asp Leu Gln Arg Ala Leu Ala Leu Ser Arg Gln Glu Ile Asp Met
    130                 135                 140

Glu Asp Glu Glu Ala Asp Leu Arg Arg Ala Ile Gln Leu Ser Met Gln
145                 150                 155                 160

Gly Ser Ser Arg Asn Ile Ser Gln Asp Met Thr Gln Thr Ser Gly Thr
                165                 170                 175

Asn Leu Thr Ser Glu Glu Leu Arg Lys Arg Arg Glu Ala Tyr Phe Glu
            180                 185                 190

Lys Gln Gln Gln Lys Gln Gln Gln Gln Gln Gln Gln Gln Gln Gly
        195                 200                 205

Asp Leu Ser Gly Gln Ser Ser His Pro Cys Glu Arg Pro Ala Thr Ser
    210                 215                 220

Ser Gly Ala Leu Gly Ser Asp Leu
225                 230


<210> 6911
<211> 110
<212> PRT
<213> Homo sapiens

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<400> 6911
Met Glu Ser Ile Phe His Glu Lys Gln Glu Gly Ser Leu Cys Ala Gln
1               5                   10                  15
```

```
His Cys Leu Asn Asn Leu Leu Gln Gly Glu Tyr Phe Ser Pro Val Glu
            20                  25                  30

Leu Ser Ser Ile Ala His Gln Leu Asp Glu Glu Glu Arg Met Arg Met
        35                  40                  45

Ala Glu Gly Gly Val Thr Ser Glu Asp Tyr Arg Thr Phe Leu Gln Gln
    50                  55                  60

Pro Ser Gly Asn Met Asp Asp Ser Gly Phe Phe Ser Ile Gln Trp Phe
65                  70                  75                  80

Asn Leu Asn Ser Leu Leu Thr Gly Pro Glu Leu Ile Ser Asp Thr Tyr
                85                  90                  95

Leu Ala Leu Phe Leu Ala Gln Leu Gln Gln Glu Val Thr Gln
            100                 105                 110


<210> 6912
<211> 79
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="ENSP ID: ENSP00000451733"

<400> 6912
Met Glu Ser Ile Phe His Glu Lys Gln Glu Gly Ser Leu Cys Ala Gln
1               5                   10                  15

His Cys Leu Asn Asn Leu Leu Gln Gly Glu Tyr Phe Ser Pro Val Glu
            20                  25                  30
```

```
Leu Ser Ser Ile Ala His Gln Leu Asp Glu Glu Glu Arg Met Arg Met
        35                  40                  45

Ala Glu Gly Gly Val Thr Ser Glu Asp Tyr Arg Thr Phe Leu Gln Gln
    50                  55                  60

Pro Ser Gly Asn Met Asp Asp Ser Gly Phe Phe Ser Ile Gln Lys
65                  70                  75


<210> 6913
<211> 159
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="ENSP ID: ENSP00000451769"

<400> 6913
Met Glu Ser Ile Phe His Glu Lys Gln Glu Gly Ser Leu Cys Ala Gln
1               5                   10                  15

His Cys Leu Asn Asn Leu Leu Gln Gly Glu Tyr Phe Ser Pro Val Glu
            20                  25                  30

Leu Ser Ser Ile Ala His Gln Leu Asp Glu Glu Glu Arg Met Arg Met
        35                  40                  45

Ala Glu Gly Gly Val Thr Ser Glu Asp Tyr Arg Thr Phe Leu Gln Gln
    50                  55                  60

Pro Ser Gly Asn Met Asp Asp Ser Gly Phe Phe Ser Ile Gln Val Ile
65                  70                  75                  80

Ser Asn Ala Leu Lys Val Trp Gly Leu Glu Leu Ile Leu Phe Asn Ser
                85                  90                  95
```

```
Pro Glu Tyr Gln Arg Leu Arg Ile Asp Pro Ile Asn Glu Arg Ser Phe
            100                 105                 110

Ile Cys Asn Tyr Lys Glu His Trp Phe Thr Val Arg Lys Leu Gly Lys
        115                 120                 125

Gln Trp Phe Asn Leu Asn Ser Leu Leu Thr Gly Pro Glu Leu Ile Ser
    130                 135                 140

Asp Thr Tyr Leu Ala Leu Phe Leu Ala Gln Leu Gln Gln Glu Gly
145                 150                 155
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<210> 6914
<211> 150
<212> PRT
<213> Homo sapiens

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<400> 6914

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Met Glu Ser Ile Phe His Glu Lys Gln Glu Gly Ser Leu Cys Ala Gln
1               5                   10                  15

His Cys Leu Asn Asn Leu Leu Gln Gly Glu Tyr Phe Ser Pro Val Glu
            20                  25                  30

Leu Ser Ser Ile Ala His Gln Leu Asp Glu Glu Glu Arg Met Arg Met
        35                  40                  45

Ala Glu Gly Gly Val Thr Ser Glu Asp Tyr Arg Thr Phe Leu Gln Gln
    50                  55                  60
```

```
Pro Ser Gly Asn Met Asp Asp Ser Gly Phe Phe Ser Ile Gln Val Ile
65                  70                  75                  80

Ser Asn Ala Leu Lys Val Trp Gly Leu Glu Leu Ile Leu Phe Asn Ser
                85                  90                  95

Pro Glu Tyr Gln Arg Leu Arg Ile Asp Pro Ile Asn Glu Arg Ser Phe
            100                 105                 110

Ile Cys Asn Tyr Lys Glu His Trp Phe Thr Val Arg Lys Leu Gly Lys
        115                 120                 125

Gln Val Ile Leu Tyr Leu Ser Leu Arg Val Ile Cys Gln Ile Ala Lys
    130                 135                 140

Leu Thr Asn Ser Cys Arg
145                 150


<210> 6915
<211> 79
<212> PRT
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<220>
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<220>
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<400> 6915
Met Glu Ser Ile Phe His Glu Lys Gln Glu Gly Ser Leu Cys Ala Gln
1               5                   10                  15

His Cys Leu Asn Asn Leu Leu Gln Gly Glu Tyr Phe Ser Pro Val Glu
            20                  25                  30

Leu Ser Ser Ile Ala His Gln Leu Asp Glu Glu Glu Arg Met Arg Met
        35                  40                  45
```

```
Ala Glu Gly Gly Val Thr Ser Glu Asp Tyr Arg Thr Phe Leu Gln Gln
    50                  55                  60

Pro Ser Gly Asn Met Asp Asp Ser Gly Phe Phe Ser Ile Gln Lys
65                  70                  75

<210> 6916
<211> 278
<212> PRT
<213> Homo sapiens

<220>
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<400> 6916
Met Glu Ser Ile Phe His Glu Lys Gln Glu Gly Ser Leu Cys Ala Gln
1               5                   10                  15

His Cys Leu Asn Asn Leu Leu Gln Gly Glu Tyr Phe Ser Pro Val Glu
            20                  25                  30

Leu Ser Ser Ile Ala His Gln Leu Asp Glu Glu Glu Arg Met Arg Met
        35                  40                  45

Ala Glu Gly Gly Val Thr Ser Glu Asp Tyr Arg Thr Phe Leu Gln Gln
    50                  55                  60

Pro Ser Gly Asn Met Asp Asp Ser Gly Phe Phe Ser Ile Gln Trp Phe
65                  70                  75                  80

Asn Leu Asn Ser Leu Leu Thr Gly Pro Glu Leu Ile Ser Asp Thr Tyr
                85                  90                  95
```

```
Leu Ala Leu Phe Leu Ala Gln Leu Gln Gln Glu Gly Tyr Ser Ile Phe
            100                 105                 110

Val Val Lys Gly Asp Leu Pro Asp Cys Glu Ala Asp Gln Leu Leu Gln
        115                 120                 125

Met Ile Arg Val Gln Gln Met His Arg Pro Lys Leu Ile Gly Glu Glu
    130                 135                 140

Leu Ala Gln Leu Lys Glu Gln Arg Val His Lys Thr Asp Leu Glu Arg
145                 150                 155                 160

Val Leu Glu Ala Asn Asp Gly Ser Gly Met Leu Asp Glu Asp Glu Glu
                165                 170                 175

Asp Leu Gln Arg Ala Leu Ala Leu Ser Arg Gln Glu Ile Asp Met Glu
            180                 185                 190

Asp Glu Glu Ala Asp Leu Arg Arg Ala Ile Gln Leu Ser Met Gln Gly
        195                 200                 205

Ser Ser Arg Asn Ile Ser Gln Asp Met Thr Gln Thr Ser Gly Thr Asn
    210                 215                 220

Leu Thr Ser Glu Glu Leu Arg Lys Arg Arg Glu Ala Tyr Phe Glu Lys
225                 230                 235                 240

Gln Gln Gln Lys Gln Gln Gln Gln Gln Gln Gln Gln Gln Gly Asp
                245                 250                 255

Leu Ser Gly Gln Ser Ser His Pro Cys Glu Arg Pro Ala Thr Ser Ser
            260                 265                 270

Gly Ala Leu Gly Ser Asp
        275
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<210> 6917
<211> 200
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<213> Homo sapiens

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<400> 6917
Met Glu Ser Ile Phe His Glu Lys Gln Glu Gly Ser Leu Cys Ala Gln
1 5 10 15

His Cys Leu Asn Asn Leu Leu Gln Gly Glu Tyr Phe Ser Pro Val Glu
20 25 30

Leu Ser Ser Ile Ala His Gln Leu Asp Glu Glu Glu Arg Met Arg Met
35 40 45

Ala Glu Gly Gly Val Thr Ser Glu Asp Tyr Arg Thr Phe Leu Gln Trp
50 55 60

Phe Asn Leu Asn Ser Leu Leu Thr Gly Pro Glu Leu Ile Ser Asp Thr
65 70 75 80

Tyr Leu Ala Leu Phe Leu Ala Gln Leu Gln Gln Glu Gly Tyr Ser Ile
85 90 95

Phe Val Val Lys Gly Asp Leu Pro Asp Cys Glu Ala Asp Gln Leu Leu
100 105 110

Gln Met Ile Arg Val Gln Gln Met His Arg Pro Lys Leu Ile Gly Glu
115 120 125

Glu Leu Ala Gln Leu Lys Glu Gln Arg Val His Lys Thr Asp Leu Glu
130 135 140

Arg Val Leu Glu Ala Asn Asp Gly Ser Gly Met Leu Asp Glu Asp Glu
145 150 155 160

Glu Asp Leu Gln Arg Ala Leu Ala Leu Ser Arg Gln Glu Ile Asp Met
165 170 175

```
Glu Asp Glu Glu Ala Asp Leu Arg Arg Ala Ile Gln Leu Ser Met Gln
            180                 185                 190

Val Pro Glu Thr Tyr Leu Lys Ile
        195                 200


<210> 6918
<211> 161
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<220>
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<223> /note="ENSP ID: ENSP00000452356"

<400> 6918
Met Glu Ser Ile Phe His Glu Lys Gln Glu Gly Ser Leu Cys Ala Gln
1               5                   10                  15

His Cys Leu Asn Asn Leu Leu Gln Gly Glu Tyr Phe Ser Pro Val Glu
            20                  25                  30

Leu Ser Ser Ile Ala His Gln Leu Asp Glu Glu Glu Arg Met Arg Met
        35                  40                  45

Ala Glu Gly Gly Val Thr Ser Glu Asp Tyr Arg Thr Phe Leu Gln Gln
    50                  55                  60

Pro Ser Gly Asn Met Asp Asp Ser Gly Phe Phe Ser Ile Gln Val Ile
65                  70                  75                  80

Ser Asn Ala Leu Lys Val Trp Gly Leu Glu Leu Ile Leu Phe Asn Ser
                85                  90                  95

Pro Glu Tyr Gln Arg Leu Arg Ile Asp Pro Ile Asn Glu Arg Ser Phe
```

100 105 110

Ile Cys Asn Tyr Lys Glu His Trp Phe Thr Val Arg Lys Leu Gly Lys
115 120 125

Gln Trp Phe Asn Leu Asn Ser Leu Leu Thr Gly Pro Glu Leu Ile Ser
130 135 140

Asp Thr Tyr Leu Ala Leu Phe Leu Ala Gln Leu Gln Gln Glu Val Thr
145 150 155 160

Gln

<210> 6919
<211> 79
<212> PRT
<213> Homo sapiens

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<220>
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<223> /note="ENSP ID: ENSP00000452461"

<400> 6919
Met Glu Ser Ile Phe His Glu Lys Gln Glu Gly Ser Leu Cys Ala Gln
1 5 10 15

His Cys Leu Asn Asn Leu Leu Gln Gly Glu Tyr Phe Ser Pro Val Glu
20 25 30

Leu Ser Ser Ile Ala His Gln Leu Asp Glu Glu Glu Arg Met Arg Met
35 40 45

Ala Glu Gly Gly Val Thr Ser Glu Asp Tyr Arg Thr Phe Leu Gln Gln
50 55 60

Pro Ser Gly Asn Met Asp Asp Ser Gly Phe Phe Ser Ile Gln Lys
65 70 75

<210> 6920
<211> 99
<212> PRT
<213> Homo sapiens

<220>
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ataxin 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000452532"

<400> 6920
Met Glu Ser Ile Phe His Glu Lys Gln Glu Gly Ser Leu Cys Ala Gln
1 5 10 15

His Cys Leu Asn Asn Leu Leu Gln Gly Glu Tyr Phe Ser Pro Val Glu
20 25 30

Leu Ser Ser Ile Ala His Gln Leu Asp Glu Glu Glu Arg Met Arg Met
35 40 45

Ala Glu Gly Gly Val Thr Ser Glu Asp Tyr Arg Thr Phe Leu Gln Gln
50 55 60

Pro Ser Gly Asn Met Asp Asp Ser Gly Phe Phe Ser Ile Gln Val Ile
65 70 75 80

Leu Tyr Leu Ser Leu Arg Val Ile Cys Gln Ile Ala Lys Leu Thr Asn
85 90 95

Ser Cys Arg

<210> 6921

<211> 199
<212> PRT
<213> Homo sapiens

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<400> 6921

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Gln Glu Gly Ser Leu Cys Ala Gln His Cys Leu Asn Asn Leu Leu Gln
1               5                   10                  15


Gly Glu Tyr Phe Ser Pro Val Glu Leu Ser Ser Ile Ala His Gln Leu
            20                  25                  30


Asp Glu Glu Glu Arg Met Arg Met Ala Glu Gly Gly Val Thr Ser Glu
        35                  40                  45


Asp Tyr Arg Thr Phe Leu Gln Gln Pro Ser Gly Asn Met Asp Asp Ser
    50                  55                  60


Gly Phe Phe Ser Ile Gln Val Ile Ser Asn Ala Leu Lys Val Trp Gly
65                  70                  75                  80


Leu Glu Leu Ile Leu Phe Asn Ser Pro Glu Tyr Gln Arg Leu Arg Ile
                85                  90                  95


Asp Pro Ile Asn Glu Arg Ser Phe Ile Cys Asn Tyr Lys Glu His Trp
            100                 105                 110


Phe Thr Val Arg Lys Leu Gly Lys Gln Gly Asp Leu Pro Asp Cys Glu
        115                 120                 125


Ala Asp Gln Leu Leu Gln Met Ile Arg Val Gln Gln Met His Arg Pro
    130                 135                 140
```

```
Lys Leu Ile Gly Glu Glu Leu Ala Gln Leu Lys Glu Gln Arg Val His
145                 150                 155                 160


Lys Thr Asp Leu Glu Arg Val Leu Glu Ala Asn Asp Gly Ser Gly Met
                165                 170                 175


Leu Asp Glu Asp Glu Glu Asp Leu Gln Arg Ala Leu Ala Leu Ser Arg
            180                 185                 190


Gln Glu Ile Asp Met Glu Asp
        195


<210> 6922
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<212> PRT
<213> Homo sapiens

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<223> /note="Uniprot ID:  P54252; "

<220>
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<223> /note="ENSP ID: ENSP00000478320"

<400> 6922
Met Glu Ser Ile Phe His Glu Lys Gln Glu Gly Ser Leu Cys Ala Gln
1               5                   10                  15


His Cys Leu Asn Asn Leu Leu Gln Gly Glu Tyr Phe Ser Pro Val Glu
            20                  25                  30


Leu Ser Ser Ile Ala His Gln Leu Asp Glu Glu Glu Arg Met Arg Met
        35                  40                  45


Ala Glu Gly Gly Val Thr Ser Glu Asp Tyr Arg Thr Phe Leu Gln Gln
```

```
    50                  55                  60

Pro Ser Gly Asn Met Asp Asp Ser Gly Phe Phe Ser Ile Gln Val Ile
65                  70                  75                  80

Ser Asn Ala Leu Lys Val Trp Gly Leu Glu Leu Ile Leu Phe Asn Ser
                85                  90                  95

Pro Glu Tyr Gln Arg Leu Arg Ile Asp Pro Ile Asn Glu Arg Ser Phe
            100                 105                 110

Ile Cys Asn Tyr Lys Glu His Trp Phe Thr Val Arg Lys Leu Gly Lys
        115                 120                 125

Gln Trp Phe Asn Leu Asn Ser Leu Leu Thr Gly Pro Glu Leu Ile Ser
    130                 135                 140

Asp Thr Tyr Leu Ala Leu Phe Leu Ala Gln Leu Gln Gln Glu Gly Tyr
145                 150                 155                 160

Ser Ile Phe Val Val Lys Gly Asp Leu Pro Asp Cys Glu Ala Asp Gln
                165                 170                 175

Leu Leu Gln Met Ile Arg Val Gln Gln Met His Arg Pro Lys Leu Ile
            180                 185                 190

Gly Glu Glu Leu Ala Gln Leu Lys Glu Gln Arg Val His Lys Thr Asp
        195                 200                 205

Leu Glu Arg Val Leu Glu Ala Asn Asp Gly Ser Gly Met Leu Asp Glu
    210                 215                 220

Asp Glu Glu Asp Leu Gln Arg Ala Leu Ala Leu Ser Arg Gln Glu Ile
225                 230                 235                 240

Asp Met Glu Asp Glu Glu Ala Asp Leu Arg Arg Ala Ile Gln Leu Ser
                245                 250                 255

Met Gln Gly Ser Ser Arg Asn Ile Ser Gln Asp Met Thr Gln Thr Ser
            260                 265                 270

Gly Thr Asn Leu Thr Ser Glu Glu Leu Arg Lys Arg Arg Glu Ala Tyr
        275                 280                 285
```

```
Phe Glu Lys Gln Gln Gln Lys Gln Gln Gln Gln Gln Gln Gln Gln
    290                 295                 300

Gln Gly Asp Leu Ser Gly Gln Ser Ser His Pro Cys Glu Arg Pro Ala
305                 310                 315                 320

Thr Ser Ser Gly Ala Leu Gly Ser Asp Leu Gly Asp Ala Met Ser Glu
                325                 330                 335

Glu Asp Met Leu Gln Ala Ala Val Thr Met Ser Leu Glu Thr Val Arg
            340                 345                 350

Asn Asp Leu Lys Thr Glu Gly Lys Lys
        355                 360
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<210> 6923
<211> 288
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ATXN3; "

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ataxin 3; "

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<400> 6923

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Met Glu Ser Ile Phe His Glu Lys Gln Glu Gly Ser Leu Cys Ala Gln
1               5                   10                  15

His Cys Leu Asn Asn Leu Leu Gln Gly Glu Tyr Phe Ser Pro Val Glu
            20                  25                  30

Leu Ser Ser Ile Ala His Gln Leu Asp Glu Glu Glu Arg Met Arg Met
        35                  40                  45
```

```
Ala Glu Gly Gly Val Thr Ser Glu Asp Tyr Arg Thr Phe Leu Gln Gln
    50                  55                  60

Pro Ser Gly Asn Met Asp Asp Ser Gly Phe Phe Ser Ile Gln Val Ile
65                  70                  75                  80

Ser Asn Ala Leu Lys Val Trp Gly Leu Glu Leu Ile Leu Phe Asn Ser
                85                  90                  95

Pro Glu Tyr Gln Arg Leu Arg Ile Asp Pro Ile Asn Glu Arg Ser Phe
            100                 105                 110

Ile Cys Asn Tyr Lys Glu His Trp Phe Thr Val Arg Lys Leu Gly Lys
        115                 120                 125

Gln Trp Phe Asn Leu Asn Ser Leu Leu Thr Gly Pro Glu Leu Ile Ser
    130                 135                 140

Asp Thr Tyr Leu Ala Leu Phe Leu Ala Gln Leu Gln Gln Glu Gly Tyr
145                 150                 155                 160

Ser Ile Phe Val Val Lys Gly Asp Leu Pro Asp Cys Glu Ala Asp Gln
                165                 170                 175

Leu Leu Gln Met Ile Arg Val Gln Gln Met His Arg Pro Lys Leu Ile
            180                 185                 190

Gly Glu Glu Leu Ala Gln Leu Lys Glu Gln Arg Val His Lys Thr Asp
        195                 200                 205

Leu Glu Arg Val Leu Glu Ala Asn Asp Gly Ser Gly Met Leu Asp Glu
    210                 215                 220

Asp Glu Glu Asp Leu Gln Arg Ala Leu Ala Leu Ser Arg Gln Glu Ile
225                 230                 235                 240

Asp Met Glu Asp Glu Glu Ala Asp Leu Arg Arg Ala Ile Gln Leu Ser
                245                 250                 255

Met Gln Gly Ser Ser Arg Asn Ile Ser Gln Asp Met Thr Gln Thr Ser
            260                 265                 270

Gly Thr Asn Leu Thr Ser Glu Glu Ser Glu Glu Thr Arg Ser Leu Leu
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275 280 285

<210> 6924
<211> 301
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<213> Homo sapiens

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<220>
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<223> /note="ENSP ID: ENSP00000481998"

<400> 6924
Met Glu Ser Ile Phe His Glu Lys Gln Glu Gly Ser Leu Cys Ala Gln
1 5 10 15

His Cys Leu Asn Asn Leu Leu Gln Gly Glu Tyr Phe Ser Pro Val Glu
20 25 30

Leu Ser Ser Ile Ala His Gln Leu Asp Glu Glu Glu Arg Met Arg Met
35 40 45

Ala Glu Gly Gly Val Thr Ser Glu Asp Tyr Arg Thr Phe Leu Gln Gln
50 55 60

Pro Ser Gly Asn Met Asp Asp Ser Gly Phe Phe Ser Ile Gln Val Ile
65 70 75 80

Ser Asn Ala Leu Lys Val Trp Gly Leu Glu Leu Ile Leu Phe Asn Ser
85 90 95

Pro Glu Tyr Gln Arg Leu Arg Ile Asp Pro Ile Asn Glu Arg Ser Phe
100 105 110

Ile Cys Asn Tyr Lys Glu His Trp Phe Thr Val Arg Lys Leu Gly Lys
115 120 125

```
Gln Trp Phe Asn Leu Asn Ser Leu Leu Thr Gly Pro Glu Leu Ile Ser
    130                 135                 140

Asp Thr Tyr Leu Ala Leu Phe Leu Ala Gln Leu Gln Gln Glu Gly Tyr
145                 150                 155                 160

Ser Ile Phe Val Val Lys Gly Asp Leu Pro Asp Cys Glu Ala Asp Gln
                165                 170                 175

Leu Leu Gln Met Ile Arg Val Gln Gln Met His Arg Pro Lys Leu Ile
            180                 185                 190

Gly Glu Glu Leu Ala Gln Leu Lys Glu Gln Arg Val His Lys Thr Asp
        195                 200                 205

Leu Glu Arg Val Leu Glu Ala Asn Asp Gly Ser Gly Met Leu Asp Glu
    210                 215                 220

Asp Glu Glu Asp Leu Gln Arg Ala Leu Ala Leu Ser Arg Gln Glu Ile
225                 230                 235                 240

Asp Met Glu Asp Glu Glu Ala Asp Leu Arg Arg Ala Ile Gln Leu Ser
                245                 250                 255

Met Gln Gly Ser Ser Arg Asn Ile Ser Gln Asp Met Thr Gln Thr Ser
            260                 265                 270

Gly Thr Asn Leu Thr Ser Glu Glu Leu Arg Lys Arg Arg Glu Ala Tyr
        275                 280                 285

Phe Glu Asn His Asn Ser Glu Val Asp Glu Gly Lys Phe
    290                 295                 300


<210> 6925
<211> 324
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Name:
ataxin 3; "

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<223> /note="ENSP ID: ENSP00000484016"

<400> 6925
Met Glu Ser Ile Phe His Glu Lys Gln Glu Gly Ser Leu Cys Ala Gln
1 5 10 15

His Cys Leu Asn Asn Leu Leu Gln Gly Glu Tyr Phe Ser Pro Val Glu
20 25 30

Leu Ser Ser Ile Ala His Gln Leu Asp Glu Glu Glu Arg Met Arg Met
35 40 45

Ala Glu Gly Gly Val Thr Ser Glu Asp Tyr Arg Thr Phe Leu Gln Gln
50 55 60

Pro Ser Gly Asn Met Asp Asp Ser Gly Phe Phe Ser Ile Gln Val Ile
65 70 75 80

Ser Asn Ala Leu Lys Val Trp Gly Leu Glu Leu Ile Leu Phe Asn Ser
85 90 95

Pro Glu Tyr Gln Arg Leu Arg Ile Asp Pro Ile Asn Glu Arg Ser Phe
100 105 110

Ile Cys Asn Tyr Lys Glu His Trp Phe Thr Val Arg Lys Leu Gly Lys
115 120 125

Gln Trp Phe Asn Leu Asn Ser Leu Leu Thr Gly Pro Glu Leu Ile Ser
130 135 140

Asp Thr Tyr Leu Ala Leu Phe Leu Ala Gln Leu Gln Gln Glu Gly Tyr
145 150 155 160

Ser Ile Phe Val Val Lys Gly Asp Leu Pro Asp Cys Glu Ala Asp Gln
165 170 175

Leu Leu Gln Met Ile Arg Val Gln Gln Met His Arg Pro Lys Leu Ile
180 185 190

```
Gly Glu Glu Leu Ala Gln Leu Lys Glu Gln Arg Val His Lys Thr Asp
        195                 200                 205

Leu Glu Arg Val Leu Glu Ala Asn Asp Gly Ser Gly Met Leu Asp Glu
    210                 215                 220

Asp Glu Glu Asp Leu Gln Arg Ala Leu Ala Leu Ser Arg Gln Glu Ile
225                 230                 235                 240

Asp Met Glu Asp Glu Glu Ala Asp Leu Arg Arg Ala Ile Gln Leu Ser
                245                 250                 255

Met Gln Gly Ser Ser Arg Asn Ile Ser Gln Asp Met Thr Gln Thr Ser
            260                 265                 270

Gly Thr Asn Leu Thr Ser Glu Glu Leu Arg Lys Arg Arg Glu Ala Tyr
        275                 280                 285

Phe Glu Lys Pro Arg Gln Ala Asp Tyr Glu Arg Gln Gln Gln Gln Lys
    290                 295                 300

Gln Gln Gln Gln Gln Gln Gln Gln Gln Gln Gly Pro Ile Arg Thr Glu
305                 310                 315                 320

Phe Thr Ser Met
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<210> 6926
<211> 355
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ATXN3L; "

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ataxin 3-like; "

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<223> /note="Uniprot ID: Q9H3M9; "

<220>
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<223> /note="ENSP ID: ENSP00000369996"

<400> 6926
Met Asp Phe Ile Phe His Glu Lys Gln Glu Gly Phe Leu Cys Ala Gln
1   5   10   15

His Cys Leu Asn Asn Leu Leu Gln Gly Glu Tyr Phe Ser Pro Val Glu
            20   25   30

Leu Ala Ser Ile Ala His Gln Leu Asp Glu Glu Glu Arg Met Arg Met
        35   40   45

Ala Glu Gly Gly Val Thr Ser Glu Glu Tyr Leu Ala Phe Leu Gln Gln
    50   55   60

Pro Ser Glu Asn Met Asp Asp Thr Gly Phe Phe Ser Ile Gln Val Ile
65   70   75   80

Ser Asn Ala Leu Lys Phe Trp Gly Leu Glu Ile Ile His Phe Asn Asn
                85   90   95

Pro Glu Tyr Gln Lys Leu Gly Ile Asp Pro Ile Asn Glu Arg Ser Phe
            100   105   110

Ile Cys Asn Tyr Lys Gln His Trp Phe Thr Ile Arg Lys Phe Gly Lys
        115   120   125

His Trp Phe Asn Leu Asn Ser Leu Leu Ala Gly Pro Glu Leu Ile Ser
    130   135   140

Asp Thr Cys Leu Ala Asn Phe Leu Ala Arg Leu Gln Gln Gln Ala Tyr
145   150   155   160

Ser Val Phe Val Val Lys Gly Asp Leu Pro Asp Cys Glu Ala Asp Gln
                165   170   175

Leu Leu Gln Ile Ile Ser Val Glu Glu Met Asp Thr Pro Lys Leu Asn
            180   185   190

Gly Lys Lys Leu Val Lys Gln Lys Glu His Arg Val Tyr Lys Thr Val

```
        195                 200                 205

Leu Glu Lys Val Ser Glu Glu Ser Asp Glu Ser Gly Thr Ser Asp Gln
    210                 215                 220

Asp Glu Glu Asp Phe Gln Arg Ala Leu Glu Leu Ser Arg Gln Glu Thr
225                 230                 235                 240

Asn Arg Glu Asp Glu His Leu Arg Ser Thr Ile Glu Leu Ser Met Gln
                245                 250                 255

Gly Ser Ser Gly Asn Thr Ser Gln Asp Leu Pro Lys Thr Ser Cys Val
            260                 265                 270

Thr Pro Ala Ser Glu Gln Pro Lys Lys Ile Lys Glu Asp Tyr Phe Glu
        275                 280                 285

Lys His Gln Gln Glu Gln Lys Gln Gln Gln Gln Gln Ser Asp Leu Pro
    290                 295                 300

Gly His Ser Ser Tyr Leu His Glu Arg Pro Thr Thr Ser Ser Arg Ala
305                 310                 315                 320

Ile Glu Ser Asp Leu Ser Asp Asp Ile Ser Glu Gly Thr Val Gln Ala
                325                 330                 335

Ala Val Asp Thr Ile Leu Glu Ile Met Arg Lys Asn Leu Lys Ile Lys
            340                 345                 350

Gly Glu Lys
        355


<210> 6927
<211> 162
<212> PRT
<213> Homo sapiens

<220>
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<221> source
<223> /note="Gene Name:
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<400> 6927
Met Asp Phe Ile Phe His Glu Lys Gln Glu Gly Phe Leu Cys Ala Gln
1 5 10 15

His Cys Leu Asn Asn Leu Leu Gln Gly Glu Tyr Phe Ser Pro Val Glu
20 25 30

Leu Ala Ser Ile Ala His Gln Leu Asp Glu Glu Glu Arg Met Arg Met
35 40 45

Ala Glu Gly Gly Val Thr Ser Glu Glu Tyr Leu Ala Phe Leu Gln Gln
50 55 60

Pro Ser Glu Asn Met Asp Asp Thr Gly Phe Phe Ser Ile Gln Trp Phe
65 70 75 80

Asn Leu Asn Ser Leu Leu Ala Gly Pro Glu Leu Ile Ser Asp Thr Cys
85 90 95

Leu Ala Asn Phe Leu Ala Arg Leu Gln Gln Gln Ala Tyr Ser Val Phe
100 105 110

Val Val Lys Gly Asp Leu Pro Asp Cys Glu Ala Asp Gln Leu Leu Gln
115 120 125

Ile Ile Ser Val Glu Glu Met Asp Thr Pro Lys Leu Asn Gly Lys Lys
130 135 140

Leu Val Lys Gln Lys Glu His Arg Val Tyr Lys Gln Ser Leu Lys Lys
145 150 155 160

Tyr Gln

<210> 6928
<211> 892
<212> PRT
<213> Homo sapiens

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<223> /note="Gene Name:
ataxin 7; "

<220>
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<223> /note="Uniprot ID: O15265; "

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<400> 6928
Met Ser Glu Arg Ala Ala Asp Asp Val Arg Gly Glu Pro Arg Arg Ala
1   5   10   15

Ala Ala Ala Ala Gly Gly Ala Ala Ala Ala Ala Ala Arg Gln Gln Gln
            20   25   30

Gln Gln Gln Gln Gln Gln Gln Pro Pro Pro Pro Gln Pro Gln Arg Gln
        35   40   45

Gln His Pro Pro Pro Pro Pro Arg Arg Thr Arg Pro Glu Asp Gly Gly
    50   55   60

Pro Gly Ala Ala Ser Thr Ser Ala Ala Ala Met Ala Thr Val Gly Glu
65   70   75   80

Arg Arg Pro Leu Pro Ser Pro Glu Val Met Leu Gly Gln Ser Trp Asn
                85   90   95

Leu Trp Val Glu Ala Ser Lys Leu Pro Gly Lys Asp Gly Thr Glu Leu
            100   105   110

Asp Glu Ser Phe Lys Glu Phe Gly Lys Asn Arg Glu Val Met Gly Leu
        115   120   125

Cys Arg Glu Asp Met Pro Ile Phe Gly Phe Cys Pro Ala His Asp Asp
    130   135   140

```
Phe Tyr Leu Val Val Cys Asn Asp Cys Asn Gln Val Val Lys Pro Gln
145                 150                 155                 160

Ala Phe Gln Ser His Tyr Glu Arg Arg His Ser Ser Ser Ser Lys Pro
                165                 170                 175

Pro Leu Ala Val Pro Pro Thr Ser Val Phe Ser Phe Phe Pro Ser Leu
            180                 185                 190

Ser Lys Ser Lys Gly Gly Ser Ala Ser Gly Ser Asn Arg Ser Ser Ser
        195                 200                 205

Gly Gly Val Leu Ser Ala Ser Ser Ser Ser Ser Lys Leu Leu Lys Ser
    210                 215                 220

Pro Lys Glu Lys Leu Gln Leu Arg Gly Asn Thr Arg Pro Met His Pro
225                 230                 235                 240

Ile Gln Gln Ser Arg Val Pro His Gly Arg Ile Met Thr Pro Ser Val
                245                 250                 255

Lys Val Glu Lys Ile His Pro Lys Met Asp Gly Thr Leu Leu Lys Ser
            260                 265                 270

Ala Val Gly Pro Thr Cys Pro Ala Thr Val Ser Ser Leu Val Lys Pro
        275                 280                 285

Gly Leu Asn Cys Pro Ser Ile Pro Lys Pro Thr Leu Pro Ser Pro Gly
    290                 295                 300

Gln Ile Leu Asn Gly Lys Gly Leu Pro Ala Pro Pro Thr Leu Glu Lys
305                 310                 315                 320

Lys Pro Glu Asp Asn Ser Asn Asn Arg Lys Phe Leu Asn Lys Arg Leu
                325                 330                 335

Ser Glu Arg Glu Phe Asp Pro Asp Ile His Cys Gly Val Ile Asp Leu
            340                 345                 350

Asp Thr Lys Lys Pro Cys Thr Arg Ser Leu Thr Cys Lys Thr His Ser
        355                 360                 365
```

```
Leu Thr Gln Arg Arg Ala Val Gln Gly Arg Arg Lys Arg Phe Asp Val
    370                 375                 380

Leu Leu Ala Glu His Lys Asn Lys Thr Arg Glu Lys Glu Leu Ile Arg
385                 390                 395                 400

His Pro Asp Ser Gln Gln Pro Pro Gln Pro Leu Arg Asp Pro His Pro
                405                 410                 415

Ala Pro Pro Arg Thr Ser Gln Glu Pro His Gln Asn Pro His Gly Val
            420                 425                 430

Ile Pro Ser Glu Ser Lys Pro Phe Val Ala Ser Lys Pro Lys Pro His
        435                 440                 445

Thr Pro Ser Leu Pro Arg Pro Pro Gly Cys Pro Ala Gln Gln Gly Gly
    450                 455                 460

Ser Ala Pro Ile Asp Pro Pro Pro Val His Glu Ser Pro His Pro Pro
465                 470                 475                 480

Leu Pro Ala Thr Glu Pro Ala Ser Arg Leu Ser Ser Glu Glu Gly Glu
                485                 490                 495

Gly Asp Asp Lys Glu Glu Ser Val Glu Lys Leu Asp Cys His Tyr Ser
            500                 505                 510

Gly His His Pro Gln Pro Ala Ser Phe Cys Thr Phe Gly Ser Arg Gln
        515                 520                 525

Ile Gly Arg Gly Tyr Tyr Val Phe Asp Ser Arg Trp Asn Arg Leu Arg
    530                 535                 540

Cys Ala Leu Asn Leu Met Val Glu Lys His Leu Asn Ala Gln Leu Trp
545                 550                 555                 560

Lys Lys Ile Pro Pro Val Pro Ser Thr Thr Ser Pro Ile Ser Thr Arg
                565                 570                 575

Ile Pro His Arg Thr Asn Ser Val Pro Thr Ser Gln Cys Gly Val Ser
            580                 585                 590
```

```
Tyr Leu Ala Ala Ala Thr Val Ser Thr Ser Pro Val Leu Leu Ser Ser
        595                 600                 605

Thr Cys Ile Ser Pro Asn Ser Lys Ser Val Pro Ala His Gly Thr Thr
    610                 615                 620

Leu Asn Ala Gln Pro Ala Ala Ser Gly Ala Met Asp Pro Val Cys Ser
625                 630                 635                 640

Met Gln Ser Arg Gln Val Ser Ser Ser Ser Ser Ser Pro Ser Thr Pro
                645                 650                 655

Ser Gly Leu Ser Ser Val Pro Ser Ser Pro Met Ser Arg Lys Pro Gln
            660                 665                 670

Lys Leu Lys Ser Ser Lys Ser Leu Arg Pro Lys Glu Ser Ser Gly Asn
        675                 680                 685

Ser Thr Asn Cys Gln Asn Ala Ser Ser Ser Thr Ser Gly Gly Ser Gly
    690                 695                 700

Lys Lys Arg Lys Asn Ser Ser Pro Leu Leu Val His Ser Ser Ser Ser
705                 710                 715                 720

Ser Ser Ser Ser Ser Ser Ser Ser His Ser Met Glu Ser Phe Arg Lys
                725                 730                 735

Asn Cys Val Ala His Ser Gly Pro Pro Tyr Pro Ser Thr Val Thr Ser
            740                 745                 750

Ser His Ser Ile Gly Leu Asn Cys Val Thr Asn Lys Ala Asn Ala Val
        755                 760                 765

Asn Val Arg His Asp Gln Ser Gly Arg Gly Pro Pro Thr Gly Ser Pro
    770                 775                 780

Ala Glu Ser Ile Lys Arg Met Ser Val Met Val Asn Ser Ser Asp Ser
785                 790                 795                 800

Thr Leu Ser Leu Gly Pro Phe Ile His Gln Ser Asn Glu Leu Pro Val
                805                 810                 815

Asn Ser His Gly Ser Phe Ser His Ser His Thr Pro Leu Asp Lys Leu
```

820 825 830

Ile Gly Lys Lys Arg Lys Cys Ser Pro Ser Ser Ser Ser Ile Asn Asn
835 840 845

Ser Ser Ser Lys Pro Thr Lys Val Ala Lys Val Pro Ala Val Asn Asn
850 855 860

Val His Met Lys His Thr Gly Thr Ile Pro Gly Ala Gln Gly Leu Met
865 870 875 880

Asn Ser Ser Leu Leu His Gln Pro Lys Ala Arg Pro
885 890

<210> 6929
<211> 25
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<213> Homo sapiens

<220>
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<221> source
<223> /note="Gene Symbol: ATXN7; "

<220>
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<223> /note="Gene Name:
ataxin 7; "

<220>
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<400> 6929
Met Ser Glu Arg Ala Ala Asp Asp Val Arg Gly Glu Pro Arg Arg Ala
1 5 10 15

Ala Ala Ala Ala Gly Gly Ala Ala Ala
20 25

<210> 6930
<211> 892
<212> PRT
<213> Homo sapiens

<220>
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ataxin 7; "

<220>
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<223> /note="Uniprot ID: O15265; "

<220>
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<400> 6930

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Met Ser Glu Arg Ala Ala Asp Asp Val Arg Gly Glu Pro Arg Arg Ala
1               5                  10                  15

Ala Ala Ala Ala Gly Gly Ala Ala Ala Ala Ala Ala Arg Gln Gln Gln
            20                  25                  30

Gln Gln Gln Gln Gln Gln Gln Pro Pro Pro Pro Gln Pro Gln Arg Gln
        35                  40                  45

Gln His Pro Pro Pro Pro Pro Arg Arg Thr Arg Pro Glu Asp Gly Gly
    50                  55                  60

Pro Gly Ala Ala Ser Thr Ser Ala Ala Ala Met Ala Thr Val Gly Glu
65                  70                  75                  80

Arg Arg Pro Leu Pro Ser Pro Glu Val Met Leu Gly Gln Ser Trp Asn
                85                  90                  95

Leu Trp Val Glu Ala Ser Lys Leu Pro Gly Lys Asp Gly Thr Glu Leu
            100                 105                 110

Asp Glu Ser Phe Lys Glu Phe Gly Lys Asn Arg Glu Val Met Gly Leu
        115                 120                 125

Cys Arg Glu Asp Met Pro Ile Phe Gly Phe Cys Pro Ala His Asp Asp
    130                 135                 140

Phe Tyr Leu Val Val Cys Asn Asp Cys Asn Gln Val Val Lys Pro Gln
```

145 150 155 160

Ala Phe Gln Ser His Tyr Glu Arg Arg His Ser Ser Ser Ser Lys Pro
165 170 175

Pro Leu Ala Val Pro Pro Thr Ser Val Phe Ser Phe Phe Pro Ser Leu
180 185 190

Ser Lys Ser Lys Gly Gly Ser Ala Ser Gly Ser Asn Arg Ser Ser Ser
195 200 205

Gly Gly Val Leu Ser Ala Ser Ser Ser Ser Ser Lys Leu Leu Lys Ser
210 215 220

Pro Lys Glu Lys Leu Gln Leu Arg Gly Asn Thr Arg Pro Met His Pro
225 230 235 240

Ile Gln Gln Ser Arg Val Pro His Gly Arg Ile Met Thr Pro Ser Val
245 250 255

Lys Val Glu Lys Ile His Pro Lys Met Asp Gly Thr Leu Leu Lys Ser
260 265 270

Ala Val Gly Pro Thr Cys Pro Ala Thr Val Ser Ser Leu Val Lys Pro
275 280 285

Gly Leu Asn Cys Pro Ser Ile Pro Lys Pro Thr Leu Pro Ser Pro Gly
290 295 300

Gln Ile Leu Asn Gly Lys Gly Leu Pro Ala Pro Pro Thr Leu Glu Lys
305 310 315 320

Lys Pro Glu Asp Asn Ser Asn Asn Arg Lys Phe Leu Asn Lys Arg Leu
325 330 335

Ser Glu Arg Glu Phe Asp Pro Asp Ile His Cys Gly Val Ile Asp Leu
340 345 350

Asp Thr Lys Lys Pro Cys Thr Arg Ser Leu Thr Cys Lys Thr His Ser
355 360 365

Leu Thr Gln Arg Arg Ala Val Gln Gly Arg Arg Lys Arg Phe Asp Val
370 375 380

```
Leu Leu Ala Glu His Lys Asn Lys Thr Arg Glu Lys Glu Leu Ile Arg
385                 390                 395                 400

His Pro Asp Ser Gln Gln Pro Pro Gln Pro Leu Arg Asp Pro His Pro
                405                 410                 415

Ala Pro Pro Arg Thr Ser Gln Glu Pro His Gln Asn Pro His Gly Val
            420                 425                 430

Ile Pro Ser Glu Ser Lys Pro Phe Val Ala Ser Lys Pro Lys Pro His
        435                 440                 445

Thr Pro Ser Leu Pro Arg Pro Pro Gly Cys Pro Ala Gln Gln Gly Gly
    450                 455                 460

Ser Ala Pro Ile Asp Pro Pro Pro Val His Glu Ser Pro His Pro Pro
465                 470                 475                 480

Leu Pro Ala Thr Glu Pro Ala Ser Arg Leu Ser Ser Glu Glu Gly Glu
                485                 490                 495

Gly Asp Asp Lys Glu Glu Ser Val Glu Lys Leu Asp Cys His Tyr Ser
            500                 505                 510

Gly His His Pro Gln Pro Ala Ser Phe Cys Thr Phe Gly Ser Arg Gln
        515                 520                 525

Ile Gly Arg Gly Tyr Tyr Val Phe Asp Ser Arg Trp Asn Arg Leu Arg
    530                 535                 540

Cys Ala Leu Asn Leu Met Val Glu Lys His Leu Asn Ala Gln Leu Trp
545                 550                 555                 560

Lys Lys Ile Pro Pro Val Pro Ser Thr Thr Ser Pro Ile Ser Thr Arg
                565                 570                 575

Ile Pro His Arg Thr Asn Ser Val Pro Thr Ser Gln Cys Gly Val Ser
            580                 585                 590

Tyr Leu Ala Ala Ala Thr Val Ser Thr Ser Pro Val Leu Leu Ser Ser
        595                 600                 605
```

```
Thr Cys Ile Ser Pro Asn Ser Lys Ser Val Pro Ala His Gly Thr Thr
    610                 615                 620

Leu Asn Ala Gln Pro Ala Ala Ser Gly Ala Met Asp Pro Val Cys Ser
625                 630                 635                 640

Met Gln Ser Arg Gln Val Ser Ser Ser Ser Ser Ser Pro Ser Thr Pro
                645                 650                 655

Ser Gly Leu Ser Ser Val Pro Ser Ser Pro Met Ser Arg Lys Pro Gln
            660                 665                 670

Lys Leu Lys Ser Ser Lys Ser Leu Arg Pro Lys Glu Ser Ser Gly Asn
        675                 680                 685

Ser Thr Asn Cys Gln Asn Ala Ser Ser Ser Thr Ser Gly Gly Ser Gly
    690                 695                 700

Lys Lys Arg Lys Asn Ser Ser Pro Leu Leu Val His Ser Ser Ser Ser
705                 710                 715                 720

Ser Ser Ser Ser Ser Ser Ser Ser His Ser Met Glu Ser Phe Arg Lys
                725                 730                 735

Asn Cys Val Ala His Ser Gly Pro Pro Tyr Pro Ser Thr Val Thr Ser
            740                 745                 750

Ser His Ser Ile Gly Leu Asn Cys Val Thr Asn Lys Ala Asn Ala Val
        755                 760                 765

Asn Val Arg His Asp Gln Ser Gly Arg Gly Pro Pro Thr Gly Ser Pro
    770                 775                 780

Ala Glu Ser Ile Lys Arg Met Ser Val Met Val Asn Ser Ser Asp Ser
785                 790                 795                 800

Thr Leu Ser Leu Gly Pro Phe Ile His Gln Ser Asn Glu Leu Pro Val
                805                 810                 815

Asn Ser His Gly Ser Phe Ser His Ser His Thr Pro Leu Asp Lys Leu
            820                 825                 830
```

```
Ile Gly Lys Lys Arg Lys Cys Ser Pro Ser Ser Ser Ser Ile Asn Asn
        835                 840                 845

Ser Ser Ser Lys Pro Thr Lys Val Ala Lys Val Pro Ala Val Asn Asn
    850                 855                 860

Val His Met Lys His Thr Gly Thr Ile Pro Gly Ala Gln Gly Leu Met
865                 870                 875                 880

Asn Ser Ser Leu Leu His Gln Pro Lys Ala Arg Pro
                885                 890


<210> 6931
<211> 115
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATXN7; "

<220>
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<223> /note="Gene Name:
      ataxin 7; "

<220>
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<223> /note="ENSP ID: ENSP00000428067"

<400> 6931
Asp Lys Leu Ile Gly Lys Lys Arg Lys Cys Ser Pro Ser Ser Ser Ser
1               5                   10                  15

Ile Asn Asn Ser Ser Ser Lys Pro Thr Lys Val Ala Lys Val Pro Ala
            20                  25                  30

Val Asn Asn Val His Met Lys His Thr Gly Thr Ile Pro Gly Ala Gln
        35                  40                  45

Gly Leu Met Asn Ser Ser Leu Leu His Gln Asp Ile Ser Ser Pro Cys
    50                  55                  60

Leu Arg Thr Gly Ile Ser Ala Thr Ser Pro Gln Ser Pro Asp Leu Lys
65                  70                  75                  80
```

```
Ser Lys Gly Thr Ser Leu Thr Ala Glu Asn Ser Thr Gly Arg Asn Asn
                85                  90                  95

Ala Asp Thr Phe Glu Asp Lys Leu His Leu His Ser Ala Leu Trp Thr
            100                 105                 110

Pro Arg Cys
        115


<210> 6932
<211> 747
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<223> /note="Uniprot ID:  O15265; "

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<400> 6932
Met Glu Gly Ser Lys Thr Pro Leu Gln Ser Ser Pro Ser Ala Gln Glu
1               5                  10                  15

Leu Lys Ala Pro Leu Glu Arg Arg His Ser Ser Ser Ser Lys Pro Pro
            20                  25                  30

Leu Ala Val Pro Pro Thr Ser Val Phe Ser Phe Phe Pro Ser Leu Ser
        35                  40                  45

Lys Ser Lys Gly Gly Ser Ala Ser Gly Ser Asn Arg Ser Ser Ser Gly
    50                  55                  60
```

```
Gly Val Leu Ser Ala Ser Ser Ser Ser Ser Lys Leu Leu Lys Ser Pro
65                  70                  75                  80

Lys Glu Lys Leu Gln Leu Arg Gly Asn Thr Arg Pro Met His Pro Ile
                85                  90                  95

Gln Gln Ser Arg Val Pro His Gly Arg Ile Met Thr Pro Ser Val Lys
            100                 105                 110

Val Glu Lys Ile His Pro Lys Met Asp Gly Thr Leu Leu Lys Ser Ala
        115                 120                 125

Val Gly Pro Thr Cys Pro Ala Thr Val Ser Ser Leu Val Lys Pro Gly
    130                 135                 140

Leu Asn Cys Pro Ser Ile Pro Lys Pro Thr Leu Pro Ser Pro Gly Gln
145                 150                 155                 160

Ile Leu Asn Gly Lys Gly Leu Pro Ala Pro Pro Thr Leu Glu Lys Lys
                165                 170                 175

Pro Glu Asp Asn Ser Asn Asn Arg Lys Phe Leu Asn Lys Arg Leu Ser
            180                 185                 190

Glu Arg Glu Phe Asp Pro Asp Ile His Cys Gly Val Ile Asp Leu Asp
        195                 200                 205

Thr Lys Lys Pro Cys Thr Arg Ser Leu Thr Cys Lys Thr His Ser Leu
    210                 215                 220

Thr Gln Arg Arg Ala Val Gln Gly Arg Arg Lys Arg Phe Asp Val Leu
225                 230                 235                 240

Leu Ala Glu His Lys Asn Lys Thr Arg Glu Lys Glu Leu Ile Arg His
                245                 250                 255

Pro Asp Ser Gln Gln Pro Pro Gln Pro Leu Arg Asp Pro His Pro Ala
            260                 265                 270

Pro Pro Arg Thr Ser Gln Glu Pro His Gln Asn Pro His Gly Val Ile
        275                 280                 285

Pro Ser Glu Ser Lys Pro Phe Val Ala Ser Lys Pro Lys Pro His Thr
```

290 295 300

Pro Ser Leu Pro Arg Pro Pro Gly Cys Pro Ala Gln Gln Gly Gly Ser
305 310 315 320

Ala Pro Ile Asp Pro Pro Pro Val His Glu Ser Pro His Pro Pro Leu
325 330 335

Pro Ala Thr Glu Pro Ala Ser Arg Leu Ser Ser Glu Glu Gly Glu Gly
340 345 350

Asp Asp Lys Glu Glu Ser Val Glu Lys Leu Asp Cys His Tyr Ser Gly
355 360 365

His His Pro Gln Pro Ala Ser Phe Cys Thr Phe Gly Ser Arg Gln Ile
370 375 380

Gly Arg Gly Tyr Tyr Val Phe Asp Ser Arg Trp Asn Arg Leu Arg Cys
385 390 395 400

Ala Leu Asn Leu Met Val Glu Lys His Leu Asn Ala Gln Leu Trp Lys
405 410 415

Lys Ile Pro Pro Val Pro Ser Thr Thr Ser Pro Ile Ser Thr Arg Ile
420 425 430

Pro His Arg Thr Asn Ser Val Pro Thr Ser Gln Cys Gly Val Ser Tyr
435 440 445

Leu Ala Ala Ala Thr Val Ser Thr Ser Pro Val Leu Leu Ser Ser Thr
450 455 460

Cys Ile Ser Pro Asn Ser Lys Ser Val Pro Ala His Gly Thr Thr Leu
465 470 475 480

Asn Ala Gln Pro Ala Ala Ser Gly Ala Met Asp Pro Val Cys Ser Met
485 490 495

Gln Ser Arg Gln Val Ser Ser Ser Ser Ser Ser Pro Ser Thr Pro Ser
500 505 510

Gly Leu Ser Ser Val Pro Ser Ser Pro Met Ser Arg Lys Pro Gln Lys
515 520 525

```
Leu Lys Ser Ser Lys Ser Leu Arg Pro Lys Glu Ser Ser Gly Asn Ser
    530                 535                 540

Thr Asn Cys Gln Asn Ala Ser Ser Ser Thr Ser Gly Gly Ser Gly Lys
545                 550                 555                 560

Lys Arg Lys Asn Ser Ser Pro Leu Leu Val His Ser Ser Ser Ser Ser
                565                 570                 575

Ser Ser Ser Ser Ser Ser Ser His Ser Met Glu Ser Phe Arg Lys Asn
            580                 585                 590

Cys Val Ala His Ser Gly Pro Pro Tyr Pro Ser Thr Val Thr Ser Ser
        595                 600                 605

His Ser Ile Gly Leu Asn Cys Val Thr Asn Lys Ala Asn Ala Val Asn
    610                 615                 620

Val Arg His Asp Gln Ser Gly Arg Gly Pro Pro Thr Gly Ser Pro Ala
625                 630                 635                 640

Glu Ser Ile Lys Arg Met Ser Val Met Val Asn Ser Ser Asp Ser Thr
                645                 650                 655

Leu Ser Leu Gly Pro Phe Ile His Gln Ser Asn Glu Leu Pro Val Asn
            660                 665                 670

Ser His Gly Ser Phe Ser His Ser His Thr Pro Leu Asp Lys Leu Ile
        675                 680                 685

Gly Lys Lys Arg Lys Cys Ser Pro Ser Ser Ser Ser Ile Asn Asn Ser
    690                 695                 700

Ser Ser Lys Pro Thr Lys Val Ala Lys Val Pro Ala Val Asn Asn Val
705                 710                 715                 720

His Met Lys His Thr Gly Thr Ile Pro Gly Ala Gln Gly Leu Met Asn
                725                 730                 735

Ser Ser Leu Leu His Gln Pro Lys Ala Arg Pro
            740                 745
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<210> 6933
<211> 945
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1479; "

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<220>
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<223> /note="Gene Name:
ataxin 7; "

<220>
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<223> /note="Uniprot ID: O15265; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000439585"

<400> 6933

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Met Ser Glu Arg Ala Ala Asp Asp Val Arg Gly Glu Pro Arg Arg Ala
1               5                  10                  15


Ala Ala Ala Ala Gly Gly Ala Ala Ala Ala Ala Ala Arg Gln Gln Gln
            20                  25                  30


Gln Gln Gln Gln Gln Gln Gln Pro Pro Pro Pro Gln Pro Gln Arg Gln
        35                  40                  45


Gln His Pro Pro Pro Pro Pro Arg Arg Thr Arg Pro Glu Asp Gly Gly
    50                  55                  60


Pro Gly Ala Ala Ser Thr Ser Ala Ala Ala Met Ala Thr Val Gly Glu
65                  70                  75                  80


Arg Arg Pro Leu Pro Ser Pro Glu Val Met Leu Gly Gln Ser Trp Asn
                85                  90                  95


Leu Trp Val Glu Ala Ser Lys Leu Pro Gly Lys Asp Gly Thr Glu Leu
            100                 105                 110


Asp Glu Ser Phe Lys Glu Phe Gly Lys Asn Arg Glu Val Met Gly Leu
```

```
        115                 120                 125

Cys Arg Glu Asp Met Pro Ile Phe Gly Phe Cys Pro Ala His Asp Asp
    130                 135                 140

Phe Tyr Leu Val Val Cys Asn Asp Cys Asn Gln Val Val Lys Pro Gln
145                 150                 155                 160

Ala Phe Gln Ser His Tyr Glu Arg Arg His Ser Ser Ser Ser Lys Pro
                165                 170                 175

Pro Leu Ala Val Pro Pro Thr Ser Val Phe Ser Phe Phe Pro Ser Leu
            180                 185                 190

Ser Lys Ser Lys Gly Gly Ser Ala Ser Gly Ser Asn Arg Ser Ser Ser
        195                 200                 205

Gly Gly Val Leu Ser Ala Ser Ser Ser Ser Ser Lys Leu Leu Lys Ser
    210                 215                 220

Pro Lys Glu Lys Leu Gln Leu Arg Gly Asn Thr Arg Pro Met His Pro
225                 230                 235                 240

Ile Gln Gln Ser Arg Val Pro His Gly Arg Ile Met Thr Pro Ser Val
                245                 250                 255

Lys Val Glu Lys Ile His Pro Lys Met Asp Gly Thr Leu Leu Lys Ser
            260                 265                 270

Ala Val Gly Pro Thr Cys Pro Ala Thr Val Ser Ser Leu Val Lys Pro
        275                 280                 285

Gly Leu Asn Cys Pro Ser Ile Pro Lys Pro Thr Leu Pro Ser Pro Gly
    290                 295                 300

Gln Ile Leu Asn Gly Lys Gly Leu Pro Ala Pro Pro Thr Leu Glu Lys
305                 310                 315                 320

Lys Pro Glu Asp Asn Ser Asn Asn Arg Lys Phe Leu Asn Lys Arg Leu
                325                 330                 335

Ser Glu Arg Glu Phe Asp Pro Asp Ile His Cys Gly Val Ile Asp Leu
            340                 345                 350
```

```
Asp Thr Lys Lys Pro Cys Thr Arg Ser Leu Thr Cys Lys Thr His Ser
        355                 360                 365

Leu Thr Gln Arg Arg Ala Val Gln Gly Arg Arg Lys Arg Phe Asp Val
    370                 375                 380

Leu Leu Ala Glu His Lys Asn Lys Thr Arg Glu Lys Glu Leu Ile Arg
385                 390                 395                 400

His Pro Asp Ser Gln Gln Pro Pro Gln Pro Leu Arg Asp Pro His Pro
                405                 410                 415

Ala Pro Pro Arg Thr Ser Gln Glu Pro His Gln Asn Pro His Gly Val
            420                 425                 430

Ile Pro Ser Glu Ser Lys Pro Phe Val Ala Ser Lys Pro Lys Pro His
        435                 440                 445

Thr Pro Ser Leu Pro Arg Pro Pro Gly Cys Pro Ala Gln Gln Gly Gly
    450                 455                 460

Ser Ala Pro Ile Asp Pro Pro Pro Val His Glu Ser Pro His Pro Pro
465                 470                 475                 480

Leu Pro Ala Thr Glu Pro Ala Ser Arg Leu Ser Ser Glu Glu Gly Glu
                485                 490                 495

Gly Asp Asp Lys Glu Glu Ser Val Glu Lys Leu Asp Cys His Tyr Ser
            500                 505                 510

Gly His His Pro Gln Pro Ala Ser Phe Cys Thr Phe Gly Ser Arg Gln
        515                 520                 525

Ile Gly Arg Gly Tyr Tyr Val Phe Asp Ser Arg Trp Asn Arg Leu Arg
    530                 535                 540

Cys Ala Leu Asn Leu Met Val Glu Lys His Leu Asn Ala Gln Leu Trp
545                 550                 555                 560

Lys Lys Ile Pro Pro Val Pro Ser Thr Thr Ser Pro Ile Ser Thr Arg
                565                 570                 575
```

```
Ile Pro His Arg Thr Asn Ser Val Pro Thr Ser Gln Cys Gly Val Ser
            580                 585                 590

Tyr Leu Ala Ala Ala Thr Val Ser Thr Ser Pro Val Leu Leu Ser Ser
        595                 600                 605

Thr Cys Ile Ser Pro Asn Ser Lys Ser Val Pro Ala His Gly Thr Thr
    610                 615                 620

Leu Asn Ala Gln Pro Ala Ala Ser Gly Ala Met Asp Pro Val Cys Ser
625                 630                 635                 640

Met Gln Ser Arg Gln Val Ser Ser Ser Ser Ser Ser Pro Ser Thr Pro
                645                 650                 655

Ser Gly Leu Ser Ser Val Pro Ser Ser Pro Met Ser Arg Lys Pro Gln
            660                 665                 670

Lys Leu Lys Ser Ser Lys Ser Leu Arg Pro Lys Glu Ser Ser Gly Asn
        675                 680                 685

Ser Thr Asn Cys Gln Asn Ala Ser Ser Ser Thr Ser Gly Gly Ser Gly
    690                 695                 700

Lys Lys Arg Lys Asn Ser Ser Pro Leu Leu Val His Ser Ser Ser Ser
705                 710                 715                 720

Ser Ser Ser Ser Ser Ser Ser Ser His Ser Met Glu Ser Phe Arg Lys
                725                 730                 735

Asn Cys Val Ala His Ser Gly Pro Pro Tyr Pro Ser Thr Val Thr Ser
            740                 745                 750

Ser His Ser Ile Gly Leu Asn Cys Val Thr Asn Lys Ala Asn Ala Val
        755                 760                 765

Asn Val Arg His Asp Gln Ser Gly Arg Gly Pro Pro Thr Gly Ser Pro
    770                 775                 780

Ala Glu Ser Ile Lys Arg Met Ser Val Met Val Asn Ser Ser Asp Ser
785                 790                 795                 800
```

```
Thr Leu Ser Leu Gly Pro Phe Ile His Gln Ser Asn Glu Leu Pro Val
                805                 810                 815

Asn Ser His Gly Ser Phe Ser His Ser His Thr Pro Leu Asp Lys Leu
            820                 825                 830

Ile Gly Lys Lys Arg Lys Cys Ser Pro Ser Ser Ser Ser Ile Asn Asn
        835                 840                 845

Ser Ser Ser Lys Pro Thr Lys Val Ala Lys Val Pro Ala Val Asn Asn
    850                 855                 860

Val His Met Lys His Thr Gly Thr Ile Pro Gly Ala Gln Gly Leu Met
865                 870                 875                 880

Asn Ser Ser Leu Leu His Gln Asp Ile Ser Ser Pro Cys Leu Arg Thr
                885                 890                 895

Gly Ile Ser Ala Thr Ser Pro Gln Ser Pro Asp Leu Lys Ser Lys Gly
            900                 905                 910

Thr Ser Leu Thr Ala Glu Asn Ser Thr Gly Arg Asn Asn Ala Asp Thr
        915                 920                 925

Phe Glu Asp Lys Leu His Leu His Ser Ala Leu Trp Thr Pro Arg Cys
    930                 935                 940

Leu
945


<210> 6934
<211> 146
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
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<220>
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<223> /note="Gene Name:
      ataxin 7-like 1; "
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<220>
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<223> /note="Uniprot ID: Q9ULK2; "

<220>
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<223> /note="ENSP ID: ENSP00000326344"

<400> 6934
Met Thr Ser Glu Arg Ser Arg Ile Pro Cys Leu Ser Ala Ala Ala Ala
1   5   10   15

Glu Gly Thr Gly Lys Lys Gln Gln Glu Gly Arg Ala Met Ala Thr Leu
            20   25   30

Asp Arg Lys Val Pro Ser Pro Glu Ala Phe Leu Gly Lys Pro Trp Ser
        35   40   45

Ser Trp Ile Asp Ala Ala Lys Leu His Cys Ser Asp Asn Val Asp Leu
    50   55   60

Glu Glu Ala Gly Lys Glu Gly Gly Lys Ser Arg Glu Val Met Arg Leu
65   70   75   80

Asn Lys Glu Asp Met His Leu Phe Gly His Tyr Pro Ala His Asp Asp
                85   90   95

Phe Tyr Leu Val Val Cys Ser Ala Cys Asn Gln Val Val Lys Pro Gln
            100   105   110

Val Phe Gln Ser His Cys Gly Arg Lys Gln Asp Asn Arg Arg Asn Glu
        115   120   125

Gly Ile Ser Arg Ser Gly Pro Glu Ser Ser Gln Ala Ile Glu Lys His
    130   135   140

Gln Val
145

<210> 6935
<211> 861
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<400> 6935

```
Met Thr Ser Glu Arg Ser Arg Ile Pro Cys Leu Ser Ala Ala Ala Ala
1               5                  10                  15

Glu Gly Thr Gly Lys Lys Gln Gln Glu Gly Arg Ala Met Ala Thr Leu
            20                  25                  30

Asp Arg Lys Val Pro Ser Pro Glu Ala Phe Leu Gly Lys Pro Trp Ser
        35                  40                  45

Ser Trp Ile Asp Ala Ala Lys Leu His Cys Ser Asp Asn Val Asp Leu
    50                  55                  60

Glu Glu Ala Gly Lys Glu Gly Gly Lys Ser Arg Glu Val Met Arg Leu
65                  70                  75                  80

Asn Lys Glu Asp Met His Leu Phe Gly His Tyr Pro Ala His Asp Asp
                85                  90                  95

Phe Tyr Leu Val Val Cys Ser Ala Cys Asn Gln Val Val Lys Pro Gln
            100                 105                 110

Val Phe Gln Ser His Cys Glu Arg Arg His Gly Ser Met Cys Arg Pro
        115                 120                 125

Ser Pro Ser Pro Val Ser Pro Ala Ser Asn Pro Arg Thr Ser Leu Val
    130                 135                 140

Gln Val Lys Thr Lys Ala Cys Leu Ser Gly His His Ser Ala Ser Ser
```

145 150 155 160

Thr Ser Lys Pro Phe Lys Thr Pro Lys Asp Asn Leu Leu Thr Ser Ser
165 170 175

Ser Lys Gln His Thr Val Phe Pro Ala Lys Gly Ser Arg Asp Lys Pro
180 185 190

Cys Val Pro Val Pro Val Val Ser Leu Glu Lys Ile Pro Asn Leu Val
195 200 205

Lys Ala Asp Gly Ala Asn Val Lys Met Asn Ser Thr Thr Thr Thr Ala
210 215 220

Val Ser Ala Ser Ser Thr Ser Ser Ser Ala Val Ser Thr Pro Pro Leu
225 230 235 240

Ile Lys Pro Val Leu Met Ser Lys Ser Val Pro Pro Ser Pro Glu Lys
245 250 255

Ile Leu Asn Gly Lys Gly Ile Leu Pro Thr Thr Ile Asp Lys Lys His
260 265 270

Gln Asn Gly Thr Lys Asn Ser Asn Lys Pro Tyr Arg Arg Leu Ser Glu
275 280 285

Arg Glu Phe Asp Pro Asn Lys His Cys Gly Val Leu Asp Pro Glu Thr
290 295 300

Lys Lys Pro Cys Thr Arg Ser Leu Thr Cys Lys Thr His Ser Leu Ser
305 310 315 320

His Arg Arg Ala Val Pro Gly Arg Lys Lys Gln Phe Asp Leu Leu Leu
325 330 335

Ala Glu His Lys Ala Lys Ser Arg Glu Lys Glu Val Lys Asp Lys Glu
340 345 350

His Leu Leu Thr Ser Thr Arg Glu Ile Leu Pro Ser Gln Ser Gly Pro
355 360 365

Ala Gln Asp Ser Leu Leu Gly Ser Ser Gly Ser Ser Gly Pro Glu Pro
370 375 380

```
Lys Val Ala Ser Pro Ala Lys Ser Arg Pro Pro Asn Ser Val Leu Pro
385                 390                 395                 400

Arg Pro Ser Ser Ala Asn Ser Ile Ser Ser Ser Thr Ser Ser Asn His
                405                 410                 415

Ser Gly His Thr Pro Glu Pro Pro Leu Pro Pro Val Gly Gly Asp Leu
            420                 425                 430

Ala Ser Arg Leu Ser Ser Asp Glu Gly Glu Met Asp Gly Ala Asp Glu
        435                 440                 445

Ser Glu Lys Leu Asp Cys Gln Phe Ser Thr His His Pro Arg Pro Leu
    450                 455                 460

Ala Phe Cys Ser Phe Gly Ser Arg Leu Met Gly Arg Gly Tyr Tyr Val
465                 470                 475                 480

Phe Asp Arg Arg Trp Asp Arg Phe Arg Phe Ala Leu Asn Ser Met Val
                485                 490                 495

Glu Lys His Leu Asn Ser Gln Met Trp Lys Lys Ile Pro Pro Ala Ala
            500                 505                 510

Asp Ser Pro Leu Pro Ser Pro Ala Ala His Ile Thr Thr Pro Val Pro
        515                 520                 525

Ala Ser Val Leu Gln Pro Phe Ser Asn Pro Ser Ala Val Tyr Leu Pro
    530                 535                 540

Ser Ala Pro Ile Ser Ser Arg Leu Thr Ser Ser Tyr Ile Met Thr Ser
545                 550                 555                 560

Ala Met Leu Ser Asn Ala Ala Phe Val Thr Ser Pro Asp Pro Ser Ala
                565                 570                 575

Leu Met Ser His Thr Thr Ala Phe Pro His Val Ala Ala Thr Leu Ser
            580                 585                 590

Ile Met Asp Ser Thr Phe Lys Ala Pro Ser Ala Val Ser Pro Ile Pro
        595                 600                 605
```

```
Ala Val Ile Pro Ser Pro Ser His Lys Pro Ser Lys Thr Lys Thr Ser
    610                 615                 620

Lys Ser Ser Lys Val Lys Asp Leu Ser Thr Arg Ser Asp Glu Ser Pro
625                 630                 635                 640

Ser Asn Lys Lys Arg Lys Pro Gln Ser Ser Thr Ser Ser Ser Ser Ser
                645                 650                 655

Ser Ser Ser Ser Ser Leu Gln Thr Ser Leu Ser Ser Pro Leu Ser Gly
            660                 665                 670

Pro His Lys Lys Asn Cys Val Leu Asn Ala Ser Ser Ala Leu Asn Ser
        675                 680                 685

Tyr Gln Ala Ala Pro Pro Tyr Asn Ser Leu Ser Val His Asn Ser Asn
    690                 695                 700

Asn Gly Val Ser Pro Leu Ser Ala Lys Leu Glu Pro Ser Gly Arg Thr
705                 710                 715                 720

Ser Leu Pro Gly Gly Pro Ala Asp Ile Val Arg Gln Val Gly Ala Val
                725                 730                 735

Gly Gly Ser Ser Asp Ser Cys Pro Leu Ser Val Pro Ser Leu Ala Leu
            740                 745                 750

His Ala Gly Asp Leu Ser Leu Ala Ser His Asn Ala Val Ser Ser Leu
        755                 760                 765

Pro Leu Ser Phe Asp Lys Ser Glu Gly Lys Lys Arg Lys Asn Ser Ser
    770                 775                 780

Ser Ser Ser Lys Ala Cys Lys Ile Thr Lys Met Pro Gly Met Asn Ser
785                 790                 795                 800

Val His Lys Lys Asn Pro Pro Ser Leu Leu Ala Pro Val Pro Asp Pro
                805                 810                 815

Val Asn Ser Thr Ser Ser Arg Gln Val Gly Lys Asn Ser Ser Leu Ala
            820                 825                 830
```

```
Leu Ser Gln Ser Ser Pro Ser Ser Ile Ser Ser Pro Gly His Ser Arg
        835                 840                 845

Gln Asn Thr Asn Arg Thr Gly Arg Ile Arg Thr Leu Pro
    850                 855                 860


<210> 6936
<211> 738
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1480; "

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<223> /note="Gene Symbol: ATXN7L1; "

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<223> /note="Gene Name:
      ataxin 7-like 1; "

<220>
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<223> /note="Uniprot ID:  Q9ULK2; "

<220>
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<400> 6936
Met Cys Arg Pro Ser Pro Ser Pro Val Ser Pro Ala Ser Asn Pro Arg
1               5                   10                  15

Thr Ser Leu Val Gln Val Lys Thr Lys Ala Cys Leu Ser Gly His His
            20                  25                  30

Ser Ala Ser Ser Thr Ser Lys Pro Phe Lys Thr Pro Lys Asp Asn Leu
        35                  40                  45

Leu Thr Ser Ser Ser Lys Gln His Thr Val Phe Pro Ala Lys Gly Ser
    50                  55                  60

Arg Asp Lys Pro Cys Val Pro Val Pro Val Val Ser Leu Glu Lys Ile
65                  70                  75                  80

Pro Asn Leu Val Lys Ala Asp Gly Ala Asn Val Lys Met Asn Ser Thr
                85                  90                  95
```

```
Thr Thr Thr Ala Val Ser Ala Ser Ser Thr Ser Ser Ser Ala Val Ser
            100                 105                 110

Thr Pro Pro Leu Ile Lys Pro Val Leu Met Ser Lys Ser Val Pro Pro
        115                 120                 125

Ser Pro Glu Lys Ile Leu Asn Gly Lys Gly Ile Leu Pro Thr Thr Ile
    130                 135                 140

Asp Lys Lys His Gln Asn Gly Thr Lys Asn Ser Asn Lys Pro Tyr Arg
145                 150                 155                 160

Arg Leu Ser Glu Arg Glu Phe Asp Pro Asn Lys His Cys Gly Val Leu
                165                 170                 175

Asp Pro Glu Thr Lys Lys Pro Cys Thr Arg Ser Leu Thr Cys Lys Thr
            180                 185                 190

His Ser Leu Ser His Arg Arg Ala Val Pro Gly Arg Lys Lys Gln Phe
        195                 200                 205

Asp Leu Leu Leu Ala Glu His Lys Ala Lys Ser Arg Glu Lys Glu Val
    210                 215                 220

Lys Asp Lys Glu His Leu Leu Thr Ser Thr Arg Glu Ile Leu Pro Ser
225                 230                 235                 240

Gln Ser Gly Pro Ala Gln Asp Ser Leu Leu Gly Ser Ser Gly Ser Ser
                245                 250                 255

Gly Pro Glu Pro Lys Val Ala Ser Pro Ala Lys Ser Arg Pro Pro Asn
            260                 265                 270

Ser Val Leu Pro Arg Pro Ser Ser Ala Asn Ser Ile Ser Ser Ser Thr
        275                 280                 285

Ser Ser Asn His Ser Gly His Thr Pro Glu Pro Pro Leu Pro Pro Val
    290                 295                 300

Gly Gly Asp Leu Ala Ser Arg Leu Ser Ser Asp Glu Gly Glu Met Asp
305                 310                 315                 320
```

```
Gly Ala Asp Glu Ser Glu Lys Leu Asp Cys Gln Phe Ser Thr His His
                325                 330                 335

Pro Arg Pro Leu Ala Phe Cys Ser Phe Gly Ser Arg Leu Met Gly Arg
            340                 345                 350

Gly Tyr Tyr Val Phe Asp Arg Arg Trp Asp Arg Phe Arg Phe Ala Leu
        355                 360                 365

Asn Ser Met Val Glu Lys His Leu Asn Ser Gln Met Trp Lys Lys Ile
    370                 375                 380

Pro Pro Ala Ala Asp Ser Pro Leu Pro Ser Pro Ala Ala His Ile Thr
385                 390                 395                 400

Thr Pro Val Pro Ala Ser Val Leu Gln Pro Phe Ser Asn Pro Ser Ala
                405                 410                 415

Val Tyr Leu Pro Ser Ala Pro Ile Ser Ser Arg Leu Thr Ser Ser Tyr
            420                 425                 430

Ile Met Thr Ser Ala Met Leu Ser Asn Ala Ala Phe Val Thr Ser Pro
        435                 440                 445

Asp Pro Ser Ala Leu Met Ser His Thr Thr Ala Phe Pro His Val Ala
    450                 455                 460

Ala Thr Leu Ser Ile Met Asp Ser Thr Phe Lys Ala Pro Ser Ala Val
465                 470                 475                 480

Ser Pro Ile Pro Ala Val Ile Pro Ser Pro Ser His Lys Pro Ser Lys
                485                 490                 495

Thr Lys Thr Ser Lys Ser Ser Lys Val Lys Asp Leu Ser Thr Arg Ser
            500                 505                 510

Asp Glu Ser Pro Ser Asn Lys Lys Arg Lys Pro Gln Ser Ser Thr Ser
        515                 520                 525

Ser Ser Ser Ser Ser Ser Ser Ser Ser Leu Gln Thr Ser Leu Ser Ser
    530                 535                 540
```

```
Pro Leu Ser Gly Pro His Lys Lys Asn Cys Val Leu Asn Ala Ser Ser
545                 550                 555                 560

Ala Leu Asn Ser Tyr Gln Ala Ala Pro Pro Tyr Asn Ser Leu Ser Val
                565                 570                 575

His Asn Ser Asn Asn Gly Val Ser Pro Leu Ser Ala Lys Leu Glu Pro
            580                 585                 590

Ser Gly Arg Thr Ser Leu Pro Gly Gly Pro Ala Asp Ile Val Arg Gln
        595                 600                 605

Val Gly Ala Val Gly Gly Ser Ser Asp Ser Cys Pro Leu Ser Val Pro
    610                 615                 620

Ser Leu Ala Leu His Ala Gly Asp Leu Ser Leu Ala Ser His Asn Ala
625                 630                 635                 640

Val Ser Ser Leu Pro Leu Ser Phe Asp Lys Ser Glu Gly Lys Lys Arg
                645                 650                 655

Lys Asn Ser Ser Ser Ser Ser Lys Ala Cys Lys Ile Thr Lys Met Pro
            660                 665                 670

Gly Met Asn Ser Val His Lys Lys Asn Pro Pro Ser Leu Leu Ala Pro
        675                 680                 685

Val Pro Asp Pro Val Asn Ser Thr Ser Ser Arg Gln Val Gly Lys Asn
    690                 695                 700

Ser Ser Leu Ala Leu Ser Gln Ser Ser Pro Ser Ser Ile Ser Ser Pro
705                 710                 715                 720

Gly His Ser Arg Gln Lys Asn Thr Asn Arg Thr Gly Arg Ile Arg Thr
                725                 730                 735

Leu Pro
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<210> 6937
<211> 95
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1480; "

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<221> source
<223> /note="Gene Symbol: ATXN7L1; "

<220>
<221> source
<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000418679"

<400> 6937
Met Ala Thr Leu Asp Arg Lys Val Pro Ser Pro Glu Ala Phe Leu Gly
1 5 10 15

Lys Pro Trp Ser Ser Trp Ile Asp Ala Ala Lys Leu His Cys Ser Asp
20 25 30

Asn Met His Leu Phe Gly His Tyr Pro Ala His Asp Asp Phe Tyr Leu
35 40 45

Val Val Cys Ser Ala Cys Asn Gln Val Val Lys Pro Gln Val Phe Gln
50 55 60

Ser His Cys Gly Arg Lys Gln Asp Asn Arg Arg Asn Glu Gly Ile Ser
65 70 75 80

Arg Ser Gly Pro Glu Ser Ser Gln Ala Ile Glu Lys His Gln Val
85 90 95

<210> 6938
<211> 574
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000418900"

<400> 6938

```
Pro Ser Ser Ala Asn Ser Ile Ser Ser Ser Thr Ser Ser Asn His Ser
1               5                  10                  15

Gly His Thr Pro Glu Pro Pro Leu Pro Pro Val Gly Gly Asp Leu Ala
            20                  25                  30

Ser Arg Leu Ser Ser Asp Glu Gly Glu Met Asp Gly Ala Asp Glu Ser
        35                  40                  45

Glu Lys Leu Asp Cys Gln Phe Ser Thr His His Pro Arg Pro Leu Ala
    50                  55                  60

Phe Cys Ser Phe Gly Ser Arg Leu Met Gly Arg Gly Tyr Tyr Val Phe
65                  70                  75                  80

Asp Arg Arg Trp Asp Arg Phe Arg Phe Ala Leu Asn Ser Met Val Glu
                85                  90                  95

Lys His Leu Asn Ser Gln Met Trp Lys His Arg Asn Pro Ser His Arg
            100                 105                 110

Ala Ser Gly Pro Ser Pro Leu Phe Arg Thr Cys Leu Thr Asn Leu Leu
        115                 120                 125

Ser Leu Ser Asn Ile Gly Ala Ala Trp Val Ser Thr Leu Glu Ser Val
    130                 135                 140

Ala Pro Arg Tyr Pro Leu Asn Leu Ala Ala Gln Thr Pro Gly Pro Gly
145                 150                 155                 160

Gly Pro Glu Pro Gly Gly Met Ala Ala Asp Gly Gly Val Glu Asp Ile
                165                 170                 175

Arg Lys Lys Arg Asn Gly Gln Asp Ser Phe Phe Phe Asn Lys His Leu
            180                 185                 190

Thr Leu His Gln Glu Pro Pro Thr Gln Tyr Ser Leu Ser Ala Arg Lys
```

```
        195                 200                 205

Ile Pro Pro Ala Ala Asp Ser Pro Leu Pro Ser Pro Ala Ala His Ile
    210                 215                 220

Thr Thr Pro Val Pro Ala Ser Val Leu Gln Pro Phe Ser Asn Pro Ser
225                 230                 235                 240

Ala Val Tyr Leu Pro Ser Ala Pro Ile Ser Ser Arg Leu Thr Ser Ser
                245                 250                 255

Tyr Ile Met Thr Ser Ala Met Leu Ser Asn Ala Ala Phe Val Thr Ser
            260                 265                 270

Pro Asp Pro Ser Ala Leu Met Ser His Thr Thr Ala Phe Pro His Val
        275                 280                 285

Ala Ala Thr Leu Ser Ile Met Asp Ser Thr Phe Lys Ala Pro Ser Ala
    290                 295                 300

Val Ser Pro Ile Pro Ala Val Ile Pro Ser Pro Ser His Lys Pro Ser
305                 310                 315                 320

Lys Thr Lys Thr Ser Lys Ser Ser Lys Val Lys Asp Leu Ser Thr Arg
                325                 330                 335

Ser Asp Glu Ser Pro Ser Asn Lys Lys Arg Lys Pro Gln Ser Ser Thr
            340                 345                 350

Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Ser Leu Gln Thr Ser Leu Ser
        355                 360                 365

Ser Pro Leu Ser Gly Pro His Lys Lys Asn Cys Val Leu Asn Ala Ser
    370                 375                 380

Ser Ala Leu Asn Ser Tyr Gln Ala Ala Pro Pro Tyr Asn Ser Leu Ser
385                 390                 395                 400

Val His Asn Ser Asn Asn Gly Val Ser Pro Leu Ser Ala Lys Leu Glu
                405                 410                 415

Pro Ser Gly Arg Thr Ser Leu Pro Gly Gly Pro Ala Asp Ile Val Arg
            420                 425                 430
```

```
Gln Val Gly Ala Val Gly Gly Ser Ser Asp Ser Cys Pro Leu Ser Val
        435                 440                 445

Pro Ser Leu Ala Leu His Ala Gly Asp Leu Ser Leu Ala Ser His Asn
    450                 455                 460

Ala Val Ser Ser Leu Pro Leu Ser Phe Asp Lys Ser Glu Gly Lys Lys
465                 470                 475                 480

Arg Lys Asn Ser Ser Ser Ser Ser Lys Ala Cys Lys Ile Thr Lys Met
                485                 490                 495

Pro Gly Met Asn Ser Val His Lys Lys Asn Pro Pro Ser Leu Leu Ala
            500                 505                 510

Pro Val Pro Asp Pro Val Asn Ser Thr Ser Ser Arg Gln Val Arg Asp
        515                 520                 525

Leu Leu Ala Pro Pro Ser Pro Ala Leu Gly Gly Arg Gly Ser Trp Ala
    530                 535                 540

Ala Pro Leu Leu Ser Arg Ala Ala Pro Thr Gly Asn Thr Ser Leu Ile
545                 550                 555                 560

Pro Val Leu Val Phe Pro Glu Gly Ser Phe His Pro Leu Leu
                565                 570
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<210> 6939
<211> 743
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
ataxin 7-like 1; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000419566"

<400> 6939

```
Met Cys Arg Pro Ser Pro Ser Pro Val Ser Pro Ala Ser Asn Pro Arg
1               5                  10                  15

Thr Ser Leu Val Gln Val Lys Thr Lys Ala Cys Leu Ser Gly His His
            20                  25                  30

Ser Ala Ser Ser Thr Ser Lys Pro Phe Lys Thr Pro Lys Asp Asn Leu
        35                  40                  45

Leu Thr Ser Ser Ser Lys Gln His Thr Val Phe Pro Ala Lys Gly Ser
    50                  55                  60

Arg Asp Lys Pro Cys Val Pro Val Pro Val Val Ser Leu Glu Lys Ile
65                  70                  75                  80

Pro Asn Leu Val Lys Ala Asp Gly Ala Asn Val Lys Met Asn Ser Thr
                85                  90                  95

Thr Thr Thr Ala Val Ser Ala Ser Ser Thr Ser Ser Ser Ala Val Ser
            100                 105                 110

Thr Pro Pro Leu Ile Lys Pro Val Leu Met Ser Lys Ser Val Pro Pro
        115                 120                 125

Ser Pro Glu Lys Ile Leu Asn Gly Lys Gly Ile Leu Pro Thr Thr Ile
    130                 135                 140

Asp Lys Lys His Gln Asn Gly Thr Lys Asn Ser Asn Lys Pro Tyr Arg
145                 150                 155                 160

Arg Leu Ser Glu Arg Glu Phe Asp Pro Asn Lys His Cys Gly Val Leu
                165                 170                 175

Asp Pro Glu Thr Lys Lys Pro Cys Thr Arg Ser Leu Thr Cys Lys Thr
            180                 185                 190

His Ser Leu Ser His Arg Arg Ala Val Pro Gly Arg Lys Lys Gln Phe
        195                 200                 205

Asp Leu Leu Leu Ala Glu His Lys Ala Lys Ser Arg Glu Lys Glu Val
```

```
    210                 215                 220

Lys Asp Lys Glu His Leu Leu Thr Ser Thr Arg Glu Ile Leu Pro Ser
225                 230                 235                 240

Gln Ser Gly Pro Ala Gln Asp Ser Leu Leu Gly Ser Ser Gly Ser Ser
                245                 250                 255

Gly Pro Glu Pro Lys Val Ala Ser Pro Ala Lys Ser Arg Pro Pro Asn
            260                 265                 270

Ser Val Leu Pro Arg Pro Ser Ser Ala Asn Ser Ile Ser Ser Ser Thr
        275                 280                 285

Ser Ser Asn His Ser Gly His Thr Pro Glu Pro Pro Leu Pro Pro Val
    290                 295                 300

Gly Gly Asp Leu Ala Ser Arg Leu Ser Ser Asp Glu Gly Glu Met Asp
305                 310                 315                 320

Gly Ala Asp Glu Ser Glu Lys Leu Asp Cys Gln Phe Ser Thr His His
                325                 330                 335

Pro Arg Pro Leu Ala Phe Cys Ser Phe Gly Ser Arg Leu Met Gly Arg
            340                 345                 350

Gly Tyr Tyr Val Phe Asp Arg Arg Trp Asp Arg Phe Arg Phe Ala Leu
        355                 360                 365

Asn Ser Met Val Glu Lys His Leu Asn Ser Gln Met Trp Lys Lys Ile
    370                 375                 380

Pro Pro Ala Ala Asp Ser Pro Leu Pro Ser Pro Ala Ala His Ile Thr
385                 390                 395                 400

Thr Pro Val Pro Ala Ser Val Leu Gln Pro Phe Ser Asn Pro Ser Ala
                405                 410                 415

Val Tyr Leu Pro Ser Ala Pro Ile Ser Ser Arg Leu Thr Ser Ser Tyr
            420                 425                 430

Ile Met Thr Ser Ala Met Leu Ser Asn Ala Ala Phe Val Thr Ser Pro
        435                 440                 445
```

```
Asp Pro Ser Ala Leu Met Ser His Thr Thr Ala Phe Pro His Val Ala
    450                 455                 460

Ala Thr Leu Ser Ile Met Asp Ser Thr Phe Lys Ala Pro Ser Ala Val
465                 470                 475                 480

Ser Pro Ile Pro Ala Val Ile Pro Ser Pro Ser His Lys Pro Ser Lys
                485                 490                 495

Thr Lys Thr Ser Lys Ser Ser Lys Val Lys Asp Leu Ser Thr Arg Ser
            500                 505                 510

Asp Glu Ser Pro Ser Asn Lys Lys Arg Lys Pro Gln Ser Ser Thr Ser
        515                 520                 525

Ser Ser Ser Ser Ser Ser Ser Ser Ser Leu Gln Thr Ser Leu Ser Ser
    530                 535                 540

Pro Leu Ser Gly Pro His Lys Lys Asn Cys Val Leu Asn Ala Ser Ser
545                 550                 555                 560

Ala Leu Asn Ser Tyr Gln Ala Ala Pro Pro Tyr Asn Ser Leu Ser Val
                565                 570                 575

His Asn Ser Asn Asn Gly Val Ser Pro Leu Ser Ala Lys Leu Glu Pro
            580                 585                 590

Ser Gly Arg Thr Ser Leu Pro Gly Gly Pro Ala Asp Ile Val Arg Gln
        595                 600                 605

Val Gly Ala Val Gly Gly Ser Ser Asp Ser Cys Pro Leu Ser Val Pro
    610                 615                 620

Ser Leu Ala Leu His Ala Gly Asp Leu Ser Leu Ala Ser His Asn Ala
625                 630                 635                 640

Val Ser Ser Leu Pro Leu Ser Phe Asp Lys Ser Glu Gly Lys Lys Arg
                645                 650                 655

Lys Asn Ser Ser Ser Ser Ser Lys Ala Cys Lys Ile Thr Lys Met Pro
            660                 665                 670
```

```
Gly Met Asn Ser Val His Lys Lys Asn Pro Pro Ser Leu Leu Ala Pro
        675                 680                 685

Val Pro Asp Pro Val Asn Ser Thr Ser Ser Arg Gln Val Arg Asp Leu
    690                 695                 700

Leu Ala Pro Pro Ser Pro Ala Leu Gly Gly Arg Gly Ser Trp Ala Ala
705                 710                 715                 720

Pro Leu Leu Ser Arg Ala Ala Pro Thr Gly Asn Thr Ser Leu Ile Pro
                725                 730                 735

Val Leu Val Phe Pro Glu Gly
            740


<210> 6940
<211> 68
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ATXN7L1; "

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<221> source
<223> /note="Gene Name:
      ataxin 7-like 1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420483"

<400> 6940
Met Cys Arg Pro Ser Pro Ser Pro Val Ser Pro Ala Ser Asn Pro Arg
1               5                   10                  15

Thr Ser Leu Val Gln Val Lys Thr Lys Ala Cys Leu Ser Gly His His
            20                  25                  30

Ser Ala Ser Ser Thr Ser Lys Pro Phe Lys Thr Pro Lys Asp Asn Leu
        35                  40                  45

Leu Thr Ser Ser Ser Lys Gln His Thr Val Phe Pro Ala Lys Gly Ser
```

50 55 60

Arg Asp Lys Pro
65

<210> 6941
<211> 722
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1481; "

<220>
<221> source
<223> /note="Gene Symbol: ATXN7L2; "

<220>
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<223> /note="Gene Name:
ataxin 7-like 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q5T6C5; "

<220>
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<223> /note="ENSP ID: ENSP00000358886"

<400> 6941
Met Ala Val Arg Glu Arg Ala Ala Ala Ala Met Ala Ala Leu Glu Arg
1 5 10 15

Arg Val Pro Ser Leu Asp Asp Phe Ala Gly Gln Ser Trp Ser Ser Trp
20 25 30

Val Glu Arg Ala Asp Leu Pro Ala Ala Asp Gly Ala Glu Leu Glu Glu
35 40 45

Ser Ser Lys Asn Thr Lys Lys Leu Asp Ala Met Thr Leu Ile Lys Glu
50 55 60

Asp Met Ser Ile Phe Gly His Cys Pro Ala His Asp Asp Phe Tyr Leu
65 70 75 80

Val Val Cys Asn His Cys Ser Gln Val Val Lys Pro Gln Ala Phe Gln
85 90 95

```
Lys His Cys Glu Arg Arg His Gly Pro Leu Ser Lys Leu Tyr Gly Arg
            100                 105                 110

Ala Pro Pro Pro Pro Pro Ala Pro Ala Ser Ser Gln Lys Cys His Val
        115                 120                 125

Val Asn Gly Gln Gly Pro Ala Cys Arg Ala Pro Gly Ser Thr Lys Thr
    130                 135                 140

Ser Ser Arg Glu Lys Gly Gln Gly Ser Arg Ser Arg Gly His Gln Pro
145                 150                 155                 160

Pro Glu Lys Thr Gln Lys Asp Asn Leu Cys Gln Pro Gly Gly Leu Thr
                165                 170                 175

Lys Asp Ser Pro Gly Lys Pro Pro Met Ala Pro Pro Ser Lys Glu Pro
            180                 185                 190

Pro Gly Arg Glu Asn Ile Glu Ile Ile Pro Ser Glu Gly Ser Ser His
        195                 200                 205

Trp Ala Glu Gly Ser Pro Pro Glu Lys Glu Pro Ser Gly Thr Arg Leu
    210                 215                 220

Pro Pro Lys Thr His Arg Lys Met Ala Arg Lys Glu Cys Asp Leu Asn
225                 230                 235                 240

Arg Gln Cys Gly Val Ile Asn Pro Glu Thr Lys Lys Ile Cys Thr Arg
                245                 250                 255

Leu Leu Thr Cys Lys Ile His Ser Val His Gln Arg Arg Glu Val Gln
            260                 265                 270

Gly Arg Ala Lys Asp Phe Asp Val Leu Val Ala Glu Leu Lys Ala Asn
        275                 280                 285

Ser Arg Lys Gly Glu Ser Pro Lys Glu Lys Ser Pro Gly Arg Lys Glu
    290                 295                 300

Gln Val Leu Glu Arg Pro Ser Gln Glu Leu Pro Ser Ser Val Gln Val
305                 310                 315                 320
```

```
Val Ala Ala Val Ala Ala Pro Ser Ser Thr Phe Ser Val Arg Ala Lys
                325                 330                 335

Gln Thr Tyr Pro Tyr Cys Ala Leu Pro Arg Ser Arg Ala Ser Ser Glu
            340                 345                 350

Ser Glu Leu Asp Asp Glu Gly Pro Cys Gly Gly Asp Gly Asp Pro Gly
        355                 360                 365

Leu Phe Pro Phe Pro Met Pro Arg Gly Gly Thr Gln Ala Ser Ser Glu
    370                 375                 380

Glu Ser Glu Glu Glu Gly Thr Ser Asp Asp Leu His Pro Pro Pro Asp
385                 390                 395                 400

Cys His Tyr Ala Thr Arg Pro Pro Arg Pro Gln Ala Phe Cys Thr Phe
                405                 410                 415

Gly Ser Arg Leu Val Ser Pro Gly Cys Tyr Val Phe Ser Arg Arg Leu
            420                 425                 430

Asp Arg Phe Cys Ser Ala Leu Ser Ser Met Leu Glu Arg His Leu Ser
        435                 440                 445

Thr His Met Trp Lys Lys Ile Pro Pro Ala Ala Glu Pro Pro Ala His
    450                 455                 460

Leu Val Asn Ser Pro Leu Ser Ala Pro Leu Ser Pro Ser Ser Thr Gly
465                 470                 475                 480

Thr Cys Pro Arg Leu Pro Gly Pro Thr Leu Arg Pro Ala Cys Pro Ala
                485                 490                 495

Ser Met Pro Pro Thr Lys Asp Asn Leu Val Pro Ser Tyr Pro Ala Gly
            500                 505                 510

Ser Pro Ser Val Ala Ala Ala Cys Ser Gln Ala Glu Cys Met Gly Gly
        515                 520                 525

Ser Gln Ala Ile Thr Ser Pro Leu Pro Ala Asn Thr Pro Ser Pro Ser
    530                 535                 540

Phe Ser Lys Leu Pro Pro Ser Lys Ala Ser Lys Ser Ser Lys Gly Lys
```

```
545                 550                 555                 560

Asp Gly Val Glu Val Glu Ala Pro Ser Arg Lys Arg Lys Leu Ser Pro
                565                 570                 575

Gly Pro Thr Thr Leu Lys Arg Thr Cys Ile Leu Glu Pro Thr Gly Lys
            580                 585                 590

Gly Lys Pro Ser Gly Cys Arg Gly Leu Ser Ala Lys Thr Lys Thr Ala
        595                 600                 605

Leu Ser Met Gly Leu Asn Gly Thr Met Gly Pro Arg Val Lys Arg Ala
    610                 615                 620

Gly Pro Leu Asp Cys Arg Gly Ser Pro His Gln Leu Pro Thr Pro Val
625                 630                 635                 640

Lys Ala Ser Gln Leu Glu Asn Arg Gly Ala Ala Gly His Pro Ala Lys
                645                 650                 655

Ala Leu Pro Thr Asn Cys Leu Ser Glu Glu Glu Val Ala Lys Lys Arg
            660                 665                 670

Lys Asn Leu Ala Thr Tyr Cys Arg Pro Val Lys Ala Lys His Cys Gln
        675                 680                 685

Ala Gly Ala Pro Ala Asp Val Ala Cys Ser Val Arg Arg Lys Lys Pro
    690                 695                 700

Gly Pro Ala Leu Ala Phe Glu Glu Lys Cys Ser Thr Leu Lys Ser Lys
705                 710                 715                 720

Ala His
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<210> 6942
<211> 103
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1481; "

<220>

<221> source
<223> /note="Gene Symbol: ATXN7L2; "

<220>
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<223> /note="Gene Name:
ataxin 7-like 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000474312"

<400> 6942
Met Ala Val Arg Glu Arg Ala Ala Ala Ala Met Ala Ala Leu Glu Arg
1 5 10 15

Arg Val Pro Ser Leu Asp Asp Phe Ala Gly Gln Ser Trp Ser Ser Trp
20 25 30

Val Glu Arg Ala Asp Leu Pro Ala Ala Asp Glu Thr Glu Val Gln Gly
35 40 45

Gln Pro Leu Pro Lys Gly Pro Leu Arg Arg Gly Gly Thr Cys Ile Ala
50 55 60

Asp Gln Gly Asp Phe Glu Asp Ala Gln Gly Pro Lys Thr Ala Val Ser
65 70 75 80

Leu Leu Cys Asp His Pro Ile Ser Ala Gly Pro Glu Lys Leu Gly Val
85 90 95

Thr Leu Thr Met Leu Trp Gly
100

<210> 6943
<211> 580
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1481; "

<220>
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<223> /note="Gene Symbol: ATXN7L2; "

<220>
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<223> /note="Gene Name:

ataxin 7-like 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000484134"

<400> 6943

```
Met Ala Val Arg Glu Arg Ala Ala Ala Ala Met Ala Ala Leu Glu Arg
1               5                   10                  15

Arg Val Pro Ser Leu Asp Asp Phe Ala Gly Gln Ser Trp Ser Ser Trp
            20                  25                  30

Val Glu Arg Ala Asp Leu Pro Ala Ala Asp Gly Ala Glu Leu Glu Glu
        35                  40                  45

Ser Ser Lys Asn Thr Lys Lys Leu Asp Ala Met Thr Leu Ile Lys Glu
    50                  55                  60

Asp Met Ser Ile Phe Gly His Cys Pro Ala His Asp Asp Phe Tyr Leu
65                  70                  75                  80

Val Val Cys Asn His Cys Ser Gln Val Val Lys Pro Gln Ala Phe Gln
                85                  90                  95

Lys His Cys Glu Arg Arg His Gly Pro Leu Ser Lys Leu Tyr Gly Arg
            100                 105                 110

Ala Pro Pro Pro Pro Pro Ala Pro Ala Ser Ser Gln Lys Cys His Val
        115                 120                 125

Val Asn Gly Gln Gly Pro Ala Cys Arg Ala Pro Gly Ser Thr Lys Thr
    130                 135                 140

Ser Ser Arg Glu Lys Gly Gln Gly Ser Arg Ser Arg Gly His Gln Pro
145                 150                 155                 160

Pro Glu Lys Thr Gln Lys Asp Asn Leu Cys Gln Pro Gly Gly Leu Thr
                165                 170                 175

Lys Asp Ser Pro Gly Lys Pro Pro Met Ala Pro Pro Ser Lys Glu Pro
            180                 185                 190

Pro Gly Arg Glu Asn Ile Glu Ile Ile Pro Ser Glu Gly Ser Ser His
        195                 200                 205
```

```
Trp Ala Glu Gly Ser Pro Pro Glu Lys Glu Pro Ser Gly Thr Arg Leu
    210                 215                 220

Pro Pro Lys Thr His Arg Lys Met Ala Arg Lys Glu Cys Asp Leu Asn
225                 230                 235                 240

Arg Gln Cys Gly Val Ile Asn Pro Glu Thr Lys Lys Ile Cys Thr Arg
                245                 250                 255

Leu Leu Thr Cys Lys Ile His Ser Val His Gln Arg Arg Glu Val Gln
            260                 265                 270

Gly Arg Ala Lys Asp Phe Asp Val Leu Val Ala Glu Leu Lys Ala Asn
        275                 280                 285

Ser Arg Lys Gly Glu Ser Pro Lys Glu Lys Ser Pro Gly Arg Lys Glu
    290                 295                 300

Gln Val Leu Glu Arg Pro Ser Gln Glu Leu Pro Ser Ser Val Gln Val
305                 310                 315                 320

Val Ala Ala Val Ala Ala Pro Ser Ser Thr Phe Ser Val Arg Ala Lys
                325                 330                 335

Gln Thr Tyr Pro Tyr Cys Ala Leu Pro Arg Ser Arg Ala Ser Ser Glu
            340                 345                 350

Ser Glu Leu Asp Asp Glu Gly Pro Cys Gly Gly Asp Gly Asp Pro Gly
        355                 360                 365

Leu Phe Pro Phe Pro Met Pro Arg Gly Gly Thr Gln Ala Ser Ser Glu
    370                 375                 380

Glu Ser Glu Glu Glu Gly Thr Ser Asp Asp Leu His Pro Pro Pro Asp
385                 390                 395                 400

Cys His Tyr Ala Thr Arg Pro Pro Arg Pro Gln Ala Phe Cys Thr Phe
                405                 410                 415

Gly Ser Arg Leu Val Ser Pro Gly Cys Tyr Val Phe Ser Arg Arg Leu
            420                 425                 430
```

```
Asp Arg Phe Cys Ser Ala Leu Ser Ser Met Leu Glu Arg His Leu Ser
        435                 440                 445

Thr His Met Trp Lys Lys Ile Pro Pro Ala Ala Glu Pro Pro Ala His
    450                 455                 460

Leu Val Asn Ser Pro Leu Ser Ala Pro Leu Ser Pro Ser Ser Thr Gly
465                 470                 475                 480

Thr Cys Pro Arg Leu Pro Gly Pro Thr Leu Arg Pro Ala Cys Pro Ala
                485                 490                 495

Ser Met Pro Pro Thr Lys Asp Asn Leu Val Pro Ser Tyr Pro Ala Gly
            500                 505                 510

Ser Pro Ser Val Ala Ala Ala Cys Ser Gln Ala Glu Cys Met Gly Glu
        515                 520                 525

Pro Gly Tyr His Leu Thr Thr Ala Cys Gln His Ala Ile Pro Val Leu
    530                 535                 540

Gln Gln Ala Ala Ala Phe Gln Gly Gln Gln Val Ile Gln Arg Gln Gly
545                 550                 555                 560

Arg Gly Gly Gly Gly Gly Pro Phe Ser Lys Ala Glu Val Ile Pro Trp
                565                 570                 575

Pro Tyr His Ser
            580


<210> 6944
<211> 347
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1482; "

<220>
<221> source
<223> /note="Gene Symbol: ATXN7L3; "

<220>
<221> source
<223> /note="Gene Name:
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ataxin 7-like 3; "

<220>
<221> source
<223> /note="Uniprot ID: Q14CW9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000374035"

<400> 6944
Met Lys Met Glu Glu Met Ser Leu Ser Gly Leu Asp Asn Ser Lys Leu
1   5   10   15

Glu Ala Ile Ala Gln Glu Ile Tyr Ala Asp Leu Val Glu Asp Ser Cys
            20   25   30

Leu Gly Phe Cys Phe Glu Val His Arg Ala Val Lys Cys Gly Tyr Phe
        35   40   45

Phe Leu Asp Asp Thr Asp Pro Asp Ser Met Lys Asp Phe Glu Ile Val
    50   55   60

Asp Gln Pro Gly Leu Asp Ile Phe Gly Gln Val Phe Asn Gln Trp Lys
65   70   75   80

Ser Lys Glu Cys Val Cys Pro Asn Cys Ser Arg Ser Ile Ala Ala Ser
                85   90   95

Arg Phe Ala Pro His Leu Glu Lys Cys Leu Gly Met Gly Arg Asn Ser
            100   105   110

Ser Arg Ile Ala Asn Arg Arg Ile Ala Asn Ser Asn Asn Met Asn Lys
        115   120   125

Ser Glu Ser Asp Gln Glu Asp Asn Asp Asp Ile Asn Asp Asn Asp Trp
    130   135   140

Ser Tyr Gly Ser Glu Lys Lys Ala Lys Lys Arg Lys Ser Asp Lys Asn
145   150   155   160

Pro Asn Ser Pro Arg Arg Ser Lys Ser Leu Lys His Lys Asn Gly Glu
                165   170   175

Leu Ser Asn Ser Asp Pro Phe Lys Tyr Asn Asn Ser Thr Gly Ile Ser
            180   185   190

```
Tyr Glu Thr Leu Gly Pro Glu Glu Leu Arg Ser Leu Leu Thr Thr Gln
        195                 200                 205

Cys Gly Val Ile Ser Glu His Thr Lys Lys Met Cys Thr Arg Ser Leu
    210                 215                 220

Arg Cys Pro Gln His Thr Asp Glu Gln Arg Arg Thr Val Arg Ile Tyr
225                 230                 235                 240

Phe Leu Gly Pro Ser Ala Val Leu Pro Glu Val Glu Ser Ser Leu Asp
                245                 250                 255

Asn Asp Ser Phe Asp Met Thr Asp Ser Gln Ala Leu Ile Ser Arg Leu
            260                 265                 270

Gln Trp Asp Gly Ser Ser Asp Leu Ser Pro Ser Asp Ser Gly Ser Ser
        275                 280                 285

Lys Thr Ser Glu Asn Gln Gly Trp Gly Leu Gly Thr Asn Ser Ser Glu
    290                 295                 300

Ser Arg Lys Thr Lys Lys Lys Lys Ser His Leu Ser Leu Val Gly Thr
305                 310                 315                 320

Ala Ser Gly Leu Gly Ser Asn Lys Lys Lys Lys Pro Lys Pro Pro Ala
                325                 330                 335

Pro Pro Thr Pro Ser Ile Tyr Asp Asp Ile Asn
            340                 345


<210> 6945
<211> 354
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1482; "

<220>
<221> source
<223> /note="Gene Symbol: ATXN7L3; "

<220>
<221> source
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<223> /note="Gene Name:
ataxin 7-like 3; "

<220>
<221> source
<223> /note="Uniprot ID: Q14CW9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000397259"

<400> 6945

```
Met Lys Met Glu Glu Met Ser Leu Ser Gly Leu Asp Asn Ser Lys Leu
1               5                  10                  15

Glu Ala Ile Ala Gln Glu Ile Tyr Ala Asp Leu Val Glu Asp Ser Cys
            20                  25                  30

Leu Gly Phe Cys Phe Glu Val His Arg Ala Val Lys Cys Gly Tyr Phe
        35                  40                  45

Phe Leu Asp Asp Thr Asp Pro Asp Ser Met Lys Asp Phe Glu Ile Val
    50                  55                  60

Asp Gln Pro Gly Leu Asp Ile Phe Gly Gln Val Phe Asn Gln Trp Lys
65                  70                  75                  80

Ser Lys Glu Cys Val Cys Pro Asn Cys Ser Arg Ser Ile Ala Ala Ser
                85                  90                  95

Arg Phe Ala Pro His Leu Glu Lys Cys Leu Gly Met Gly Arg Asn Ser
            100                 105                 110

Ser Arg Ile Ala Asn Arg Arg Ile Ala Asn Ser Asn Asn Met Asn Lys
        115                 120                 125

Ser Glu Ser Asp Gln Glu Asp Asn Asp Asp Ile Asn Asp Asn Asp Trp
    130                 135                 140

Ser Tyr Gly Ser Glu Lys Lys Ala Lys Lys Arg Lys Ser Asp Lys Leu
145                 150                 155                 160

Trp Tyr Leu Pro Phe Gln Asn Pro Asn Ser Pro Arg Arg Ser Lys Ser
                165                 170                 175

Leu Lys His Lys Asn Gly Glu Leu Ser Asn Ser Asp Pro Phe Lys Tyr
```

```
            180                 185                 190

Asn Asn Ser Thr Gly Ile Ser Tyr Glu Thr Leu Gly Pro Glu Glu Leu
        195                 200                 205

Arg Ser Leu Leu Thr Thr Gln Cys Gly Val Ile Ser Glu His Thr Lys
    210                 215                 220

Lys Met Cys Thr Arg Ser Leu Arg Cys Pro Gln His Thr Asp Glu Gln
225                 230                 235                 240

Arg Arg Thr Val Arg Ile Tyr Phe Leu Gly Pro Ser Ala Val Leu Pro
                245                 250                 255

Glu Val Glu Ser Ser Leu Asp Asn Asp Ser Phe Asp Met Thr Asp Ser
            260                 265                 270

Gln Ala Leu Ile Ser Arg Leu Gln Trp Asp Gly Ser Ser Asp Leu Ser
        275                 280                 285

Pro Ser Asp Ser Gly Ser Ser Lys Thr Ser Glu Asn Gln Gly Trp Gly
    290                 295                 300

Leu Gly Thr Asn Ser Ser Glu Ser Arg Lys Thr Lys Lys Lys Lys Ser
305                 310                 315                 320

His Leu Ser Leu Val Gly Thr Ala Ser Gly Leu Gly Ser Asn Lys Lys
                325                 330                 335

Lys Lys Pro Lys Pro Pro Ala Pro Pro Thr Pro Ser Ile Tyr Asp Asp
            340                 345                 350

Ile Asn


<210> 6946
<211> 72
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1482; "

<220>
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<221> source
<223> /note="Gene Symbol: ATXN7L3; "

<220>
<221> source
<223> /note="Gene Name:
ataxin 7-like 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000465210"

<400> 6946
Met Cys Thr Arg Ser Leu Arg Cys Pro Gln His Thr Asp Glu Gln Arg
1 5 10 15

Arg Thr Val Arg Ile Tyr Phe Leu Gly Pro Ser Ala Val Leu Pro Glu
20 25 30

Val Glu Ser Ser Leu Asp Asn Asp Ser Phe Asp Met Thr Asp Ser Gln
35 40 45

Ala Leu Ile Ser Arg Leu Gln Trp Asp Gly Ser Ser Asp Leu Ser Pro
50 55 60

Ser Asp Ser Gly Ser Ser Lys Thr
65 70

<210> 6947
<211> 308
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1482; "

<220>
<221> source
<223> /note="Gene Symbol: ATXN7L3; "

<220>
<221> source
<223> /note="Gene Name:
ataxin 7-like 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000465614"

<400> 6947
Met Lys Met Glu Glu Met Ser Leu Ser Gly Leu Asp Asn Ser Lys Leu

```
1               5                   10                  15

Glu Ala Ile Ala Gln Glu Ile Tyr Ala Asp Leu Val Glu Asp Ser Cys
            20                  25                  30

Leu Gly Phe Cys Phe Glu Val His Arg Ala Val Lys Cys Gly Tyr Phe
        35                  40                  45

Phe Leu Asp Asp Thr Asp Pro Asp Ser Met Lys Asp Phe Glu Ile Val
    50                  55                  60

Asp Gln Pro Gly Leu Asp Ile Phe Gly Gln Val Phe Asn Gln Trp Lys
65                  70                  75                  80

Ser Lys Glu Cys Val Cys Pro Asn Cys Ser Arg Ser Ile Ala Ala Ser
                85                  90                  95

Arg Phe Ala Pro His Leu Glu Lys Cys Leu Gly Met Gly Arg Asn Ser
            100                 105                 110

Ser Arg Ile Ala Asn Arg Arg Ile Ala Asn Ser Asn Asn Met Asn Lys
        115                 120                 125

Ser Glu Ser Asp Gln Glu Asp Asn Asp Asp Ile Asn Asp Asn Asp Trp
    130                 135                 140

Ser Tyr Gly Ser Glu Lys Lys Ala Lys Lys Arg Lys Ser Asp Lys Asn
145                 150                 155                 160

Pro Asn Ser Pro Arg Arg Ser Lys Ser Leu Lys His Lys Asn Gly Glu
                165                 170                 175

Leu Ser Asn Ser Asp Pro Phe Lys Tyr Asn Asn Ser Thr Gly Ile Ser
            180                 185                 190

Tyr Glu Thr Leu Gly Pro Glu Glu Leu Arg Ser Leu Leu Thr Thr Gln
        195                 200                 205

Cys Gly Val Ile Ser Glu His Thr Lys Lys Met Cys Thr Arg Ser Leu
    210                 215                 220

Arg Cys Pro Gln His Thr Asp Glu Gln Arg Arg Thr Val Arg Ile Tyr
225                 230                 235                 240
```

```
Phe Leu Gly Pro Ser Ala Val Leu Pro Glu Val Glu Ser Ser Leu Asp
                245                 250                 255

Asn Asp Ser Phe Asp Met Thr Asp Ser Gln Ala Leu Ile Ser Arg Leu
            260                 265                 270

Gln Trp Asp Gly Ser Ser Asp Leu Ser Pro Ser Asp Ser Gly Ser Ser
        275                 280                 285

Lys Thr Ser Glu Asn Gln Gly Trp Gly Leu Gly Thr Asn Ser Ser Glu
    290                 295                 300

Ser Arg Lys Thr
305
```

<210> 6948
<211> 139
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1482; "

<220>
<221> source
<223> /note="Gene Symbol: ATXN7L3; "

<220>
<221> source
<223> /note="Gene Name:
ataxin 7-like 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466717"

<400> 6948

```
Met Lys Met Glu Glu Met Ser Leu Ser Gly Leu Asp Asn Ser Lys Leu
1               5                   10                  15

Glu Ala Ile Ala Gln Glu Ile Tyr Ala Asp Leu Val Glu Asp Ser Cys
            20                  25                  30

Leu Gly Phe Cys Phe Glu Val His Arg Ala Val Lys Cys Gly Tyr Phe
        35                  40                  45
```

```
Phe Leu Asp Asp Thr Asp Pro Asp Ser Met Lys Asp Phe Glu Ile Val
    50                  55                  60

Asp Gln Pro Gly Leu Asp Ile Phe Gly Gln Val Phe Asn Gln Trp Lys
65                  70                  75                  80

Ser Lys Glu Cys Val Cys Pro Asn Cys Ser Arg Ser Ile Ala Ala Ser
                85                  90                  95

Arg Phe Ala Pro His Leu Glu Lys Cys Leu Gly Met Gly Arg Asn Ser
            100                 105                 110

Ser Arg Ile Ala Asn Arg Arg Ile Ala Asn Ser Asn Asn Met Asn Lys
        115                 120                 125

Ser Glu Ser Asp Gln Glu Asp Asn Asp Asp Ile
    130                 135


<210> 6949
<211> 186
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1482; "

<220>
<221> source
<223> /note="Gene Symbol: ATXN7L3; "

<220>
<221> source
<223> /note="Gene Name:
      ataxin 7-like 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467092"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6949
Xaa Ser Leu Lys His Lys Asn Gly Glu Leu Ser Asn Ser Asp Pro Phe
1               5                   10                  15
```

```
Lys Tyr Asn Asn Ser Thr Gly Ile Ser Tyr Glu Thr Leu Gly Pro Glu
            20                  25                  30

Glu Leu Arg Ser Leu Leu Thr Thr Leu Ile Phe Leu Phe Gln Gln Cys
        35                  40                  45

Gly Val Ile Ser Glu His Thr Lys Lys Met Cys Thr Arg Ser Leu Arg
    50                  55                  60

Cys Pro Gln His Thr Asp Glu Gln Arg Arg Thr Val Arg Ile Tyr Phe
65                  70                  75                  80

Leu Gly Pro Ser Ala Val Leu Pro Glu Val Glu Ser Ser Leu Asp Asn
                85                  90                  95

Asp Ser Phe Asp Met Thr Asp Ser Gln Ala Leu Ile Ser Arg Leu Gln
            100                 105                 110

Trp Asp Gly Ser Ser Asp Leu Ser Pro Ser Asp Ser Gly Ser Ser Lys
        115                 120                 125

Thr Ser Glu Asn Gln Gly Trp Gly Leu Gly Thr Asn Ser Ser Glu Ser
    130                 135                 140

Arg Lys Thr Lys Lys Lys Lys Ser His Leu Ser Leu Val Gly Thr Ala
145                 150                 155                 160

Ser Gly Leu Gly Ser Asn Lys Lys Lys Lys Pro Lys Pro Pro Ala Pro
                165                 170                 175

Pro Thr Pro Ser Ile Tyr Asp Asp Ile Asn
            180                 185


<210> 6950
<211> 147
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1482; "

<220>
<221> source
<223> /note="Gene Symbol: ATXN7L3; "
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<220>
<221> source
<223> /note="Gene Name:
ataxin 7-like 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467153"

<400> 6950
Met Lys Met Glu Glu Met Ser Leu Ser Gly Leu Asp Asn Ser Lys Leu
1 5 10 15

Glu Ala Ile Ala Gln Glu Ile Tyr Ala Asp Leu Val Glu Asp Ser Cys
20 25 30

Leu Gly Phe Cys Phe Glu Val His Arg Ala Val Lys Cys Gly Tyr Phe
35 40 45

Phe Leu Asp Asp Thr Asp Pro Asp Ser Met Lys Asp Phe Glu Ile Val
50 55 60

Asp Gln Pro Gly Leu Asp Ile Phe Gly Gln Val Phe Asn Gln Trp Lys
65 70 75 80

Ser Lys Glu Cys Val Cys Pro Asn Cys Ser Arg Ser Ile Ala Ala Ser
85 90 95

Arg Phe Ala Pro His Leu Glu Lys Cys Leu Gly Met Gly Arg Asn Ser
100 105 110

Ser Arg Ile Ala Asn Arg Arg Ile Ala Asn Ser Asn Asn Met Asn Lys
115 120 125

Ser Glu Ser Asp Gln Glu Asp Asn Asp Asp Ile Asn Asp Asn Asp Trp
130 135 140

Ser Tyr Gly
145

<210> 6951
<211> 97
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1483; "

<220>
<221> source
<223> /note="Gene Symbol: ATXN7L3B; "

<220>
<221> source
<223> /note="Gene Name:
ataxin 7-like 3B; "

<220>
<221> source
<223> /note="Uniprot ID: Q96GX2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000430000"

<400> 6951
Met Glu Glu Ile Ser Leu Ala Asn Leu Asp Thr Asn Lys Leu Glu Ala
1   5   10   15

Ile Ala Gln Glu Ile Tyr Val Asp Leu Ile Glu Asp Ser Cys Leu Gly
            20   25   30

Phe Cys Phe Glu Val His Arg Ala Val Lys Cys Gly Tyr Phe Tyr Leu
        35   40   45

Glu Phe Ala Glu Thr Gly Ser Val Lys Asp Phe Gly Ile Gln Pro Val
    50   55   60

Glu Asp Lys Gly Ala Cys Arg Leu Pro Leu Cys Ser Leu Pro Gly Glu
65   70   75   80

Pro Gly Asn Gly Pro Asp Gln Gln Leu Gln Arg Ser Pro Pro Glu Phe
                85   90   95

Gln

<210> 6952
<211> 193
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1484; "

<220>
<221> source
<223> /note="Gene Symbol: ATHL1; "

<220>
<221> source
<223> /note="Gene Name:
ATH1, acid trehalase-like 1
(yeast); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000380780"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6952
Xaa Glu Ile Tyr Glu Ala Val Thr Ser Pro Gln Gly Pro Ala Met Thr
1 5 10 15

Trp Ser Met Phe Ala Val Gly Trp Met Glu Leu Lys Asp Ala Val Arg
20 25 30

Ala Arg Gly Leu Leu Asp Arg Ser Phe Ala Asn Met Ala Glu Pro Phe
35 40 45

Lys Val Trp Thr Glu Asn Ala Asp Gly Ser Gly Ala Val Asn Phe Leu
50 55 60

Thr Gly Met Gly Gly Phe Leu Gln Ala Val Val Phe Gly Cys Thr Gly
65 70 75 80

Phe Arg Val Ser Val Ser Gly Ile Phe Tyr Gln Gly Asn Lys Leu Asn
85 90 95

Phe Ser Phe Ser Glu Asp Ser Val Thr Val Glu Val Thr Ala Arg Ala
100 105 110

Gly Pro Trp Ala Pro His Leu Glu Ala Glu Leu Trp Pro Ser Gln Ser
115 120 125

Arg Leu Ser Leu Leu Pro Gly His Lys Val Ser Phe Pro Arg Ser Ala
130 135 140

```
Gly Arg Ile Gln Met Ser Pro Pro Lys Leu Pro Gly Ser Ser Ser Ser
145                 150                 155                 160


Glu Phe Pro Gly Arg Thr Phe Ser Asp Val Arg Asp Pro Leu Gln Ser
                165                 170                 175


Pro Leu Trp Val Thr Leu Gly Ser Ser Ser Pro Thr Glu Ser Leu Thr
            180                 185                 190


Val



<210> 6953
<211> 489
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1484; "

<220>
<221> source
<223> /note="Gene Symbol: ATHL1; "

<220>
<221> source
<223> /note="Gene Name:
      ATH1, acid trehalase-like 1
      (yeast); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000386297"

<400> 6953
Met Leu Trp Thr Pro Ala Pro Pro Asp Leu Thr Leu Gly Glu Gly Glu
1               5                   10                  15


Glu Ala Arg Thr Trp Asp Phe Leu Thr Ala Val Gly Gly Ser Gln Ala
            20                  25                  30


Glu Ala Gln Ala Cys Leu Thr Glu Ala Leu Gln Leu Gln Ala Arg Gly
        35                  40                  45


Ala Leu Tyr Thr Ala His Ala Gln Ala Trp Ala Gln Leu Trp Val Glu
    50                  55                  60


Cys Gly Leu Asp Val Val Gly Pro Leu Gln Leu Arg Gln Ala Leu Arg
```

65 70 75 80

Gly Ser Leu Tyr Tyr Leu Leu Ser Ala Leu Pro Gln Pro Lys Ala Pro
85 90 95

Gly Tyr Ile Cys His Gly Leu Ser Pro Gly Gly Leu Ser Asn Gly Ser
100 105 110

Arg Glu Glu Cys Tyr Trp Gly His Val Phe Trp Asp Gln Asp Leu Trp
115 120 125

Met Phe Pro Ser Ile Leu Met Phe His Pro Glu Ala Ala Arg Ala Ile
130 135 140

Leu Glu Tyr Arg Ile Arg Thr Leu Asp Gly Ala Leu Glu Asn Ala Gln
145 150 155 160

Asn Leu Gly Tyr Gln Gly Ala Lys Phe Ala Trp Glu Ser Ala Asp Ser
165 170 175

Gly Leu Glu Val Cys Pro Glu Asp Ile Tyr Gly Val Gln Glu Val His
180 185 190

Val Asn Gly Ala Val Val Leu Ala Phe Glu Leu Tyr Tyr His Thr Thr
195 200 205

Gln Asp Leu Gln Leu Phe Arg Glu Ala Gly Gly Trp Asp Val Val Arg
210 215 220

Ala Val Ala Glu Phe Trp Cys Ser Arg Val Glu Trp Ser Pro Arg Glu
225 230 235 240

Glu Lys Tyr His Leu Arg Gly Val Met Ser Pro Asp Glu Tyr His Ser
245 250 255

Gly Val Asn Asn Ser Val Tyr Thr Asn Val Leu Val Gln Asn Arg Lys
260 265 270

Asn Leu Glu Ile Tyr Glu Ala Val Thr Ser Pro Gln Gly Pro Ala Met
275 280 285

Thr Trp Ser Met Phe Ala Val Gly Trp Met Glu Leu Lys Asp Ala Val
290 295 300

```
Arg Ala Arg Gly Leu Leu Asp Arg Ser Phe Ala Asn Met Ala Glu Pro
305                 310                 315                 320

Phe Lys Val Trp Thr Glu Asn Ala Asp Gly Ser Gly Ala Val Asn Phe
                325                 330                 335

Leu Thr Gly Met Gly Gly Phe Leu Gln Ala Val Val Phe Gly Cys Thr
            340                 345                 350

Gly Phe Arg Val Thr Arg Ala Gly Val Thr Phe Asp Pro Val Cys Leu
        355                 360                 365

Ser Gly Ile Ser Arg Val Ser Val Ser Gly Ile Phe Tyr Gln Gly Asn
    370                 375                 380

Lys Leu Asn Phe Ser Phe Ser Glu Asp Ser Val Thr Val Glu Val Thr
385                 390                 395                 400

Ala Arg Ala Gly Pro Trp Ala Pro His Leu Glu Ala Glu Leu Trp Pro
                405                 410                 415

Ser Gln Ser Arg Leu Ser Leu Leu Pro Gly His Lys Val Ser Phe Pro
            420                 425                 430

Arg Ser Ala Gly Arg Ile Gln Met Ser Pro Pro Lys Leu Pro Gly Ser
        435                 440                 445

Ser Ser Ser Glu Phe Pro Gly Arg Thr Phe Ser Asp Val Arg Asp Pro
    450                 455                 460

Leu Gln Ser Pro Leu Trp Val Thr Leu Gly Ser Ser Ser Pro Thr Glu
465                 470                 475                 480

Ser Leu Thr Val Asp Pro Ala Ser Glu
                485
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<210> 6954
<211> 764
<212> PRT
<213> Homo sapiens

<220>
<221> source

<223> /note="Payload ID: 1484; "

<220>
<221> source
<223> /note="Gene Symbol: ATHL1; "

<220>
<221> source
<223> /note="Gene Name:
ATH1, acid trehalase-like 1
(yeast); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000387099"

<400> 6954

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Met Glu Asp Ala Gly Glu Asp Pro Thr Thr Phe Ala Ala His Ser Leu
1               5                  10                  15

Pro Ser Asp Pro Arg Leu Leu Ala Thr Val Thr Asn Ala Tyr Leu Gly
            20                  25                  30

Thr Arg Val Phe His Asp Thr Leu His Val Ser Gly Val Tyr Asn Gly
        35                  40                  45

Ala Gly Gly Asp Thr His Arg Ala Met Leu Pro Ser Pro Leu Asn Val
    50                  55                  60

Arg Leu Glu Ala Pro Ala Gly Met Gly Glu Gln Leu Thr Glu Thr Phe
65                  70                  75                  80

Ala Leu Asp Thr Asn Thr Gly Ser Phe Leu His Thr Leu Glu Gly Pro
                85                  90                  95

Arg Phe Arg Ala Ser Gln Cys Ile Tyr Ala His Arg Thr Leu Pro His
            100                 105                 110

Val Leu Ala Phe Arg Val Ser Ile Ala Arg Leu Ala Pro Gly Ser Gly
        115                 120                 125

Pro Ile Thr Leu Leu Leu Arg Ser Ala Phe Ser Pro Glu Ser Pro Asp
    130                 135                 140

Leu Asp Leu His Gln Gly Pro Asp Phe Gln Gly Ala Arg Tyr Leu Tyr
145                 150                 155                 160
```

```
Gly His Thr Leu Thr Pro Glu Gln Pro Gly Gly Pro Gln Gln Glu Val
                165                 170                 175

His Met Leu Trp Thr Pro Ala Pro Pro Asp Leu Thr Leu Gly Glu Gly
            180                 185                 190

Glu Glu Ala Arg Thr Trp Asp Phe Leu Thr Ala Val Gly Gly Ser Gln
        195                 200                 205

Ala Glu Ala Gln Ala Cys Leu Thr Glu Ala Leu Gln Leu Gln Ala Arg
    210                 215                 220

Gly Ala Leu Tyr Thr Ala His Ala Gln Ala Trp Ala Gln Leu Trp Val
225                 230                 235                 240

Glu Cys Gly Leu Asp Val Val Gly Pro Leu Gln Leu Arg Gln Ala Leu
                245                 250                 255

Arg Gly Ser Leu Tyr Tyr Leu Leu Ser Ala Leu Pro Gln Pro Lys Ala
            260                 265                 270

Pro Gly Tyr Ile Cys His Gly Leu Ser Pro Gly Gly Leu Ser Asn Gly
        275                 280                 285

Ser Arg Glu Glu Cys Tyr Trp Gly His Val Phe Trp Asp Gln Asp Leu
    290                 295                 300

Trp Met Phe Pro Ser Ile Leu Met Phe His Pro Glu Ala Ala Arg Ala
305                 310                 315                 320

Ile Leu Glu Tyr Arg Ile Arg Thr Leu Asp Gly Ala Leu Glu Asn Ala
                325                 330                 335

Gln Asn Leu Gly Tyr Gln Gly Ala Lys Phe Ala Trp Glu Ser Ala Asp
            340                 345                 350

Ser Gly Leu Glu Val Cys Pro Glu Asp Ile Tyr Gly Val Gln Glu Val
        355                 360                 365

His Val Asn Gly Ala Val Val Leu Ala Phe Glu Leu Tyr Tyr His Thr
    370                 375                 380

Thr Gln Asp Leu Gln Leu Phe Arg Glu Ala Gly Gly Trp Asp Val Val
```

385 390 395 400

Arg Ala Val Ala Glu Phe Trp Cys Ser Arg Val Glu Trp Ser Pro Arg
405 410 415

Glu Glu Lys His Leu Thr Cys Ala Ser Pro Thr Leu Thr Thr Gly Val
420 425 430

Glu Gly Arg Pro Leu Arg Leu Cys Thr Glu His His Leu Gly Leu Val
435 440 445

Cys Pro Gly Val Met Ser Pro Asp Glu Tyr His Ser Gly Val Asn Asn
450 455 460

Ser Val Tyr Thr Asn Val Leu Val Gln Asn Ser Leu Arg Phe Ala Ala
465 470 475 480

Ala Leu Ala Gln Asp Leu Gly Leu Pro Ile Pro Ser Gln Trp Leu Ala
485 490 495

Val Ala Asp Lys Ile Lys Val Pro Phe Asp Val Glu Gln Asn Phe His
500 505 510

Pro Glu Phe Asp Gly Tyr Glu Pro Gly Glu Val Val Lys Gln Ala Asp
515 520 525

Val Val Leu Leu Gly Tyr Pro Val Pro Phe Ser Leu Ser Pro Asp Val
530 535 540

Arg Arg Lys Asn Leu Glu Ile Tyr Glu Ala Val Thr Ser Pro Gln Gly
545 550 555 560

Pro Ala Met Thr Trp Ser Met Phe Ala Val Gly Trp Met Glu Leu Lys
565 570 575

Asp Ala Val Arg Ala Arg Gly Leu Leu Asp Arg Ser Phe Ala Asn Met
580 585 590

Ala Glu Pro Phe Lys Val Trp Thr Glu Asn Ala Asp Gly Ser Gly Ala
595 600 605

Val Asn Phe Leu Thr Gly Met Gly Gly Phe Leu Gln Ala Val Val Phe
610 615 620

```
Gly Cys Thr Gly Phe Arg Val Thr Arg Ala Gly Val Thr Phe Asp Pro
625                 630                 635                 640

Val Cys Leu Ser Gly Ile Ser Arg Val Ser Val Ser Gly Ile Phe Tyr
                645                 650                 655

Gln Gly Asn Lys Leu Asn Phe Ser Phe Ser Glu Asp Ser Val Thr Val
            660                 665                 670

Glu Val Thr Ala Arg Ala Gly Pro Trp Ala Pro His Leu Glu Ala Glu
        675                 680                 685

Leu Trp Pro Ser Gln Ser Arg Leu Ser Leu Leu Pro Gly His Lys Val
    690                 695                 700

Ser Phe Pro Arg Ser Ala Gly Arg Ile Gln Met Ser Pro Pro Lys Leu
705                 710                 715                 720

Pro Gly Ser Ser Ser Ser Glu Phe Pro Gly Arg Thr Phe Ser Asp Val
                725                 730                 735

Arg Asp Pro Leu Gln Ser Pro Leu Trp Val Thr Leu Gly Ser Ser Ser
            740                 745                 750

Pro Thr Glu Ser Leu Thr Val Asp Pro Ala Ser Glu
        755                 760
```

<210> 6955
<211> 737
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1484; "

<220>
<221> source
<223> /note="Gene Symbol: ATHL1; "

<220>
<221> source
<223> /note="Gene Name:
ATH1, acid trehalase-like 1
(yeast); "

<220>
<221> source
<223> /note="Uniprot ID: Q32M88; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000387185"

<400> 6955
Met Glu Asp Ala Gly Glu Asp Pro Thr Thr Phe Ala Ala His Ser Leu
1   5   10   15

Pro Ser Asp Pro Arg Leu Leu Ala Thr Val Thr Asn Ala Tyr Leu Gly
            20   25   30

Thr Arg Val Phe His Asp Thr Leu His Val Ser Gly Val Tyr Asn Gly
        35   40   45

Ala Gly Gly Asp Thr His Arg Ala Met Leu Pro Ser Pro Leu Asn Val
    50   55   60

Arg Leu Glu Ala Pro Ala Gly Met Gly Glu Gln Leu Thr Glu Thr Phe
65   70   75   80

Ala Leu Asp Thr Asn Thr Gly Ser Phe Leu His Thr Leu Glu Gly Pro
                85   90   95

Arg Phe Arg Ala Ser Gln Cys Ile Tyr Ala His Arg Thr Leu Pro His
            100   105   110

Val Leu Ala Phe Arg Val Ser Ile Ala Arg Leu Ala Pro Gly Ser Gly
        115   120   125

Pro Ile Thr Leu Leu Leu Arg Ser Ala Phe Ser Pro Glu Ser Pro Asp
    130   135   140

Leu Asp Leu His Gln Gly Pro Asp Phe Gln Gly Ala Arg Tyr Leu Tyr
145   150   155   160

Gly His Thr Leu Thr Pro Glu Gln Pro Gly Gly Pro Gln Gln Glu Val
                165   170   175

His Met Leu Trp Thr Pro Ala Pro Pro Asp Leu Thr Leu Gly Glu Gly
            180   185   190

```
Glu Glu Ala Arg Thr Trp Asp Phe Leu Thr Ala Val Gly Gly Ser Gln
        195                 200                 205

Ala Glu Ala Gln Ala Cys Leu Thr Glu Ala Leu Gln Leu Gln Ala Arg
    210                 215                 220

Gly Ala Leu Tyr Thr Ala His Ala Gln Ala Trp Ala Gln Leu Trp Val
225                 230                 235                 240

Glu Cys Gly Leu Asp Val Val Gly Pro Leu Gln Leu Arg Gln Ala Leu
                245                 250                 255

Arg Gly Ser Leu Tyr Tyr Leu Leu Ser Ala Leu Pro Gln Pro Lys Ala
            260                 265                 270

Pro Gly Tyr Ile Cys His Gly Leu Ser Pro Gly Gly Leu Ser Asn Gly
        275                 280                 285

Ser Arg Glu Glu Cys Tyr Trp Gly His Val Phe Trp Asp Gln Asp Leu
    290                 295                 300

Trp Met Phe Pro Ser Ile Leu Met Phe His Pro Glu Ala Ala Arg Ala
305                 310                 315                 320

Ile Leu Glu Tyr Arg Ile Arg Thr Leu Asp Gly Ala Leu Glu Asn Ala
                325                 330                 335

Gln Asn Leu Gly Tyr Gln Gly Ala Lys Phe Ala Trp Glu Ser Ala Asp
            340                 345                 350

Ser Gly Leu Glu Val Cys Pro Glu Asp Ile Tyr Gly Val Gln Glu Val
        355                 360                 365

His Val Asn Gly Ala Val Val Leu Ala Phe Glu Leu Tyr Tyr His Thr
    370                 375                 380

Thr Gln Asp Leu Gln Leu Phe Arg Glu Ala Gly Gly Trp Asp Val Val
385                 390                 395                 400

Arg Ala Val Ala Glu Phe Trp Cys Ser Arg Val Glu Trp Ser Pro Arg
                405                 410                 415

Glu Glu Lys Tyr His Leu Arg Gly Val Met Ser Pro Asp Glu Tyr His
```

```
            420                 425                 430

Ser Gly Val Asn Asn Ser Val Tyr Thr Asn Val Leu Val Gln Asn Ser
        435                 440                 445

Leu Arg Phe Ala Ala Ala Leu Ala Gln Asp Leu Gly Leu Pro Ile Pro
    450                 455                 460

Ser Gln Trp Leu Ala Val Ala Asp Lys Ile Lys Val Pro Phe Asp Val
465                 470                 475                 480

Glu Gln Asn Phe His Pro Glu Phe Asp Gly Tyr Glu Pro Gly Glu Val
                485                 490                 495

Val Lys Gln Ala Asp Val Val Leu Leu Gly Tyr Pro Val Pro Phe Ser
            500                 505                 510

Leu Ser Pro Asp Val Arg Arg Lys Asn Leu Glu Ile Tyr Glu Ala Val
        515                 520                 525

Thr Ser Pro Gln Gly Pro Ala Met Thr Trp Ser Met Phe Ala Val Gly
    530                 535                 540

Trp Met Glu Leu Lys Asp Ala Val Arg Ala Arg Gly Leu Leu Asp Arg
545                 550                 555                 560

Ser Phe Ala Asn Met Ala Glu Pro Phe Lys Val Trp Thr Glu Asn Ala
                565                 570                 575

Asp Gly Ser Gly Ala Val Asn Phe Leu Thr Gly Met Gly Gly Phe Leu
            580                 585                 590

Gln Ala Val Val Phe Gly Cys Thr Gly Phe Arg Val Thr Arg Ala Gly
        595                 600                 605

Val Thr Phe Asp Pro Val Cys Leu Ser Gly Ile Ser Arg Val Ser Val
    610                 615                 620

Ser Gly Ile Phe Tyr Gln Gly Asn Lys Leu Asn Phe Ser Phe Ser Glu
625                 630                 635                 640

Asp Ser Val Thr Val Glu Val Thr Ala Arg Ala Gly Pro Trp Ala Pro
                645                 650                 655
```

```
His Leu Glu Ala Glu Leu Trp Pro Ser Gln Ser Arg Leu Ser Leu Leu
            660                 665                 670

Pro Gly His Lys Val Ser Phe Pro Arg Ser Ala Gly Arg Ile Gln Met
        675                 680                 685

Ser Pro Pro Lys Leu Pro Gly Ser Ser Ser Ser Glu Phe Pro Gly Arg
    690                 695                 700

Thr Phe Ser Asp Val Arg Asp Pro Leu Gln Ser Pro Leu Trp Val Thr
705                 710                 715                 720

Leu Gly Ser Ser Ser Pro Thr Glu Ser Leu Thr Val Asp Pro Ala Ser
                725                 730                 735

Glu
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<210> 6956
<211> 203
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1484; "

<220>
<221> source
<223> /note="Gene Symbol: ATHL1; "

<220>
<221> source
<223> /note="Gene Name:
ATH1, acid trehalase-like 1
(yeast); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431881"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6956
Xaa Phe His Asp Thr Leu His Val Ser Gly Val Tyr Asn Gly Ala Gly

1 5 10 15

Gly Asp Thr His Arg Ala Met Leu Pro Ser Pro Leu Asn Val Arg Leu
20 25 30

Glu Ala Pro Ala Gly Met Gly Glu Gln Leu Thr Glu Thr Phe Ala Leu
35 40 45

Asp Thr Asn Thr Gly Ser Phe Leu His Thr Leu Glu Gly Pro Arg Phe
50 55 60

Arg Ala Ser Gln Cys Ile Tyr Ala His Arg Thr Leu Pro His Val Leu
65 70 75 80

Ala Phe Arg Val Ser Ile Ala Arg Leu Ala Pro Gly Ser Gly Pro Ile
85 90 95

Thr Leu Leu Leu Arg Ser Ala Phe Ser Pro Glu Ser Pro Asp Leu Asp
100 105 110

Leu His Gln Gly Pro Asp Phe Gln Gly Ala Arg Tyr Leu Tyr Gly His
115 120 125

Thr Leu Thr Pro Glu Gln Pro Gly Gly Pro Gln Gln Glu Val His Met
130 135 140

Leu Trp Thr Pro Ala Pro Pro Asp Leu Thr Leu Gly Glu Val Pro Cys
145 150 155 160

Pro Ser Pro Arg Pro Gln Asp Thr Ser Ala Met Ala Ser Val Leu Gly
165 170 175

Ala Ser Pro Met Gly Ala Val Arg Asn Ala Thr Gly Ala Thr Ser Ser
180 185 190

Gly Thr Arg Thr Ser Gly Cys Ser Arg Val Ser
195 200

<210> 6957
<211> 899
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1485; "

<220>
<221> source
<223> /note="Gene Symbol: AKNA; "

<220>
<221> source
<223> /note="Gene Name:
AT-hook transcription
factor; "

<220>
<221> source
<223> /note="Uniprot ID: Q7Z591; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000223791"

<400> 6957

```
Met Pro Thr Leu Gly Trp Leu Pro Glu Asn Arg Asp Ile Ser Glu Asp
1               5                  10                  15


Gln Ser Ser Ala Glu Gln Thr Gln Ala Leu Ala Ser Gln Ala Ser Gln
            20                  25                  30


Phe Leu Ala Lys Val Glu Ser Phe Glu Arg Leu Ile Gln Ala Gly Arg
        35                  40                  45


Leu Met Pro Gln Asp Gln Val Lys Gly Phe Gln Arg Leu Lys Ala Ala
    50                  55                  60


His Ala Ala Leu Glu Glu Glu Tyr Leu Lys Ala Cys Arg Glu Gln His
65                  70                  75                  80


Pro Ala Gln Pro Leu Ala Gly Ser Lys Gly Thr Pro Gly Arg Phe Asp
                85                  90                  95


Pro Arg Arg Glu Leu Glu Ala Glu Ile Tyr Arg Leu Gly Ser Cys Leu
            100                 105                 110


Glu Glu Leu Lys Glu His Ile Asp Gln Thr Gln Gln Glu Pro Glu Pro
        115                 120                 125


Pro Gly Ser Asp Ser Ala Leu Asp Ser Thr Pro Ala Leu Pro Cys Leu
    130                 135                 140
```

```
His Gln Pro Thr His Leu Pro Ala Pro Ser Gly Gln Ala Pro Met Pro
145                 150                 155                 160

Ala Ile Lys Thr Ser Cys Pro Glu Pro Ala Thr Thr Thr Ala Ala Ala
                165                 170                 175

Ser Thr Gly Pro Cys Pro Leu His Val Asn Val Glu Val Ser Ser Gly
            180                 185                 190

Asn Ser Glu Val Glu Asp Arg Pro Gln Asp Pro Leu Ala Arg Leu Arg
        195                 200                 205

His Lys Glu Leu Gln Met Glu Gln Val Tyr His Gly Leu Met Glu Arg
    210                 215                 220

Tyr Leu Ser Val Lys Ser Leu Pro Glu Ala Met Arg Met Glu Glu Glu
225                 230                 235                 240

Glu Glu Gly Glu Glu Glu Glu Glu Glu Glu Glu Gly Gly Gly Asp Ser Leu
                245                 250                 255

Glu Val Asp Gly Val Ala Ala Thr Pro Gly Lys Ala Glu Ala Thr Arg
            260                 265                 270

Val Leu Pro Arg Gln Cys Pro Val Gln Ala Glu Lys Ser His Gly Ala
        275                 280                 285

Pro Leu Glu Glu Ala Thr Glu Lys Met Val Ser Met Lys Pro Pro Gly
    290                 295                 300

Phe Gln Ala Ser Leu Ala Arg Asp Gly His Met Ser Gly Leu Gly Lys
305                 310                 315                 320

Ala Glu Ala Ala Pro Pro Gly Pro Gly Val Pro Pro His Pro Pro Gly
                325                 330                 335

Thr Lys Ser Ala Ala Ser His Gln Ser Ser Met Thr Ser Leu Glu Gly
            340                 345                 350

Ser Gly Ile Ser Glu Arg Leu Pro Gln Lys Pro Leu His Arg Gly Gly
        355                 360                 365
```

```
Gly Pro His Leu Glu Glu Thr Trp Met Ala Ser Pro Glu Thr Asp Ser
    370                 375                 380

Gly Phe Val Gly Ser Glu Thr Ser Arg Val Ser Pro Leu Thr Gln Thr
385                 390                 395                 400

Pro Glu His Arg Leu Ser His Ile Ser Thr Ala Gly Thr Leu Ala Gln
                405                 410                 415

Pro Phe Ala Ala Ser Val Pro Arg Asp Gly Ala Ser Tyr Pro Lys Ala
            420                 425                 430

Arg Gly Ser Leu Ile Pro Arg Arg Ala Thr Glu Pro Ser Thr Pro Arg
        435                 440                 445

Ser Gln Ala Gln Arg Tyr Leu Ser Ser Pro Ser Gly Pro Leu Arg Gln
    450                 455                 460

Arg Ala Pro Asn Phe Ser Leu Glu Arg Thr Leu Ala Ala Glu Met Ala
465                 470                 475                 480

Val Pro Gly Ser Glu Phe Glu Gly His Lys Arg Ile Ser Glu Gln Pro
                485                 490                 495

Leu Pro Asn Lys Thr Ile Ser Pro Pro Pro Ala Pro Ala Pro Ala Ala
            500                 505                 510

Ala Pro Leu Pro Cys Gly Pro Thr Glu Thr Ile Pro Ser Phe Leu Leu
        515                 520                 525

Thr Arg Ala Gly Arg Asp Gln Ala Ile Cys Glu Leu Gln Glu Glu Val
    530                 535                 540

Ser Arg Leu Arg Leu Arg Leu Glu Asp Ser Leu His Gln Pro Leu Gln
545                 550                 555                 560

Gly Ser Pro Thr Arg Pro Ala Ser Ala Phe Asp Arg Pro Ala Arg Thr
                565                 570                 575

Arg Gly Arg Pro Ala Asp Ser Pro Ala Thr Trp Gly Ser His Tyr Gly
            580                 585                 590

Ser Lys Ser Thr Glu Arg Leu Pro Gly Glu Pro Arg Gly Glu Glu Gln
```

595 600 605

Ile Val Pro Pro Gly Arg Gln Arg Ala Arg Ser Ser Ser Val Pro Arg
610 615 620

Glu Val Leu Arg Leu Ser Leu Ser Ser Glu Ser Glu Leu Pro Ser Leu
625 630 635 640

Pro Leu Phe Ser Glu Lys Ser Lys Thr Thr Lys Asp Ser Pro Gln Ala
645 650 655

Ala Arg Asp Gly Lys Arg Gly Val Gly Ser Ala Gly Trp Pro Asp Arg
660 665 670

Val Thr Phe Arg Gly Gln Tyr Thr Gly His Glu Tyr His Val Leu Ser
675 680 685

Pro Lys Ala Val Pro Lys Gly Asn Gly Thr Val Ser Cys Pro His Cys
690 695 700

Arg Pro Ile Arg Thr Gln Asp Ala Gly Gly Ala Val Thr Gly Asp Pro
705 710 715 720

Leu Gly Pro Pro Pro Ala Asp Thr Leu Gln Cys Pro Leu Cys Gly Gln
725 730 735

Val Gly Ser Pro Pro Glu Ala Asp Gly Pro Gly Ser Ala Thr Ser Gly
740 745 750

Ala Glu Lys Ala Thr Thr Arg Arg Lys Ala Ser Ser Thr Pro Ser Pro
755 760 765

Lys Gln Arg Ser Lys Gln Ala Gly Ser Ser Pro Arg Pro Pro Pro Gly
770 775 780

Leu Trp Tyr Leu Ala Thr Ala Pro Pro Ala Pro Ala Pro Pro Ala Phe
785 790 795 800

Ala Tyr Ile Ser Ser Val Pro Ile Met Pro Tyr Pro Pro Ala Ala Val
805 810 815

Tyr Tyr Ala Pro Ala Gly Pro Thr Ser Ala Gln Pro Ala Ala Lys Trp
820 825 830

```
Pro Pro Thr Ala Ser Pro Pro Pro Ala Arg Arg His Arg His Ser Ile
        835                 840                 845

Gln Leu Asp Leu Gly Asp Leu Glu Glu Leu Asn Lys Ala Leu Ser Arg
    850                 855                 860

Ala Val Gln Ala Ala Glu Ser Val Arg Ser Thr Thr Arg Gln Met Arg
865                 870                 875                 880

Ser Ser Leu Ser Ala Asp Leu Arg Gln Ala His Ser Leu Arg Gly Ser
                885                 890                 895

Cys Leu Phe
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<210> 6958
<211> 1439
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1485; "

<220>
<221> source
<223> /note="Gene Symbol: AKNA; "

<220>
<221> source
<223> /note="Gene Name:
AT-hook transcription
factor; "

<220>
<221> source
<223> /note="Uniprot ID: Q7Z591; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000303769"

<400> 6958

```
Met Ala Ser Ser Glu Thr Glu Ile Arg Trp Ala Glu Pro Gly Leu Gly
1               5                   10                  15

Lys Gly Pro Gln Arg Arg Arg Trp Ala Trp Ala Glu Asp Lys Arg Asp
            20                  25                  30
```

```
Val Asp Arg Ser Ser Ser Gln Ser Trp Glu Glu Glu Arg Leu Phe Pro
        35                  40                  45

Asn Ala Thr Ser Pro Glu Leu Leu Glu Asp Phe Arg Leu Ala Gln Gln
    50                  55                  60

His Leu Pro Pro Leu Glu Trp Asp Pro His Pro Gln Pro Asp Gly His
65                  70                  75                  80

Gln Asp Ser Glu Ser Gly Glu Thr Ser Gly Glu Glu Ala Glu Ala Glu
                85                  90                  95

Asp Val Asp Ser Pro Ala Ser Ser His Glu Pro Leu Ala Trp Leu Pro
            100                 105                 110

Gln Gln Gly Arg Gln Leu Asp Met Thr Glu Glu Glu Pro Asp Gly Thr
        115                 120                 125

Leu Gly Ser Leu Glu Val Glu Glu Ala Gly Glu Ser Ser Ser Arg Leu
    130                 135                 140

Gly Tyr Glu Ala Gly Leu Ser Leu Glu Gly His Gly Asn Thr Ser Pro
145                 150                 155                 160

Met Ala Leu Gly His Gly Gln Ala Arg Gly Trp Val Ala Ser Gly Glu
                165                 170                 175

Gln Ala Ser Gly Asp Lys Leu Ser Glu His Ser Glu Val Asn Pro Ser
            180                 185                 190

Val Glu Leu Ser Pro Ala Arg Ser Trp Ser Ser Gly Thr Val Ser Leu
        195                 200                 205

Asp His Pro Ser Asp Ser Leu Asp Ser Thr Trp Glu Gly Glu Thr Asp
    210                 215                 220

Gly Pro Gln Pro Thr Ala Leu Ala Glu Thr Leu Pro Glu Gly Pro Ser
225                 230                 235                 240

His His Leu Leu Ser Pro Asp Gly Arg Thr Gly Gly Ser Val Ala Arg
                245                 250                 255
```

```
Ala Thr Pro Met Glu Phe Gln Asp Ser Ser Ala Pro Pro Ala Gln Ser
            260                 265                 270

Pro Gln His Ala Thr Asp Arg Trp Arg Arg Glu Thr Thr Arg Phe Phe
        275                 280                 285

Cys Pro Gln Pro Lys Glu His Ile Trp Lys Gln Thr Lys Thr Ser Pro
    290                 295                 300

Lys Pro Leu Pro Ser Arg Phe Ile Gly Ser Ile Ser Pro Leu Asn Pro
305                 310                 315                 320

Gln Pro Arg Pro Thr Arg Gln Gly Arg Pro Leu Pro Arg Gln Gly Ala
                325                 330                 335

Thr Leu Ala Gly Arg Ser Ser Ser Asn Ala Pro Lys Tyr Gly Arg Gly
            340                 345                 350

Gln Leu Asn Tyr Pro Leu Pro Asp Phe Ser Lys Val Gly Pro Arg Val
        355                 360                 365

Arg Phe Pro Lys Asp Glu Ser Tyr Arg Pro Pro Lys Ser Arg Ser His
    370                 375                 380

Asn Arg Lys Pro Gln Ala Pro Ala Arg Pro Leu Ile Phe Lys Ser Pro
385                 390                 395                 400

Ala Glu Ile Val Gln Glu Val Leu Leu Ser Ser Gly Glu Ala Ala Leu
                405                 410                 415

Ala Lys Asp Thr Pro Pro Ala His Pro Ile Thr Arg Val Pro Gln Glu
            420                 425                 430

Phe Gln Thr Pro Glu Gln Ala Thr Glu Leu Val His Gln Leu Gln Glu
        435                 440                 445

Asp Tyr His Arg Leu Leu Thr Lys Tyr Ala Glu Ala Glu Asn Thr Ile
    450                 455                 460

Asp Gln Leu Arg Leu Gly Ala Lys Val Asn Leu Phe Ser Asp Pro Pro
465                 470                 475                 480

Gln Pro Asn His Ser Ile His Thr Gly Met Val Pro Gln Gly Thr Lys
```

485 490 495

Val Leu Ser Phe Thr Ile Pro Gln Pro Arg Ser Ala Glu Trp Trp Pro
500 505 510

Gly Pro Ala Glu Asp Pro Gln Ala Ser Ala Ala Ser Gly Trp Pro Ser
515 520 525

Ala Arg Gly Asp Leu Ser Pro Ser Ser Leu Thr Ser Met Pro Thr Leu
530 535 540

Gly Trp Leu Pro Glu Asn Arg Asp Ile Ser Glu Asp Gln Ser Ser Ala
545 550 555 560

Glu Gln Thr Gln Ala Leu Ala Ser Gln Ala Ser Gln Phe Leu Ala Lys
565 570 575

Val Glu Ser Phe Glu Arg Leu Ile Gln Ala Gly Arg Leu Met Pro Gln
580 585 590

Asp Gln Val Lys Gly Phe Gln Arg Leu Lys Ala Ala His Ala Ala Leu
595 600 605

Glu Glu Glu Tyr Leu Lys Ala Cys Arg Glu Gln His Pro Ala Gln Pro
610 615 620

Leu Ala Gly Ser Lys Gly Thr Pro Gly Arg Phe Asp Pro Arg Arg Glu
625 630 635 640

Leu Glu Ala Glu Ile Tyr Arg Leu Gly Ser Cys Leu Glu Glu Leu Lys
645 650 655

Glu His Ile Asp Gln Thr Gln Gln Glu Pro Glu Pro Pro Gly Ser Asp
660 665 670

Ser Ala Leu Asp Ser Thr Pro Ala Leu Pro Cys Leu His Gln Pro Thr
675 680 685

His Leu Pro Ala Pro Ser Gly Gln Ala Pro Met Pro Ala Ile Lys Thr
690 695 700

Ser Cys Pro Glu Pro Ala Thr Thr Thr Ala Ala Ala Ser Thr Gly Pro
705 710 715 720

```
Cys Pro Leu His Val Asn Val Glu Val Ser Ser Gly Asn Ser Glu Val
                725                 730                 735

Glu Asp Arg Pro Gln Asp Pro Leu Ala Arg Leu Arg His Lys Glu Leu
            740                 745                 750

Gln Met Glu Gln Val Tyr His Gly Leu Met Glu Arg Tyr Leu Ser Val
        755                 760                 765

Lys Ser Leu Pro Glu Ala Met Arg Met Glu Glu Glu Glu Glu Gly Glu
    770                 775                 780

Glu Glu Glu Glu Glu Glu Gly Gly Gly Asp Ser Leu Glu Val Asp Gly
785                 790                 795                 800

Val Ala Ala Thr Pro Gly Lys Ala Glu Ala Thr Arg Val Leu Pro Arg
                805                 810                 815

Gln Cys Pro Val Gln Ala Glu Lys Ser His Gly Ala Pro Leu Glu Glu
            820                 825                 830

Ala Thr Glu Lys Met Val Ser Met Lys Pro Pro Gly Phe Gln Ala Ser
        835                 840                 845

Leu Ala Arg Asp Gly His Met Ser Gly Leu Gly Lys Ala Glu Ala Ala
    850                 855                 860

Pro Pro Gly Pro Gly Val Pro Pro His Pro Pro Gly Thr Lys Ser Ala
865                 870                 875                 880

Ala Ser His Gln Ser Ser Met Thr Ser Leu Glu Gly Ser Gly Ile Ser
                885                 890                 895

Glu Arg Leu Pro Gln Lys Pro Leu His Arg Gly Gly Gly Pro His Leu
            900                 905                 910

Glu Glu Thr Trp Met Ala Ser Pro Glu Thr Asp Ser Gly Phe Val Gly
        915                 920                 925

Ser Glu Thr Ser Arg Val Ser Pro Leu Thr Gln Thr Pro Glu His Arg
    930                 935                 940
```

```
Leu Ser His Ile Ser Thr Ala Gly Thr Leu Ala Gln Pro Phe Ala Ala
945                 950                 955                 960

Ser Val Pro Arg Asp Gly Ala Ser Tyr Pro Lys Ala Arg Gly Ser Leu
                965                 970                 975

Ile Pro Arg Arg Ala Thr Glu Pro Ser Thr Pro Arg Ser Gln Ala Gln
            980                 985                 990

Arg Tyr Leu Ser Ser Pro Ser Gly  Pro Leu Arg Gln Arg  Ala Pro
Asn
        995                 1000                1005

Phe Ser  Leu Glu Arg Thr Leu  Ala Ala Glu Met Ala  Val Pro Gly
    1010                1015                1020

Ser Glu  Phe Glu Gly His Lys  Arg Ile Ser Glu Gln  Pro Leu Pro
    1025                1030                1035

Asn Lys  Thr Ile Ser Pro Pro  Pro Ala Pro Ala Pro  Ala Ala Ala
    1040                1045                1050

Pro Leu  Pro Cys Gly Pro Thr  Glu Thr Ile Pro Ser  Phe Leu Leu
    1055                1060                1065

Thr Arg  Ala Gly Arg Asp Gln  Ala Ile Cys Glu Leu  Gln Glu Glu
    1070                1075                1080

Val Ser  Arg Leu Arg Leu Arg  Leu Glu Asp Ser Leu  His Gln Pro
    1085                1090                1095

Leu Gln  Gly Ser Pro Thr Arg  Pro Ala Ser Ala Phe  Asp Arg Pro
    1100                1105                1110

Ala Arg  Thr Arg Gly Arg Pro  Ala Asp Ser Pro Ala  Thr Trp Gly
    1115                1120                1125

Ser His  Tyr Gly Ser Lys Ser  Thr Glu Arg Leu Pro  Gly Glu Pro
    1130                1135                1140

Arg Gly  Glu Glu Gln Ile Val  Pro Pro Gly Arg Gln  Arg Ala Arg
    1145                1150                1155
```

```
Ser Ser  Ser Val Pro Arg Glu  Val Leu Arg Leu Ser  Leu Ser Ser
    1160                1165                1170

Glu Ser  Glu Leu Pro Ser Leu  Pro Leu Phe Ser Glu  Lys Ser Lys
    1175                1180                1185

Thr Thr  Lys Asp Ser Pro Gln  Ala Ala Arg Asp Gly  Lys Arg Gly
    1190                1195                1200

Val Gly  Ser Ala Gly Trp Pro  Asp Arg Val Thr Phe  Arg Gly Gln
    1205                1210                1215

Tyr Thr  Gly His Glu Tyr His  Val Leu Ser Pro Lys  Ala Val Pro
    1220                1225                1230

Lys Gly  Asn Gly Thr Val Ser  Cys Pro His Cys Arg  Pro Ile Arg
    1235                1240                1245

Thr Gln  Asp Ala Gly Gly Ala  Val Thr Gly Asp Pro  Leu Gly Pro
    1250                1255                1260

Pro Pro  Ala Asp Thr Leu Gln  Cys Pro Leu Cys Gly  Gln Val Gly
    1265                1270                1275

Ser Pro  Pro Glu Ala Asp Gly  Pro Gly Ser Ala Thr  Ser Gly Ala
    1280                1285                1290

Glu Lys  Ala Thr Thr Arg Arg  Lys Ala Ser Ser Thr  Pro Ser Pro
    1295                1300                1305

Lys Gln  Arg Ser Lys Gln Ala  Gly Ser Ser Pro Arg  Pro Pro Pro
    1310                1315                1320

Gly Leu  Trp Tyr Leu Ala Thr  Ala Pro Pro Ala Pro  Ala Pro Pro
    1325                1330                1335

Ala Phe  Ala Tyr Ile Ser Ser  Val Pro Ile Met Pro  Tyr Pro Pro
    1340                1345                1350

Ala Ala  Val Tyr Tyr Ala Pro  Ala Gly Pro Thr Ser  Ala Gln Pro
    1355                1360                1365
```

```
Ala Ala  Lys Trp Pro Pro Thr  Ala Ser Pro Pro Pro  Ala Arg Arg
    1370                1375                1380


His Arg  His Ser Ile Gln Leu  Asp Leu Gly Asp Leu  Glu Glu Leu
    1385                1390                1395


Asn Lys  Ala Leu Ser Arg Ala  Val Gln Ala Ala Glu  Ser Val Arg
    1400                1405                1410


Ser Thr  Thr Arg Gln Met Arg  Ser Ser Leu Ser Ala  Asp Leu Arg
    1415                1420                1425


Gln Ala  His Ser Leu Arg Gly  Ser Cys Leu Phe
    1430                1435


<210> 6959
<211> 831
<212> PRT
<213> Homo sapiens

<220>
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      factor; "

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<400> 6959
Met Ala Ser Ser Glu Thr Glu Ile Arg Trp Ala Glu Pro Gly Leu Gly
1               5                  10                  15


Lys Gly Pro Gln Arg Arg Arg Trp Ala Trp Ala Glu Asp Lys Arg Asp
            20                  25                  30


Val Asp Arg Ser Ser Ser Gln Ser Trp Glu Glu Glu Arg Leu Phe Pro
```

```
        35                  40                  45

Asn Ala Thr Ser Pro Glu Leu Leu Glu Asp Phe Arg Leu Ala Gln Gln
    50                  55                  60

His Leu Pro Pro Leu Glu Trp Asp Pro His Pro Gln Pro Asp Gly His
65                  70                  75                  80

Gln Asp Ser Glu Ser Gly Glu Thr Ser Gly Glu Glu Ala Glu Ala Glu
                85                  90                  95

Asp Val Asp Ser Pro Ala Ser Ser His Glu Pro Leu Ala Trp Leu Pro
            100                 105                 110

Gln Gln Gly Arg Gln Leu Asp Met Thr Glu Glu Glu Pro Asp Gly Thr
        115                 120                 125

Leu Gly Ser Leu Glu Val Glu Glu Ala Gly Glu Ser Ser Ser Arg Leu
    130                 135                 140

Gly Tyr Glu Ala Gly Leu Ser Leu Glu Gly His Gly Asn Thr Ser Pro
145                 150                 155                 160

Met Ala Leu Gly His Gly Gln Ala Arg Gly Trp Val Ala Ser Gly Glu
                165                 170                 175

Gln Ala Ser Gly Asp Lys Leu Ser Glu His Ser Glu Val Asn Pro Ser
            180                 185                 190

Val Glu Leu Ser Pro Ala Arg Ser Trp Ser Ser Gly Thr Val Ser Leu
        195                 200                 205

Asp His Pro Ser Asp Ser Leu Asp Ser Thr Trp Glu Gly Glu Thr Asp
    210                 215                 220

Gly Pro Gln Pro Thr Ala Leu Ala Glu Thr Leu Pro Glu Gly Pro Ser
225                 230                 235                 240

His His Leu Leu Ser Pro Asp Gly Arg Thr Gly Gly Ser Val Ala Arg
                245                 250                 255

Ala Thr Pro Met Glu Phe Gln Asp Ser Ser Ala Pro Pro Ala Gln Ser
            260                 265                 270
```

```
Pro Gln His Ala Thr Asp Arg Trp Arg Arg Glu Thr Thr Arg Phe Phe
        275                 280                 285

Cys Pro Gln Pro Lys Glu His Ile Trp Lys Gln Thr Lys Thr Ser Pro
    290                 295                 300

Lys Pro Leu Pro Ser Arg Phe Ile Gly Ser Ile Ser Pro Leu Asn Pro
305                 310                 315                 320

Gln Pro Arg Pro Thr Arg Gln Gly Arg Pro Leu Pro Arg Gln Gly Ala
                325                 330                 335

Thr Leu Ala Gly Arg Ser Ser Ser Asn Ala Pro Lys Tyr Gly Arg Gly
            340                 345                 350

Gln Leu Asn Tyr Pro Leu Pro Asp Phe Ser Lys Val Gly Pro Arg Val
        355                 360                 365

Arg Phe Pro Lys Asp Glu Ser Tyr Arg Pro Pro Lys Ser Arg Ser His
    370                 375                 380

Asn Arg Lys Pro Gln Ala Pro Ala Arg Pro Leu Ile Phe Lys Ser Pro
385                 390                 395                 400

Ala Glu Ile Val Gln Glu Val Leu Leu Ser Ser Gly Glu Ala Ala Leu
                405                 410                 415

Ala Lys Asp Thr Pro Pro Ala His Pro Ile Thr Arg Val Pro Gln Glu
            420                 425                 430

Phe Gln Thr Pro Glu Gln Ala Thr Glu Leu Val His Gln Leu Gln Glu
        435                 440                 445

Asp Tyr His Arg Leu Leu Thr Lys Tyr Ala Glu Ala Glu Asn Thr Ile
    450                 455                 460

Asp Gln Leu Arg Leu Gly Ala Lys Val Asn Leu Phe Ser Asp Pro Pro
465                 470                 475                 480

Gln Pro Asn His Ser Ile His Thr Gly Met Val Pro Gln Gly Thr Lys
                485                 490                 495
```

Val Leu Ser Phe Thr Ile Pro Gln Pro Arg Ser Ala Glu Trp Trp Pro
500 505 510

Gly Pro Ala Glu Asp Pro Gln Ala Ser Ala Ala Ser Gly Trp Pro Ser
515 520 525

Ala Arg Gly Asp Leu Ser Pro Ser Ser Leu Thr Ser Met Pro Thr Leu
530 535 540

Gly Trp Leu Pro Glu Asn Arg Asp Ile Ser Glu Asp Gln Ser Ser Ala
545 550 555 560

Glu Gln Thr Gln Ala Leu Ala Ser Gln Ala Ser Gln Phe Leu Ala Lys
565 570 575

Val Glu Ser Phe Glu Arg Leu Ile Gln Ala Gly Arg Leu Met Pro Gln
580 585 590

Asp Gln Val Lys Gly Phe Gln Arg Leu Lys Ala Ala His Ala Ala Leu
595 600 605

Glu Glu Glu Tyr Leu Lys Ala Cys Arg Glu Gln His Pro Ala Gln Pro
610 615 620

Leu Ala Gly Ser Lys Gly Thr Pro Gly Arg Phe Asp Pro Arg Arg Glu
625 630 635 640

Leu Glu Ala Glu Ile Tyr Arg Leu Gly Ser Cys Leu Glu Glu Leu Lys
645 650 655

Glu His Ile Asp Gln Thr Gln Gln Glu Pro Glu Pro Pro Gly Ser Asp
660 665 670

Ser Ala Leu Asp Ser Thr Pro Ala Leu Pro Cys Leu His Gln Pro Thr
675 680 685

His Leu Pro Ala Pro Ser Gly Gln Ala Pro Met Pro Ala Ile Lys Thr
690 695 700

Ser Cys Pro Glu Pro Ala Thr Thr Thr Ala Ala Ala Ser Thr Gly Pro
705 710 715 720

```
Cys Pro Leu His Val Asn Val Glu Val Ser Ser Gly Asn Ser Glu Val
                725                 730                 735

Glu Asp Arg Pro Gln Asp Pro Leu Ala Arg Leu Arg His Lys Glu Leu
            740                 745                 750

Gln Met Glu Gln Val Tyr His Gly Leu Met Glu Arg Tyr Leu Ser Val
        755                 760                 765

Lys Ser Leu Pro Glu Ala Met Arg Met Glu Glu Glu Glu Glu Gly Glu
    770                 775                 780

Glu Glu Glu Glu Glu Glu Gly Gly Gly Asp Ser Leu Glu Val Asp Gly
785                 790                 795                 800

Val Ala Ala Thr Pro Gly Lys Ala Glu Ala Thr Arg Val Leu Pro Arg
                805                 810                 815

Gln Cys Pro Val Gln Ala Glu Lys Ser His Gly Ala Pro Leu Glu
            820                 825                 830


<210> 6960
<211> 1358
<212> PRT
<213> Homo sapiens

<220>
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<220>
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      factor; "

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<220>
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<223> /note="ENSP ID: ENSP00000363188"

<400> 6960
Met Leu Arg Ser Glu Trp Pro Val Phe Pro Glu Ala Glu Ala Glu Asp
```

```
1               5                   10                  15

Val Asp Ser Pro Ala Ser Ser His Glu Pro Leu Ala Trp Leu Pro Gln
            20                  25                  30

Gln Gly Arg Gln Leu Asp Met Thr Glu Glu Glu Pro Asp Gly Thr Leu
        35                  40                  45

Gly Ser Leu Glu Val Glu Glu Ala Gly Glu Ser Ser Ser Arg Leu Gly
    50                  55                  60

Tyr Glu Ala Gly Leu Ser Leu Glu Gly His Gly Asn Thr Ser Pro Met
65                  70                  75                  80

Ala Leu Gly His Gly Gln Ala Arg Gly Trp Val Ala Ser Gly Glu Gln
                85                  90                  95

Ala Ser Gly Asp Lys Leu Ser Glu His Ser Glu Val Asn Pro Ser Val
            100                 105                 110

Glu Leu Ser Pro Ala Arg Ser Trp Ser Ser Gly Thr Val Ser Leu Asp
        115                 120                 125

His Pro Ser Asp Ser Leu Asp Ser Thr Trp Glu Gly Glu Thr Asp Gly
    130                 135                 140

Pro Gln Pro Thr Ala Leu Ala Glu Thr Leu Pro Glu Gly Pro Ser His
145                 150                 155                 160

His Leu Leu Ser Pro Asp Gly Arg Thr Gly Gly Ser Val Ala Arg Ala
                165                 170                 175

Thr Pro Met Glu Phe Gln Asp Ser Ser Ala Pro Pro Ala Gln Ser Pro
            180                 185                 190

Gln His Ala Thr Asp Arg Trp Arg Arg Glu Thr Thr Arg Phe Phe Cys
        195                 200                 205

Pro Gln Pro Lys Glu His Ile Trp Lys Gln Thr Lys Thr Ser Pro Lys
    210                 215                 220

Pro Leu Pro Ser Arg Phe Ile Gly Ser Ile Ser Pro Leu Asn Pro Gln
225                 230                 235                 240
```

```
Pro Arg Pro Thr Arg Gln Gly Arg Pro Leu Pro Arg Gln Gly Ala Thr
                245                 250                 255

Leu Ala Gly Arg Ser Ser Ser Asn Ala Pro Lys Tyr Gly Arg Gly Gln
            260                 265                 270

Leu Asn Tyr Pro Leu Pro Asp Phe Ser Lys Val Gly Pro Arg Val Arg
        275                 280                 285

Phe Pro Lys Asp Glu Ser Tyr Arg Pro Pro Lys Ser Arg Ser His Asn
    290                 295                 300

Arg Lys Pro Gln Ala Pro Ala Arg Pro Leu Ile Phe Lys Ser Pro Ala
305                 310                 315                 320

Glu Ile Val Gln Glu Val Leu Leu Ser Ser Gly Glu Ala Ala Leu Ala
                325                 330                 335

Lys Asp Thr Pro Pro Ala His Pro Ile Thr Arg Val Pro Gln Glu Phe
            340                 345                 350

Gln Thr Pro Glu Gln Ala Thr Glu Leu Val His Gln Leu Gln Glu Asp
        355                 360                 365

Tyr His Arg Leu Leu Thr Lys Tyr Ala Glu Ala Glu Asn Thr Ile Asp
    370                 375                 380

Gln Leu Arg Leu Gly Ala Lys Val Asn Leu Phe Ser Asp Pro Pro Gln
385                 390                 395                 400

Pro Asn His Ser Ile His Thr Gly Met Val Pro Gln Gly Thr Lys Val
                405                 410                 415

Leu Ser Phe Thr Ile Pro Gln Pro Arg Ser Ala Glu Trp Trp Pro Gly
            420                 425                 430

Pro Ala Glu Asp Pro Gln Ala Ser Ala Ala Ser Gly Trp Pro Ser Ala
        435                 440                 445

Arg Gly Asp Leu Ser Pro Ser Ser Leu Thr Ser Met Pro Thr Leu Gly
    450                 455                 460
```

```
Trp Leu Pro Glu Asn Arg Asp Ile Ser Glu Asp Gln Ser Ser Ala Glu
465                 470                 475                 480

Gln Thr Gln Ala Leu Ala Ser Gln Ala Ser Gln Phe Leu Ala Lys Val
                485                 490                 495

Glu Ser Phe Glu Arg Leu Ile Gln Ala Gly Arg Leu Met Pro Gln Asp
            500                 505                 510

Gln Val Lys Gly Phe Gln Arg Leu Lys Ala Ala His Ala Ala Leu Glu
        515                 520                 525

Glu Glu Tyr Leu Lys Ala Cys Arg Glu Gln His Pro Ala Gln Pro Leu
    530                 535                 540

Ala Gly Ser Lys Gly Thr Pro Gly Arg Phe Asp Pro Arg Arg Glu Leu
545                 550                 555                 560

Glu Ala Glu Ile Tyr Arg Leu Gly Ser Cys Leu Glu Glu Leu Lys Glu
                565                 570                 575

His Ile Asp Gln Thr Gln Gln Glu Pro Glu Pro Pro Gly Ser Asp Ser
            580                 585                 590

Ala Leu Asp Ser Thr Pro Ala Leu Pro Cys Leu His Gln Pro Thr His
        595                 600                 605

Leu Pro Ala Pro Ser Gly Gln Ala Pro Met Pro Ala Ile Lys Thr Ser
    610                 615                 620

Cys Pro Glu Pro Ala Thr Thr Thr Ala Ala Ala Ser Thr Gly Pro Cys
625                 630                 635                 640

Pro Leu His Val Asn Val Glu Val Ser Ser Gly Asn Ser Glu Val Glu
                645                 650                 655

Asp Arg Pro Gln Asp Pro Leu Ala Arg Leu Arg His Lys Glu Leu Gln
            660                 665                 670

Met Glu Gln Val Tyr His Gly Leu Met Glu Arg Tyr Leu Ser Val Lys
        675                 680                 685
```

```
Ser Leu Pro Glu Ala Met Arg Met Glu Glu Glu Glu Glu Gly Glu Glu
    690                 695                 700

Glu Glu Glu Glu Glu Gly Gly Gly Asp Ser Leu Glu Val Asp Gly Val
705                 710                 715                 720

Ala Ala Thr Pro Gly Lys Ala Glu Ala Thr Arg Val Leu Pro Arg Gln
                725                 730                 735

Cys Pro Val Gln Ala Glu Lys Ser His Gly Ala Pro Leu Glu Glu Ala
            740                 745                 750

Thr Glu Lys Met Val Ser Met Lys Pro Pro Gly Phe Gln Ala Ser Leu
        755                 760                 765

Ala Arg Asp Gly His Met Ser Gly Leu Gly Lys Ala Glu Ala Ala Pro
    770                 775                 780

Pro Gly Pro Gly Val Pro Pro His Pro Pro Gly Thr Lys Ser Ala Ala
785                 790                 795                 800

Ser His Gln Ser Ser Met Thr Ser Leu Glu Gly Ser Gly Ile Ser Glu
                805                 810                 815

Arg Leu Pro Gln Lys Pro Leu His Arg Gly Gly Gly Pro His Leu Glu
            820                 825                 830

Glu Thr Trp Met Ala Ser Pro Glu Thr Asp Ser Gly Phe Val Gly Ser
        835                 840                 845

Glu Thr Ser Arg Val Ser Pro Leu Thr Gln Thr Pro Glu His Arg Leu
    850                 855                 860

Ser His Ile Ser Thr Ala Gly Thr Leu Ala Gln Pro Phe Ala Ala Ser
865                 870                 875                 880

Val Pro Arg Asp Gly Ala Ser Tyr Pro Lys Ala Arg Gly Ser Leu Ile
                885                 890                 895

Pro Arg Arg Ala Thr Glu Pro Ser Thr Pro Arg Ser Gln Ala Gln Arg
            900                 905                 910

Tyr Leu Ser Ser Pro Ser Gly Pro Leu Arg Gln Arg Ala Pro Asn Phe
```

915 920 925

Ser Leu Glu Arg Thr Leu Ala Ala Glu Met Ala Val Pro Gly Ser Glu
930 935 940

Phe Glu Gly His Lys Arg Ile Ser Glu Gln Pro Leu Pro Asn Lys Thr
945 950 955 960

Ile Ser Pro Pro Pro Ala Pro Ala Pro Ala Ala Ala Pro Leu Pro Cys
965 970 975

Gly Pro Thr Glu Thr Ile Pro Ser Phe Leu Leu Thr Arg Ala Gly Arg
980 985 990

Asp Gln Ala Ile Cys Glu Leu Gln Glu Glu Val Ser Arg Leu Arg
Leu
995 1000 1005

Arg Leu Glu Asp Ser Leu His Gln Pro Leu Gln Gly Ser Pro Thr
1010 1015 1020

Arg Pro Ala Ser Ala Phe Asp Arg Pro Ala Arg Thr Arg Gly Arg
1025 1030 1035

Pro Ala Asp Ser Pro Ala Thr Trp Gly Ser His Tyr Gly Ser Lys
1040 1045 1050

Ser Thr Glu Arg Leu Pro Gly Glu Pro Arg Gly Glu Glu Gln Ile
1055 1060 1065

Val Pro Pro Gly Arg Gln Arg Ala Arg Ser Ser Ser Val Pro Arg
1070 1075 1080

Glu Val Leu Arg Leu Ser Leu Ser Ser Glu Ser Glu Leu Pro Ser
1085 1090 1095

Leu Pro Leu Phe Ser Glu Lys Ser Lys Thr Thr Lys Asp Ser Pro
1100 1105 1110

Gln Ala Ala Arg Asp Gly Lys Arg Gly Val Gly Ser Ala Gly Trp
1115 1120 1125

Pro Asp Arg Val Thr Phe Arg Gly Gln Tyr Thr Gly His Glu Tyr

1130 1135 1140

His Val Leu Ser Pro Lys Ala Val Pro Lys Gly Asn Gly Thr Val
1145 1150 1155

Ser Cys Pro His Cys Arg Pro Ile Arg Thr Gln Asp Ala Gly Gly
1160 1165 1170

Ala Val Thr Gly Asp Pro Leu Gly Pro Pro Pro Ala Asp Thr Leu
1175 1180 1185

Gln Cys Pro Leu Cys Gly Gln Val Gly Ser Pro Pro Glu Ala Asp
1190 1195 1200

Gly Pro Gly Ser Ala Thr Ser Gly Ala Glu Lys Ala Thr Thr Arg
1205 1210 1215

Arg Lys Ala Ser Ser Thr Pro Ser Pro Lys Gln Arg Ser Lys Gln
1220 1225 1230

Ala Gly Ser Ser Pro Arg Pro Pro Pro Gly Leu Trp Tyr Leu Ala
1235 1240 1245

Thr Ala Pro Pro Ala Pro Ala Pro Pro Ala Phe Ala Tyr Ile Ser
1250 1255 1260

Ser Val Pro Ile Met Pro Tyr Pro Pro Ala Ala Val Tyr Tyr Ala
1265 1270 1275

Pro Ala Gly Pro Thr Ser Ala Gln Pro Ala Ala Lys Trp Pro Pro
1280 1285 1290

Thr Ala Ser Pro Pro Pro Ala Arg Arg His Arg His Ser Ile Gln
1295 1300 1305

Leu Asp Leu Gly Asp Leu Glu Glu Leu Asn Lys Ala Leu Ser Arg
1310 1315 1320

Ala Val Gln Ala Ala Glu Ser Val Arg Ser Thr Thr Arg Gln Met
1325 1330 1335

Arg Ser Ser Leu Ser Ala Asp Leu Arg Gln Ala His Ser Leu Arg
1340 1345 1350

Gly Ser Cys Leu Phe
1355

<210> 6961
<211> 384
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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factor; "

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<223> /note="Uniprot ID: Q7Z591; "

<220>
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<400> 6961
Met Ser Ala Gly Gly Gly Thr Arg Gly Tyr Ser Pro Arg Ser Pro Gly
1 5 10 15

Ala Thr Ser Gln Ala Ile Cys Glu Leu Gln Glu Glu Val Ser Arg Leu
20 25 30

Arg Leu Arg Leu Glu Asp Ser Leu His Gln Pro Leu Gln Gly Ser Pro
35 40 45

Thr Arg Pro Ala Ser Ala Phe Asp Arg Pro Ala Arg Thr Arg Gly Arg
50 55 60

Pro Ala Asp Ser Pro Ala Thr Trp Gly Ser His Tyr Gly Ser Lys Ser
65 70 75 80

Thr Glu Arg Leu Pro Gly Glu Pro Arg Gly Glu Glu Gln Ile Val Pro
85 90 95

```
Pro Gly Arg Gln Arg Ala Arg Ser Ser Ser Val Pro Arg Glu Val Leu
            100                 105                 110

Arg Leu Ser Leu Ser Ser Glu Ser Glu Leu Pro Ser Leu Pro Leu Phe
        115                 120                 125

Ser Glu Lys Ser Lys Thr Thr Lys Asp Ser Pro Gln Ala Ala Arg Asp
    130                 135                 140

Gly Lys Arg Gly Val Gly Ser Ala Gly Trp Pro Asp Arg Val Thr Phe
145                 150                 155                 160

Arg Gly Gln Tyr Thr Gly His Glu Tyr His Val Leu Ser Pro Lys Ala
                165                 170                 175

Val Pro Lys Gly Asn Gly Thr Val Ser Cys Pro His Cys Arg Pro Ile
            180                 185                 190

Arg Thr Gln Asp Ala Gly Gly Ala Val Thr Gly Asp Pro Leu Gly Pro
        195                 200                 205

Pro Pro Ala Asp Thr Leu Gln Cys Pro Leu Cys Gly Gln Val Gly Ser
    210                 215                 220

Pro Pro Glu Ala Asp Gly Pro Gly Ser Ala Thr Ser Gly Ala Glu Lys
225                 230                 235                 240

Ala Thr Thr Arg Arg Lys Ala Ser Ser Thr Pro Ser Pro Lys Gln Arg
                245                 250                 255

Ser Lys Gln Ala Gly Ser Ser Pro Arg Pro Pro Pro Gly Leu Trp Tyr
            260                 265                 270

Leu Ala Thr Ala Pro Pro Ala Pro Ala Pro Pro Ala Phe Ala Tyr Ile
        275                 280                 285

Ser Ser Val Pro Ile Met Pro Tyr Pro Pro Ala Ala Val Tyr Tyr Ala
    290                 295                 300

Pro Ala Gly Pro Thr Ser Ala Gln Pro Ala Ala Lys Trp Pro Pro Thr
305                 310                 315                 320
```

```
Ala Ser Pro Pro Pro Ala Arg Arg His Arg His Ser Ile Gln Leu Asp
                325                 330                 335

Leu Gly Asp Leu Glu Glu Leu Asn Lys Ala Leu Ser Arg Ala Val Gln
            340                 345                 350

Ala Ala Glu Ser Val Arg Ser Thr Thr Arg Gln Met Arg Ser Ser Leu
        355                 360                 365

Ser Ala Asp Leu Arg Gln Ala His Ser Leu Arg Gly Ser Cys Leu Phe
    370                 375                 380
```

<210> 6962
<211> 1439
<212> PRT
<213> Homo sapiens

<220>
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<220>
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AT-hook transcription
factor; "

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<220>
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<400> 6962

```
Met Ala Ser Ser Glu Thr Glu Ile Arg Trp Ala Glu Pro Gly Leu Gly
1               5                   10                  15

Lys Gly Pro Gln Arg Arg Arg Trp Ala Trp Ala Glu Asp Lys Arg Asp
            20                  25                  30

Val Asp Arg Ser Ser Ser Gln Ser Trp Glu Glu Glu Arg Leu Phe Pro
        35                  40                  45

Asn Ala Thr Ser Pro Glu Leu Leu Glu Asp Phe Arg Leu Ala Gln Gln
```

```
    50                  55                  60

His Leu Pro Pro Leu Glu Trp Asp Pro His Pro Gln Pro Asp Gly His
65                  70                  75                  80

Gln Asp Ser Glu Ser Gly Glu Thr Ser Gly Glu Glu Ala Glu Ala Glu
                85                  90                  95

Asp Val Asp Ser Pro Ala Ser Ser His Glu Pro Leu Ala Trp Leu Pro
            100                 105                 110

Gln Gln Gly Arg Gln Leu Asp Met Thr Glu Glu Glu Pro Asp Gly Thr
        115                 120                 125

Leu Gly Ser Leu Glu Val Glu Glu Ala Gly Glu Ser Ser Ser Arg Leu
    130                 135                 140

Gly Tyr Glu Ala Gly Leu Ser Leu Glu Gly His Gly Asn Thr Ser Pro
145                 150                 155                 160

Met Ala Leu Gly His Gly Gln Ala Arg Gly Trp Val Ala Ser Gly Glu
                165                 170                 175

Gln Ala Ser Gly Asp Lys Leu Ser Glu His Ser Glu Val Asn Pro Ser
            180                 185                 190

Val Glu Leu Ser Pro Ala Arg Ser Trp Ser Ser Gly Thr Val Ser Leu
        195                 200                 205

Asp His Pro Ser Asp Ser Leu Asp Ser Thr Trp Glu Gly Glu Thr Asp
    210                 215                 220

Gly Pro Gln Pro Thr Ala Leu Ala Glu Thr Leu Pro Glu Gly Pro Ser
225                 230                 235                 240

His His Leu Leu Ser Pro Asp Gly Arg Thr Gly Gly Ser Val Ala Arg
                245                 250                 255

Ala Thr Pro Met Glu Phe Gln Asp Ser Ser Ala Pro Pro Ala Gln Ser
            260                 265                 270

Pro Gln His Ala Thr Asp Arg Trp Arg Arg Glu Thr Thr Arg Phe Phe
        275                 280                 285
```

```
Cys Pro Gln Pro Lys Glu His Ile Trp Lys Gln Thr Lys Thr Ser Pro
    290                 295                 300

Lys Pro Leu Pro Ser Arg Phe Ile Gly Ser Ile Ser Pro Leu Asn Pro
305                 310                 315                 320

Gln Pro Arg Pro Thr Arg Gln Gly Arg Pro Leu Pro Arg Gln Gly Ala
                325                 330                 335

Thr Leu Ala Gly Arg Ser Ser Ser Asn Ala Pro Lys Tyr Gly Arg Gly
            340                 345                 350

Gln Leu Asn Tyr Pro Leu Pro Asp Phe Ser Lys Val Gly Pro Arg Val
        355                 360                 365

Arg Phe Pro Lys Asp Glu Ser Tyr Arg Pro Pro Lys Ser Arg Ser His
    370                 375                 380

Asn Arg Lys Pro Gln Ala Pro Ala Arg Pro Leu Ile Phe Lys Ser Pro
385                 390                 395                 400

Ala Glu Ile Val Gln Glu Val Leu Leu Ser Ser Gly Glu Ala Ala Leu
                405                 410                 415

Ala Lys Asp Thr Pro Pro Ala His Pro Ile Thr Arg Val Pro Gln Glu
            420                 425                 430

Phe Gln Thr Pro Glu Gln Ala Thr Glu Leu Val His Gln Leu Gln Glu
        435                 440                 445

Asp Tyr His Arg Leu Leu Thr Lys Tyr Ala Glu Ala Glu Asn Thr Ile
    450                 455                 460

Asp Gln Leu Arg Leu Gly Ala Lys Val Asn Leu Phe Ser Asp Pro Pro
465                 470                 475                 480

Gln Pro Asn His Ser Ile His Thr Gly Met Val Pro Gln Gly Thr Lys
                485                 490                 495

Val Leu Ser Phe Thr Ile Pro Gln Pro Arg Ser Ala Glu Trp Trp Pro
            500                 505                 510
```

```
Gly Pro Ala Glu Asp Pro Gln Ala Ser Ala Ala Ser Gly Trp Pro Ser
        515                 520                 525

Ala Arg Gly Asp Leu Ser Pro Ser Ser Leu Thr Ser Met Pro Thr Leu
    530                 535                 540

Gly Trp Leu Pro Glu Asn Arg Asp Ile Ser Glu Asp Gln Ser Ser Ala
545                 550                 555                 560

Glu Gln Thr Gln Ala Leu Ala Ser Gln Ala Ser Gln Phe Leu Ala Lys
                565                 570                 575

Val Glu Ser Phe Glu Arg Leu Ile Gln Ala Gly Arg Leu Met Pro Gln
            580                 585                 590

Asp Gln Val Lys Gly Phe Gln Arg Leu Lys Ala Ala His Ala Ala Leu
        595                 600                 605

Glu Glu Glu Tyr Leu Lys Ala Cys Arg Glu Gln His Pro Ala Gln Pro
    610                 615                 620

Leu Ala Gly Ser Lys Gly Thr Pro Gly Arg Phe Asp Pro Arg Arg Glu
625                 630                 635                 640

Leu Glu Ala Glu Ile Tyr Arg Leu Gly Ser Cys Leu Glu Glu Leu Lys
                645                 650                 655

Glu His Ile Asp Gln Thr Gln Gln Glu Pro Glu Pro Pro Gly Ser Asp
            660                 665                 670

Ser Ala Leu Asp Ser Thr Pro Ala Leu Pro Cys Leu His Gln Pro Thr
        675                 680                 685

His Leu Pro Ala Pro Ser Gly Gln Ala Pro Met Pro Ala Ile Lys Thr
    690                 695                 700

Ser Cys Pro Glu Pro Ala Thr Thr Thr Ala Ala Ala Ser Thr Gly Pro
705                 710                 715                 720

Cys Pro Leu His Val Asn Val Glu Val Ser Ser Gly Asn Ser Glu Val
                725                 730                 735
```

```
Glu Asp Arg Pro Gln Asp Pro Leu Ala Arg Leu Arg His Lys Glu Leu
            740                 745                 750

Gln Met Glu Gln Val Tyr His Gly Leu Met Glu Arg Tyr Leu Ser Val
        755                 760                 765

Lys Ser Leu Pro Glu Ala Met Arg Met Glu Glu Glu Glu Glu Gly Glu
    770                 775                 780

Glu Glu Glu Glu Glu Glu Gly Gly Gly Asp Ser Leu Glu Val Asp Gly
785                 790                 795                 800

Val Ala Ala Thr Pro Gly Lys Ala Glu Ala Thr Arg Val Leu Pro Arg
                805                 810                 815

Gln Cys Pro Val Gln Ala Glu Lys Ser His Gly Ala Pro Leu Glu Glu
            820                 825                 830

Ala Thr Glu Lys Met Val Ser Met Lys Pro Pro Gly Phe Gln Ala Ser
        835                 840                 845

Leu Ala Arg Asp Gly His Met Ser Gly Leu Gly Lys Ala Glu Ala Ala
    850                 855                 860

Pro Pro Gly Pro Gly Val Pro Pro His Pro Pro Gly Thr Lys Ser Ala
865                 870                 875                 880

Ala Ser His Gln Ser Ser Met Thr Ser Leu Glu Gly Ser Gly Ile Ser
                885                 890                 895

Glu Arg Leu Pro Gln Lys Pro Leu His Arg Gly Gly Gly Pro His Leu
            900                 905                 910

Glu Glu Thr Trp Met Ala Ser Pro Glu Thr Asp Ser Gly Phe Val Gly
        915                 920                 925

Ser Glu Thr Ser Arg Val Ser Pro Leu Thr Gln Thr Pro Glu His Arg
    930                 935                 940

Leu Ser His Ile Ser Thr Ala Gly Thr Leu Ala Gln Pro Phe Ala Ala
945                 950                 955                 960

Ser Val Pro Arg Asp Gly Ala Ser Tyr Pro Lys Ala Arg Gly Ser Leu
```

965 970 975

Ile Pro Arg Arg Ala Thr Glu Pro Ser Thr Pro Arg Ser Gln Ala Gln
980 985 990

Arg Tyr Leu Ser Ser Pro Ser Gly Pro Leu Arg Gln Arg Ala Pro
Asn
995 1000 1005

Phe Ser Leu Glu Arg Thr Leu Ala Ala Glu Met Ala Val Pro Gly
1010 1015 1020

Ser Glu Phe Glu Gly His Lys Arg Ile Ser Glu Gln Pro Leu Pro
1025 1030 1035

Asn Lys Thr Ile Ser Pro Pro Pro Ala Pro Ala Pro Ala Ala Ala
1040 1045 1050

Pro Leu Pro Cys Gly Pro Thr Glu Thr Ile Pro Ser Phe Leu Leu
1055 1060 1065

Thr Arg Ala Gly Arg Asp Gln Ala Ile Cys Glu Leu Gln Glu Glu
1070 1075 1080

Val Ser Arg Leu Arg Leu Arg Leu Glu Asp Ser Leu His Gln Pro
1085 1090 1095

Leu Gln Gly Ser Pro Thr Arg Pro Ala Ser Ala Phe Asp Arg Pro
1100 1105 1110

Ala Arg Thr Arg Gly Arg Pro Ala Asp Ser Pro Ala Thr Trp Gly
1115 1120 1125

Ser His Tyr Gly Ser Lys Ser Thr Glu Arg Leu Pro Gly Glu Pro
1130 1135 1140

Arg Gly Glu Glu Gln Ile Val Pro Pro Gly Arg Gln Arg Ala Arg
1145 1150 1155

Ser Ser Ser Val Pro Arg Glu Val Leu Arg Leu Ser Leu Ser Ser
1160 1165 1170

Glu Ser Glu Leu Pro Ser Leu Pro Leu Phe Ser Glu Lys Ser Lys

1175 1180 1185

Thr Thr Lys Asp Ser Pro Gln Ala Ala Arg Asp Gly Lys Arg Gly
1190 1195 1200

Val Gly Ser Ala Gly Trp Pro Asp Arg Val Thr Phe Arg Gly Gln
1205 1210 1215

Tyr Thr Gly His Glu Tyr His Val Leu Ser Pro Lys Ala Val Pro
1220 1225 1230

Lys Gly Asn Gly Thr Val Ser Cys Pro His Cys Arg Pro Ile Arg
1235 1240 1245

Thr Gln Asp Ala Gly Gly Ala Val Thr Gly Asp Pro Leu Gly Pro
1250 1255 1260

Pro Pro Ala Asp Thr Leu Gln Cys Pro Leu Cys Gly Gln Val Gly
1265 1270 1275

Ser Pro Pro Glu Ala Asp Gly Pro Gly Ser Ala Thr Ser Gly Ala
1280 1285 1290

Glu Lys Ala Thr Thr Arg Arg Lys Ala Ser Ser Thr Pro Ser Pro
1295 1300 1305

Lys Gln Arg Ser Lys Gln Ala Gly Ser Ser Pro Arg Pro Pro Pro
1310 1315 1320

Gly Leu Trp Tyr Leu Ala Thr Ala Pro Pro Ala Pro Ala Pro Pro
1325 1330 1335

Ala Phe Ala Tyr Ile Ser Ser Val Pro Ile Met Pro Tyr Pro Pro
1340 1345 1350

Ala Ala Val Tyr Tyr Ala Pro Ala Gly Pro Thr Ser Ala Gln Pro
1355 1360 1365

Ala Ala Lys Trp Pro Pro Thr Ala Ser Pro Pro Pro Ala Arg Arg
1370 1375 1380

His Arg His Ser Ile Gln Leu Asp Leu Gly Asp Leu Glu Glu Leu
1385 1390 1395

```
Asn Lys  Ala Leu Ser Arg Ala  Val Gln Ala Ala Glu  Ser Val Arg
    1400                 1405                 1410

Ser Thr  Thr Arg Gln Met Arg  Ser Ser Leu Ser Ala  Asp Leu Arg
    1415                 1420                 1425

Gln Ala  His Ser Leu Arg Gly  Ser Cys Leu Phe
    1430                 1435
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<210> 6963
<211> 558
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<400> 6963

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Met Ala Lys Asn Arg Arg Asp Arg Asn Ser Trp Gly Gly Phe Ser Glu
1               5                  10                  15

Lys Thr Tyr Glu Trp Ser Ser Glu Glu Glu Glu Pro Val Lys Lys Ala
            20                  25                  30

Gly Pro Val Gln Val Leu Ile Val Lys Asp Asp His Ser Phe Glu Leu
        35                  40                  45

Asp Glu Thr Ala Leu Asn Arg Ile Leu Leu Ser Glu Ala Val Arg Asp
    50                  55                  60
```

```
Lys Glu Val Val Ala Val Ser Val Ala Gly Ala Phe Arg Lys Gly Lys
65                  70                  75                  80

Ser Phe Leu Met Asp Phe Met Leu Arg Tyr Met Tyr Asn Gln Glu Ser
                85                  90                  95

Val Asp Trp Val Gly Asp Tyr Asn Glu Pro Leu Thr Gly Phe Ser Trp
            100                 105                 110

Arg Gly Gly Ser Glu Arg Glu Thr Thr Gly Ile Gln Ile Trp Ser Glu
        115                 120                 125

Ile Phe Leu Ile Asn Lys Pro Asp Gly Lys Lys Val Ala Val Leu Leu
    130                 135                 140

Met Asp Thr Gln Gly Thr Phe Asp Ser Gln Ser Thr Leu Arg Asp Ser
145                 150                 155                 160

Ala Thr Val Phe Ala Leu Ser Thr Met Ile Ser Ser Ile Gln Val Tyr
                165                 170                 175

Asn Leu Ser Gln Asn Val Gln Glu Asp Asp Leu Gln His Leu Gln Leu
            180                 185                 190

Phe Thr Glu Tyr Gly Arg Leu Ala Met Glu Glu Thr Phe Leu Lys Pro
        195                 200                 205

Phe Gln Ser Leu Ile Phe Leu Val Arg Asp Trp Ser Phe Pro Tyr Glu
    210                 215                 220

Phe Ser Tyr Gly Ala Asp Gly Gly Ala Lys Phe Leu Glu Lys Arg Leu
225                 230                 235                 240

Lys Val Ser Gly Asn Gln His Glu Glu Leu Gln Asn Val Arg Lys His
                245                 250                 255

Ile His Ser Cys Phe Thr Asn Ile Ser Cys Phe Leu Leu Pro His Pro
            260                 265                 270

Gly Leu Lys Val Ala Thr Asn Pro Asn Phe Asp Gly Lys Leu Lys Glu
        275                 280                 285

Ile Asp Asp Glu Phe Ile Lys Asn Leu Lys Ile Leu Ile Pro Trp Leu
```

```
    290                 295                 300

Leu Ser Pro Glu Ser Leu Asp Ile Lys Glu Ile Asn Gly Asn Lys Ile
305                 310                 315                 320

Thr Cys Arg Gly Leu Val Glu Tyr Phe Lys Ala Tyr Ile Lys Ile Tyr
                325                 330                 335

Gln Gly Glu Glu Leu Pro His Pro Lys Ser Met Leu Gln Ala Thr Ala
            340                 345                 350

Glu Ala Asn Asn Leu Ala Ala Val Ala Thr Ala Lys Asp Thr Tyr Asn
        355                 360                 365

Lys Lys Met Glu Glu Ile Cys Gly Gly Asp Lys Pro Phe Leu Ala Pro
    370                 375                 380

Asn Asp Leu Gln Thr Lys His Leu Gln Leu Lys Glu Glu Ser Val Lys
385                 390                 395                 400

Leu Phe Arg Gly Val Lys Lys Met Gly Gly Glu Glu Phe Ser Arg Arg
                405                 410                 415

Tyr Leu Gln Gln Leu Glu Ser Glu Ile Asp Glu Leu Tyr Ile Gln Tyr
            420                 425                 430

Ile Lys His Asn Asp Ser Lys Asn Ile Phe His Ala Ala Arg Thr Pro
        435                 440                 445

Ala Thr Leu Phe Val Val Ile Phe Ile Thr Tyr Val Ile Ala Gly Val
    450                 455                 460

Thr Gly Phe Ile Gly Leu Asp Ile Ile Ala Ser Leu Cys Asn Met Ile
465                 470                 475                 480

Met Gly Leu Thr Leu Ile Thr Leu Cys Thr Trp Ala Tyr Ile Arg Tyr
                485                 490                 495

Ser Gly Glu Tyr Arg Glu Leu Gly Ala Val Ile Asp Gln Val Ala Ala
            500                 505                 510

Ala Leu Trp Asp Gln Gly Ser Thr Asn Glu Ala Leu Tyr Lys Leu Tyr
        515                 520                 525
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Ser Ala Ala Ala Thr His Arg His Leu Tyr His Gln Ala Phe Pro Thr
530 535 540

Pro Lys Ser Glu Ser Thr Glu Gln Ser Glu Lys Lys Lys Met
545 550 555

<210> 6964
<211> 553
<212> PRT
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<220>
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<220>
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Met Ala Lys Asn Arg Arg Asp Arg Asn Ser Trp Gly Gly Phe Ser Glu
1 5 10 15

Lys Thr Tyr Glu Trp Ser Ser Glu Glu Glu Glu Pro Val Lys Lys Ala
20 25 30

Gly Pro Val Gln Val Leu Ile Val Lys Asp Asp His Ser Phe Glu Leu
35 40 45

Asp Glu Thr Ala Leu Asn Arg Ile Leu Leu Ser Glu Ala Val Arg Asp
50 55 60

Lys Glu Val Val Ala Val Ser Val Ala Gly Ala Phe Arg Lys Gly Lys
65 70 75 80

```
Ser Phe Leu Met Asp Phe Met Leu Arg Tyr Met Tyr Asn Gln Glu Ser
                85                  90                  95

Val Asp Trp Val Gly Asp Tyr Asn Glu Pro Leu Thr Gly Phe Ser Trp
            100                 105                 110

Arg Gly Gly Ser Glu Arg Glu Thr Thr Gly Ile Gln Ile Trp Ser Glu
        115                 120                 125

Ile Phe Leu Ile Asn Lys Pro Asp Gly Lys Lys Val Ala Val Leu Leu
    130                 135                 140

Met Asp Thr Gln Gly Thr Phe Asp Ser Gln Ser Thr Leu Arg Asp Ser
145                 150                 155                 160

Ala Thr Val Phe Ala Leu Ser Thr Met Ile Ser Ser Ile Gln Val Tyr
                165                 170                 175

Asn Leu Ser Gln Asn Val Gln Glu Asp Asp Leu Gln His Leu Gln Leu
            180                 185                 190

Phe Thr Glu Tyr Gly Arg Leu Ala Met Glu Glu Thr Phe Leu Lys Pro
        195                 200                 205

Phe Gln Ser Leu Ile Phe Leu Val Arg Asp Trp Ser Phe Pro Tyr Glu
    210                 215                 220

Phe Ser Tyr Gly Ala Asp Gly Gly Ala Lys Phe Leu Glu Lys Arg Leu
225                 230                 235                 240

Lys Val Ser Gly Asn Gln His Glu Glu Leu Gln Asn Val Arg Lys His
                245                 250                 255

Ile His Ser Cys Phe Thr Asn Ile Ser Cys Phe Leu Leu Pro His Pro
            260                 265                 270

Gly Leu Lys Val Ala Thr Asn Pro Asn Phe Asp Gly Lys Leu Lys Glu
        275                 280                 285

Ile Asp Asp Glu Phe Ile Lys Asn Leu Lys Ile Leu Ile Pro Trp Leu
    290                 295                 300

Leu Ser Pro Glu Ser Leu Asp Ile Lys Glu Ile Asn Gly Asn Lys Ile
```

305 310 315 320

Thr Cys Arg Gly Leu Val Glu Tyr Phe Lys Ala Tyr Ile Lys Ile Tyr
325 330 335

Gln Gly Glu Glu Leu Pro His Pro Lys Ser Met Leu Gln Ala Thr Ala
340 345 350

Glu Ala Asn Asn Leu Ala Ala Val Ala Thr Ala Lys Asp Thr Tyr Asn
355 360 365

Lys Lys Met Glu Glu Ile Cys Gly Gly Asp Lys Pro Phe Leu Ala Pro
370 375 380

Asn Asp Leu Gln Thr Lys His Leu Gln Leu Lys Glu Glu Ser Val Lys
385 390 395 400

Leu Phe Arg Gly Val Lys Lys Met Gly Gly Glu Glu Phe Ser Arg Arg
405 410 415

Tyr Leu Gln Gln Leu Glu Ser Glu Ile Asp Glu Leu Tyr Ile Gln Tyr
420 425 430

Ile Lys His Asn Asp Ser Lys Asn Ile Phe His Ala Ala Arg Thr Pro
435 440 445

Ala Thr Leu Phe Val Val Ile Phe Ile Thr Tyr Val Ile Ala Gly Val
450 455 460

Thr Gly Phe Ile Gly Leu Asp Ile Ile Ala Ser Leu Cys Asn Met Ile
465 470 475 480

Met Gly Leu Thr Leu Ile Thr Leu Cys Thr Trp Ala Tyr Ile Arg Tyr
485 490 495

Ser Gly Glu Tyr Arg Glu Leu Gly Ala Val Ile Asp Gln Val Ala Ala
500 505 510

Ala Leu Trp Asp Gln Ala Leu Tyr Lys Leu Tyr Ser Ala Ala Ala Thr
515 520 525

His Arg His Leu Tyr His Gln Ala Phe Pro Thr Pro Lys Ser Glu Ser
530 535 540

```
Thr Glu Gln Ser Glu Lys Lys Lys Met
545                 550


<210> 6965
<211> 52
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<220>
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<223> /note="ENSP ID: ENSP00000450897"

<400> 6965
Gly Asn Gln His Glu Glu Leu Gln Asn Val Arg Lys His Ile His Ser
1               5                   10                  15


Cys Phe Thr Asn Ile Ser Cys Phe Leu Leu Pro His Pro Gly Leu Lys
            20                  25                  30


Val Ala Thr Asn Pro Asn Phe Asp Gly Lys Leu Lys Gly Leu Tyr Lys
        35                  40                  45


Asp Leu Ser Arg
    50


<210> 6966
<211> 29
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
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<220>
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<400> 6966
Met Ala Lys Asn Arg Arg Asp Arg Asn Ser Trp Gly Gly Phe Ser Glu
1 5 10 15

Lys Thr Tyr Glu Trp Ser Ser Glu Glu Glu Glu Pro Val
20 25

<210> 6967
<211> 47
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="ENSP ID: ENSP00000451015"

<400> 6967
Met Asp Phe Met Leu Arg Tyr Met Tyr Asn Gln Glu Ser Val Asp Trp
1 5 10 15

Val Gly Asp Tyr Asn Glu Pro Leu Thr Gly Phe Ser Trp Arg Gly Gly
20 25 30

Ser Glu Arg Glu Thr Thr Gly Ile Gln Ile Trp Ser Glu Ile Phe
35 40 45

<210> 6968
<211> 105
<212> PRT

<213> Homo sapiens

<220>
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<220>
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<400> 6968
Gln Gln Leu Glu Ser Glu Ile Asp Glu Leu Tyr Ile Gln Tyr Ile Lys
1 5 10 15

His Asn Asp Ser Lys Asn Ile Phe His Ala Ala Arg Thr Pro Ala Thr
20 25 30

Leu Phe Val Val Ile Phe Ile Thr Tyr Val Ile Ala Gly Val Thr Gly
35 40 45

Phe Ile Gly Leu Asp Ile Ile Ala Ser Leu Cys Asn Met Ile Met Gly
50 55 60

Leu Thr Leu Ile Thr Leu Cys Thr Trp Ala Tyr Ile Arg Tyr Ser Gly
65 70 75 80

Glu Tyr Arg Glu Leu Gly Ala Val Ile Asp Gln Val Ala Ala Ala Leu
85 90 95

Trp Asp Gln Gly Ser Thr Asn Glu Ile
100 105

<210> 6969
<211> 75
<212> PRT
<213> Homo sapiens

<220>
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<400> 6969
Met Asp Thr Gln Gly Thr Phe Asp Ser Gln Ser Thr Leu Arg Asp Ser
1 5 10 15

Ala Thr Val Phe Ala Leu Ser Thr Met Ile Ser Ser Ile Gln Val Tyr
20 25 30

Asn Leu Ser Gln Asn Val Gln Glu Asp Asp Leu Gln His Leu Gln Leu
35 40 45

Phe Thr Glu Tyr Gly Arg Leu Ala Met Glu Glu Thr Phe Leu Lys Pro
50 55 60

Phe Gln Ser Leu Ile Phe Leu Val Arg Asp Trp
65 70 75

<210> 6970
<211> 99
<212> PRT
<213> Homo sapiens

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<400> 6970

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Met Ala Lys Asn Arg Arg Asp Arg Asn Ser Trp Gly Gly Phe Ser Glu
1               5                   10                  15

Lys Thr Tyr Glu Trp Ser Ser Glu Glu Glu Glu Pro Val Lys Lys Ala
            20                  25                  30

Gly Pro Val Gln Val Leu Ile Val Lys Asp Asp His Ser Phe Glu Leu
        35                  40                  45

Asp Glu Thr Ala Leu Asn Arg Ile Leu Leu Ser Glu Ala Val Arg Asp
    50                  55                  60

Lys Glu Val Val Ala Val Ser Val Ala Gly Ala Phe Arg Lys Gly Lys
65                  70                  75                  80

Ser Phe Leu Met Asp Phe Met Leu Arg Tyr Met Tyr Asn Gln Glu Ser
                85                  90                  95

Val Asp Trp
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<210> 6971
<211> 583
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<213> Homo sapiens

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<223> /note="Gene Symbol: ATL2; "

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<223> /note="Gene Name:
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<223> /note="ENSP ID: ENSP00000368237"

<400> 6971

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Met Ala Glu Gly Asp Glu Ala Ala Arg Gly Gln Gln Pro His Gln Gly
1               5                   10                  15
```

```
Leu Trp Arg Arg Arg Arg Thr Ser Asp Pro Ser Ala Ala Val Asn His
            20                  25                  30

Val Ser Ser Thr Thr Ser Leu Gly Glu Asn Tyr Glu Asp Asp Asp Leu
        35                  40                  45

Val Asn Ser Asp Glu Val Met Lys Lys Pro Cys Pro Val Gln Ile Val
    50                  55                  60

Leu Ala His Glu Asp Asp His Asn Phe Glu Leu Asp Glu Glu Ala Leu
65                  70                  75                  80

Glu Gln Ile Leu Leu Gln Glu His Ile Arg Asp Leu Asn Ile Val Val
                85                  90                  95

Val Ser Val Ala Gly Ala Phe Arg Lys Gly Lys Ser Phe Leu Leu Asp
            100                 105                 110

Phe Met Leu Arg Tyr Met Tyr Asn Lys Asp Ser Gln Ser Trp Ile Gly
        115                 120                 125

Gly Asn Asn Glu Pro Leu Thr Gly Phe Thr Trp Arg Gly Gly Cys Glu
    130                 135                 140

Arg Glu Thr Thr Gly Ile Gln Val Trp Asn Glu Val Phe Val Ile Asp
145                 150                 155                 160

Arg Pro Asn Gly Thr Lys Val Ala Val Leu Leu Met Asp Thr Gln Gly
                165                 170                 175

Ala Phe Asp Ser Gln Ser Thr Ile Lys Asp Cys Ala Thr Val Phe Ala
            180                 185                 190

Leu Ser Thr Met Thr Ser Ser Val Gln Val Tyr Asn Leu Ser Gln Asn
        195                 200                 205

Ile Gln Glu Asp Asp Leu Gln His Leu Gln Leu Phe Thr Glu Tyr Gly
    210                 215                 220

Arg Leu Ala Met Glu Glu Ile Tyr Gln Lys Pro Phe Gln Thr Leu Met
225                 230                 235                 240
```

```
Phe Leu Ile Arg Asp Trp Ser Tyr Pro Tyr Glu His Ser Tyr Gly Leu
                245                 250                 255

Glu Gly Gly Lys Gln Phe Leu Glu Lys Arg Leu Gln Val Lys Gln Asn
            260                 265                 270

Gln His Glu Glu Leu Gln Asn Val Arg Lys His Ile His Asn Cys Phe
        275                 280                 285

Ser Asn Leu Gly Cys Phe Leu Leu Pro His Pro Gly Leu Lys Val Ala
    290                 295                 300

Thr Asn Pro Ser Phe Asp Gly Arg Leu Lys Asp Ile Asp Glu Asp Phe
305                 310                 315                 320

Lys Arg Glu Leu Arg Asn Leu Val Pro Leu Leu Leu Ala Pro Glu Asn
                325                 330                 335

Leu Val Glu Lys Glu Ile Ser Gly Ser Lys Val Thr Cys Arg Asp Leu
            340                 345                 350

Val Glu Tyr Phe Lys Ala Tyr Ile Lys Ile Tyr Gln Gly Glu Glu Leu
        355                 360                 365

Pro His Pro Lys Ser Met Leu Gln Ala Thr Ala Glu Ala Asn Asn Leu
    370                 375                 380

Ala Ala Val Ala Gly Ala Arg Asp Thr Tyr Cys Lys Ser Met Glu Gln
385                 390                 395                 400

Val Cys Gly Gly Asp Lys Pro Tyr Ile Ala Pro Ser Asp Leu Glu Arg
                405                 410                 415

Lys His Leu Asp Leu Lys Glu Val Ala Ile Lys Gln Phe Arg Ser Val
            420                 425                 430

Lys Lys Met Gly Gly Asp Glu Phe Cys Arg Arg Tyr Gln Asp Gln Leu
        435                 440                 445

Glu Ala Glu Ile Glu Glu Thr Tyr Ala Asn Phe Ile Lys His Asn Asp
    450                 455                 460
```

```
Gly Lys Asn Ile Phe Tyr Ala Ala Arg Thr Pro Ala Thr Leu Phe Ala
465                 470                 475                 480

Val Met Phe Ala Met Tyr Ile Ile Ser Gly Leu Thr Gly Phe Ile Gly
                485                 490                 495

Leu Asn Ser Ile Ala Val Leu Cys Asn Leu Val Met Gly Leu Ala Leu
            500                 505                 510

Ile Phe Leu Cys Thr Trp Ala Tyr Val Lys Tyr Ser Gly Glu Phe Arg
        515                 520                 525

Glu Ile Gly Thr Val Ile Asp Gln Ile Ala Glu Thr Leu Trp Glu Gln
    530                 535                 540

Val Leu Lys Pro Leu Gly Asp Asn Leu Met Glu Glu Asn Ile Arg Gln
545                 550                 555                 560

Ser Val Thr Asn Ser Ile Lys Ala Gly Leu Thr Asp Gln Val Ser His
                565                 570                 575

His Ala Arg Leu Lys Thr Asp
            580


<210> 6972
<211> 49
<212> PRT
<213> Homo sapiens

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<223> /note="Payload ID: 1487; "

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<223> /note="Gene Name:
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<220>
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<400> 6972
Met Ala Glu Gly Asp Glu Ala Ala Arg Gly Gln Gln Pro His Gln Gly
1               5                   10                  15
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Leu Trp Arg Arg Arg Arg Thr Ser Asp Pro Ser Ala Ala Val Asn His
            20   25   30

Val Ser Ser Thr Thr Ser Leu Gly Phe Ser Lys Leu Asp Trp Trp Lys
        35   40   45

Gln

<210> 6973
<211> 412
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Name:
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<220>
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<223> /note="ENSP ID: ENSP00000384062"

<400> 6973
Met Asp Thr Gln Gly Ala Phe Asp Ser Gln Ser Thr Ile Lys Asp Cys
1   5   10   15

Ala Thr Val Phe Ala Leu Ser Thr Met Thr Ser Ser Val Gln Val Tyr
            20   25   30

Asn Leu Ser Gln Asn Ile Gln Glu Asp Asp Leu Gln His Leu Gln Leu
        35   40   45

Phe Thr Glu Tyr Gly Arg Leu Ala Met Glu Glu Ile Tyr Gln Lys Pro
    50   55   60

```
Phe Gln Thr Leu Met Phe Leu Ile Arg Asp Trp Ser Tyr Pro Tyr Glu
65                  70                  75                  80

His Ser Tyr Gly Leu Glu Gly Gly Lys Gln Phe Leu Glu Lys Arg Leu
                85                  90                  95

Gln Val Lys Gln Asn Gln His Glu Glu Leu Gln Asn Val Arg Lys His
            100                 105                 110

Ile His Asn Cys Phe Ser Asn Leu Gly Cys Phe Leu Leu Pro His Pro
        115                 120                 125

Gly Leu Lys Val Ala Thr Asn Pro Ser Phe Asp Gly Arg Leu Lys Asp
    130                 135                 140

Ile Asp Glu Asp Phe Lys Arg Glu Leu Arg Asn Leu Val Pro Leu Leu
145                 150                 155                 160

Leu Ala Pro Glu Asn Leu Val Glu Lys Glu Ile Ser Gly Ser Lys Val
                165                 170                 175

Thr Cys Arg Asp Leu Val Glu Tyr Phe Lys Ala Tyr Ile Lys Ile Tyr
            180                 185                 190

Gln Gly Glu Glu Leu Pro His Pro Lys Ser Met Leu Gln Ala Thr Ala
        195                 200                 205

Glu Ala Asn Asn Leu Ala Ala Val Ala Gly Ala Arg Asp Thr Tyr Cys
    210                 215                 220

Lys Ser Met Glu Gln Val Cys Gly Gly Asp Lys Pro Tyr Ile Ala Pro
225                 230                 235                 240

Ser Asp Leu Glu Arg Lys His Leu Asp Leu Lys Glu Val Ala Ile Lys
                245                 250                 255

Gln Phe Arg Ser Val Lys Lys Met Gly Gly Asp Glu Phe Cys Arg Arg
            260                 265                 270

Tyr Gln Asp Gln Leu Glu Ala Glu Ile Glu Glu Thr Tyr Ala Asn Phe
        275                 280                 285

Ile Lys His Asn Asp Gly Lys Asn Ile Phe Tyr Ala Ala Arg Thr Pro
```

```
    290                 295                 300

Ala Thr Leu Phe Ala Val Met Phe Ala Met Tyr Ile Ile Ser Gly Leu
305                 310                 315                 320

Thr Gly Phe Ile Gly Leu Asn Ser Ile Ala Val Leu Cys Asn Leu Val
                325                 330                 335

Met Gly Leu Ala Leu Ile Phe Leu Cys Thr Trp Ala Tyr Val Lys Tyr
            340                 345                 350

Ser Gly Glu Phe Arg Glu Ile Gly Thr Val Ile Asp Gln Ile Ala Glu
        355                 360                 365

Thr Leu Trp Glu Gln Val Leu Lys Pro Leu Gly Asp Asn Leu Met Glu
    370                 375                 380

Glu Asn Ile Arg Gln Ser Val Thr Asn Ser Ile Lys Ala Gly Leu Thr
385                 390                 395                 400

Asp Gln Val Ser His His Ala Arg Leu Lys Thr Asp
                405                 410


<210> 6974
<211> 413
<212> PRT
<213> Homo sapiens

<220>
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      atlastin GTPase 2; "

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<400> 6974
Met Asp Thr Gln Gly Ala Phe Asp Ser Gln Ser Thr Ile Lys Asp Cys
1               5                   10                  15
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```
Ala Thr Val Phe Ala Leu Ser Thr Met Thr Ser Ser Val Gln Val Tyr
            20                  25                  30

Asn Leu Ser Gln Asn Ile Gln Glu Asp Asp Leu Gln His Leu Gln Leu
        35                  40                  45

Phe Thr Glu Tyr Gly Arg Leu Ala Met Glu Glu Ile Tyr Gln Lys Pro
    50                  55                  60

Phe Gln Thr Leu Met Phe Leu Ile Arg Asp Trp Ser Tyr Pro Tyr Glu
65                  70                  75                  80

His Ser Tyr Gly Leu Glu Gly Gly Lys Gln Phe Leu Glu Lys Arg Leu
                85                  90                  95

Gln Val Lys Gln Asn Gln His Glu Glu Leu Gln Asn Val Arg Lys His
            100                 105                 110

Ile His Asn Cys Phe Ser Asn Leu Gly Cys Phe Leu Leu Pro His Pro
        115                 120                 125

Gly Leu Lys Val Ala Thr Asn Pro Ser Phe Asp Gly Arg Leu Lys Asp
    130                 135                 140

Ile Asp Glu Asp Phe Lys Arg Glu Leu Arg Asn Leu Val Pro Leu Leu
145                 150                 155                 160

Leu Ala Pro Glu Asn Leu Val Glu Lys Glu Ile Ser Gly Ser Lys Val
                165                 170                 175

Thr Cys Arg Asp Leu Val Glu Tyr Phe Lys Ala Tyr Ile Lys Ile Tyr
            180                 185                 190

Gln Gly Glu Glu Leu Pro His Pro Lys Ser Met Leu Gln Ala Thr Ala
        195                 200                 205

Glu Ala Asn Asn Leu Ala Ala Val Ala Gly Ala Arg Asp Thr Tyr Cys
    210                 215                 220

Lys Ser Met Glu Gln Val Cys Gly Gly Asp Lys Pro Tyr Ile Ala Pro
225                 230                 235                 240
```

```
Ser Asp Leu Glu Arg Lys His Leu Asp Leu Lys Glu Val Ala Ile Lys
                245                 250                 255

Gln Phe Arg Ser Val Lys Lys Met Gly Gly Asp Glu Phe Cys Arg Arg
            260                 265                 270

Tyr Gln Asp Gln Leu Glu Ala Glu Ile Glu Glu Thr Tyr Ala Asn Phe
        275                 280                 285

Ile Lys His Asn Asp Gly Lys Asn Ile Phe Tyr Ala Ala Arg Thr Pro
    290                 295                 300

Ala Thr Leu Phe Ala Val Met Phe Ala Met Tyr Ile Ile Ser Gly Leu
305                 310                 315                 320

Thr Gly Phe Ile Gly Leu Asn Ser Ile Ala Val Leu Cys Asn Leu Val
                325                 330                 335

Met Gly Leu Ala Leu Ile Phe Leu Cys Thr Trp Ala Tyr Val Lys Tyr
            340                 345                 350

Ser Gly Glu Phe Arg Glu Ile Gly Thr Val Ile Asp Gln Ile Ala Glu
        355                 360                 365

Thr Leu Trp Glu Gln Arg Ser Pro Arg Lys Val Phe Ser Lys Leu Phe
    370                 375                 380

Glu Val Thr Arg Arg Arg Met Val His Arg Ala Leu Ser Ser Ala Gln
385                 390                 395                 400

Arg Gln Arg Leu Ser Ser Asn Asn Asn Lys Lys Lys Asn
                405                 410


<210> 6975
<211> 565
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1487; "

<220>
<221> source
<223> /note="Gene Symbol: ATL2; "
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<220>
<221> source
<223> /note="Gene Name:
atlastin GTPase 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q8NHH9; "

<220>
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<223> /note="ENSP ID: ENSP00000390743"

<400> 6975

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Met Val Leu Lys Lys Gly Ile Lys Phe Phe Gln Arg Leu Ile Asn Ser
1               5                  10                  15

Lys Ser Leu Arg Phe Gly Glu Asn Tyr Glu Asp Asp Asp Leu Val Asn
            20                  25                  30

Ser Asp Glu Val Met Lys Lys Pro Cys Pro Val Gln Ile Val Leu Ala
        35                  40                  45

His Glu Asp Asp His Asn Phe Glu Leu Asp Glu Glu Ala Leu Glu Gln
    50                  55                  60

Ile Leu Leu Gln Glu His Ile Arg Asp Leu Asn Ile Val Val Val Ser
65                  70                  75                  80

Val Ala Gly Ala Phe Arg Lys Gly Lys Ser Phe Leu Leu Asp Phe Met
                85                  90                  95

Leu Arg Tyr Met Tyr Asn Lys Asp Ser Gln Ser Trp Ile Gly Gly Asn
            100                 105                 110

Asn Glu Pro Leu Thr Gly Phe Thr Trp Arg Gly Gly Cys Glu Arg Glu
        115                 120                 125

Thr Thr Gly Ile Gln Val Trp Asn Glu Val Phe Val Ile Asp Arg Pro
    130                 135                 140

Asn Gly Thr Lys Val Ala Val Leu Leu Met Asp Thr Gln Gly Ala Phe
145                 150                 155                 160

Asp Ser Gln Ser Thr Ile Lys Asp Cys Ala Thr Val Phe Ala Leu Ser
                165                 170                 175
```

```
Thr Met Thr Ser Ser Val Gln Val Tyr Asn Leu Ser Gln Asn Ile Gln
            180                 185                 190

Glu Asp Asp Leu Gln His Leu Gln Leu Phe Thr Glu Tyr Gly Arg Leu
        195                 200                 205

Ala Met Glu Glu Ile Tyr Gln Lys Pro Phe Gln Thr Leu Met Phe Leu
    210                 215                 220

Ile Arg Asp Trp Ser Tyr Pro Tyr Glu His Ser Tyr Gly Leu Glu Gly
225                 230                 235                 240

Gly Lys Gln Phe Leu Glu Lys Arg Leu Gln Val Lys Gln Asn Gln His
                245                 250                 255

Glu Glu Leu Gln Asn Val Arg Lys His Ile His Asn Cys Phe Ser Asn
            260                 265                 270

Leu Gly Cys Phe Leu Leu Pro His Pro Gly Leu Lys Val Ala Thr Asn
        275                 280                 285

Pro Ser Phe Asp Gly Arg Leu Lys Asp Ile Asp Glu Asp Phe Lys Arg
    290                 295                 300

Glu Leu Arg Asn Leu Val Pro Leu Leu Leu Ala Pro Glu Asn Leu Val
305                 310                 315                 320

Glu Lys Glu Ile Ser Gly Ser Lys Val Thr Cys Arg Asp Leu Val Glu
                325                 330                 335

Tyr Phe Lys Ala Tyr Ile Lys Ile Tyr Gln Gly Glu Glu Leu Pro His
            340                 345                 350

Pro Lys Ser Met Leu Gln Ala Thr Ala Glu Ala Asn Asn Leu Ala Ala
        355                 360                 365

Val Ala Gly Ala Arg Asp Thr Tyr Cys Lys Ser Met Glu Gln Val Cys
    370                 375                 380

Gly Gly Asp Lys Pro Tyr Ile Ala Pro Ser Asp Leu Glu Arg Lys His
385                 390                 395                 400
```

```
Leu Asp Leu Lys Glu Val Ala Ile Lys Gln Phe Arg Ser Val Lys Lys
                405                 410                 415

Met Gly Gly Asp Glu Phe Cys Arg Arg Tyr Gln Asp Gln Leu Glu Ala
            420                 425                 430

Glu Ile Glu Glu Thr Tyr Ala Asn Phe Ile Lys His Asn Asp Gly Lys
        435                 440                 445

Asn Ile Phe Tyr Ala Ala Arg Thr Pro Ala Thr Leu Phe Ala Val Met
    450                 455                 460

Phe Ala Met Tyr Ile Ile Ser Gly Leu Thr Gly Phe Ile Gly Leu Asn
465                 470                 475                 480

Ser Ile Ala Val Leu Cys Asn Leu Val Met Gly Leu Ala Leu Ile Phe
                485                 490                 495

Leu Cys Thr Trp Ala Tyr Val Lys Tyr Ser Gly Glu Phe Arg Glu Ile
            500                 505                 510

Gly Thr Val Ile Asp Gln Ile Ala Glu Thr Leu Trp Glu Gln Val Leu
        515                 520                 525

Lys Pro Leu Gly Asp Asn Leu Met Glu Glu Asn Ile Arg Gln Ser Val
    530                 535                 540

Thr Asn Ser Ile Lys Ala Gly Leu Thr Asp Gln Val Ser His His Ala
545                 550                 555                 560

Arg Leu Lys Thr Asp
                565


<210> 6976
<211> 185
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1487; "

<220>
<221> source
<223> /note="Gene Symbol: ATL2; "
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<220>
<221> source
<223> /note="Gene Name:
atlastin GTPase 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000404921"

<400> 6976

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Met Ala Glu Gly Asp Glu Ala Ala Arg Gly Gln Gln Pro His Gln Gly
1               5                  10                  15

Leu Trp Arg Arg Arg Arg Thr Ser Asp Pro Ser Ala Ala Val Asn His
            20                  25                  30

Val Ser Ser Thr Thr Ser Leu Glu Ser Cys Ser Val Ala Arg Leu Glu
        35                  40                  45

Cys Ser Gly Thr Ile Phe Ala Tyr Cys Asn Leu Pro Gly Ser Ser Asp
    50                  55                  60

Ser Ser Ala Ser Ala Ser Gln Val Ala Gly Ile Thr Gly Glu Asn Tyr
65                  70                  75                  80

Glu Asp Asp Asp Leu Val Asn Ser Asp Glu Val Met Lys Lys Pro Cys
                85                  90                  95

Pro Val Gln Ile Val Leu Ala His Glu Asp Asp His Asn Phe Glu Leu
            100                 105                 110

Asp Glu Glu Ala Leu Glu Gln Ile Leu Leu Gln Glu His Ile Arg Asp
        115                 120                 125

Leu Asn Ile Val Val Val Ser Val Ala Gly Ala Phe Arg Lys Gly Lys
    130                 135                 140

Ser Phe Leu Leu Asp Phe Met Leu Arg Tyr Met Tyr Asn Lys Asp Ser
145                 150                 155                 160

Gln Ser Trp Ile Gly Gly Asn Asn Glu Pro Leu Thr Gly Phe Thr Trp
                165                 170                 175

Arg Gly Gly Cys Glu Arg Glu Thr Thr
            180                 185
```

<210> 6977
<211> 93
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ATL2; "

<220>
<221> source
<223> /note="Gene Name:
atlastin GTPase 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000406004"

<400> 6977
Met Ala Glu Gly Asp Glu Ala Ala Arg Gly Gln Gln Pro His Gln Gly
1 5 10 15

Leu Trp Arg Arg Arg Arg Thr Ser Asp Pro Ser Ala Ala Val Asn His
20 25 30

Val Ser Ser Thr Thr Ser Leu Asp Gly Val Ser Leu Cys Arg Pro Gly
35 40 45

Trp Gly Ala Val Ala Arg Ser Arg Leu Thr Ala Ser Ser Ala Ser Trp
50 55 60

Val His Ala Ile Leu Arg Pro Gln Pro Pro Glu Tyr Leu Gly Leu Gln
65 70 75 80

Ala Pro Ala Thr Val Ser Gly Leu Leu Phe Leu Tyr Phe
85 90

<210> 6978
<211> 175
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1487; "

<220>
<221> source
<223> /note="Gene Symbol: ATL2; "

<220>
<221> source
<223> /note="Gene Name:
atlastin GTPase 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000409811"

<400> 6978
Met Ala Glu Gly Asp Glu Ala Ala Arg Gly Gln Gln Pro His Gln Gly
1 5 10 15

Leu Trp Arg Arg Arg Arg Thr Ser Asp Pro Ser Ala Ala Val Asn His
20 25 30

Val Ser Ser Thr Thr Ser Leu Glu Tyr Gly Arg Leu Ala Met Glu Glu
35 40 45

Ile Tyr Gln Lys Pro Phe Gln Thr Leu Met Phe Leu Ile Arg Asp Trp
50 55 60

Ser Tyr Pro Tyr Glu His Ser Tyr Gly Leu Glu Gly Gly Lys Gln Phe
65 70 75 80

Leu Glu Lys Arg Leu Gln Val Lys Gln Asn Gln His Glu Glu Leu Gln
85 90 95

Asn Val Arg Lys His Ile His Asn Cys Phe Ser Asn Leu Gly Cys Phe
100 105 110

Leu Leu Pro His Pro Gly Leu Lys Val Ala Thr Asn Pro Ser Phe Asp
115 120 125

Gly Arg Leu Lys Asp Ile Asp Glu Asp Phe Lys Arg Glu Leu Arg Asn
130 135 140

Leu Val Pro Leu Leu Leu Ala Pro Glu Asn Leu Val Glu Lys Glu Ile
145 150 155 160

Ser Gly Ser Lys Val Thr Cys Arg Asp Leu Val Glu Tyr Phe Lys
165 170 175

<210> 6979
<211> 258
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1487; "

<220>
<221> source
<223> /note="Gene Symbol: ATL2; "

<220>
<221> source
<223> /note="Gene Name:
atlastin GTPase 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000410592"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 6979
Xaa Glu Gly Asp Glu Ala Ala Arg Gly Gln Gln Pro His Gln Gly Leu
1 5 10 15

Trp Arg Arg Arg Arg Thr Ser Asp Pro Ser Ala Ala Val Asn His Val
20 25 30

Ser Ser Thr Thr Ser Leu Gly Glu Asn Tyr Glu Asp Asp Asp Leu Val
35 40 45

Asn Ser Asp Glu Val Met Lys Lys Pro Cys Pro Val Gln Ile Val Leu
50 55 60

Ala His Glu Asp Asp His Asn Phe Glu Leu Asp Glu Glu Ala Leu Glu
65 70 75 80

Gln Ile Leu Leu Gln Glu His Ile Arg Asp Leu Asn Ile Val Val Val
85 90 95

Ser Val Ala Gly Ala Phe Arg Lys Gly Lys Ser Phe Leu Leu Asp Phe
100 105 110

```
Met Leu Arg Tyr Met Tyr Asn Lys Val Tyr Asn Leu Ser Gln Asn Ile
        115                 120                 125

Gln Glu Asp Asp Leu Gln His Leu Gln Leu Phe Thr Glu Tyr Gly Arg
    130                 135                 140

Leu Ala Met Glu Glu Ile Tyr Gln Lys Pro Phe Gln Thr Leu Met Phe
145                 150                 155                 160

Leu Ile Arg Asp Trp Ser Tyr Pro Tyr Glu His Ser Tyr Gly Leu Glu
                165                 170                 175

Gly Gly Lys Gln Phe Leu Glu Lys Arg Leu Gln Val Lys Gln Asn Gln
            180                 185                 190

His Glu Glu Leu Gln Asn Val Arg Lys His Ile His Asn Cys Phe Ser
        195                 200                 205

Asn Leu Gly Cys Phe Leu Leu Pro His Pro Gly Leu Lys Val Ala Thr
    210                 215                 220

Asn Pro Ser Phe Asp Gly Arg Leu Lys Asp Ile Asp Glu Asp Phe Lys
225                 230                 235                 240

Arg Glu Leu Arg Asn Leu Val Pro Leu Leu Leu Ala Pro Glu Asn Leu
                245                 250                 255

Val Glu
```

<210> 6980
<211> 86
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1487; "

<220>
<221> source
<223> /note="Gene Symbol: ATL2; "

<220>
<221> source
<223> /note="Gene Name:

atlastin GTPase 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000413216"

<400> 6980
Met Ala Glu Gly Asp Glu Ala Ala Arg Gly Gln Gln Pro His Gln Gly
1   5   10   15

Leu Trp Arg Arg Arg Arg Thr Ser Asp Pro Ser Ala Ala Val Asn His
            20   25   30

Val Ser Ser Thr Thr Ser Leu Glu Ser Cys Ser Val Ala Arg Leu Glu
        35   40   45

Cys Ser Gly Thr Ile Phe Ala Tyr Cys Asn Leu Pro Gly Ser Ser Asp
    50   55   60

Ser Ser Ala Ser Ala Ser Gln Val Ala Gly Ile Thr Gly Phe Ser Lys
65   70   75   80

Leu Asp Trp Trp Lys Gln
                85

<210> 6981
<211> 579
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1487; "

<220>
<221> source
<223> /note="Gene Symbol: ATL2; "

<220>
<221> source
<223> /note="Gene Name:
atlastin GTPase 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q8NHH9; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000415336"

<400> 6981
Met Ala Glu Gly Asp Glu Ala Ala Arg Gly Gln Gln Pro His Gln Gly
1 5 10 15

Leu Trp Arg Arg Arg Arg Thr Ser Asp Pro Ser Ala Ala Val Asn His
20 25 30

Val Ser Ser Thr Thr Ser Leu Gly Glu Asn Tyr Glu Asp Asp Asp Leu
35 40 45

Val Asn Ser Asp Glu Val Met Lys Lys Pro Cys Pro Val Gln Ile Val
50 55 60

Leu Ala His Glu Asp Asp His Asn Phe Glu Leu Asp Glu Glu Ala Leu
65 70 75 80

Glu Gln Ile Leu Leu Gln Glu His Ile Arg Asp Leu Asn Ile Val Val
85 90 95

Val Ser Val Ala Gly Ala Phe Arg Lys Gly Lys Ser Phe Leu Leu Asp
100 105 110

Phe Met Leu Arg Tyr Met Tyr Asn Lys Asp Ser Gln Ser Trp Ile Gly
115 120 125

Gly Asn Asn Glu Pro Leu Thr Gly Phe Thr Trp Arg Gly Gly Cys Glu
130 135 140

Arg Glu Thr Thr Gly Ile Gln Val Trp Asn Glu Val Phe Val Ile Asp
145 150 155 160

Arg Pro Asn Gly Thr Lys Val Ala Val Leu Leu Met Asp Thr Gln Gly
165 170 175

Ala Phe Asp Ser Gln Ser Thr Ile Lys Asp Cys Ala Thr Val Phe Ala
180 185 190

Leu Ser Thr Met Thr Ser Ser Val Gln Val Tyr Asn Leu Ser Gln Asn
195 200 205

Ile Gln Glu Asp Asp Leu Gln His Leu Gln Leu Phe Thr Glu Tyr Gly
210 215 220

```
Arg Leu Ala Met Glu Glu Ile Tyr Gln Lys Pro Phe Gln Thr Leu Met
225                 230                 235                 240

Phe Leu Ile Arg Asp Trp Ser Tyr Pro Tyr Glu His Ser Tyr Gly Leu
                245                 250                 255

Glu Gly Gly Lys Gln Phe Leu Glu Lys Arg Leu Gln Val Lys Gln Asn
            260                 265                 270

Gln His Glu Glu Leu Gln Asn Val Arg Lys His Ile His Asn Cys Phe
        275                 280                 285

Ser Asn Leu Gly Cys Phe Leu Leu Pro His Pro Gly Leu Lys Val Ala
    290                 295                 300

Thr Asn Pro Ser Phe Asp Gly Arg Leu Lys Asp Ile Asp Glu Asp Phe
305                 310                 315                 320

Lys Arg Glu Leu Arg Asn Leu Val Pro Leu Leu Leu Ala Pro Glu Asn
                325                 330                 335

Leu Val Glu Lys Glu Ile Ser Gly Ser Lys Val Thr Cys Arg Asp Leu
            340                 345                 350

Val Glu Tyr Phe Lys Ala Tyr Ile Lys Ile Tyr Gln Gly Glu Glu Leu
        355                 360                 365

Pro His Pro Lys Ser Met Leu Gln Ala Thr Ala Glu Ala Asn Asn Leu
    370                 375                 380

Ala Ala Val Ala Gly Ala Arg Asp Thr Tyr Cys Lys Ser Met Glu Gln
385                 390                 395                 400

Val Cys Gly Gly Asp Lys Pro Tyr Ile Ala Pro Ser Asp Leu Glu Arg
                405                 410                 415

Lys His Leu Asp Leu Lys Glu Val Ala Ile Lys Gln Phe Arg Ser Val
            420                 425                 430

Lys Lys Met Gly Gly Asp Glu Phe Cys Arg Arg Tyr Gln Asp Gln Leu
        435                 440                 445

Glu Ala Glu Ile Glu Glu Thr Tyr Ala Asn Phe Ile Lys His Asn Asp
```

```
    450                 455                 460

Gly Lys Asn Ile Phe Tyr Ala Ala Arg Thr Pro Ala Thr Leu Phe Ala
465                 470                 475                 480

Val Met Phe Ala Met Tyr Ile Ile Ser Gly Leu Thr Gly Phe Ile Gly
                485                 490                 495

Leu Asn Ser Ile Ala Val Leu Cys Asn Leu Val Met Gly Leu Ala Leu
            500                 505                 510

Ile Phe Leu Cys Thr Trp Ala Tyr Val Lys Tyr Ser Gly Glu Phe Arg
        515                 520                 525

Glu Ile Gly Thr Val Ile Asp Gln Ile Ala Glu Thr Leu Trp Glu Gln
    530                 535                 540

Val Phe Ser Lys Leu Phe Glu Val Thr Arg Arg Arg Met Val His Arg
545                 550                 555                 560

Ala Leu Ser Ser Ala Gln Arg Gln Arg Leu Ser Ser Asn Asn Asn Lys
                565                 570                 575

Lys Lys Asn
```

<210> 6982
<211> 413
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1487; "

<220>
<221> source
<223> /note="Gene Symbol: ATL2; "

<220>
<221> source
<223> /note="Gene Name:
atlastin GTPase 2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000486809"

<400> 6982
Met Asp Thr Gln Gly Ala Phe Asp Ser Gln Ser Thr Ile Lys Asp Cys
1 5 10 15

Ala Thr Val Phe Ala Leu Ser Thr Met Thr Ser Ser Val Gln Val Tyr
20 25 30

Asn Leu Ser Gln Asn Ile Gln Glu Asp Asp Leu Gln His Leu Gln Leu
35 40 45

Phe Thr Glu Tyr Gly Arg Leu Ala Met Glu Glu Ile Tyr Gln Lys Pro
50 55 60

Phe Gln Thr Leu Met Phe Leu Ile Arg Asp Trp Ser Tyr Pro Tyr Glu
65 70 75 80

His Ser Tyr Gly Leu Glu Gly Gly Lys Gln Phe Leu Glu Lys Arg Leu
85 90 95

Gln Val Lys Gln Asn Gln His Glu Glu Leu Gln Asn Val Arg Lys His
100 105 110

Ile His Asn Cys Phe Ser Asn Leu Gly Cys Phe Leu Leu Pro His Pro
115 120 125

Gly Leu Lys Val Ala Thr Asn Pro Ser Phe Asp Gly Arg Leu Lys Asp
130 135 140

Ile Asp Glu Asp Phe Lys Arg Glu Leu Arg Asn Leu Val Pro Leu Leu
145 150 155 160

Leu Ala Pro Glu Asn Leu Val Glu Lys Glu Ile Ser Gly Ser Lys Val
165 170 175

Thr Cys Arg Asp Leu Val Glu Tyr Phe Lys Ala Tyr Ile Lys Ile Tyr
180 185 190

Gln Gly Glu Glu Leu Pro His Pro Lys Ser Met Leu Gln Ala Thr Ala
195 200 205

Glu Ala Asn Asn Leu Ala Ala Val Ala Gly Ala Arg Asp Thr Tyr Cys
210 215 220

```
Lys Ser Met Glu Gln Val Cys Gly Gly Asp Lys Pro Tyr Ile Ala Pro
225                 230                 235                 240

Ser Asp Leu Glu Arg Lys His Leu Asp Leu Lys Glu Val Ala Ile Lys
                245                 250                 255

Gln Phe Arg Ser Val Lys Lys Met Gly Gly Asp Glu Phe Cys Arg Arg
            260                 265                 270

Tyr Gln Asp Gln Leu Glu Ala Glu Ile Glu Glu Thr Tyr Ala Asn Phe
        275                 280                 285

Ile Lys His Asn Asp Gly Lys Asn Ile Phe Tyr Ala Ala Arg Thr Pro
    290                 295                 300

Ala Thr Leu Phe Ala Val Met Phe Ala Met Tyr Ile Ile Ser Gly Leu
305                 310                 315                 320

Thr Gly Phe Ile Gly Leu Asn Ser Ile Ala Val Leu Cys Asn Leu Val
                325                 330                 335

Met Gly Leu Ala Leu Ile Phe Leu Cys Thr Trp Ala Tyr Val Lys Tyr
            340                 345                 350

Ser Gly Glu Phe Arg Glu Ile Gly Thr Val Ile Asp Gln Ile Ala Glu
        355                 360                 365

Thr Leu Trp Glu Gln Arg Ser Pro Arg Lys Val Phe Ser Lys Leu Phe
    370                 375                 380

Glu Val Thr Arg Arg Arg Met Val His Arg Ala Leu Ser Ser Ala Gln
385                 390                 395                 400

Arg Gln Arg Leu Ser Ser Asn Asn Asn Lys Lys Lys Asn
                405                 410


<210> 6983
<211> 541
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1488; "
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<220>
<221> source
<223> /note="Gene Symbol: ATL3; "

<220>
<221> source
<223> /note="Gene Name:
atlastin GTPase 3; "

<220>
<221> source
<223> /note="Uniprot ID: Q6DD88; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000381844"

<400> 6983
Met Leu Ser Pro Gln Arg Val Ala Ala Ala Ala Ser Arg Gly Ala Asp
1 5 10 15

Asp Ala Met Glu Ser Ser Lys Pro Gly Pro Val Gln Val Val Leu Val
20 25 30

Gln Lys Asp Gln His Ser Phe Glu Leu Asp Glu Lys Ala Leu Ala Ser
35 40 45

Ile Leu Leu Gln Asp His Ile Arg Asp Leu Asp Val Val Val Val Ser
50 55 60

Val Ala Gly Ala Phe Arg Lys Gly Lys Ser Phe Ile Leu Asp Phe Met
65 70 75 80

Leu Arg Tyr Leu Tyr Ser Gln Lys Glu Ser Gly His Ser Asn Trp Leu
85 90 95

Gly Asp Pro Glu Glu Pro Leu Thr Gly Phe Ser Trp Arg Gly Gly Ser
100 105 110

Asp Pro Glu Thr Thr Gly Ile Gln Ile Trp Ser Glu Val Phe Thr Val
115 120 125

Glu Lys Pro Gly Gly Lys Lys Val Ala Val Val Leu Met Asp Thr Gln
130 135 140

Gly Ala Phe Asp Ser Gln Ser Thr Val Lys Asp Cys Ala Thr Ile Phe
145 150 155 160

```
Ala Leu Ser Thr Met Thr Ser Ser Val Gln Ile Tyr Asn Leu Ser Gln
                165                 170                 175

Asn Ile Gln Glu Asp Asp Leu Gln Gln Leu Gln Leu Phe Thr Glu Tyr
            180                 185                 190

Gly Arg Leu Ala Met Asp Glu Ile Phe Gln Lys Pro Phe Gln Thr Leu
        195                 200                 205

Met Phe Leu Val Arg Asp Trp Ser Phe Pro Tyr Glu Tyr Ser Tyr Gly
    210                 215                 220

Leu Gln Gly Gly Met Ala Phe Leu Asp Lys Arg Leu Gln Val Lys Glu
225                 230                 235                 240

His Gln His Glu Glu Ile Gln Asn Val Arg Asn His Ile His Ser Cys
                245                 250                 255

Phe Ser Asp Val Thr Cys Phe Leu Leu Pro His Pro Gly Leu Gln Val
            260                 265                 270

Ala Thr Ser Pro Asp Phe Asp Gly Lys Leu Lys Asp Ile Ala Gly Glu
        275                 280                 285

Phe Lys Glu Gln Leu Gln Ala Leu Ile Pro Tyr Val Leu Asn Pro Ser
    290                 295                 300

Lys Leu Met Glu Lys Glu Ile Asn Gly Ser Lys Val Thr Cys Arg Gly
305                 310                 315                 320

Leu Leu Glu Tyr Phe Lys Ala Tyr Ile Lys Ile Tyr Gln Gly Glu Asp
                325                 330                 335

Leu Pro His Pro Lys Ser Met Leu Gln Ala Thr Ala Glu Ala Asn Asn
            340                 345                 350

Leu Ala Ala Ala Ala Ser Ala Lys Asp Ile Tyr Tyr Asn Asn Met Glu
        355                 360                 365

Glu Val Cys Gly Gly Glu Lys Pro Tyr Leu Ser Pro Asp Ile Leu Glu
    370                 375                 380
```

```
Glu Lys His Cys Glu Phe Lys Gln Leu Ala Leu Asp His Phe Lys Lys
385                 390                 395                 400

Thr Lys Lys Met Gly Gly Lys Asp Phe Ser Phe Arg Tyr Gln Gln Glu
                405                 410                 415

Leu Glu Glu Glu Ile Lys Glu Leu Tyr Glu Asn Phe Cys Lys His Asn
            420                 425                 430

Gly Ser Lys Asn Val Phe Ser Thr Phe Arg Thr Pro Ala Val Leu Phe
        435                 440                 445

Thr Gly Ile Val Ala Leu Tyr Ile Ala Ser Gly Leu Thr Gly Phe Ile
    450                 455                 460

Gly Leu Glu Val Val Ala Gln Leu Phe Asn Cys Met Val Gly Leu Leu
465                 470                 475                 480

Leu Ile Ala Leu Leu Thr Trp Gly Tyr Ile Arg Tyr Ser Gly Gln Tyr
                485                 490                 495

Arg Glu Leu Gly Gly Ala Ile Asp Phe Gly Ala Ala Tyr Val Leu Glu
            500                 505                 510

Gln Ala Ser Ser His Ile Gly Asn Ser Thr Gln Ala Thr Val Arg Asp
        515                 520                 525

Ala Val Val Gly Arg Pro Ser Met Asp Lys Lys Ala Gln
    530                 535                 540


<210> 6984
<211> 523
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1488; "

<220>
<221> source
<223> /note="Gene Symbol: ATL3; "

<220>
<221> source
<223> /note="Gene Name:
      atlastin GTPase 3; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000437593"

<400> 6984
Met Glu Ser Ser Lys Pro Gly Pro Val Gln Val Val Leu Val Gln Lys
1   5   10   15

Asp Gln His Ser Phe Glu Leu Asp Glu Lys Ala Leu Ala Ser Ile Leu
            20   25   30

Leu Gln Asp His Ile Arg Asp Leu Asp Val Val Val Val Ser Val Ala
        35   40   45

Gly Ala Phe Arg Lys Gly Lys Ser Phe Ile Leu Asp Phe Met Leu Arg
    50   55   60

Tyr Leu Tyr Ser Gln Lys Glu Ser Gly His Ser Asn Trp Leu Gly Asp
65   70   75   80

Pro Glu Glu Pro Leu Thr Gly Phe Ser Trp Arg Gly Gly Ser Asp Pro
                85   90   95

Glu Thr Thr Gly Ile Gln Ile Trp Ser Glu Val Phe Thr Val Glu Lys
            100   105   110

Pro Gly Gly Lys Lys Val Ala Val Val Leu Met Asp Thr Gln Gly Ala
        115   120   125

Phe Asp Ser Gln Ser Thr Val Lys Asp Cys Ala Thr Ile Phe Ala Leu
    130   135   140

Ser Thr Met Thr Ser Ser Val Gln Ile Tyr Asn Leu Ser Gln Asn Ile
145   150   155   160

Gln Glu Asp Asp Leu Gln Gln Leu Gln Leu Phe Thr Glu Tyr Gly Arg
                165   170   175

Leu Ala Met Asp Glu Ile Phe Gln Lys Pro Phe Gln Thr Leu Met Phe
            180   185   190

Leu Val Arg Asp Trp Ser Phe Pro Tyr Glu Tyr Ser Tyr Gly Leu Gln
        195   200   205

```
Gly Gly Met Ala Phe Leu Asp Lys Arg Leu Gln Val Lys Glu His Gln
    210                 215                 220

His Glu Glu Ile Gln Asn Val Arg Asn His Ile His Ser Cys Phe Ser
225                 230                 235                 240

Asp Val Thr Cys Phe Leu Leu Pro His Pro Gly Leu Gln Val Ala Thr
                245                 250                 255

Ser Pro Asp Phe Asp Gly Lys Leu Lys Asp Ile Ala Gly Glu Phe Lys
            260                 265                 270

Glu Gln Leu Gln Ala Leu Ile Pro Tyr Val Leu Asn Pro Ser Lys Leu
        275                 280                 285

Met Glu Lys Glu Ile Asn Gly Ser Lys Val Thr Cys Arg Gly Leu Leu
    290                 295                 300

Glu Tyr Phe Lys Ala Tyr Ile Lys Ile Tyr Gln Gly Glu Asp Leu Pro
305                 310                 315                 320

His Pro Lys Ser Met Leu Gln Ala Thr Ala Glu Ala Asn Asn Leu Ala
                325                 330                 335

Ala Ala Ala Ser Ala Lys Asp Ile Tyr Tyr Asn Asn Met Glu Glu Val
            340                 345                 350

Cys Gly Gly Glu Lys Pro Tyr Leu Ser Pro Asp Ile Leu Glu Glu Lys
        355                 360                 365

His Cys Glu Phe Lys Gln Leu Ala Leu Asp His Phe Lys Lys Thr Lys
    370                 375                 380

Lys Met Gly Gly Lys Asp Phe Ser Phe Arg Tyr Gln Gln Glu Leu Glu
385                 390                 395                 400

Glu Glu Ile Lys Glu Leu Tyr Glu Asn Phe Cys Lys His Asn Gly Ser
                405                 410                 415

Lys Asn Val Phe Ser Thr Phe Arg Thr Pro Ala Val Leu Phe Thr Gly
            420                 425                 430
```

```
Ile Val Ala Leu Tyr Ile Ala Ser Gly Leu Thr Gly Phe Ile Gly Leu
        435                 440                 445

Glu Val Val Ala Gln Leu Phe Asn Cys Met Val Gly Leu Leu Leu Ile
    450                 455                 460

Ala Leu Leu Thr Trp Gly Tyr Ile Arg Tyr Ser Gly Gln Tyr Arg Glu
465                 470                 475                 480

Leu Gly Gly Ala Ile Asp Phe Gly Ala Ala Tyr Val Leu Glu Gln Ala
                485                 490                 495

Ser Ser His Ile Gly Asn Ser Thr Gln Ala Thr Val Arg Asp Ala Val
            500                 505                 510

Val Gly Arg Pro Ser Met Asp Lys Lys Ala Gln
        515                 520


<210> 6985
<211> 169
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1488; "

<220>
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<223> /note="Gene Symbol: ATL3; "

<220>
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<223> /note="Gene Name:
      atlastin GTPase 3; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000441842"

<400> 6985
Met Arg Thr Ala Gly Arg Asp Pro Val Ser Ala Gly Leu Gln Phe Pro
1               5                   10                  15

Lys Asp Gly Ser Thr Gln Arg Pro Ala Asn Arg Ala Arg Phe Val Pro
            20                  25                  30

Ala Arg Thr Arg Pro Ser Pro Leu His Pro Cys Cys Phe Cys Phe Glu
        35                  40                  45
```

```
Gly Gly Gly Ser Met Leu Ser Pro Gln Arg Val Ala Ala Ala Ala Ser
    50                  55                  60

Arg Gly Ala Asp Asp Ala Met Glu Ser Ser Lys Pro Gly Pro Val Gln
65                  70                  75                  80

Val Val Leu Val Gln Lys Asp Gln His Ser Phe Glu Leu Asp Glu Lys
                85                  90                  95

Ala Leu Ala Ser Ile Leu Leu Gln Asp His Ile Arg Asp Leu Asp Val
            100                 105                 110

Val Val Val Ser Val Ala Gly Ala Phe Arg Lys Gly Lys Ser Phe Ile
        115                 120                 125

Leu Asp Phe Met Leu Arg Tyr Leu Tyr Ser Gln Lys Glu Ser Gly His
    130                 135                 140

Ser Asn Trp Leu Gly Asp Pro Glu Glu Pro Leu Thr Gly Phe Ser Trp
145                 150                 155                 160

Arg Gly Gly Ser Asp Pro Glu Thr Thr
                165


<210> 6986
<211> 823
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1489; "

<220>
<221> source
<223> /note="Gene Symbol: ATMIN; "

<220>
<221> source
<223> /note="Gene Name:
      ATM interactor; "

<220>
<221> source
<223> /note="Uniprot ID:  O43313; "

<220>
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<221> source
<223> /note="ENSP ID: ENSP00000299575"

<400> 6986
Met Ala Ala Ser Glu Ala Ala Ala Ala Ala Gly Ser Ala Ala Leu Ala
1   5   10   15

Ala Gly Ala Arg Ala Val Pro Ala Ala Thr Thr Gly Ala Ala Ala Ala
            20   25   30

Ala Ser Gly Pro Trp Val Pro Pro Gly Pro Arg Leu Arg Gly Ser Arg
        35   40   45

Pro Arg Pro Ala Gly Ala Thr Gln Gln Pro Ala Val Pro Ala Pro Pro
    50   55   60

Ala Gly Glu Leu Ile Gln Pro Ser Val Ser Glu Leu Ser Arg Ala Val
65   70   75   80

Arg Thr Asn Ile Leu Cys Thr Val Arg Gly Cys Gly Lys Ile Leu Pro
                85   90   95

Asn Ser Pro Ala Leu Asn Met His Leu Val Lys Ser His Arg Leu Gln
            100   105   110

Asp Gly Ile Val Asn Pro Thr Ile Arg Lys Asp Leu Lys Thr Gly Pro
        115   120   125

Lys Phe Tyr Cys Cys Pro Ile Glu Gly Cys Pro Arg Gly Pro Glu Arg
    130   135   140

Pro Phe Ser Gln Phe Ser Leu Val Lys Gln His Phe Met Lys Met His
145   150   155   160

Ala Glu Lys Lys His Lys Cys Ser Lys Cys Ser Asn Ser Tyr Gly Thr
                165   170   175

Glu Trp Asp Leu Lys Arg His Ala Glu Asp Cys Gly Lys Thr Phe Arg
            180   185   190

Cys Thr Cys Gly Cys Pro Tyr Ala Ser Arg Thr Ala Leu Gln Ser His
        195   200   205

Ile Tyr Arg Thr Gly His Glu Ile Pro Ala Glu His Arg Asp Pro Pro

```
    210                 215                 220

Ser Lys Lys Arg Lys Met Glu Asn Cys Ala Gln Asn Gln Lys Leu Ser
225                 230                 235                 240

Asn Lys Thr Ile Glu Ser Leu Asn Asn Gln Pro Ile Pro Arg Pro Asp
                245                 250                 255

Thr Gln Glu Leu Glu Ala Ser Glu Ile Lys Leu Glu Pro Ser Phe Glu
            260                 265                 270

Asp Ser Cys Gly Ser Asn Thr Asp Lys Gln Thr Leu Thr Thr Pro Pro
        275                 280                 285

Arg Tyr Pro Gln Lys Leu Leu Leu Pro Lys Pro Lys Val Ala Leu Val
    290                 295                 300

Lys Leu Pro Val Met Gln Phe Ser Val Met Pro Val Phe Val Pro Thr
305                 310                 315                 320

Ala Asp Ser Ser Ala Gln Pro Val Val Leu Gly Val Asp Gln Gly Ser
                325                 330                 335

Ala Thr Gly Ala Val His Leu Met Pro Leu Ser Val Gly Thr Leu Ile
            340                 345                 350

Leu Gly Leu Asp Ser Glu Ala Cys Ser Leu Lys Glu Ser Leu Pro Leu
        355                 360                 365

Phe Lys Ile Ala Asn Pro Ile Ala Gly Glu Pro Ile Ser Thr Gly Val
    370                 375                 380

Gln Val Asn Phe Gly Lys Ser Pro Ser Asn Pro Leu Gln Glu Leu Gly
385                 390                 395                 400

Asn Thr Cys Gln Lys Asn Ser Ile Ser Ser Ile Asn Val Gln Thr Asp
                405                 410                 415

Leu Ser Tyr Ala Ser Gln Asn Phe Ile Pro Ser Ala Gln Trp Ala Thr
            420                 425                 430

Ala Asp Ser Ser Val Ser Ser Cys Ser Gln Thr Asp Leu Ser Phe Asp
        435                 440                 445
```

```
Ser Gln Val Ser Leu Pro Ile Ser Val His Thr Gln Thr Phe Leu Pro
    450                 455                 460

Ser Ser Lys Val Thr Ser Ser Ile Ala Ala Gln Thr Asp Ala Phe Met
465                 470                 475                 480

Asp Thr Cys Phe Gln Ser Gly Gly Val Ser Arg Glu Thr Gln Thr Ser
                485                 490                 495

Gly Ile Glu Ser Pro Thr Asp Asp His Val Gln Met Asp Gln Ala Gly
            500                 505                 510

Met Cys Gly Asp Ile Phe Glu Ser Val His Ser Ser Tyr Asn Val Ala
        515                 520                 525

Thr Gly Asn Ile Ile Ser Asn Ser Leu Val Ala Glu Thr Val Thr His
    530                 535                 540

Ser Leu Leu Pro Gln Asn Glu Pro Lys Thr Leu Asn Gln Asp Ile Glu
545                 550                 555                 560

Lys Ser Ala Pro Ile Ile Asn Phe Ser Ala Gln Asn Ser Met Leu Pro
                565                 570                 575

Ser Gln Asn Met Thr Asp Asn Gln Thr Gln Thr Ile Asp Leu Leu Ser
            580                 585                 590

Asp Leu Glu Asn Ile Leu Ser Ser Asn Leu Pro Ala Gln Thr Leu Asp
        595                 600                 605

His Arg Ser Leu Leu Ser Asp Thr Asn Pro Gly Pro Asp Thr Gln Leu
    610                 615                 620

Pro Ser Gly Pro Ala Gln Asn Pro Gly Ile Asp Phe Asp Ile Glu Glu
625                 630                 635                 640

Phe Phe Ser Ala Ser Asn Ile Gln Thr Gln Thr Glu Glu Ser Glu Leu
                645                 650                 655

Ser Thr Met Thr Thr Glu Pro Val Leu Glu Ser Leu Asp Ile Glu Thr
            660                 665                 670
```

```
Gln Thr Asp Phe Leu Leu Ala Asp Thr Ser Ala Gln Ser Tyr Gly Cys
        675                 680                 685

Arg Gly Asn Ser Asn Phe Leu Gly Leu Glu Met Phe Asp Thr Gln Thr
    690                 695                 700

Gln Thr Asp Leu Asn Phe Phe Leu Asp Ser Ser Pro His Leu Pro Leu
705                 710                 715                 720

Gly Ser Ile Leu Lys His Ser Ser Phe Ser Val Ser Thr Asp Ser Ser
                725                 730                 735

Asp Thr Glu Thr Gln Thr Glu Gly Val Ser Thr Ala Lys Asn Ile Pro
            740                 745                 750

Ala Leu Glu Ser Lys Val Gln Leu Asn Ser Thr Glu Thr Gln Thr Met
        755                 760                 765

Ser Ser Gly Phe Glu Thr Leu Gly Ser Leu Phe Phe Thr Ser Asn Glu
    770                 775                 780

Thr Gln Thr Ala Met Asp Asp Phe Leu Leu Ala Asp Leu Ala Trp Asn
785                 790                 795                 800

Thr Met Glu Ser Gln Phe Ser Ser Val Glu Thr Gln Thr Ser Ala Glu
                805                 810                 815

Pro His Thr Val Ser Asn Phe
            820


<210> 6987
<211> 667
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1489; "

<220>
<221> source
<223> /note="Gene Symbol: ATMIN; "

<220>
<221> source
<223> /note="Gene Name:
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ATM interactor; "

<220>
<221> source
<223> /note="Uniprot ID: O43313; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000455497"

<400> 6987

```
Met Lys Met His Ala Glu Lys Lys His Lys Cys Ser Lys Cys Ser Asn
1               5                  10                  15

Ser Tyr Gly Thr Glu Trp Asp Leu Lys Arg His Ala Glu Asp Cys Gly
            20                  25                  30

Lys Thr Phe Arg Cys Thr Cys Gly Cys Pro Tyr Ala Ser Arg Thr Ala
        35                  40                  45

Leu Gln Ser His Ile Tyr Arg Thr Gly His Glu Ile Pro Ala Glu His
    50                  55                  60

Arg Asp Pro Pro Ser Lys Lys Arg Lys Met Glu Asn Cys Ala Gln Asn
65                  70                  75                  80

Gln Lys Leu Ser Asn Lys Thr Ile Glu Ser Leu Asn Asn Gln Pro Ile
                85                  90                  95

Pro Arg Pro Asp Thr Gln Glu Leu Glu Ala Ser Glu Ile Lys Leu Glu
            100                 105                 110

Pro Ser Phe Glu Asp Ser Cys Gly Ser Asn Thr Asp Lys Gln Thr Leu
        115                 120                 125

Thr Thr Pro Pro Arg Tyr Pro Gln Lys Leu Leu Leu Pro Lys Pro Lys
    130                 135                 140

Val Ala Leu Val Lys Leu Pro Val Met Gln Phe Ser Val Met Pro Val
145                 150                 155                 160

Phe Val Pro Thr Ala Asp Ser Ser Ala Gln Pro Val Val Leu Gly Val
                165                 170                 175

Asp Gln Gly Ser Ala Thr Gly Ala Val His Leu Met Pro Leu Ser Val
            180                 185                 190
```

```
Gly Thr Leu Ile Leu Gly Leu Asp Ser Glu Ala Cys Ser Leu Lys Glu
        195                 200                 205

Ser Leu Pro Leu Phe Lys Ile Ala Asn Pro Ile Ala Gly Glu Pro Ile
    210                 215                 220

Ser Thr Gly Val Gln Val Asn Phe Gly Lys Ser Pro Ser Asn Pro Leu
225                 230                 235                 240

Gln Glu Leu Gly Asn Thr Cys Gln Lys Asn Ser Ile Ser Ser Ile Asn
                245                 250                 255

Val Gln Thr Asp Leu Ser Tyr Ala Ser Gln Asn Phe Ile Pro Ser Ala
            260                 265                 270

Gln Trp Ala Thr Ala Asp Ser Ser Val Ser Ser Cys Ser Gln Thr Asp
        275                 280                 285

Leu Ser Phe Asp Ser Gln Val Ser Leu Pro Ile Ser Val His Thr Gln
    290                 295                 300

Thr Phe Leu Pro Ser Ser Lys Val Thr Ser Ser Ile Ala Ala Gln Thr
305                 310                 315                 320

Asp Ala Phe Met Asp Thr Cys Phe Gln Ser Gly Gly Val Ser Arg Glu
                325                 330                 335

Thr Gln Thr Ser Gly Ile Glu Ser Pro Thr Asp Asp His Val Gln Met
            340                 345                 350

Asp Gln Ala Gly Met Cys Gly Asp Ile Phe Glu Ser Val His Ser Ser
        355                 360                 365

Tyr Asn Val Ala Thr Gly Asn Ile Ile Ser Asn Ser Leu Val Ala Glu
    370                 375                 380

Thr Val Thr His Ser Leu Leu Pro Gln Asn Glu Pro Lys Thr Leu Asn
385                 390                 395                 400

Gln Asp Ile Glu Lys Ser Ala Pro Ile Ile Asn Phe Ser Ala Gln Asn
                405                 410                 415
```

```
Ser Met Leu Pro Ser Gln Asn Met Thr Asp Asn Gln Thr Gln Thr Ile
            420                 425                 430

Asp Leu Leu Ser Asp Leu Glu Asn Ile Leu Ser Ser Asn Leu Pro Ala
        435                 440                 445

Gln Thr Leu Asp His Arg Ser Leu Leu Ser Asp Thr Asn Pro Gly Pro
    450                 455                 460

Asp Thr Gln Leu Pro Ser Gly Pro Ala Gln Asn Pro Gly Ile Asp Phe
465                 470                 475                 480

Asp Ile Glu Glu Phe Phe Ser Ala Ser Asn Ile Gln Thr Gln Thr Glu
                485                 490                 495

Glu Ser Glu Leu Ser Thr Met Thr Thr Glu Pro Val Leu Glu Ser Leu
            500                 505                 510

Asp Ile Glu Thr Gln Thr Asp Phe Leu Leu Ala Asp Thr Ser Ala Gln
        515                 520                 525

Ser Tyr Gly Cys Arg Gly Asn Ser Asn Phe Leu Gly Leu Glu Met Phe
    530                 535                 540

Asp Thr Gln Thr Gln Thr Asp Leu Asn Phe Phe Leu Asp Ser Ser Pro
545                 550                 555                 560

His Leu Pro Leu Gly Ser Ile Leu Lys His Ser Ser Phe Ser Val Ser
                565                 570                 575

Thr Asp Ser Ser Asp Thr Glu Thr Gln Thr Glu Gly Val Ser Thr Ala
            580                 585                 590

Lys Asn Ile Pro Ala Leu Glu Ser Lys Val Gln Leu Asn Ser Thr Glu
        595                 600                 605

Thr Gln Thr Met Ser Ser Gly Phe Glu Thr Leu Gly Ser Leu Phe Phe
    610                 615                 620

Thr Ser Asn Glu Thr Gln Thr Ala Met Asp Asp Phe Leu Leu Ala Asp
625                 630                 635                 640
```

```
Leu Ala Trp Asn Thr Met Glu Ser Gln Phe Ser Ser Val Glu Thr Gln
                645                 650                 655

Thr Ser Ala Glu Pro His Thr Val Ser Asn Phe
            660                 665


<210> 6988
<211> 667
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1489; "

<220>
<221> source
<223> /note="Gene Symbol: ATMIN; "

<220>
<221> source
<223> /note="Gene Name:
      ATM interactor; "

<220>
<221> source
<223> /note="Uniprot ID:  O43313; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000463478"

<400> 6988
Met Lys Met His Ala Glu Lys Lys His Lys Cys Ser Lys Cys Ser Asn
1               5                   10                  15

Ser Tyr Gly Thr Glu Trp Asp Leu Lys Arg His Ala Glu Asp Cys Gly
            20                  25                  30

Lys Thr Phe Arg Cys Thr Cys Gly Cys Pro Tyr Ala Ser Arg Thr Ala
        35                  40                  45

Leu Gln Ser His Ile Tyr Arg Thr Gly His Glu Ile Pro Ala Glu His
    50                  55                  60

Arg Asp Pro Pro Ser Lys Lys Arg Lys Met Glu Asn Cys Ala Gln Asn
65                  70                  75                  80

Gln Lys Leu Ser Asn Lys Thr Ile Glu Ser Leu Asn Asn Gln Pro Ile
                85                  90                  95
```

```
Pro Arg Pro Asp Thr Gln Glu Leu Glu Ala Ser Glu Ile Lys Leu Glu
            100                 105                 110

Pro Ser Phe Glu Asp Ser Cys Gly Ser Asn Thr Asp Lys Gln Thr Leu
        115                 120                 125

Thr Thr Pro Pro Arg Tyr Pro Gln Lys Leu Leu Leu Pro Lys Pro Lys
    130                 135                 140

Val Ala Leu Val Lys Leu Pro Val Met Gln Phe Ser Val Met Pro Val
145                 150                 155                 160

Phe Val Pro Thr Ala Asp Ser Ser Ala Gln Pro Val Val Leu Gly Val
                165                 170                 175

Asp Gln Gly Ser Ala Thr Gly Ala Val His Leu Met Pro Leu Ser Val
            180                 185                 190

Gly Thr Leu Ile Leu Gly Leu Asp Ser Glu Ala Cys Ser Leu Lys Glu
        195                 200                 205

Ser Leu Pro Leu Phe Lys Ile Ala Asn Pro Ile Ala Gly Glu Pro Ile
    210                 215                 220

Ser Thr Gly Val Gln Val Asn Phe Gly Lys Ser Pro Ser Asn Pro Leu
225                 230                 235                 240

Gln Glu Leu Gly Asn Thr Cys Gln Lys Asn Ser Ile Ser Ser Ile Asn
                245                 250                 255

Val Gln Thr Asp Leu Ser Tyr Ala Ser Gln Asn Phe Ile Pro Ser Ala
            260                 265                 270

Gln Trp Ala Thr Ala Asp Ser Ser Val Ser Ser Cys Ser Gln Thr Asp
        275                 280                 285

Leu Ser Phe Asp Ser Gln Val Ser Leu Pro Ile Ser Val His Thr Gln
    290                 295                 300

Thr Phe Leu Pro Ser Ser Lys Val Thr Ser Ser Ile Ala Ala Gln Thr
305                 310                 315                 320
```

```
Asp Ala Phe Met Asp Thr Cys Phe Gln Ser Gly Gly Val Ser Arg Glu
                325                 330                 335

Thr Gln Thr Ser Gly Ile Glu Ser Pro Thr Asp Asp His Val Gln Met
            340                 345                 350

Asp Gln Ala Gly Met Cys Gly Asp Ile Phe Glu Ser Val His Ser Ser
        355                 360                 365

Tyr Asn Val Ala Thr Gly Asn Ile Ile Ser Asn Ser Leu Val Ala Glu
    370                 375                 380

Thr Val Thr His Ser Leu Leu Pro Gln Asn Glu Pro Lys Thr Leu Asn
385                 390                 395                 400

Gln Asp Ile Glu Lys Ser Ala Pro Ile Ile Asn Phe Ser Ala Gln Asn
                405                 410                 415

Ser Met Leu Pro Ser Gln Asn Met Thr Asp Asn Gln Thr Gln Thr Ile
            420                 425                 430

Asp Leu Leu Ser Asp Leu Glu Asn Ile Leu Ser Ser Asn Leu Pro Ala
        435                 440                 445

Gln Thr Leu Asp His Arg Ser Leu Leu Ser Asp Thr Asn Pro Gly Pro
    450                 455                 460

Asp Thr Gln Leu Pro Ser Gly Pro Ala Gln Asn Pro Gly Ile Asp Phe
465                 470                 475                 480

Asp Ile Glu Glu Phe Phe Ser Ala Ser Asn Ile Gln Thr Gln Thr Glu
                485                 490                 495

Glu Ser Glu Leu Ser Thr Met Thr Thr Glu Pro Val Leu Glu Ser Leu
            500                 505                 510

Asp Ile Glu Thr Gln Thr Asp Phe Leu Leu Ala Asp Thr Ser Ala Gln
        515                 520                 525

Ser Tyr Gly Cys Arg Gly Asn Ser Asn Phe Leu Gly Leu Glu Met Phe
    530                 535                 540
```

```
Asp Thr Gln Thr Gln Thr Asp Leu Asn Phe Phe Leu Asp Ser Ser Pro
545                 550                 555                 560

His Leu Pro Leu Gly Ser Ile Leu Lys His Ser Ser Phe Ser Val Ser
                565                 570                 575

Thr Asp Ser Ser Asp Thr Glu Thr Gln Thr Glu Gly Val Ser Thr Ala
            580                 585                 590

Lys Asn Ile Pro Ala Leu Glu Ser Lys Val Gln Leu Asn Ser Thr Glu
        595                 600                 605

Thr Gln Thr Met Ser Ser Gly Phe Glu Thr Leu Gly Ser Leu Phe Phe
    610                 615                 620

Thr Ser Asn Glu Thr Gln Thr Ala Met Asp Asp Phe Leu Leu Ala Asp
625                 630                 635                 640

Leu Ala Trp Asn Thr Met Glu Ser Gln Phe Ser Ser Val Glu Thr Gln
                645                 650                 655

Thr Ser Ala Glu Pro His Thr Val Ser Asn Phe
            660                 665


<210> 6989
<211> 54
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1489; "

<220>
<221> source
<223> /note="Gene Symbol: ATMIN; "

<220>
<221> source
<223> /note="Gene Name:
      ATM interactor; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000464427"

<400> 6989
Met Lys Met His Ala Glu Lys Lys His Lys Cys Ser Lys Cys Ser Asn
1               5                   10                  15
```

```
Ser Tyr Gly Thr Glu Trp Asp Leu Lys Arg His Ala Glu Asp Cys Gly
            20                  25                  30

Lys Thr Phe Arg Cys Thr Cys Gly Cys Pro Tyr Ala Ser Arg Thr Ala
        35                  40                  45

Leu Gln Ser His Ile Tyr
    50
```

<210> 6990
<211> 3056
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1490; "

<220>
<221> source
<223> /note="Gene Symbol: ATM; "

<220>
<221> source
<223> /note="Gene Name:
ATM serine/threonine kinase; "

<220>
<221> source
<223> /note="Uniprot ID: Q13315; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000278616"

<400> 6990

```
Met Ser Leu Val Leu Asn Asp Leu Leu Ile Cys Cys Arg Gln Leu Glu
1               5                  10                  15

His Asp Arg Ala Thr Glu Arg Lys Lys Glu Val Glu Lys Phe Lys Arg
            20                  25                  30

Leu Ile Arg Asp Pro Glu Thr Ile Lys His Leu Asp Arg His Ser Asp
        35                  40                  45

Ser Lys Gln Gly Lys Tyr Leu Asn Trp Asp Ala Val Phe Arg Phe Leu
    50                  55                  60
```

```
Gln Lys Tyr Ile Gln Lys Glu Thr Glu Cys Leu Arg Ile Ala Lys Pro
65                  70                  75                  80

Asn Val Ser Ala Ser Thr Gln Ala Ser Arg Gln Lys Lys Met Gln Glu
                85                  90                  95

Ile Ser Ser Leu Val Lys Tyr Phe Ile Lys Cys Ala Asn Arg Arg Ala
            100                 105                 110

Pro Arg Leu Lys Cys Gln Glu Leu Leu Asn Tyr Ile Met Asp Thr Val
        115                 120                 125

Lys Asp Ser Ser Asn Gly Ala Ile Tyr Gly Ala Asp Cys Ser Asn Ile
    130                 135                 140

Leu Leu Lys Asp Ile Leu Ser Val Arg Lys Tyr Trp Cys Glu Ile Ser
145                 150                 155                 160

Gln Gln Gln Trp Leu Glu Leu Phe Ser Val Tyr Phe Arg Leu Tyr Leu
                165                 170                 175

Lys Pro Ser Gln Asp Val His Arg Val Leu Val Ala Arg Ile Ile His
            180                 185                 190

Ala Val Thr Lys Gly Cys Cys Ser Gln Thr Asp Gly Leu Asn Ser Lys
        195                 200                 205

Phe Leu Asp Phe Phe Ser Lys Ala Ile Gln Cys Ala Arg Gln Glu Lys
    210                 215                 220

Ser Ser Ser Gly Leu Asn His Ile Leu Ala Ala Leu Thr Ile Phe Leu
225                 230                 235                 240

Lys Thr Leu Ala Val Asn Phe Arg Ile Arg Val Cys Glu Leu Gly Asp
                245                 250                 255

Glu Ile Leu Pro Thr Leu Leu Tyr Ile Trp Thr Gln His Arg Leu Asn
            260                 265                 270

Asp Ser Leu Lys Glu Val Ile Ile Glu Leu Phe Gln Leu Gln Ile Tyr
        275                 280                 285

Ile His His Pro Lys Gly Ala Lys Thr Gln Glu Lys Gly Ala Tyr Glu
```

```
    290                 295                 300

Ser Thr Lys Trp Arg Ser Ile Leu Tyr Asn Leu Tyr Asp Leu Leu Val
305                 310                 315                 320

Asn Glu Ile Ser His Ile Gly Ser Arg Gly Lys Tyr Ser Ser Gly Phe
                325                 330                 335

Arg Asn Ile Ala Val Lys Glu Asn Leu Ile Glu Leu Met Ala Asp Ile
            340                 345                 350

Cys His Gln Val Phe Asn Glu Asp Thr Arg Ser Leu Glu Ile Ser Gln
        355                 360                 365

Ser Tyr Thr Thr Thr Gln Arg Glu Ser Ser Asp Tyr Ser Val Pro Cys
    370                 375                 380

Lys Arg Lys Lys Ile Glu Leu Gly Trp Glu Val Ile Lys Asp His Leu
385                 390                 395                 400

Gln Lys Ser Gln Asn Asp Phe Asp Leu Val Pro Trp Leu Gln Ile Ala
                405                 410                 415

Thr Gln Leu Ile Ser Lys Tyr Pro Ala Ser Leu Pro Asn Cys Glu Leu
            420                 425                 430

Ser Pro Leu Leu Met Ile Leu Ser Gln Leu Leu Pro Gln Gln Arg His
        435                 440                 445

Gly Glu Arg Thr Pro Tyr Val Leu Arg Cys Leu Thr Glu Val Ala Leu
    450                 455                 460

Cys Gln Asp Lys Arg Ser Asn Leu Glu Ser Ser Gln Lys Ser Asp Leu
465                 470                 475                 480

Leu Lys Leu Trp Asn Lys Ile Trp Cys Ile Thr Phe Arg Gly Ile Ser
                485                 490                 495

Ser Glu Gln Ile Gln Ala Glu Asn Phe Gly Leu Leu Gly Ala Ile Ile
            500                 505                 510

Gln Gly Ser Leu Val Glu Val Asp Arg Glu Phe Trp Lys Leu Phe Thr
        515                 520                 525
```

```
Gly Ser Ala Cys Arg Pro Ser Cys Pro Ala Val Cys Cys Leu Thr Leu
    530                 535                 540

Ala Leu Thr Thr Ser Ile Val Pro Gly Thr Val Lys Met Gly Ile Glu
545                 550                 555                 560

Gln Asn Met Cys Glu Val Asn Arg Ser Phe Ser Leu Lys Glu Ser Ile
                565                 570                 575

Met Lys Trp Leu Leu Phe Tyr Gln Leu Glu Gly Asp Leu Glu Asn Ser
            580                 585                 590

Thr Glu Val Pro Pro Ile Leu His Ser Asn Phe Pro His Leu Val Leu
        595                 600                 605

Glu Lys Ile Leu Val Ser Leu Thr Met Lys Asn Cys Lys Ala Ala Met
    610                 615                 620

Asn Phe Phe Gln Ser Val Pro Glu Cys Glu His His Gln Lys Asp Lys
625                 630                 635                 640

Glu Glu Leu Ser Phe Ser Glu Val Glu Glu Leu Phe Leu Gln Thr Thr
                645                 650                 655

Phe Asp Lys Met Asp Phe Leu Thr Ile Val Arg Glu Cys Gly Ile Glu
            660                 665                 670

Lys His Gln Ser Ser Ile Gly Phe Ser Val His Gln Asn Leu Lys Glu
        675                 680                 685

Ser Leu Asp Arg Cys Leu Leu Gly Leu Ser Glu Gln Leu Leu Asn Asn
    690                 695                 700

Tyr Ser Ser Glu Ile Thr Asn Ser Glu Thr Leu Val Arg Cys Ser Arg
705                 710                 715                 720

Leu Leu Val Gly Val Leu Gly Cys Tyr Cys Tyr Met Gly Val Ile Ala
                725                 730                 735

Glu Glu Glu Ala Tyr Lys Ser Glu Leu Phe Gln Lys Ala Lys Ser Leu
            740                 745                 750
```

```
Met Gln Cys Ala Gly Glu Ser Ile Thr Leu Phe Lys Asn Lys Thr Asn
        755                 760                 765

Glu Glu Phe Arg Ile Gly Ser Leu Arg Asn Met Met Gln Leu Cys Thr
    770                 775                 780

Arg Cys Leu Ser Asn Cys Thr Lys Lys Ser Pro Asn Lys Ile Ala Ser
785                 790                 795                 800

Gly Phe Phe Leu Arg Leu Leu Thr Ser Lys Leu Met Asn Asp Ile Ala
                805                 810                 815

Asp Ile Cys Lys Ser Leu Ala Ser Phe Ile Lys Lys Pro Phe Asp Arg
            820                 825                 830

Gly Glu Val Glu Ser Met Glu Asp Asp Thr Asn Gly Asn Leu Met Glu
        835                 840                 845

Val Glu Asp Gln Ser Ser Met Asn Leu Phe Asn Asp Tyr Pro Asp Ser
    850                 855                 860

Ser Val Ser Asp Ala Asn Glu Pro Gly Glu Ser Gln Ser Thr Ile Gly
865                 870                 875                 880

Ala Ile Asn Pro Leu Ala Glu Glu Tyr Leu Ser Lys Gln Asp Leu Leu
                885                 890                 895

Phe Leu Asp Met Leu Lys Phe Leu Cys Leu Cys Val Thr Thr Ala Gln
            900                 905                 910

Thr Asn Thr Val Ser Phe Arg Ala Ala Asp Ile Arg Arg Lys Leu Leu
        915                 920                 925

Met Leu Ile Asp Ser Ser Thr Leu Glu Pro Thr Lys Ser Leu His Leu
    930                 935                 940

His Met Tyr Leu Met Leu Leu Lys Glu Leu Pro Gly Glu Glu Tyr Pro
945                 950                 955                 960

Leu Pro Met Glu Asp Val Leu Glu Leu Leu Lys Pro Leu Ser Asn Val
                965                 970                 975
```

```
Cys Ser Leu Tyr Arg Arg Asp Gln Asp Val Cys Lys Thr Ile Leu Asn
            980                 985                 990

His Val Leu His Val Val Lys Asn  Leu Gly Gln Ser Asn  Met Asp
Ser
        995                 1000                1005

Glu Asn  Thr Arg Asp Ala Gln  Gly Gln Phe Leu Thr  Val Ile Gly
    1010                1015                1020

Ala Phe  Trp His Leu Thr Lys  Glu Arg Lys Tyr Ile  Phe Ser Val
    1025                1030                1035

Arg Met  Ala Leu Val Asn Cys  Leu Lys Thr Leu Leu  Glu Ala Asp
    1040                1045                1050

Pro Tyr  Ser Lys Trp Ala Ile  Leu Asn Val Met Gly  Lys Asp Phe
    1055                1060                1065

Pro Val  Asn Glu Val Phe Thr  Gln Phe Leu Ala Asp  Asn His His
    1070                1075                1080

Gln Val  Arg Met Leu Ala Ala  Glu Ser Ile Asn Arg  Leu Phe Gln
    1085                1090                1095

Asp Thr  Lys Gly Asp Ser Ser  Arg Leu Leu Lys Ala  Leu Pro Leu
    1100                1105                1110

Lys Leu  Gln Gln Thr Ala Phe  Glu Asn Ala Tyr Leu  Lys Ala Gln
    1115                1120                1125

Glu Gly  Met Arg Glu Met Ser  His Ser Ala Glu Asn  Pro Glu Thr
    1130                1135                1140

Leu Asp  Glu Ile Tyr Asn Arg  Lys Ser Val Leu Leu  Thr Leu Ile
    1145                1150                1155

Ala Val  Val Leu Ser Cys Ser  Pro Ile Cys Glu Lys  Gln Ala Leu
    1160                1165                1170

Phe Ala  Leu Cys Lys Ser Val  Lys Glu Asn Gly Leu  Glu Pro His
    1175                1180                1185
```

Leu Val Lys Lys Val Leu Glu Lys Val Ser Glu Thr Phe Gly Tyr
1190 1195 1200

Arg Arg Leu Glu Asp Phe Met Ala Ser His Leu Asp Tyr Leu Val
1205 1210 1215

Leu Glu Trp Leu Asn Leu Gln Asp Thr Glu Tyr Asn Leu Ser Ser
1220 1225 1230

Phe Pro Phe Ile Leu Leu Asn Tyr Thr Asn Ile Glu Asp Phe Tyr
1235 1240 1245

Arg Ser Cys Tyr Lys Val Leu Ile Pro His Leu Val Ile Arg Ser
1250 1255 1260

His Phe Asp Glu Val Lys Ser Ile Ala Asn Gln Ile Gln Glu Asp
1265 1270 1275

Trp Lys Ser Leu Leu Thr Asp Cys Phe Pro Lys Ile Leu Val Asn
1280 1285 1290

Ile Leu Pro Tyr Phe Ala Tyr Glu Gly Thr Arg Asp Ser Gly Met
1295 1300 1305

Ala Gln Gln Arg Glu Thr Ala Thr Lys Val Tyr Asp Met Leu Lys
1310 1315 1320

Ser Glu Asn Leu Leu Gly Lys Gln Ile Asp His Leu Phe Ile Ser
1325 1330 1335

Asn Leu Pro Glu Ile Val Val Glu Leu Leu Met Thr Leu His Glu
1340 1345 1350

Pro Ala Asn Ser Ser Ala Ser Gln Ser Thr Asp Leu Cys Asp Phe
1355 1360 1365

Ser Gly Asp Leu Asp Pro Ala Pro Asn Pro Pro His Phe Pro Ser
1370 1375 1380

His Val Ile Lys Ala Thr Phe Ala Tyr Ile Ser Asn Cys His Lys
1385 1390 1395

Thr Lys Leu Lys Ser Ile Leu Glu Ile Leu Ser Lys Ser Pro Asp

1400 1405 1410

Ser Tyr Gln Lys Ile Leu Leu Ala Ile Cys Glu Gln Ala Ala Glu
1415 1420 1425

Thr Asn Asn Val Tyr Lys Lys His Arg Ile Leu Lys Ile Tyr His
1430 1435 1440

Leu Phe Val Ser Leu Leu Leu Lys Asp Ile Lys Ser Gly Leu Gly
1445 1450 1455

Gly Ala Trp Ala Phe Val Leu Arg Asp Val Ile Tyr Thr Leu Ile
1460 1465 1470

His Tyr Ile Asn Gln Arg Pro Ser Cys Ile Met Asp Val Ser Leu
1475 1480 1485

Arg Ser Phe Ser Leu Cys Cys Asp Leu Leu Ser Gln Val Cys Gln
1490 1495 1500

Thr Ala Val Thr Tyr Cys Lys Asp Ala Leu Glu Asn His Leu His
1505 1510 1515

Val Ile Val Gly Thr Leu Ile Pro Leu Val Tyr Glu Gln Val Glu
1520 1525 1530

Val Gln Lys Gln Val Leu Asp Leu Leu Lys Tyr Leu Val Ile Asp
1535 1540 1545

Asn Lys Asp Asn Glu Asn Leu Tyr Ile Thr Ile Lys Leu Leu Asp
1550 1555 1560

Pro Phe Pro Asp His Val Val Phe Lys Asp Leu Arg Ile Thr Gln
1565 1570 1575

Gln Lys Ile Lys Tyr Ser Arg Gly Pro Phe Ser Leu Leu Glu Glu
1580 1585 1590

Ile Asn His Phe Leu Ser Val Ser Val Tyr Asp Ala Leu Pro Leu
1595 1600 1605

Thr Arg Leu Glu Gly Leu Lys Asp Leu Arg Arg Gln Leu Glu Leu
1610 1615 1620

```
His Lys  Asp Gln Met Val Asp  Ile Met Arg Ala Ser  Gln Asp Asn
    1625                1630                1635

Pro Gln  Asp Gly Ile Met Val  Lys Leu Val Val Asn  Leu Leu Gln
    1640                1645                1650

Leu Ser  Lys Met Ala Ile Asn  His Thr Gly Glu Lys  Glu Val Leu
    1655                1660                1665

Glu Ala  Val Gly Ser Cys Leu  Gly Glu Val Gly Pro  Ile Asp Phe
    1670                1675                1680

Ser Thr  Ile Ala Ile Gln His  Ser Lys Asp Ala Ser  Tyr Thr Lys
    1685                1690                1695

Ala Leu  Lys Leu Phe Glu Asp  Lys Glu Leu Gln Trp  Thr Phe Ile
    1700                1705                1710

Met Leu  Thr Tyr Leu Asn Asn  Thr Leu Val Glu Asp  Cys Val Lys
    1715                1720                1725

Val Arg  Ser Ala Ala Val Thr  Cys Leu Lys Asn Ile  Leu Ala Thr
    1730                1735                1740

Lys Thr  Gly His Ser Phe Trp  Glu Ile Tyr Lys Met  Thr Thr Asp
    1745                1750                1755

Pro Met  Leu Ala Tyr Leu Gln  Pro Phe Arg Thr Ser  Arg Lys Lys
    1760                1765                1770

Phe Leu  Glu Val Pro Arg Phe  Asp Lys Glu Asn Pro  Phe Glu Gly
    1775                1780                1785

Leu Asp  Asp Ile Asn Leu Trp  Ile Pro Leu Ser Glu  Asn His Asp
    1790                1795                1800

Ile Trp  Ile Lys Thr Leu Thr  Cys Ala Phe Leu Asp  Ser Gly Gly
    1805                1810                1815

Thr Lys  Cys Glu Ile Leu Gln  Leu Leu Lys Pro Met  Cys Glu Val
    1820                1825                1830
```

```
Lys Thr  Asp Phe Cys Gln Thr  Val Leu Pro Tyr Leu  Ile His Asp
    1835                1840                1845

Ile Leu  Leu Gln Asp Thr Asn  Glu Ser Trp Arg Asn  Leu Leu Ser
    1850                1855                1860

Thr His  Val Gln Gly Phe Phe  Thr Ser Cys Leu Arg  His Phe Ser
    1865                1870                1875

Gln Thr  Ser Arg Ser Thr Thr  Pro Ala Asn Leu Asp  Ser Glu Ser
    1880                1885                1890

Glu His  Phe Phe Arg Cys Cys  Leu Asp Lys Lys Ser  Gln Arg Thr
    1895                1900                1905

Met Leu  Ala Val Val Asp Tyr  Met Arg Arg Gln Lys  Arg Pro Ser
    1910                1915                1920

Ser Gly  Thr Ile Phe Asn Asp  Ala Phe Trp Leu Asp  Leu Asn Tyr
    1925                1930                1935

Leu Glu  Val Ala Lys Val Ala  Gln Ser Cys Ala Ala  His Phe Thr
    1940                1945                1950

Ala Leu  Leu Tyr Ala Glu Ile  Tyr Ala Asp Lys Lys  Ser Met Asp
    1955                1960                1965

Asp Gln  Glu Lys Arg Ser Leu  Ala Phe Glu Glu Gly  Ser Gln Ser
    1970                1975                1980

Thr Thr  Ile Ser Ser Leu Ser  Glu Lys Ser Lys Glu  Glu Thr Gly
    1985                1990                1995

Ile Ser  Leu Gln Asp Leu Leu  Leu Glu Ile Tyr Arg  Ser Ile Gly
    2000                2005                2010

Glu Pro  Asp Ser Leu Tyr Gly  Cys Gly Gly Gly Lys  Met Leu Gln
    2015                2020                2025

Pro Ile  Thr Arg Leu Arg Thr  Tyr Glu His Glu Ala  Met Trp Gly
    2030                2035                2040
```

Lys Ala Leu Val Thr Tyr Asp Leu Glu Thr Ala Ile Pro Ser Ser
2045 2050 2055

Thr Arg Gln Ala Gly Ile Ile Gln Ala Leu Gln Asn Leu Gly Leu
2060 2065 2070

Cys His Ile Leu Ser Val Tyr Leu Lys Gly Leu Asp Tyr Glu Asn
2075 2080 2085

Lys Asp Trp Cys Pro Glu Leu Glu Glu Leu His Tyr Gln Ala Ala
2090 2095 2100

Trp Arg Asn Met Gln Trp Asp His Cys Thr Ser Val Ser Lys Glu
2105 2110 2115

Val Glu Gly Thr Ser Tyr His Glu Ser Leu Tyr Asn Ala Leu Gln
2120 2125 2130

Ser Leu Arg Asp Arg Glu Phe Ser Thr Phe Tyr Glu Ser Leu Lys
2135 2140 2145

Tyr Ala Arg Val Lys Glu Val Glu Glu Met Cys Lys Arg Ser Leu
2150 2155 2160

Glu Ser Val Tyr Ser Leu Tyr Pro Thr Leu Ser Arg Leu Gln Ala
2165 2170 2175

Ile Gly Glu Leu Glu Ser Ile Gly Glu Leu Phe Ser Arg Ser Val
2180 2185 2190

Thr His Arg Gln Leu Ser Glu Val Tyr Ile Lys Trp Gln Lys His
2195 2200 2205

Ser Gln Leu Leu Lys Asp Ser Asp Phe Ser Phe Gln Glu Pro Ile
2210 2215 2220

Met Ala Leu Arg Thr Val Ile Leu Glu Ile Leu Met Glu Lys Glu
2225 2230 2235

Met Asp Asn Ser Gln Arg Glu Cys Ile Lys Asp Ile Leu Thr Lys
2240 2245 2250

His Leu Val Glu Leu Ser Ile Leu Ala Arg Thr Phe Lys Asn Thr

2255 2260 2265

Gln Leu Pro Glu Arg Ala Ile Phe Gln Ile Lys Gln Tyr Asn Ser
2270 2275 2280

Val Ser Cys Gly Val Ser Glu Trp Gln Leu Glu Glu Ala Gln Val
2285 2290 2295

Phe Trp Ala Lys Lys Glu Gln Ser Leu Ala Leu Ser Ile Leu Lys
2300 2305 2310

Gln Met Ile Lys Lys Leu Asp Ala Ser Cys Ala Ala Asn Asn Pro
2315 2320 2325

Ser Leu Lys Leu Thr Tyr Thr Glu Cys Leu Arg Val Cys Gly Asn
2330 2335 2340

Trp Leu Ala Glu Thr Cys Leu Glu Asn Pro Ala Val Ile Met Gln
2345 2350 2355

Thr Tyr Leu Glu Lys Ala Val Glu Val Ala Gly Asn Tyr Asp Gly
2360 2365 2370

Glu Ser Ser Asp Glu Leu Arg Asn Gly Lys Met Lys Ala Phe Leu
2375 2380 2385

Ser Leu Ala Arg Phe Ser Asp Thr Gln Tyr Gln Arg Ile Glu Asn
2390 2395 2400

Tyr Met Lys Ser Ser Glu Phe Glu Asn Lys Gln Ala Leu Leu Lys
2405 2410 2415

Arg Ala Lys Glu Glu Val Gly Leu Leu Arg Glu His Lys Ile Gln
2420 2425 2430

Thr Asn Arg Tyr Thr Val Lys Val Gln Arg Glu Leu Glu Leu Asp
2435 2440 2445

Glu Leu Ala Leu Arg Ala Leu Lys Glu Asp Arg Lys Arg Phe Leu
2450 2455 2460

Cys Lys Ala Val Glu Asn Tyr Ile Asn Cys Leu Leu Ser Gly Glu
2465 2470 2475

```
Glu His  Asp Met Trp Val Phe  Arg Leu Cys Ser Leu  Trp Leu Glu
    2480                2485                2490

Asn Ser  Gly Val Ser Glu Val  Asn Gly Met Met Lys  Arg Asp Gly
    2495                2500                2505

Met Lys  Ile Pro Thr Tyr Lys  Phe Leu Pro Leu Met  Tyr Gln Leu
    2510                2515                2520

Ala Ala  Arg Met Gly Thr Lys  Met Met Gly Gly Leu  Gly Phe His
    2525                2530                2535

Glu Val  Leu Asn Asn Leu Ile  Ser Arg Ile Ser Met  Asp His Pro
    2540                2545                2550

His His  Thr Leu Phe Ile Ile  Leu Ala Leu Ala Asn  Ala Asn Arg
    2555                2560                2565

Asp Glu  Phe Leu Thr Lys Pro  Glu Val Ala Arg Arg  Ser Arg Ile
    2570                2575                2580

Thr Lys  Asn Val Pro Lys Gln  Ser Ser Gln Leu Asp  Glu Asp Arg
    2585                2590                2595

Thr Glu  Ala Ala Asn Arg Ile  Ile Cys Thr Ile Arg  Ser Arg Arg
    2600                2605                2610

Pro Gln  Met Val Arg Ser Val  Glu Ala Leu Cys Asp  Ala Tyr Ile
    2615                2620                2625

Ile Leu  Ala Asn Leu Asp Ala  Thr Gln Trp Lys Thr  Gln Arg Lys
    2630                2635                2640

Gly Ile  Asn Ile Pro Ala Asp  Gln Pro Ile Thr Lys  Leu Lys Asn
    2645                2650                2655

Leu Glu  Asp Val Val Val Pro  Thr Met Glu Ile Lys  Val Asp His
    2660                2665                2670

Thr Gly  Glu Tyr Gly Asn Leu  Val Thr Ile Gln Ser  Phe Lys Ala
    2675                2680                2685
```

```
Glu Phe  Arg Leu Ala Gly Gly  Val Asn Leu Pro Lys  Ile Ile Asp
    2690                2695                2700

Cys Val  Gly Ser Asp Gly Lys  Glu Arg Arg Gln Leu  Val Lys Gly
    2705                2710                2715

Arg Asp  Asp Leu Arg Gln Asp  Ala Val Met Gln Gln  Val Phe Gln
    2720                2725                2730

Met Cys  Asn Thr Leu Leu Gln  Arg Asn Thr Glu Thr  Arg Lys Arg
    2735                2740                2745

Lys Leu  Thr Ile Cys Thr Tyr  Lys Val Val Pro Leu  Ser Gln Arg
    2750                2755                2760

Ser Gly  Val Leu Glu Trp Cys  Thr Gly Thr Val Pro  Ile Gly Glu
    2765                2770                2775

Phe Leu  Val Asn Asn Glu Asp  Gly Ala His Lys Arg  Tyr Arg Pro
    2780                2785                2790

Asn Asp  Phe Ser Ala Phe Gln  Cys Gln Lys Lys Met  Met Glu Val
    2795                2800                2805

Gln Lys  Lys Ser Phe Glu Glu  Lys Tyr Glu Val Phe  Met Asp Val
    2810                2815                2820

Cys Gln  Asn Phe Gln Pro Val  Phe Arg Tyr Phe Cys  Met Glu Lys
    2825                2830                2835

Phe Leu  Asp Pro Ala Ile Trp  Phe Glu Lys Arg Leu  Ala Tyr Thr
    2840                2845                2850

Arg Ser  Val Ala Thr Ser Ser  Ile Val Gly Tyr Ile  Leu Gly Leu
    2855                2860                2865

Gly Asp  Arg His Val Gln Asn  Ile Leu Ile Asn Glu  Gln Ser Ala
    2870                2875                2880

Glu Leu  Val His Ile Asp Leu  Gly Val Ala Phe Glu  Gln Gly Lys
    2885                2890                2895
```

```
Ile Leu  Pro Thr Pro Glu Thr  Val Pro Phe Arg Leu  Thr Arg Asp
    2900                2905                2910

Ile Val  Asp Gly Met Gly Ile  Thr Gly Val Glu Gly  Val Phe Arg
    2915                2920                2925

Arg Cys  Cys Glu Lys Thr Met  Glu Val Met Arg Asn  Ser Gln Glu
    2930                2935                2940

Thr Leu  Leu Thr Ile Val Glu  Val Leu Leu Tyr Asp  Pro Leu Phe
    2945                2950                2955

Asp Trp  Thr Met Asn Pro Leu  Lys Ala Leu Tyr Leu  Gln Gln Arg
    2960                2965                2970

Pro Glu  Asp Glu Thr Glu Leu  His Pro Thr Leu Asn  Ala Asp Asp
    2975                2980                2985

Gln Glu  Cys Lys Arg Asn Leu  Ser Asp Ile Asp Gln  Ser Phe Asn
    2990                2995                3000

Lys Val  Ala Glu Arg Val Leu  Met Arg Leu Gln Glu  Lys Leu Lys
    3005                3010                3015

Gly Val  Glu Glu Gly Thr Val  Leu Ser Val Gly Gly  Gln Val Asn
    3020                3025                3030

Leu Leu  Ile Gln Gln Ala Ile  Asp Pro Lys Asn Leu  Ser Arg Leu
    3035                3040                3045

Phe Pro  Gly Trp Lys Ala Trp  Val
    3050                3055


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Met Ser Leu Val Leu Asn Asp Leu Leu Ile Cys Cys Arg Gln Leu Glu
1               5                  10                  15

His Asp Arg Ala Thr Glu Arg Lys Lys Glu Val Glu Lys Phe Lys Arg
            20                  25                  30

Leu Ile Arg Asp Pro Glu Thr Ile Lys His Leu Asp Arg His Ser Asp
        35                  40                  45

Ser Lys Gln Gly Lys Tyr Leu Asn Trp Asp Ala Val Phe Arg Phe Leu
    50                  55                  60

Gln Lys Tyr Ile Gln Lys Glu Thr Glu Cys Leu Arg Ile Ala Lys Pro
65                  70                  75                  80

Asn Val Ser Ala Ser Thr Gln Ala Ser Arg Gln Lys Lys Met Gln Glu
                85                  90                  95

Ile Ser Ser Leu Val Lys Tyr Phe Ile Lys Cys Ala Asn Arg Arg Ala
            100                 105                 110

Pro Arg Leu Lys Cys Gln Glu Leu Leu Asn Tyr Ile Met Asp Thr Val
        115                 120                 125

Lys Asp Ser Ser Asn Gly Ala Ile Tyr Gly Ala Asp Cys Ser Asn Ile
    130                 135                 140

Leu Leu Lys Asp Ile Leu Ser Val Arg Lys Tyr Trp Cys Glu Ile Ser
145                 150                 155                 160

Gln Gln Gln Trp Leu Glu Leu Phe Ser Val Tyr Phe Arg Leu Tyr Leu
                165                 170                 175
```

```
Lys Pro Ser Gln Asp Val His Arg Val Leu Val Ala Arg Ile Ile His
            180                 185                 190

Ala Val Thr Lys Gly Cys Cys Ser Gln Thr Asp Gly Leu Asn Ser Lys
        195                 200                 205

Phe Leu Asp Phe Phe Ser Lys Ala Ile Gln Cys Ala Arg Gln Glu Lys
    210                 215                 220

Ser Ser Ser Gly Leu Asn His Ile Leu Ala Ala Leu Thr Ile Phe Leu
225                 230                 235                 240

Lys Thr Leu Ala Val Asn Phe Arg Ile Arg Val Cys Glu Leu Gly Asp
                245                 250                 255

Glu Ile Leu Pro Thr Leu Leu Tyr Ile Trp Thr Gln His Arg Leu Asn
            260                 265                 270

Asp Ser Leu Lys Glu Val Ile Ile Glu Leu Phe Gln Leu Gln Ile Tyr
        275                 280                 285

Ile His His Pro Lys Gly Ala Lys Thr Gln Glu Lys Gly Ala Tyr Glu
    290                 295                 300

Ser Thr Lys Trp Arg Ser Ile Leu Tyr Asn Leu Tyr Asp Leu Leu Val
305                 310                 315                 320

Asn Glu Ile Ser His Ile Gly Ser Arg Gly Lys Tyr Ser Ser Gly Phe
                325                 330                 335

Arg Asn Ile Ala Val Lys Glu Asn Leu Ile Glu Leu Met Ala Asp Ile
            340                 345                 350

Cys His Gln Val Phe Asn Glu Asp Thr Arg Ser Leu Glu Ile Ser Gln
        355                 360                 365

Ser Tyr Thr Thr Thr Gln Arg Glu Ser Ser Asp Tyr Ser Val Pro Cys
    370                 375                 380

Lys Arg Lys Lys Ile Glu Leu Gly Trp Glu Val Ile Lys Asp His Leu
385                 390                 395                 400
```

```
Gln Lys Ser Gln Asn Asp Phe Asp Leu Val Pro Trp Leu Gln Ile Ala
                405                 410                 415

Thr Gln Leu Ile Ser Lys Tyr Pro Ala Ser Leu Pro Asn Cys Glu Leu
            420                 425                 430

Ser Pro Leu Leu Met Ile Leu Ser Gln Leu Leu Pro Gln Gln Arg His
        435                 440                 445

Gly Glu Arg Thr Pro Tyr Val Leu Arg Cys Leu Thr Glu Val Ala Leu
    450                 455                 460

Cys Gln Asp Lys Arg Ser Asn Leu Glu Ser Ser Gln Lys Ser Asp Leu
465                 470                 475                 480

Leu Lys Leu Trp Asn Lys Ile Trp Cys Ile Thr Phe Arg Gly Ile Ser
                485                 490                 495

Ser Glu Gln Ile Gln Ala Glu Asn Phe Gly Leu Leu Gly Ala Ile Ile
            500                 505                 510

Gln Gly Ser Leu Val Glu Val Asp Arg Glu Phe Trp Lys Leu Phe Thr
        515                 520                 525

Gly Ser Ala Cys Arg Pro Ser Cys Pro Ala Val Cys Cys Leu Thr Leu
    530                 535                 540

Ala Leu Thr Thr Ser Ile Val Pro Gly Thr Val Lys Met Gly Ile Glu
545                 550                 555                 560

Gln Asn Met Cys Glu Val Asn Arg Ser Phe Ser Leu Lys Glu Ser Ile
                565                 570                 575

Met Lys Trp Leu Leu Phe Tyr Gln Leu Glu Gly Asp Leu Glu Asn Ser
            580                 585                 590

Thr Glu Val Pro Pro Ile Leu His Ser Asn Phe Pro His Leu Val Leu
        595                 600                 605

Glu Lys Ile Leu Val Ser Leu Thr Met Lys Asn Cys Lys Ala Ala Met
    610                 615                 620

Asn Phe Phe Gln Ser Val Pro Glu Cys Glu His His Gln Lys Asp Lys
```

625 630 635 640

Glu Glu Leu Ser Phe Ser Glu Val Glu Glu Leu Phe Leu Gln Thr Thr
645 650 655

Phe Asp Lys Met Asp Phe Leu Thr Ile Val Arg Glu Cys Gly Ile Glu
660 665 670

Lys His Gln Ser Ser Ile Gly Phe Ser Val His Gln Asn Leu Lys Glu
675 680 685

Ser Leu Asp Arg Cys Leu Leu Gly Leu Ser Glu Gln Leu Leu Asn Asn
690 695 700

Tyr Ser Ser Glu Ile Thr Asn Ser Glu Thr Leu Val Arg Cys Ser Arg
705 710 715 720

Leu Leu Val Gly Val Leu Gly Cys Tyr Cys Tyr Met Gly Val Ile Ala
725 730 735

Glu Glu Glu Ala Tyr Lys Ser Glu Leu Phe Gln Lys Ala Lys Ser Leu
740 745 750

Met Gln Cys Ala Gly Glu Ser Ile Thr Leu Phe Lys Asn Lys Thr Asn
755 760 765

Glu Glu Phe Arg Ile Gly Ser Leu Arg Asn Met Met Gln Leu Cys Thr
770 775 780

Arg Cys Leu Ser Asn Cys Thr Lys Lys Ser Pro Asn Lys Ile Ala Ser
785 790 795 800

Gly Phe Phe Leu Arg Leu Leu Thr Ser Lys Leu Met Asn Asp Ile Ala
805 810 815

Asp Ile Cys Lys Ser Leu Ala Ser Phe Ile Lys Lys Pro Phe Asp Arg
820 825 830

Gly Glu Val Glu Ser Met Glu Asp Asp Thr Asn Gly Asn Leu Met Glu
835 840 845

Val Glu Asp Gln Ser Ser Met Asn Leu Phe Asn Asp Tyr Pro Asp Ser
850 855 860

```
Ser Val Ser Asp Ala Asn Glu Pro Gly Glu Ser Gln Ser Thr Ile Gly
865                 870                 875                 880

Ala Ile Asn Pro Leu Ala Glu Glu Tyr Leu Ser Lys Gln Asp Leu Leu
                885                 890                 895

Phe Leu Asp Met Leu Lys Phe Leu Cys Leu Cys Val Thr Thr Ala Gln
            900                 905                 910

Thr Asn Thr Val Ser Phe Arg Ala Ala Asp Ile Arg Arg Lys Leu Leu
        915                 920                 925

Met Leu Ile Asp Ser Ser Thr Leu Glu Pro Thr Lys Ser Leu His Leu
    930                 935                 940

His Met Tyr Leu Met Leu Leu Lys Glu Leu Pro Gly Glu Glu Tyr Pro
945                 950                 955                 960

Leu Pro Met Glu Asp Val Leu Glu Leu Leu Lys Pro Leu Ser Asn Val
                965                 970                 975

Cys Ser Leu Tyr Arg Arg Asp Gln Asp Val Cys Lys Thr Ile Leu Asn
            980                 985                 990

His Val Leu His Val Val Lys Asn  Leu Gly Gln Ser Asn  Met Asp
Ser
        995                 1000                1005

Glu Asn  Thr Arg Asp Ala Gln  Gly Gln Phe Leu Thr  Val Ile Gly
    1010                1015                1020

Ala Phe  Trp His Leu Thr Lys  Glu Arg Lys Tyr Ile  Phe Ser Val
    1025                1030                1035

Arg Met  Ala Leu Val Asn Cys  Leu Lys Thr Leu Leu  Glu Ala Asp
    1040                1045                1050

Pro Tyr  Ser Lys Trp Ala Ile  Leu Asn Val Met Gly  Lys Asp Phe
    1055                1060                1065

Pro Val  Asn Glu Val Phe Thr  Gln Phe Leu Ala Asp  Asn His His
    1070                1075                1080
```

```
Gln Val  Arg Met Leu Ala Ala  Glu Ser Ile Asn Arg  Leu Phe Gln
    1085                1090                1095

Asp Thr  Lys Gly Asp Ser Ser  Arg Leu Leu Lys Ala  Leu Pro Leu
    1100                1105                1110

Lys Leu  Gln Gln Thr Ala Phe  Glu Asn Ala Tyr Leu  Lys Ala Gln
    1115                1120                1125

Glu Gly  Met Arg Glu Met Ser  His Ser Ala Glu Asn  Pro Glu Thr
    1130                1135                1140

Leu Asp  Glu Ile Tyr Asn Arg  Lys Ser Val Leu Leu  Thr Leu Ile
    1145                1150                1155

Ala Val  Val Leu Ser Cys Ser  Pro Ile Cys Glu Lys  Gln Ala Leu
    1160                1165                1170

Phe Ala  Leu Cys Lys Ser Val  Lys Glu Asn Gly Leu  Glu Pro His
    1175                1180                1185

Leu Val  Lys Lys Val Leu Glu  Lys Val Ser Glu Thr  Phe Gly Tyr
    1190                1195                1200

Arg Arg  Leu Glu Asp Phe Met  Ala Ser His Leu Asp  Tyr Leu Val
    1205                1210                1215

Leu Glu  Trp Leu Asn Leu Gln  Asp Thr Glu Tyr Asn  Leu Ser Ser
    1220                1225                1230

Phe Pro  Phe Ile Leu Leu Asn  Tyr Thr Asn Ile Glu  Asp Phe Tyr
    1235                1240                1245

Arg Ser  Cys Tyr Lys Val Leu  Ile Pro His Leu Val  Ile Arg Ser
    1250                1255                1260

His Phe  Asp Glu Val Lys Ser  Ile Ala Asn Gln Ile  Gln Glu Asp
    1265                1270                1275

Trp Lys  Ser Leu Leu Thr Asp  Cys Phe Pro Lys Ile  Leu Val Asn
    1280                1285                1290
```

```
Ile Leu  Pro Tyr Phe Ala Tyr  Glu Gly Thr Arg Asp  Ser Gly Met
    1295                1300                1305

Ala Gln  Gln Arg Glu Thr Ala  Thr Lys Val Tyr Asp  Met Leu Lys
    1310                1315                1320

Ser Glu  Asn Leu Leu Gly Lys  Gln Ile Asp His Leu  Phe Ile Ser
    1325                1330                1335

Asn Leu  Pro Glu Ile Val Val  Glu Leu Leu Met Thr  Leu His Glu
    1340                1345                1350

Pro Ala  Asn Ser Ser Ala Ser  Gln Ser Thr Asp Leu  Cys Asp Phe
    1355                1360                1365

Ser Gly  Asp Leu Asp Pro Ala  Pro Asn Pro Pro His  Phe Pro Ser
    1370                1375                1380

His Val  Ile Lys Ala Thr Phe  Ala Tyr Ile Ser Asn  Cys His Lys
    1385                1390                1395

Thr Lys  Leu Lys Ser Ile Leu  Glu Ile Leu Ser Lys  Ser Pro Asp
    1400                1405                1410

Ser Tyr  Gln Lys Ile Leu Leu  Ala Ile Cys Glu Gln  Ala Ala Glu
    1415                1420                1425

Thr Asn  Asn Val Tyr Lys Lys  His Arg Ile Leu Lys  Ile Tyr His
    1430                1435                1440

Leu Phe  Val Ser Leu Leu Leu  Lys Asp Ile Lys Ser  Gly Leu Gly
    1445                1450                1455

Gly Ala  Trp Ala Phe Val Leu  Arg Asp Val Ile Tyr  Thr Leu Ile
    1460                1465                1470

His Tyr  Ile Asn Gln Arg Pro  Ser Cys Ile Met Asp  Val Ser Leu
    1475                1480                1485

Arg Ser  Phe Ser Leu Cys Cys  Asp Leu Leu Ser Gln  Val Cys Gln
    1490                1495                1500
```

Thr Ala Val Thr Tyr Cys Lys Asp Ala Leu Glu Asn His Leu His
1505 1510 1515

Val Ile Val Gly Thr Leu Ile Pro Leu Val Tyr Glu Gln Val Glu
1520 1525 1530

Val Gln Lys Gln Val Leu Asp Leu Leu Lys Tyr Leu Val Ile Asp
1535 1540 1545

Asn Lys Asp Asn Glu Asn Leu Tyr Ile Thr Ile Lys Leu Leu Asp
1550 1555 1560

Pro Phe Pro Asp His Val Val Phe Lys Asp Leu Arg Ile Thr Gln
1565 1570 1575

Gln Lys Ile Lys Tyr Ser Arg Gly Pro Phe Ser Leu Leu Glu Glu
1580 1585 1590

Ile Asn His Phe Leu Ser Val Ser Val Tyr Asp Ala Leu Pro Leu
1595 1600 1605

Thr Arg Leu Glu Gly Leu Lys Asp Leu Arg Arg Gln Leu Glu Leu
1610 1615 1620

His Lys Asp Gln Met Val Asp Ile Met Arg Ala Ser Gln Asp Asn
1625 1630 1635

Pro Gln Asp Gly Ile Met Val Lys Leu Val Val Asn Leu Leu Gln
1640 1645 1650

Leu Ser Lys Met Ala Ile Asn His Thr Gly Glu Lys Glu Val Leu
1655 1660 1665

Glu Ala Val Gly Ser Cys Leu Gly Glu Val Gly Pro Ile Asp Phe
1670 1675 1680

Ser Thr Ile Ala Ile Gln His Ser Lys Asp Ala Ser Tyr Thr Lys
1685 1690 1695

Ala Leu Lys Leu Phe Glu Asp Lys Glu Leu Gln Trp Thr Phe Ile
1700 1705 1710

Met Leu Thr Tyr Leu Asn Asn Thr Leu Val Glu Asp Cys Val Lys

1715 1720 1725

Val Arg Ser Ala Ala Val Thr Cys Leu Lys Asn Ile Leu Ala Thr
1730 1735 1740

Lys Thr Gly His Ser Phe Trp Glu Ile Tyr Lys Met Thr Thr Asp
1745 1750 1755

Pro Met Leu Ala Tyr Leu Gln Pro Phe Arg Thr Ser Arg Lys Lys
1760 1765 1770

Phe Leu Glu Val Pro Arg Phe Asp Lys Glu Asn Pro Phe Glu Gly
1775 1780 1785

Leu Asp Asp Ile Asn Leu Trp Ile Pro Leu Ser Glu Asn His Asp
1790 1795 1800

Ile Trp Ile Lys Thr Leu Thr Cys Ala Phe Leu Asp Ser Gly Gly
1805 1810 1815

Thr Lys Cys Glu Ile Leu Gln Leu Leu Lys Pro Met Cys Glu Val
1820 1825 1830

Lys Thr Asp Phe Cys Gln Thr Val Leu Pro Tyr Leu Ile His Asp
1835 1840 1845

Ile Leu Leu Gln Asp Thr Asn Glu Ser Trp Arg Asn Leu Leu Ser
1850 1855 1860

Thr His Val Gln Gly Phe Phe Thr Ser Cys Leu Arg His Phe Ser
1865 1870 1875

Gln Thr Ser Arg Ser Thr Thr Pro Ala Asn Leu Asp Ser Glu Ser
1880 1885 1890

Glu His Phe Phe Arg Cys Cys Leu Asp Lys Lys Ser Gln Arg Thr
1895 1900 1905

Met Leu Ala Val Val Asp Tyr Met Arg Arg Gln Lys Arg Pro Ser
1910 1915 1920

Ser Gly Thr Ile Phe Asn Asp Ala Phe Trp Leu Asp Leu Asn Tyr
1925 1930 1935

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Leu Glu  Val Ala Lys Val Ala  Gln Ser Cys Ala Ala  His Phe Thr
    1940                1945                1950

Ala Leu  Leu Tyr Ala Glu Ile  Tyr Ala Asp Lys Lys  Ser Met Asp
    1955                1960                1965

Asp Gln  Glu Lys Arg Ser Leu  Ala Phe Glu Glu Gly  Ser Gln Ser
    1970                1975                1980

Thr Thr  Ile Ser Ser Leu Ser  Glu Lys Ser Lys Glu  Glu Thr Gly
    1985                1990                1995

Ile Ser  Leu Gln Asp Leu Leu  Leu Glu Ile Tyr Arg  Ser Ile Gly
    2000                2005                2010

Glu Pro  Asp Ser Leu Tyr Gly  Cys Gly Gly Gly Lys  Met Leu Gln
    2015                2020                2025

Pro Ile  Thr Arg Leu Arg Thr  Tyr Glu His Glu Ala  Met Trp Gly
    2030                2035                2040

Lys Ala  Leu Val Thr Tyr Asp  Leu Glu Thr Ala Ile  Pro Ser Ser
    2045                2050                2055

Thr Arg  Gln Ala Gly Ile Ile  Gln Ala Leu Gln Asn  Leu Gly Leu
    2060                2065                2070

Cys His  Ile Leu Ser Val Tyr  Leu Lys Gly Leu Asp  Tyr Glu Asn
    2075                2080                2085

Lys Asp  Trp Cys Pro Glu Leu  Glu Glu Leu His Tyr  Gln Ala Ala
    2090                2095                2100

Trp Arg  Asn Met Gln Trp Asp  His Cys Thr Ser Val  Ser Lys Glu
    2105                2110                2115

Val Glu  Gly Thr Ser Tyr His  Glu Ser Leu Tyr Asn  Ala Leu Gln
    2120                2125                2130

Ser Leu  Arg Asp Arg Glu Phe  Ser Thr Phe Tyr Glu  Ser Leu Lys
    2135                2140                2145
```

```
Tyr Ala  Arg Val Lys Glu Val  Glu Glu Met Cys Lys  Arg Ser Leu
    2150                2155                2160

Glu Ser  Val Tyr Ser Leu Tyr  Pro Thr Leu Ser Arg  Leu Gln Ala
    2165                2170                2175

Ile Gly  Glu Leu Glu Ser Ile  Gly Glu Leu Phe Ser  Arg Ser Val
    2180                2185                2190

Thr His  Arg Gln Leu Ser Glu  Val Tyr Ile Lys Trp  Gln Lys His
    2195                2200                2205

Ser Gln  Leu Leu Lys Asp Ser  Asp Phe Ser Phe Gln  Glu Pro Ile
    2210                2215                2220

Met Ala  Leu Arg Thr Val Ile  Leu Glu Ile Leu Met  Glu Lys Glu
    2225                2230                2235

Met Asp  Asn Ser Gln Arg Glu  Cys Ile Lys Asp Ile  Leu Thr Lys
    2240                2245                2250

His Leu  Val Glu Leu Ser Ile  Leu Ala Arg Thr Phe  Lys Asn Thr
    2255                2260                2265

Gln Leu  Pro Glu Arg Ala Ile  Phe Gln Ile Lys Gln  Tyr Asn Ser
    2270                2275                2280

Val Ser  Cys Gly Val Ser Glu  Trp Gln Leu Glu Glu  Ala Gln Val
    2285                2290                2295

Phe Trp  Ala Lys Lys Glu Gln  Ser Leu Ala Leu Ser  Ile Leu Lys
    2300                2305                2310

Gln Met  Ile Lys Lys Leu Asp  Ala Ser Cys Ala Ala  Asn Asn Pro
    2315                2320                2325

Ser Leu  Lys Leu Thr Tyr Thr  Glu Cys Leu Arg Val  Cys Gly Asn
    2330                2335                2340

Trp Leu  Ala Glu Thr Cys Leu  Glu Asn Pro Ala Val  Ile Met Gln
    2345                2350                2355
```

```
Thr Tyr  Leu Glu Lys Ala Val  Glu Val Ala Gly Asn  Tyr Asp Gly
    2360                2365                2370

Glu Ser  Ser Asp Glu Leu Arg  Asn Gly Lys Met Lys  Ala Phe Leu
    2375                2380                2385

Ser Leu  Ala Arg Phe Ser Asp  Thr Gln Tyr Gln Arg  Ile Glu Asn
    2390                2395                2400

Tyr Met  Lys Ser Ser Glu Phe  Glu Asn Lys Gln Ala  Leu Leu Lys
    2405                2410                2415

Arg Ala  Lys Glu Glu Val Gly  Leu Leu Arg Glu His  Lys Ile Gln
    2420                2425                2430

Thr Asn  Arg Tyr Thr Val Lys  Val Gln Arg Glu Leu  Glu Leu Asp
    2435                2440                2445

Glu Leu  Ala Leu Arg Ala Leu  Lys Glu Asp Arg Lys  Arg Phe Leu
    2450                2455                2460

Cys Lys  Ala Val Glu Asn Tyr  Ile Asn Cys Leu Leu  Ser Gly Glu
    2465                2470                2475

Glu His  Asp Met Trp Val Phe  Arg Leu Cys Ser Leu  Trp Leu Glu
    2480                2485                2490

Asn Ser  Gly Val Ser Glu Val  Asn Gly Met Met Lys  Arg Asp Gly
    2495                2500                2505

Met Lys  Ile Pro Thr Tyr Lys  Phe Leu Pro Leu Met  Tyr Gln Leu
    2510                2515                2520

Ala Ala  Arg Met Gly Thr Lys  Met Met Gly Gly Leu  Gly Phe His
    2525                2530                2535

Glu Val  Leu Asn Asn Leu Ile  Ser Arg Ile Ser Met  Asp His Pro
    2540                2545                2550

His His  Thr Leu Phe Ile Ile  Leu Ala Leu Ala Asn  Ala Asn Arg
    2555                2560                2565

Asp Glu  Phe Leu Thr Lys Pro  Glu Val Ala Arg Arg  Ser Arg Ile
```

2570 2575 2580

Thr Lys Asn Val Pro Lys Gln Ser Ser Gln Leu Asp Glu Asp Arg
2585 2590 2595

Thr Glu Ala Ala Asn Arg Ile Ile Cys Thr Ile Arg Ser Arg Arg
2600 2605 2610

Pro Gln Met Val Arg Ser Val Glu Ala Leu Cys Asp Ala Tyr Ile
2615 2620 2625

Ile Leu Ala Asn Leu Asp Ala Thr Gln Trp Lys Thr Gln Arg Lys
2630 2635 2640

Gly Ile Asn Ile Pro Ala Asp Gln Pro Ile Thr Lys Leu Lys Asn
2645 2650 2655

Leu Glu Asp Val Val Val Pro Thr Met Glu Ile Lys Val Asp His
2660 2665 2670

Thr Gly Glu Tyr Gly Asn Leu Val Thr Ile Gln Ser Phe Lys Ala
2675 2680 2685

Glu Phe Arg Leu Ala Gly Gly Val Asn Leu Pro Lys Ile Ile Asp
2690 2695 2700

Cys Val Gly Ser Asp Gly Lys Glu Arg Arg Gln Leu Val Lys Gly
2705 2710 2715

Arg Asp Asp Leu Arg Gln Asp Ala Val Met Gln Gln Val Phe Gln
2720 2725 2730

Met Cys Asn Thr Leu Leu Gln Arg Asn Thr Glu Thr Arg Lys Arg
2735 2740 2745

Lys Leu Thr Ile Cys Thr Tyr Lys Val Val Pro Leu Ser Gln Arg
2750 2755 2760

Ser Gly Val Leu Glu Trp Cys Thr Gly Thr Val Pro Ile Gly Glu
2765 2770 2775

Phe Leu Val Asn Asn Glu Asp Gly Ala His Lys Arg Tyr Arg Pro
2780 2785 2790

```
Asn Asp  Phe Ser Ala Phe Gln  Cys Gln Lys Lys Met  Met Glu Val
    2795                 2800                 2805

Gln Lys  Lys Ser Phe Glu Glu  Lys Tyr Glu Val Phe  Met Asp Val
    2810                 2815                 2820

Cys Gln  Asn Phe Gln Pro Val  Phe Arg Tyr Phe Cys  Met Glu Lys
    2825                 2830                 2835

Phe Leu  Asp Pro Ala Ile Trp  Phe Glu Lys Arg Leu  Ala Tyr Thr
    2840                 2845                 2850

Arg Ser  Val Ala Thr Ser Ser  Ile Val Gly Tyr Ile  Leu Gly Leu
    2855                 2860                 2865

Gly Asp  Arg His Val Gln Asn  Ile Leu Ile Asn Glu  Gln Ser Ala
    2870                 2875                 2880

Glu Leu  Val His Ile Asp Leu  Gly Val Ala Phe Glu  Gln Gly Lys
    2885                 2890                 2895

Ile Leu  Pro Thr Pro Glu Thr  Val Pro Phe Arg Leu  Thr Arg Asp
    2900                 2905                 2910

Ile Val  Asp Gly Met Gly Ile  Thr Gly Val Glu Gly  Val Phe Arg
    2915                 2920                 2925

Arg Cys  Cys Glu Lys Thr Met  Glu Val Met Arg Asn  Ser Gln Glu
    2930                 2935                 2940

Thr Leu  Leu Thr Ile Val Glu  Val Leu Leu Tyr Asp  Pro Leu Phe
    2945                 2950                 2955

Asp Trp  Thr Met Asn Pro Leu  Lys Ala Leu Tyr Leu  Gln Gln Arg
    2960                 2965                 2970

Pro Glu  Asp Glu Thr Glu Leu  His Pro Thr Leu Asn  Ala Asp Asp
    2975                 2980                 2985

Gln Glu  Cys Lys Arg Asn Leu  Ser Asp Ile Asp Gln  Ser Phe Asn
    2990                 2995                 3000
```

Lys Val Ala Glu Arg Val Leu Met Arg Leu Gln Glu Lys Leu Lys
3005 3010 3015

Gly Val Glu Glu Gly Thr Val Leu Ser Val Gly Gly Gln Val Asn
3020 3025 3030

Leu Leu Ile Gln Gln Ala Ile Asp Pro Lys Asn Leu Ser Arg Leu
3035 3040 3045

Phe Pro Gly Trp Lys Ala Trp Val
3050 3055

<210> 6992
<211> 93
<212> PRT
<213> Homo sapiens

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<223> /note="Payload ID: 1490; "

<220>
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<223> /note="Gene Name:
ATM serine/threonine kinase; "

<220>
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<400> 6992
Met Ser Leu Val Leu Asn Asp Leu Leu Ile Cys Cys Arg Gln Leu Glu
1 5 10 15

His Asp Arg Ala Thr Glu Arg Lys Lys Glu Val Glu Lys Phe Lys Arg
20 25 30

Leu Ile Arg Asp Pro Glu Thr Ile Lys His Leu Asp Arg His Ser Asp
35 40 45

Ser Lys Gln Gly Lys Tyr Leu Asn Trp Asp Ala Val Phe Arg Phe Leu
50 55 60

Gln Lys Tyr Ile Gln Lys Glu Thr Glu Cys Leu Arg Ile Ala Lys Pro

65 70 75 80

Asn Val Ser Ala Ser Thr Gln Ala Ser Arg Gln Lys Lys
85 90

<210> 6993
<211> 154
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<400> 6993
Met Ser Leu Val Leu Asn Asp Leu Leu Ile Cys Cys Arg Gln Leu Glu
1 5 10 15

His Asp Arg Ala Thr Glu Arg Lys Lys Glu Val Glu Lys Phe Lys Arg
20 25 30

Leu Ile Arg Asp Pro Glu Thr Ile Lys His Leu Asp Arg His Ser Asp
35 40 45

Ser Lys Gln Gly Lys Tyr Leu Asn Trp Asp Ala Val Phe Arg Phe Leu
50 55 60

Gln Lys Tyr Ile Gln Lys Glu Thr Glu Cys Leu Arg Ile Ala Lys Pro
65 70 75 80

Asn Val Ser Ala Ser Thr Gln Ala Ser Arg Gln Lys Lys Met Gln Glu
85 90 95

Ile Ser Ser Leu Val Lys Tyr Phe Ile Lys Cys Ala Asn Arg Lys Leu
100 105 110

```
Phe Ser Val Tyr Phe Arg Leu Tyr Leu Lys Pro Ser Gln Asp Val His
        115                 120                 125

Arg Val Leu Val Ala Arg Ile Ile His Ala Val Thr Lys Gly Cys Cys
    130                 135                 140

Ser Gln Thr Asp Gly Leu Asn Ser Lys Phe
145                 150
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<210> 6994
<211> 155
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<213> Homo sapiens

<220>
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<400> 6994

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Ile Asp His Leu Phe Ile Ser Asn Leu Pro Glu Ile Val Val Glu Leu
1               5                   10                  15

Leu Met Thr Leu His Glu Pro Ala Asn Ser Ser Ala Ser Gln Ser Thr
            20                  25                  30

Asp Leu Cys Asp Phe Ser Gly Asp Leu Asp Pro Ala Pro Asn Pro Pro
        35                  40                  45

His Phe Pro Ser His Val Ile Lys Ala Thr Phe Ala Tyr Ile Ser Asn
    50                  55                  60

Cys His Lys Thr Lys Leu Lys Ser Ile Leu Glu Ile Leu Ser Lys Ser
65                  70                  75                  80

Pro Asp Ser Tyr Gln Lys Ile Leu Leu Ala Ile Cys Glu Gln Ala Ala
```

```
                85                  90                  95

Glu Thr Asn Asn Val Tyr Lys Lys His Arg Ile Leu Lys Ile Tyr His
            100                 105                 110

Leu Phe Val Ser Leu Leu Leu Lys Asp Ile Lys Ser Gly Leu Gly Gly
        115                 120                 125

Ala Trp Ala Phe Val Leu Arg Asp Val Ile Tyr Thr Leu Ile His Tyr
    130                 135                 140

Ile Asn Gln Arg Lys Leu Thr Ile Phe Ser Gln
145                 150                 155


<210> 6995
<211> 77
<212> PRT
<213> Homo sapiens

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<220>
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<223> /note="ENSP ID: ENSP00000435524"


<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 6995
Xaa Cys Glu Val Lys Thr Asp Phe Cys Gln Thr Val Leu Pro Tyr Leu
1               5                   10                  15

Ile His Asp Ile Leu Leu Gln Asp Thr Asn Glu Ser Trp Arg Asn Leu
            20                  25                  30

Leu Ser Thr His Val Gln Gly Phe Phe Thr Ser Cys Leu Arg His Phe
```

```
        35                  40                  45

Ser Gln Thr Ser Arg Ser Thr Thr Pro Ala Asn Leu Asp Ser Asp Leu
    50                  55                  60

Leu Gln Glu Gln Phe Leu Met Met Leu Ser Gly Trp Ile
65                  70                  75


<210> 6996
<211> 1369
<212> PRT
<213> Homo sapiens

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<220>
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<400> 6996
Met Ser Leu Val Leu Asn Asp Leu Leu Ile Cys Cys Arg Gln Leu Glu
1               5                   10                  15

His Asp Arg Ala Thr Glu Arg Lys Lys Glu Val Glu Lys Phe Lys Arg
            20                  25                  30

Leu Ile Arg Asp Pro Glu Thr Ile Lys His Leu Asp Arg His Ser Asp
        35                  40                  45

Ser Lys Gln Gly Lys Tyr Leu Asn Trp Asp Ala Val Phe Arg Phe Leu
    50                  55                  60

Gln Lys Tyr Ile Gln Lys Glu Thr Glu Cys Leu Arg Ile Ala Lys Pro
65                  70                  75                  80

Asn Val Ser Ala Ser Thr Gln Ala Ser Arg Gln Lys Lys Met Gln Glu
                85                  90                  95
```

```
Ile Ser Ser Leu Val Lys Tyr Phe Ile Lys Cys Ala Asn Arg Arg Ala
            100                 105                 110

Pro Arg Leu Lys Cys Gln Glu Leu Leu Asn Tyr Ile Met Asp Thr Val
        115                 120                 125

Lys Asp Ser Ser Asn Gly Ala Ile Tyr Gly Ala Asp Cys Ser Asn Ile
    130                 135                 140

Leu Leu Lys Asp Ile Leu Ser Val Arg Lys Tyr Trp Cys Glu Ile Ser
145                 150                 155                 160

Gln Gln Gln Trp Leu Glu Leu Phe Ser Val Tyr Phe Arg Leu Tyr Leu
                165                 170                 175

Lys Pro Ser Gln Asp Val His Arg Val Leu Val Ala Arg Ile Ile His
            180                 185                 190

Ala Val Thr Lys Gly Cys Cys Ser Gln Thr Asp Gly Leu Asn Ser Lys
        195                 200                 205

Phe Leu Asp Phe Phe Ser Lys Ala Ile Gln Cys Ala Arg Gln Glu Lys
    210                 215                 220

Ser Ser Ser Gly Leu Asn His Ile Leu Ala Ala Leu Thr Ile Phe Leu
225                 230                 235                 240

Lys Thr Leu Ala Val Asn Phe Arg Ile Arg Val Cys Glu Leu Gly Asp
                245                 250                 255

Glu Ile Leu Pro Thr Leu Leu Tyr Ile Trp Thr Gln His Arg Leu Asn
            260                 265                 270

Asp Ser Leu Lys Glu Val Ile Ile Glu Leu Phe Gln Leu Gln Ile Tyr
        275                 280                 285

Ile His His Pro Lys Gly Ala Lys Thr Gln Glu Lys Gly Ala Tyr Glu
    290                 295                 300

Ser Thr Lys Trp Arg Ser Ile Leu Tyr Asn Leu Tyr Asp Leu Leu Val
305                 310                 315                 320
```

```
Asn Glu Ile Ser His Ile Gly Ser Arg Gly Lys Tyr Ser Ser Gly Phe
                325                 330                 335

Arg Asn Ile Ala Val Lys Glu Asn Leu Ile Glu Leu Met Ala Asp Ile
            340                 345                 350

Cys His Gln Val Phe Asn Glu Asp Thr Arg Ser Leu Glu Ile Ser Gln
        355                 360                 365

Ser Tyr Thr Thr Thr Gln Arg Glu Ser Ser Asp Tyr Ser Val Pro Cys
    370                 375                 380

Lys Arg Lys Lys Ile Glu Leu Gly Trp Glu Val Ile Lys Asp His Leu
385                 390                 395                 400

Gln Lys Ser Gln Asn Asp Phe Asp Leu Val Pro Trp Leu Gln Ile Ala
                405                 410                 415

Thr Gln Leu Ile Ser Lys Tyr Pro Ala Ser Leu Pro Asn Cys Glu Leu
            420                 425                 430

Ser Pro Leu Leu Met Ile Leu Ser Gln Leu Leu Pro Gln Gln Arg His
        435                 440                 445

Gly Glu Arg Thr Pro Tyr Val Leu Arg Cys Leu Thr Glu Val Ala Leu
    450                 455                 460

Cys Gln Asp Lys Arg Ser Asn Leu Glu Ser Ser Gln Lys Ser Asp Leu
465                 470                 475                 480

Leu Lys Leu Trp Asn Lys Ile Trp Cys Ile Thr Phe Arg Gly Ile Ser
                485                 490                 495

Ser Glu Gln Ile Gln Ala Glu Asn Phe Gly Leu Leu Gly Ala Ile Ile
            500                 505                 510

Gln Gly Ser Leu Val Glu Val Asp Arg Glu Phe Trp Lys Leu Phe Thr
        515                 520                 525

Gly Ser Ala Cys Arg Pro Ser Cys Pro Ala Val Cys Cys Leu Thr Leu
    530                 535                 540

Ala Leu Thr Thr Ser Ile Val Pro Gly Thr Val Lys Met Gly Ile Glu
```

545 550 555 560

Gln Asn Met Cys Glu Val Asn Arg Ser Phe Ser Leu Lys Glu Ser Ile
565 570 575

Met Lys Trp Leu Leu Phe Tyr Gln Leu Glu Gly Asp Leu Glu Asn Ser
580 585 590

Thr Glu Val Pro Pro Ile Leu His Ser Asn Phe Pro His Leu Val Leu
595 600 605

Glu Lys Ile Leu Val Ser Leu Thr Met Lys Asn Cys Lys Ala Ala Met
610 615 620

Asn Phe Phe Gln Ser Val Pro Glu Cys Glu His His Gln Lys Asp Lys
625 630 635 640

Glu Glu Leu Ser Phe Ser Glu Val Glu Glu Leu Phe Leu Gln Thr Thr
645 650 655

Phe Asp Lys Met Asp Phe Leu Thr Ile Val Arg Glu Cys Gly Ile Glu
660 665 670

Lys His Gln Ser Ser Ile Gly Phe Ser Val His Gln Asn Leu Lys Glu
675 680 685

Ser Leu Asp Arg Cys Leu Leu Gly Leu Ser Glu Gln Leu Leu Asn Asn
690 695 700

Tyr Ser Ser Glu Ile Thr Asn Ser Glu Thr Leu Val Arg Cys Ser Arg
705 710 715 720

Leu Leu Val Gly Val Leu Gly Cys Tyr Cys Tyr Met Gly Val Ile Ala
725 730 735

Glu Glu Glu Ala Tyr Lys Ser Glu Leu Phe Gln Lys Ala Lys Ser Leu
740 745 750

Met Gln Cys Ala Gly Glu Ser Ile Thr Leu Phe Lys Asn Lys Thr Asn
755 760 765

Glu Glu Phe Arg Ile Gly Ser Leu Arg Asn Met Met Gln Leu Cys Thr
770 775 780

```
Arg Cys Leu Ser Asn Cys Thr Lys Lys Ser Pro Asn Lys Ile Ala Ser
785                 790                 795                 800

Gly Phe Phe Leu Arg Leu Leu Thr Ser Lys Leu Met Asn Asp Ile Ala
                805                 810                 815

Asp Ile Cys Lys Ser Leu Ala Ser Phe Ile Lys Lys Pro Phe Asp Arg
            820                 825                 830

Gly Glu Val Glu Ser Met Glu Asp Asp Thr Asn Gly Asn Leu Met Glu
        835                 840                 845

Val Glu Asp Gln Ser Ser Met Asn Leu Phe Asn Asp Tyr Pro Asp Ser
    850                 855                 860

Ser Val Ser Asp Ala Asn Glu Pro Gly Glu Ser Gln Ser Thr Ile Gly
865                 870                 875                 880

Ala Ile Asn Pro Leu Ala Glu Glu Tyr Leu Ser Lys Gln Asp Leu Leu
                885                 890                 895

Phe Leu Asp Met Leu Lys Phe Leu Cys Leu Cys Val Thr Thr Ala Gln
            900                 905                 910

Thr Asn Thr Val Ser Phe Arg Ala Ala Asp Ile Arg Arg Lys Leu Leu
        915                 920                 925

Met Leu Ile Asp Ser Ser Thr Leu Glu Pro Thr Lys Ser Leu His Leu
    930                 935                 940

His Met Tyr Leu Met Leu Leu Lys Glu Leu Pro Gly Glu Glu Tyr Pro
945                 950                 955                 960

Leu Pro Met Glu Asp Val Leu Glu Leu Leu Lys Pro Leu Ser Asn Val
                965                 970                 975

Cys Ser Leu Tyr Arg Arg Asp Gln Asp Val Cys Lys Thr Ile Leu Asn
            980                 985                 990

His Val Leu His Val Val Lys Asn  Leu Gly Gln Ser Asn  Met Asp
Ser
        995                 1000                1005
```

```
Glu Asn  Thr Arg Asp Ala Gln  Gly Gln Phe Leu Thr  Val Ile Gly
    1010                1015                1020

Ala Phe  Trp His Leu Thr Lys  Glu Arg Lys Tyr Ile  Phe Ser Val
    1025                1030                1035

Arg Met  Ala Leu Val Asn Cys  Leu Lys Thr Leu Leu  Glu Ala Asp
    1040                1045                1050

Pro Tyr  Ser Lys Trp Ala Ile  Leu Asn Val Met Gly  Lys Asp Phe
    1055                1060                1065

Pro Val  Asn Glu Val Phe Thr  Gln Phe Leu Ala Asp  Asn His His
    1070                1075                1080

Gln Val  Arg Met Leu Ala Ala  Glu Ser Ile Asn Arg  Leu Phe Gln
    1085                1090                1095

Asp Thr  Lys Gly Asp Ser Ser  Arg Leu Leu Lys Ala  Leu Pro Leu
    1100                1105                1110

Lys Leu  Gln Gln Thr Ala Phe  Glu Asn Ala Tyr Leu  Lys Ala Gln
    1115                1120                1125

Glu Gly  Met Arg Glu Met Ser  His Ser Ala Glu Asn  Pro Glu Thr
    1130                1135                1140

Leu Asp  Glu Ile Tyr Asn Arg  Lys Ser Val Leu Leu  Thr Leu Ile
    1145                1150                1155

Ala Val  Val Leu Ser Cys Ser  Pro Ile Cys Glu Lys  Gln Ala Leu
    1160                1165                1170

Phe Ala  Leu Cys Lys Ser Val  Lys Glu Asn Gly Leu  Glu Pro His
    1175                1180                1185

Leu Val  Lys Lys Val Leu Glu  Lys Val Ser Glu Thr  Phe Gly Tyr
    1190                1195                1200

Arg Arg  Leu Glu Asp Phe Met  Ala Ser His Leu Asp  Tyr Leu Val
    1205                1210                1215
```

```
Leu Glu  Trp Leu Asn Leu Gln  Asp Thr Glu Tyr Asn  Leu Ser Ser
    1220                1225                1230

Phe Pro  Phe Ile Leu Leu Asn  Tyr Thr Asn Ile Glu  Asp Phe Tyr
    1235                1240                1245

Arg Ser  Cys Tyr Lys Val Leu  Ile Pro His Leu Val  Ile Arg Ser
    1250                1255                1260

His Phe  Asp Glu Val Lys Ser  Ile Ala Asn Gln Ile  Gln Glu Asp
    1265                1270                1275

Trp Lys  Ser Leu Leu Thr Asp  Cys Phe Pro Lys Ile  Leu Val Asn
    1280                1285                1290

Ile Leu  Pro Tyr Phe Ala Tyr  Glu Gly Thr Arg Asp  Ser Gly Met
    1295                1300                1305

Ala Gln  Gln Arg Glu Thr Ala  Thr Lys Val Tyr Asp  Met Leu Lys
    1310                1315                1320

Ser Glu  Asn Leu Leu Gly Lys  Gln Ile Asp His Leu  Phe Ile Ser
    1325                1330                1335

Asn Leu  Pro Glu Ile Val Val  Glu Leu Leu Met Thr  Leu His Glu
    1340                1345                1350

Pro Ala  Asn Ser Ser Ala Ser  Gln Ser Thr Asp Leu  Cys Asp Phe
    1355                1360                1365

Ser
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<210> 6997
<211> 135
<212> PRT
<213> Homo sapiens

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<220>
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<400> 6997
Met Ser Leu Val Leu Asn Asp Leu Leu Ile Cys Cys Arg Gln Leu Glu
1 5 10 15

His Asp Arg Ala Thr Glu Arg Lys Lys Glu Val Glu Lys Phe Lys Arg
20 25 30

Leu Ile Arg Asp Pro Glu Thr Ile Lys His Leu Asp Arg His Ser Asp
35 40 45

Ser Lys Gln Gly Lys Tyr Leu Asn Trp Asp Ala Val Phe Arg Phe Leu
50 55 60

Gln Lys Tyr Ile Gln Lys Glu Thr Glu Cys Leu Arg Ile Ala Lys Pro
65 70 75 80

Asn Val Ser Ala Ser Thr Gln Ala Ser Arg Gln Lys Lys Met Gln Glu
85 90 95

Ile Ser Ser Leu Val Lys Tyr Phe Ile Lys Cys Ala Asn Arg Arg Ala
100 105 110

Pro Arg Leu Lys Cys Gln Glu Leu Leu Asn Tyr Ile Met Asp Thr Val
115 120 125

Lys Asp Ser Ser Asn Gly Ala
130 135

<210> 6998
<211> 112
<212> PRT
<213> Homo sapiens

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<400> 6998
Met Ser Leu Val Leu Asn Asp Leu Leu Ile Cys Cys Arg Gln Leu Glu
1 5 10 15

His Asp Arg Ala Thr Glu Arg Lys Lys Glu Val Glu Lys Phe Lys Arg
20 25 30

Leu Ile Arg Asp Pro Glu Thr Ile Lys His Leu Asp Arg His Ser Asp
35 40 45

Ser Lys Gln Gly Lys Tyr Leu Asn Trp Asp Ala Val Phe Arg Phe Leu
50 55 60

Gln Lys Tyr Ile Gln Lys Glu Thr Glu Cys Leu Arg Ile Ala Lys Pro
65 70 75 80

Asn Val Ser Ala Ser Thr Gln Ala Ser Arg Gln Lys Lys Met Gln Glu
85 90 95

Ile Ser Ser Leu Val Lys Tyr Phe Ile Lys Cys Ala Asn Arg Ser Lys
100 105 110

<210> 6999
<211> 168
<212> PRT
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<220>
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<223> /note="Gene Name:

ATM serine/threonine kinase; "

<220>
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<400> 6999
Met Ser Leu Val Leu Asn Asp Leu Leu Ile Cys Cys Arg Gln Leu Glu
1 5 10 15

His Asp Arg Ala Thr Glu Arg Lys Lys Glu Val Glu Lys Phe Lys Arg
20 25 30

Leu Ile Arg Asp Pro Glu Thr Ile Lys His Leu Asp Arg His Ser Asp
35 40 45

Ser Lys Gln Gly Lys Tyr Leu Asn Trp Asp Ala Val Phe Arg Phe Leu
50 55 60

Gln Lys Tyr Ile Gln Lys Glu Thr Glu Cys Leu Arg Ile Ala Lys Pro
65 70 75 80

Asn Val Ser Ala Ser Thr Gln Ala Ser Arg Gln Lys Lys Met Gln Glu
85 90 95

Ile Ser Ser Leu Val Lys Tyr Phe Ile Lys Cys Ala Asn Arg Arg Ala
100 105 110

Pro Arg Leu Lys Cys Gln Glu Leu Leu Asn Tyr Ile Met Asp Thr Val
115 120 125

Lys Asp Ser Ser Asn Gly Ala Ile Tyr Gly Ala Asp Cys Ser Asn Ile
130 135 140

Leu Leu Lys Asp Ile Leu Ser Val Arg Lys Tyr Trp Cys Glu Ile Ser
145 150 155 160

Gln Gln Gln Trp Leu Gly Met Phe
165

<210> 7000
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<220>
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atonal bHLH transcription
factor 1; "

<220>
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<400> 7000

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Met Ser Arg Leu Leu His Ala Glu Glu Trp Ala Glu Val Lys Glu Leu
1               5                  10                  15


Gly Asp His His Arg Gln Pro Gln Pro His His Leu Pro Gln Pro Pro
            20                  25                  30


Pro Pro Pro Gln Pro Pro Ala Thr Leu Gln Ala Arg Glu His Pro Val
        35                  40                  45


Tyr Pro Pro Glu Leu Ser Leu Leu Asp Ser Thr Asp Pro Arg Ala Trp
    50                  55                  60


Leu Ala Pro Thr Leu Gln Gly Ile Cys Thr Ala Arg Ala Ala Gln Tyr
65                  70                  75                  80


Leu Leu His Ser Pro Glu Leu Gly Ala Ser Glu Ala Ala Ala Pro Arg
                85                  90                  95


Asp Glu Val Asp Gly Arg Gly Glu Leu Val Arg Arg Ser Ser Gly Gly
            100                 105                 110


Ala Ser Ser Ser Lys Ser Pro Gly Pro Val Lys Val Arg Glu Gln Leu
        115                 120                 125


Cys Lys Leu Lys Gly Gly Val Val Val Asp Glu Leu Gly Cys Ser Arg
    130                 135                 140
```

```
Gln Arg Ala Pro Ser Ser Lys Gln Val Asn Gly Val Gln Lys Gln Arg
145                 150                 155                 160

Arg Leu Ala Ala Asn Ala Arg Glu Arg Arg Arg Met His Gly Leu Asn
                165                 170                 175

His Ala Phe Asp Gln Leu Arg Asn Val Ile Pro Ser Phe Asn Asn Asp
            180                 185                 190

Lys Lys Leu Ser Lys Tyr Glu Thr Leu Gln Met Ala Gln Ile Tyr Ile
        195                 200                 205

Asn Ala Leu Ser Glu Leu Leu Gln Thr Pro Ser Gly Gly Glu Gln Pro
    210                 215                 220

Pro Pro Pro Pro Ala Ser Cys Lys Ser Asp His His His Leu Arg Thr
225                 230                 235                 240

Ala Ala Ser Tyr Glu Gly Gly Ala Gly Asn Ala Thr Ala Ala Gly Ala
                245                 250                 255

Gln Gln Ala Ser Gly Gly Ser Gln Arg Pro Thr Pro Pro Gly Ser Cys
            260                 265                 270

Arg Thr Arg Phe Ser Ala Pro Ala Ser Ala Gly Gly Tyr Ser Val Gln
        275                 280                 285

Leu Asp Ala Leu His Phe Ser Thr Phe Glu Asp Ser Ala Leu Thr Ala
    290                 295                 300

Met Met Ala Gln Lys Asn Leu Ser Pro Ser Leu Pro Gly Ser Ile Leu
305                 310                 315                 320

Gln Pro Val Gln Glu Glu Asn Ser Lys Thr Ser Pro Arg Ser His Arg
                325                 330                 335

Ser Asp Gly Glu Phe Ser Pro His Ser His Tyr Ser Asp Ser Asp Glu
            340                 345                 350

Ala Ser
```

<210> 7001
<211> 152
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<220>
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Met Lys Ser Cys Lys Pro Ser Gly Pro Pro Ala Gly Ala Arg Val Ala
1   5   10   15

Pro Pro Cys Ala Gly Gly Thr Glu Cys Ala Gly Thr Cys Ala Gly Ala
            20   25   30

Gly Arg Leu Glu Ser Ala Ala Arg Arg Arg Leu Ala Ala Asn Ala Arg
        35   40   45

Glu Arg Arg Arg Met Gln Gly Leu Asn Thr Ala Phe Asp Arg Leu Arg
    50   55   60

Arg Val Val Pro Gln Trp Gly Gln Asp Lys Lys Leu Ser Lys Tyr Glu
65   70   75   80

Thr Leu Gln Met Ala Leu Ser Tyr Ile Met Ala Leu Thr Arg Ile Leu
                85   90   95

Ala Glu Ala Glu Arg Phe Gly Ser Glu Arg Asp Trp Val Gly Leu His
            100   105   110

Cys Glu His Phe Gly Arg Asp His Tyr Leu Pro Phe Pro Gly Ala Lys

```
        115                 120                 125

Leu Pro Gly Glu Ser Glu Leu Tyr Ser Gln Arg Leu Phe Gly Phe Gln
    130                 135                 140

Pro Glu Pro Phe Gln Met Ala Thr
145                 150


<210> 7002
<211> 321
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<220>
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<220>
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      factor 8; "

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<223> /note="Uniprot ID:  Q96SQ7; "

<220>
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<400> 7002
Met Lys His Ile Pro Val Leu Glu Asp Gly Pro Trp Lys Thr Val Cys
1               5                   10                  15

Val Lys Glu Leu Asn Gly Leu Lys Lys Leu Lys Arg Lys Gly Lys Glu
            20                  25                  30

Pro Ala Arg Arg Ala Asn Gly Tyr Lys Thr Phe Arg Leu Asp Leu Glu
        35                  40                  45

Ala Pro Glu Pro Arg Ala Val Ala Thr Asn Gly Leu Arg Asp Arg Thr
    50                  55                  60

His Arg Leu Gln Pro Val Pro Val Pro Val Pro Val Pro Val Pro Val
65                  70                  75                  80
```

```
Ala Pro Ala Val Pro Pro Arg Gly Gly Thr Asp Thr Ala Gly Glu Arg
                85                  90                  95

Gly Gly Ser Arg Ala Pro Glu Val Ser Asp Ala Arg Lys Arg Cys Phe
            100                 105                 110

Ala Leu Gly Ala Val Gly Pro Gly Leu Pro Thr Pro Pro Pro Pro Pro
        115                 120                 125

Pro Pro Ala Pro Gln Ser Gln Ala Pro Gly Gly Pro Glu Ala Gln Pro
    130                 135                 140

Phe Arg Glu Pro Gly Leu Arg Pro Arg Ile Leu Leu Cys Ala Pro Pro
145                 150                 155                 160

Ala Arg Pro Ala Pro Ser Ala Pro Pro Ala Pro Pro Ala Pro Pro Glu
                165                 170                 175

Ser Thr Val Arg Pro Ala Pro Pro Thr Arg Pro Gly Glu Ser Ser Tyr
            180                 185                 190

Ser Ser Ile Ser His Val Ile Tyr Asn Asn His Gln Asp Ser Ser Ala
        195                 200                 205

Ser Pro Arg Lys Arg Pro Gly Glu Ala Thr Ala Ala Ser Ser Glu Ile
    210                 215                 220

Lys Ala Leu Gln Gln Thr Arg Arg Leu Leu Ala Asn Ala Arg Glu Arg
225                 230                 235                 240

Thr Arg Val His Thr Ile Ser Ala Ala Phe Glu Ala Leu Arg Lys Gln
                245                 250                 255

Val Pro Cys Tyr Ser Tyr Gly Gln Lys Leu Ser Lys Leu Ala Ile Leu
            260                 265                 270

Arg Ile Ala Cys Asn Tyr Ile Leu Ser Leu Ala Arg Leu Ala Asp Leu
        275                 280                 285

Asp Tyr Ser Ala Asp His Ser Asn Leu Ser Phe Ser Glu Cys Val Gln
    290                 295                 300
```

Arg Cys Thr Arg Thr Leu Gln Ala Glu Gly Arg Ala Lys Lys Arg Lys
305 310 315 320

Glu

<210> 7003
<211> 1101
<212> PRT
<213> Homo sapiens

<220>
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ATP citrate lyase; "

<220>
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<220>
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<400> 7003
Met Ser Ala Lys Ala Ile Ser Glu Gln Thr Gly Lys Glu Leu Leu Tyr
1 5 10 15

Lys Phe Ile Cys Thr Thr Ser Ala Ile Gln Asn Arg Phe Lys Tyr Ala
20 25 30

Arg Val Thr Pro Asp Thr Asp Trp Ala Arg Leu Leu Gln Asp His Pro
35 40 45

Trp Leu Leu Ser Gln Asn Leu Val Val Lys Pro Asp Gln Leu Ile Lys
50 55 60

Arg Arg Gly Lys Leu Gly Leu Val Gly Val Asn Leu Thr Leu Asp Gly
65 70 75 80

Val Lys Ser Trp Leu Lys Pro Arg Leu Gly Gln Glu Ala Thr Val Gly

```
                85                  90                  95

Lys Ala Thr Gly Phe Leu Lys Asn Phe Leu Ile Glu Pro Phe Val Pro
            100                 105                 110

His Ser Gln Ala Glu Glu Phe Tyr Val Cys Ile Tyr Ala Thr Arg Glu
        115                 120                 125

Gly Asp Tyr Val Leu Phe His His Glu Gly Gly Val Asp Val Gly Asp
    130                 135                 140

Val Asp Ala Lys Ala Gln Lys Leu Leu Val Gly Val Asp Glu Lys Leu
145                 150                 155                 160

Asn Pro Glu Asp Ile Lys Lys His Leu Leu Val His Ala Pro Glu Asp
                165                 170                 175

Lys Lys Glu Ile Leu Ala Ser Phe Ile Ser Gly Leu Phe Asn Phe Tyr
            180                 185                 190

Glu Asp Leu Tyr Phe Thr Tyr Leu Glu Ile Asn Pro Leu Val Val Thr
        195                 200                 205

Lys Asp Gly Val Tyr Val Leu Asp Leu Ala Ala Lys Val Asp Ala Thr
    210                 215                 220

Ala Asp Tyr Ile Cys Lys Val Lys Trp Gly Asp Ile Glu Phe Pro Pro
225                 230                 235                 240

Pro Phe Gly Arg Glu Ala Tyr Pro Glu Glu Ala Tyr Ile Ala Asp Leu
                245                 250                 255

Asp Ala Lys Ser Gly Ala Ser Leu Lys Leu Thr Leu Leu Asn Pro Lys
            260                 265                 270

Gly Arg Ile Trp Thr Met Val Ala Gly Gly Gly Ala Ser Val Val Tyr
        275                 280                 285

Ser Asp Thr Ile Cys Asp Leu Gly Gly Val Asn Glu Leu Ala Asn Tyr
    290                 295                 300

Gly Glu Tyr Ser Gly Ala Pro Ser Glu Gln Gln Thr Tyr Asp Tyr Ala
305                 310                 315                 320
```

Lys Thr Ile Leu Ser Leu Met Thr Arg Glu Lys His Pro Asp Gly Lys
325 330 335

Ile Leu Ile Ile Gly Gly Ser Ile Ala Asn Phe Thr Asn Val Ala Ala
340 345 350

Thr Phe Lys Gly Ile Val Arg Ala Ile Arg Asp Tyr Gln Gly Pro Leu
355 360 365

Lys Glu His Glu Val Thr Ile Phe Val Arg Arg Gly Gly Pro Asn Tyr
370 375 380

Gln Glu Gly Leu Arg Val Met Gly Glu Val Gly Lys Thr Thr Gly Ile
385 390 395 400

Pro Ile His Val Phe Gly Thr Glu Thr His Met Thr Ala Ile Val Gly
405 410 415

Met Ala Leu Gly His Arg Pro Ile Pro Asn Gln Pro Pro Thr Ala Ala
420 425 430

His Thr Ala Asn Phe Leu Leu Asn Ala Ser Gly Ser Thr Ser Thr Pro
435 440 445

Ala Pro Ser Arg Thr Ala Ser Phe Ser Glu Ser Arg Ala Asp Glu Val
450 455 460

Ala Pro Ala Lys Lys Ala Lys Pro Ala Met Pro Gln Asp Ser Val Pro
465 470 475 480

Ser Pro Arg Ser Leu Gln Gly Lys Ser Thr Thr Leu Phe Ser Arg His
485 490 495

Thr Lys Ala Ile Val Trp Gly Met Gln Thr Arg Ala Val Gln Gly Met
500 505 510

Leu Asp Phe Asp Tyr Val Cys Ser Arg Asp Glu Pro Ser Val Ala Ala
515 520 525

Met Val Tyr Pro Phe Thr Gly Asp His Lys Gln Lys Phe Tyr Trp Gly
530 535 540

```
His Lys Glu Ile Leu Ile Pro Val Phe Lys Asn Met Ala Asp Ala Met
545                 550                 555                 560

Arg Lys His Pro Glu Val Asp Val Leu Ile Asn Phe Ala Ser Leu Arg
                565                 570                 575

Ser Ala Tyr Asp Ser Thr Met Glu Thr Met Asn Tyr Ala Gln Ile Arg
            580                 585                 590

Thr Ile Ala Ile Ile Ala Glu Gly Ile Pro Glu Ala Leu Thr Arg Lys
        595                 600                 605

Leu Ile Lys Lys Ala Asp Gln Lys Gly Val Thr Ile Ile Gly Pro Ala
    610                 615                 620

Thr Val Gly Gly Ile Lys Pro Gly Cys Phe Lys Ile Gly Asn Thr Gly
625                 630                 635                 640

Gly Met Leu Asp Asn Ile Leu Ala Ser Lys Leu Tyr Arg Pro Gly Ser
                645                 650                 655

Val Ala Tyr Val Ser Arg Ser Gly Gly Met Ser Asn Glu Leu Asn Asn
            660                 665                 670

Ile Ile Ser Arg Thr Thr Asp Gly Val Tyr Glu Gly Val Ala Ile Gly
        675                 680                 685

Gly Asp Arg Tyr Pro Gly Ser Thr Phe Met Asp His Val Leu Arg Tyr
    690                 695                 700

Gln Asp Thr Pro Gly Val Lys Met Ile Val Val Leu Gly Glu Ile Gly
705                 710                 715                 720

Gly Thr Glu Glu Tyr Lys Ile Cys Arg Gly Ile Lys Glu Gly Arg Leu
                725                 730                 735

Thr Lys Pro Ile Val Cys Trp Cys Ile Gly Thr Cys Ala Thr Met Phe
            740                 745                 750

Ser Ser Glu Val Gln Phe Gly His Ala Gly Ala Cys Ala Asn Gln Ala
        755                 760                 765
```

```
Ser Glu Thr Ala Val Ala Lys Asn Gln Ala Leu Lys Glu Ala Gly Val
    770                 775                 780

Phe Val Pro Arg Ser Phe Asp Glu Leu Gly Glu Ile Ile Gln Ser Val
785                 790                 795                 800

Tyr Glu Asp Leu Val Ala Asn Gly Val Ile Val Pro Ala Gln Glu Val
                805                 810                 815

Pro Pro Pro Thr Val Pro Met Asp Tyr Ser Trp Ala Arg Glu Leu Gly
            820                 825                 830

Leu Ile Arg Lys Pro Ala Ser Phe Met Thr Ser Ile Cys Asp Glu Arg
        835                 840                 845

Gly Gln Glu Leu Ile Tyr Ala Gly Met Pro Ile Thr Glu Val Phe Lys
    850                 855                 860

Glu Glu Met Gly Ile Gly Gly Val Leu Gly Leu Leu Trp Phe Gln Lys
865                 870                 875                 880

Arg Leu Pro Lys Tyr Ser Cys Gln Phe Ile Glu Met Cys Leu Met Val
                885                 890                 895

Thr Ala Asp His Gly Pro Ala Val Ser Gly Ala His Asn Thr Ile Ile
            900                 905                 910

Cys Ala Arg Ala Gly Lys Asp Leu Val Ser Ser Leu Thr Ser Gly Leu
        915                 920                 925

Leu Thr Ile Gly Asp Arg Phe Gly Gly Ala Leu Asp Ala Ala Ala Lys
    930                 935                 940

Met Phe Ser Lys Ala Phe Asp Ser Gly Ile Ile Pro Met Glu Phe Val
945                 950                 955                 960

Asn Lys Met Lys Lys Glu Gly Lys Leu Ile Met Gly Ile Gly His Arg
                965                 970                 975

Val Lys Ser Ile Asn Asn Pro Asp Met Arg Val Gln Ile Leu Lys Asp
            980                 985                 990

Tyr Val Arg Gln His Phe Pro Ala  Thr Pro Leu Leu Asp  Tyr Ala
```

```
Leu
        995                 1000                1005

Glu Val  Glu Lys Ile Thr Thr  Ser Lys Lys Pro Asn  Leu Ile Leu
    1010                1015                1020

Asn Val  Asp Gly Leu Ile Gly  Val Ala Phe Val Asp  Met Leu Arg
    1025                1030                1035

Asn Cys  Gly Ser Phe Thr Arg  Glu Glu Ala Asp Glu  Tyr Ile Asp
    1040                1045                1050

Ile Gly  Ala Leu Asn Gly Ile  Phe Val Leu Gly Arg  Ser Met Gly
    1055                1060                1065

Phe Ile  Gly His Tyr Leu Asp  Gln Lys Arg Leu Lys  Gln Gly Leu
    1070                1075                1080

Tyr Arg  His Pro Trp Asp Asp  Ile Ser Tyr Val Leu  Pro Glu His
    1085                1090                1095

Met Ser  Met
    1100


<210> 7004
<211> 1091
<212> PRT
<213> Homo sapiens

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<221> source
<223> /note="Gene Symbol: ACLY; "

<220>
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<223> /note="Gene Name:
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<221> source
<223> /note="Uniprot ID:  P53396; "

<220>
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<400> 7004
Met Ser Ala Lys Ala Ile Ser Glu Gln Thr Gly Lys Glu Leu Leu Tyr
1 5 10 15

Lys Phe Ile Cys Thr Thr Ser Ala Ile Gln Asn Arg Phe Lys Tyr Ala
20 25 30

Arg Val Thr Pro Asp Thr Asp Trp Ala Arg Leu Leu Gln Asp His Pro
35 40 45

Trp Leu Leu Ser Gln Asn Leu Val Val Lys Pro Asp Gln Leu Ile Lys
50 55 60

Arg Arg Gly Lys Leu Gly Leu Val Gly Val Asn Leu Thr Leu Asp Gly
65 70 75 80

Val Lys Ser Trp Leu Lys Pro Arg Leu Gly Gln Glu Ala Thr Val Gly
85 90 95

Lys Ala Thr Gly Phe Leu Lys Asn Phe Leu Ile Glu Pro Phe Val Pro
100 105 110

His Ser Gln Ala Glu Glu Phe Tyr Val Cys Ile Tyr Ala Thr Arg Glu
115 120 125

Gly Asp Tyr Val Leu Phe His His Glu Gly Gly Val Asp Val Gly Asp
130 135 140

Val Asp Ala Lys Ala Gln Lys Leu Leu Val Gly Val Asp Glu Lys Leu
145 150 155 160

Asn Pro Glu Asp Ile Lys Lys His Leu Leu Val His Ala Pro Glu Asp
165 170 175

Lys Lys Glu Ile Leu Ala Ser Phe Ile Ser Gly Leu Phe Asn Phe Tyr
180 185 190

Glu Asp Leu Tyr Phe Thr Tyr Leu Glu Ile Asn Pro Leu Val Val Thr
195 200 205

Lys Asp Gly Val Tyr Val Leu Asp Leu Ala Ala Lys Val Asp Ala Thr
210 215 220

```
Ala Asp Tyr Ile Cys Lys Val Lys Trp Gly Asp Ile Glu Phe Pro Pro
225                 230                 235                 240

Pro Phe Gly Arg Glu Ala Tyr Pro Glu Glu Ala Tyr Ile Ala Asp Leu
                245                 250                 255

Asp Ala Lys Ser Gly Ala Ser Leu Lys Leu Thr Leu Leu Asn Pro Lys
            260                 265                 270

Gly Arg Ile Trp Thr Met Val Ala Gly Gly Gly Ala Ser Val Val Tyr
        275                 280                 285

Ser Asp Thr Ile Cys Asp Leu Gly Gly Val Asn Glu Leu Ala Asn Tyr
    290                 295                 300

Gly Glu Tyr Ser Gly Ala Pro Ser Glu Gln Gln Thr Tyr Asp Tyr Ala
305                 310                 315                 320

Lys Thr Ile Leu Ser Leu Met Thr Arg Glu Lys His Pro Asp Gly Lys
                325                 330                 335

Ile Leu Ile Ile Gly Gly Ser Ile Ala Asn Phe Thr Asn Val Ala Ala
            340                 345                 350

Thr Phe Lys Gly Ile Val Arg Ala Ile Arg Asp Tyr Gln Gly Pro Leu
        355                 360                 365

Lys Glu His Glu Val Thr Ile Phe Val Arg Arg Gly Gly Pro Asn Tyr
    370                 375                 380

Gln Glu Gly Leu Arg Val Met Gly Glu Val Gly Lys Thr Thr Gly Ile
385                 390                 395                 400

Pro Ile His Val Phe Gly Thr Glu Thr His Met Thr Ala Ile Val Gly
                405                 410                 415

Met Ala Leu Gly His Arg Pro Ile Pro Asn Gln Pro Pro Thr Ala Ala
            420                 425                 430

His Thr Ala Asn Phe Leu Leu Asn Ala Ser Gly Ser Thr Ser Thr Pro
        435                 440                 445
```

```
Ala Pro Ser Arg Thr Ala Ser Phe Ser Glu Ser Arg Ala Asp Glu Val
    450                 455                 460

Ala Pro Ala Lys Lys Ala Lys Pro Ala Met Pro Gln Gly Lys Ser Thr
465                 470                 475                 480

Thr Leu Phe Ser Arg His Thr Lys Ala Ile Val Trp Gly Met Gln Thr
                485                 490                 495

Arg Ala Val Gln Gly Met Leu Asp Phe Asp Tyr Val Cys Ser Arg Asp
            500                 505                 510

Glu Pro Ser Val Ala Ala Met Val Tyr Pro Phe Thr Gly Asp His Lys
        515                 520                 525

Gln Lys Phe Tyr Trp Gly His Lys Glu Ile Leu Ile Pro Val Phe Lys
    530                 535                 540

Asn Met Ala Asp Ala Met Arg Lys His Pro Glu Val Asp Val Leu Ile
545                 550                 555                 560

Asn Phe Ala Ser Leu Arg Ser Ala Tyr Asp Ser Thr Met Glu Thr Met
                565                 570                 575

Asn Tyr Ala Gln Ile Arg Thr Ile Ala Ile Ile Ala Glu Gly Ile Pro
            580                 585                 590

Glu Ala Leu Thr Arg Lys Leu Ile Lys Lys Ala Asp Gln Lys Gly Val
        595                 600                 605

Thr Ile Ile Gly Pro Ala Thr Val Gly Gly Ile Lys Pro Gly Cys Phe
    610                 615                 620

Lys Ile Gly Asn Thr Gly Gly Met Leu Asp Asn Ile Leu Ala Ser Lys
625                 630                 635                 640

Leu Tyr Arg Pro Gly Ser Val Ala Tyr Val Ser Arg Ser Gly Gly Met
                645                 650                 655

Ser Asn Glu Leu Asn Asn Ile Ile Ser Arg Thr Thr Asp Gly Val Tyr
            660                 665                 670

Glu Gly Val Ala Ile Gly Gly Asp Arg Tyr Pro Gly Ser Thr Phe Met
```

675 680 685

Asp His Val Leu Arg Tyr Gln Asp Thr Pro Gly Val Lys Met Ile Val
690 695 700

Val Leu Gly Glu Ile Gly Gly Thr Glu Glu Tyr Lys Ile Cys Arg Gly
705 710 715 720

Ile Lys Glu Gly Arg Leu Thr Lys Pro Ile Val Cys Trp Cys Ile Gly
725 730 735

Thr Cys Ala Thr Met Phe Ser Ser Glu Val Gln Phe Gly His Ala Gly
740 745 750

Ala Cys Ala Asn Gln Ala Ser Glu Thr Ala Val Ala Lys Asn Gln Ala
755 760 765

Leu Lys Glu Ala Gly Val Phe Val Pro Arg Ser Phe Asp Glu Leu Gly
770 775 780

Glu Ile Ile Gln Ser Val Tyr Glu Asp Leu Val Ala Asn Gly Val Ile
785 790 795 800

Val Pro Ala Gln Glu Val Pro Pro Pro Thr Val Pro Met Asp Tyr Ser
805 810 815

Trp Ala Arg Glu Leu Gly Leu Ile Arg Lys Pro Ala Ser Phe Met Thr
820 825 830

Ser Ile Cys Asp Glu Arg Gly Gln Glu Leu Ile Tyr Ala Gly Met Pro
835 840 845

Ile Thr Glu Val Phe Lys Glu Glu Met Gly Ile Gly Gly Val Leu Gly
850 855 860

Leu Leu Trp Phe Gln Lys Arg Leu Pro Lys Tyr Ser Cys Gln Phe Ile
865 870 875 880

Glu Met Cys Leu Met Val Thr Ala Asp His Gly Pro Ala Val Ser Gly
885 890 895

Ala His Asn Thr Ile Ile Cys Ala Arg Ala Gly Lys Asp Leu Val Ser
900 905 910

Ser Leu Thr Ser Gly Leu Leu Thr Ile Gly Asp Arg Phe Gly Gly Ala
915 920 925

Leu Asp Ala Ala Ala Lys Met Phe Ser Lys Ala Phe Asp Ser Gly Ile
930 935 940

Ile Pro Met Glu Phe Val Asn Lys Met Lys Lys Glu Gly Lys Leu Ile
945 950 955 960

Met Gly Ile Gly His Arg Val Lys Ser Ile Asn Asn Pro Asp Met Arg
965 970 975

Val Gln Ile Leu Lys Asp Tyr Val Arg Gln His Phe Pro Ala Thr Pro
980 985 990

Leu Leu Asp Tyr Ala Leu Glu Val Glu Lys Ile Thr Thr Ser Lys
Lys
995 1000 1005

Pro Asn Leu Ile Leu Asn Val Asp Gly Leu Ile Gly Val Ala Phe
1010 1015 1020

Val Asp Met Leu Arg Asn Cys Gly Ser Phe Thr Arg Glu Glu Ala
1025 1030 1035

Asp Glu Tyr Ile Asp Ile Gly Ala Leu Asn Gly Ile Phe Val Leu
1040 1045 1050

Gly Arg Ser Met Gly Phe Ile Gly His Tyr Leu Asp Gln Lys Arg
1055 1060 1065

Leu Lys Gln Gly Leu Tyr Arg His Pro Trp Asp Asp Ile Ser Tyr
1070 1075 1080

Val Leu Pro Glu His Met Ser Met
1085 1090

<210> 7005
<211> 1091
<212> PRT
<213> Homo sapiens

<220>

<221> source
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<220>
<221> source
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ATP citrate lyase; "

<220>
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<223> /note="Uniprot ID: P53396; "

<220>
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<223> /note="ENSP ID: ENSP00000377474"

<400> 7005

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Met Ser Ala Lys Ala Ile Ser Glu Gln Thr Gly Lys Glu Leu Leu Tyr
1               5                  10                  15

Lys Phe Ile Cys Thr Thr Ser Ala Ile Gln Asn Arg Phe Lys Tyr Ala
            20                  25                  30

Arg Val Thr Pro Asp Thr Asp Trp Ala Arg Leu Leu Gln Asp His Pro
        35                  40                  45

Trp Leu Leu Ser Gln Asn Leu Val Val Lys Pro Asp Gln Leu Ile Lys
    50                  55                  60

Arg Arg Gly Lys Leu Gly Leu Val Gly Val Asn Leu Thr Leu Asp Gly
65                  70                  75                  80

Val Lys Ser Trp Leu Lys Pro Arg Leu Gly Gln Glu Ala Thr Val Gly
                85                  90                  95

Lys Ala Thr Gly Phe Leu Lys Asn Phe Leu Ile Glu Pro Phe Val Pro
            100                 105                 110

His Ser Gln Ala Glu Glu Phe Tyr Val Cys Ile Tyr Ala Thr Arg Glu
        115                 120                 125

Gly Asp Tyr Val Leu Phe His His Glu Gly Gly Val Asp Val Gly Asp
    130                 135                 140
```

```
Val Asp Ala Lys Ala Gln Lys Leu Leu Val Gly Val Asp Glu Lys Leu
145                 150                 155                 160

Asn Pro Glu Asp Ile Lys Lys His Leu Leu Val His Ala Pro Glu Asp
                165                 170                 175

Lys Lys Glu Ile Leu Ala Ser Phe Ile Ser Gly Leu Phe Asn Phe Tyr
            180                 185                 190

Glu Asp Leu Tyr Phe Thr Tyr Leu Glu Ile Asn Pro Leu Val Val Thr
        195                 200                 205

Lys Asp Gly Val Tyr Val Leu Asp Leu Ala Ala Lys Val Asp Ala Thr
    210                 215                 220

Ala Asp Tyr Ile Cys Lys Val Lys Trp Gly Asp Ile Glu Phe Pro Pro
225                 230                 235                 240

Pro Phe Gly Arg Glu Ala Tyr Pro Glu Glu Ala Tyr Ile Ala Asp Leu
                245                 250                 255

Asp Ala Lys Ser Gly Ala Ser Leu Lys Leu Thr Leu Leu Asn Pro Lys
            260                 265                 270

Gly Arg Ile Trp Thr Met Val Ala Gly Gly Gly Ala Ser Val Val Tyr
        275                 280                 285

Ser Asp Thr Ile Cys Asp Leu Gly Gly Val Asn Glu Leu Ala Asn Tyr
    290                 295                 300

Gly Glu Tyr Ser Gly Ala Pro Ser Glu Gln Gln Thr Tyr Asp Tyr Ala
305                 310                 315                 320

Lys Thr Ile Leu Ser Leu Met Thr Arg Glu Lys His Pro Asp Gly Lys
                325                 330                 335

Ile Leu Ile Ile Gly Gly Ser Ile Ala Asn Phe Thr Asn Val Ala Ala
            340                 345                 350

Thr Phe Lys Gly Ile Val Arg Ala Ile Arg Asp Tyr Gln Gly Pro Leu
        355                 360                 365

Lys Glu His Glu Val Thr Ile Phe Val Arg Arg Gly Gly Pro Asn Tyr
```

370 375 380

Gln Glu Gly Leu Arg Val Met Gly Glu Val Gly Lys Thr Thr Gly Ile
385 390 395 400

Pro Ile His Val Phe Gly Thr Glu Thr His Met Thr Ala Ile Val Gly
405 410 415

Met Ala Leu Gly His Arg Pro Ile Pro Asn Gln Pro Pro Thr Ala Ala
420 425 430

His Thr Ala Asn Phe Leu Leu Asn Ala Ser Gly Ser Thr Ser Thr Pro
435 440 445

Ala Pro Ser Arg Thr Ala Ser Phe Ser Glu Ser Arg Ala Asp Glu Val
450 455 460

Ala Pro Ala Lys Lys Ala Lys Pro Ala Met Pro Gln Gly Lys Ser Thr
465 470 475 480

Thr Leu Phe Ser Arg His Thr Lys Ala Ile Val Trp Gly Met Gln Thr
485 490 495

Arg Ala Val Gln Gly Met Leu Asp Phe Asp Tyr Val Cys Ser Arg Asp
500 505 510

Glu Pro Ser Val Ala Ala Met Val Tyr Pro Phe Thr Gly Asp His Lys
515 520 525

Gln Lys Phe Tyr Trp Gly His Lys Glu Ile Leu Ile Pro Val Phe Lys
530 535 540

Asn Met Ala Asp Ala Met Arg Lys His Pro Glu Val Asp Val Leu Ile
545 550 555 560

Asn Phe Ala Ser Leu Arg Ser Ala Tyr Asp Ser Thr Met Glu Thr Met
565 570 575

Asn Tyr Ala Gln Ile Arg Thr Ile Ala Ile Ile Ala Glu Gly Ile Pro
580 585 590

Glu Ala Leu Thr Arg Lys Leu Ile Lys Lys Ala Asp Gln Lys Gly Val
595 600 605

```
Thr Ile Ile Gly Pro Ala Thr Val Gly Gly Ile Lys Pro Gly Cys Phe
    610                 615                 620

Lys Ile Gly Asn Thr Gly Gly Met Leu Asp Asn Ile Leu Ala Ser Lys
625                 630                 635                 640

Leu Tyr Arg Pro Gly Ser Val Ala Tyr Val Ser Arg Ser Gly Gly Met
                645                 650                 655

Ser Asn Glu Leu Asn Asn Ile Ile Ser Arg Thr Thr Asp Gly Val Tyr
            660                 665                 670

Glu Gly Val Ala Ile Gly Gly Asp Arg Tyr Pro Gly Ser Thr Phe Met
        675                 680                 685

Asp His Val Leu Arg Tyr Gln Asp Thr Pro Gly Val Lys Met Ile Val
    690                 695                 700

Val Leu Gly Glu Ile Gly Gly Thr Glu Glu Tyr Lys Ile Cys Arg Gly
705                 710                 715                 720

Ile Lys Glu Gly Arg Leu Thr Lys Pro Ile Val Cys Trp Cys Ile Gly
                725                 730                 735

Thr Cys Ala Thr Met Phe Ser Ser Glu Val Gln Phe Gly His Ala Gly
            740                 745                 750

Ala Cys Ala Asn Gln Ala Ser Glu Thr Ala Val Ala Lys Asn Gln Ala
        755                 760                 765

Leu Lys Glu Ala Gly Val Phe Val Pro Arg Ser Phe Asp Glu Leu Gly
    770                 775                 780

Glu Ile Ile Gln Ser Val Tyr Glu Asp Leu Val Ala Asn Gly Val Ile
785                 790                 795                 800

Val Pro Ala Gln Glu Val Pro Pro Pro Thr Val Pro Met Asp Tyr Ser
                805                 810                 815

Trp Ala Arg Glu Leu Gly Leu Ile Arg Lys Pro Ala Ser Phe Met Thr
            820                 825                 830
```

```
Ser Ile Cys Asp Glu Arg Gly Gln Glu Leu Ile Tyr Ala Gly Met Pro
        835                 840                 845

Ile Thr Glu Val Phe Lys Glu Glu Met Gly Ile Gly Gly Val Leu Gly
    850                 855                 860

Leu Leu Trp Phe Gln Lys Arg Leu Pro Lys Tyr Ser Cys Gln Phe Ile
865                 870                 875                 880

Glu Met Cys Leu Met Val Thr Ala Asp His Gly Pro Ala Val Ser Gly
                885                 890                 895

Ala His Asn Thr Ile Ile Cys Ala Arg Ala Gly Lys Asp Leu Val Ser
            900                 905                 910

Ser Leu Thr Ser Gly Leu Leu Thr Ile Gly Asp Arg Phe Gly Gly Ala
        915                 920                 925

Leu Asp Ala Ala Ala Lys Met Phe Ser Lys Ala Phe Asp Ser Gly Ile
    930                 935                 940

Ile Pro Met Glu Phe Val Asn Lys Met Lys Lys Glu Gly Lys Leu Ile
945                 950                 955                 960

Met Gly Ile Gly His Arg Val Lys Ser Ile Asn Asn Pro Asp Met Arg
                965                 970                 975

Val Gln Ile Leu Lys Asp Tyr Val Arg Gln His Phe Pro Ala Thr Pro
            980                 985                 990

Leu Leu Asp Tyr Ala Leu Glu Val  Glu Lys Ile Thr Thr  Ser Lys
Lys
        995                 1000                1005

Pro Asn  Leu Ile Leu Asn Val  Asp Gly Leu Ile Gly  Val Ala Phe
    1010                1015                1020

Val Asp  Met Leu Arg Asn Cys  Gly Ser Phe Thr Arg  Glu Glu Ala
    1025                1030                1035

Asp Glu  Tyr Ile Asp Ile Gly  Ala Leu Asn Gly Ile  Phe Val Leu
    1040                1045                1050
```

Gly Arg Ser Met Gly Phe Ile Gly His Tyr Leu Asp Gln Lys Arg
1055 1060 1065

Leu Lys Gln Gly Leu Tyr Arg His Pro Trp Asp Asp Ile Ser Tyr
1070 1075 1080

Val Leu Pro Glu His Met Ser Met
1085 1090

<210> 7006
<211> 830
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1494; "

<220>
<221> source
<223> /note="Gene Symbol: ACLY; "

<220>
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<223> /note="Gene Name:
ATP citrate lyase; "

<220>
<221> source
<223> /note="Uniprot ID: P53396; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000445349"

<400> 7006
Met Ser Ala Lys Ala Ile Ser Glu Gln Thr Gly Lys Glu Leu Leu Tyr
1 5 10 15

Lys Phe Ile Cys Thr Thr Ser Ala Ile Gln Asn Arg Phe Lys Tyr Ala
20 25 30

Arg Val Thr Pro Asp Thr Asp Trp Ala Arg Leu Leu Gln Asp His Pro
35 40 45

Trp Leu Leu Ser Gln Asn Leu Val Val Lys Pro Asp Gln Leu Ile Lys
50 55 60

Arg Arg Gly Lys Leu Gly Leu Val Gly Val Asn Leu Thr Leu Asp Gly

65 70 75 80

Val Lys Ser Trp Leu Lys Pro Arg Leu Gly Gln Glu Ala Thr Gly Ile
85 90 95

Val Arg Ala Ile Arg Asp Tyr Gln Gly Pro Leu Lys Glu His Glu Val
100 105 110

Thr Ile Phe Val Arg Arg Gly Gly Pro Asn Tyr Gln Glu Gly Leu Arg
115 120 125

Val Met Gly Glu Val Gly Lys Thr Thr Gly Ile Pro Ile His Val Phe
130 135 140

Gly Thr Glu Thr His Met Thr Ala Ile Val Gly Met Ala Leu Gly His
145 150 155 160

Arg Pro Ile Pro Asn Gln Pro Pro Thr Ala Ala His Thr Ala Asn Phe
165 170 175

Leu Leu Asn Ala Ser Gly Ser Thr Ser Thr Pro Ala Pro Ser Arg Thr
180 185 190

Ala Ser Phe Ser Glu Ser Arg Ala Asp Glu Val Ala Pro Ala Lys Lys
195 200 205

Ala Lys Pro Ala Met Pro Gln Gly Lys Ser Thr Thr Leu Phe Ser Arg
210 215 220

His Thr Lys Ala Ile Val Trp Gly Met Gln Thr Arg Ala Val Gln Gly
225 230 235 240

Met Leu Asp Phe Asp Tyr Val Cys Ser Arg Asp Glu Pro Ser Val Ala
245 250 255

Ala Met Val Tyr Pro Phe Thr Gly Asp His Lys Gln Lys Phe Tyr Trp
260 265 270

Gly His Lys Glu Ile Leu Ile Pro Val Phe Lys Asn Met Ala Asp Ala
275 280 285

Met Arg Lys His Pro Glu Val Asp Val Leu Ile Asn Phe Ala Ser Leu
290 295 300

```
Arg Ser Ala Tyr Asp Ser Thr Met Glu Thr Met Asn Tyr Ala Gln Ile
305                 310                 315                 320

Arg Thr Ile Ala Ile Ile Ala Glu Gly Ile Pro Glu Ala Leu Thr Arg
                325                 330                 335

Lys Leu Ile Lys Lys Ala Asp Gln Lys Gly Val Thr Ile Ile Gly Pro
            340                 345                 350

Ala Thr Val Gly Gly Ile Lys Pro Gly Cys Phe Lys Ile Gly Asn Thr
        355                 360                 365

Gly Gly Met Leu Asp Asn Ile Leu Ala Ser Lys Leu Tyr Arg Pro Gly
    370                 375                 380

Ser Val Ala Tyr Val Ser Arg Ser Gly Gly Met Ser Asn Glu Leu Asn
385                 390                 395                 400

Asn Ile Ile Ser Arg Thr Thr Asp Gly Val Tyr Glu Gly Val Ala Ile
                405                 410                 415

Gly Gly Asp Arg Tyr Pro Gly Ser Thr Phe Met Asp His Val Leu Arg
            420                 425                 430

Tyr Gln Asp Thr Pro Gly Val Lys Met Ile Val Val Leu Gly Glu Ile
        435                 440                 445

Gly Gly Thr Glu Glu Tyr Lys Ile Cys Arg Gly Ile Lys Glu Gly Arg
    450                 455                 460

Leu Thr Lys Pro Ile Val Cys Trp Cys Ile Gly Thr Cys Ala Thr Met
465                 470                 475                 480

Phe Ser Ser Glu Val Gln Phe Gly His Ala Gly Ala Cys Ala Asn Gln
                485                 490                 495

Ala Ser Glu Thr Ala Val Ala Lys Asn Gln Ala Leu Lys Glu Ala Gly
            500                 505                 510

Val Phe Val Pro Arg Ser Phe Asp Glu Leu Gly Glu Ile Ile Gln Ser
        515                 520                 525
```

```
Val Tyr Glu Asp Leu Val Ala Asn Gly Val Ile Val Pro Ala Gln Glu
    530                 535                 540

Val Pro Pro Pro Thr Val Pro Met Asp Tyr Ser Trp Ala Arg Glu Leu
545                 550                 555                 560

Gly Leu Ile Arg Lys Pro Ala Ser Phe Met Thr Ser Ile Cys Asp Glu
                565                 570                 575

Arg Gly Gln Glu Leu Ile Tyr Ala Gly Met Pro Ile Thr Glu Val Phe
            580                 585                 590

Lys Glu Glu Met Gly Ile Gly Gly Val Leu Gly Leu Leu Trp Phe Gln
        595                 600                 605

Lys Arg Leu Pro Lys Tyr Ser Cys Gln Phe Ile Glu Met Cys Leu Met
    610                 615                 620

Val Thr Ala Asp His Gly Pro Ala Val Ser Gly Ala His Asn Thr Ile
625                 630                 635                 640

Ile Cys Ala Arg Ala Gly Lys Asp Leu Val Ser Ser Leu Thr Ser Gly
                645                 650                 655

Leu Leu Thr Ile Gly Asp Arg Phe Gly Gly Ala Leu Asp Ala Ala Ala
            660                 665                 670

Lys Met Phe Ser Lys Ala Phe Asp Ser Gly Ile Ile Pro Met Glu Phe
        675                 680                 685

Val Asn Lys Met Lys Lys Glu Gly Lys Leu Ile Met Gly Ile Gly His
    690                 695                 700

Arg Val Lys Ser Ile Asn Asn Pro Asp Met Arg Val Gln Ile Leu Lys
705                 710                 715                 720

Asp Tyr Val Arg Gln His Phe Pro Ala Thr Pro Leu Leu Asp Tyr Ala
                725                 730                 735

Leu Glu Val Glu Lys Ile Thr Thr Ser Lys Lys Pro Asn Leu Ile Leu
            740                 745                 750
```

```
Asn Val Asp Gly Leu Ile Gly Val Ala Phe Val Asp Met Leu Arg Asn
        755                 760                 765

Cys Gly Ser Phe Thr Arg Glu Glu Ala Asp Glu Tyr Ile Asp Ile Gly
    770                 775                 780

Ala Leu Asn Gly Ile Phe Val Leu Gly Arg Ser Met Gly Phe Ile Gly
785                 790                 795                 800

His Tyr Leu Asp Gln Lys Arg Leu Lys Gln Gly Leu Tyr Arg His Pro
                805                 810                 815

Trp Asp Asp Ile Ser Tyr Val Leu Pro Glu His Met Ser Met
            820                 825                 830


<210> 7007
<211> 133
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1494; "

<220>
<221> source
<223> /note="Gene Symbol: ACLY; "

<220>
<221> source
<223> /note="Gene Name:
      ATP citrate lyase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000464717"

<400> 7007
Met Thr Arg Glu Lys His Pro Asp Gly Lys Ile Leu Ile Ile Gly Gly
1               5                   10                  15

Ser Ile Ala Asn Phe Thr Asn Val Ala Ala Thr Phe Lys Gly Ile Val
            20                  25                  30

Arg Ala Ile Arg Asp Tyr Gln Gly Pro Leu Lys Glu His Glu Val Thr
        35                  40                  45

Ile Phe Val Arg Arg Gly Gly Pro Asn Tyr Gln Glu Gly Leu Arg Val
    50                  55                  60
```

```
Met Gly Glu Val Gly Lys Thr Thr Gly Ile Pro Ile His Val Phe Gly
65                  70                  75                  80

Thr Glu Thr His Met Thr Ala Ile Val Gly Met Ala Leu Gly His Arg
                85                  90                  95

Pro Ile Pro Asn Gln Pro Pro Thr Ala Ala His Thr Ala Asn Phe Leu
            100                 105                 110

Leu Asn Ala Ser Gly Ser Thr Ser Thr Pro Ala Pro Ser Arg Thr Ala
        115                 120                 125

Ser Phe Ser Glu Ser
    130


<210> 7008
<211> 1101
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1494; "

<220>
<221> source
<223> /note="Gene Symbol: ACLY; "

<220>
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<223> /note="Gene Name:
      ATP citrate lyase; "

<220>
<221> source
<223> /note="Uniprot ID:  P53396; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466259"

<400> 7008
Met Ser Ala Lys Ala Ile Ser Glu Gln Thr Gly Lys Glu Leu Leu Tyr
1               5                   10                  15

Lys Phe Ile Cys Thr Thr Ser Ala Ile Gln Asn Arg Phe Lys Tyr Ala
            20                  25                  30
```

```
Arg Val Thr Pro Asp Thr Asp Trp Ala Arg Leu Leu Gln Asp His Pro
        35                  40                  45

Trp Leu Leu Ser Gln Asn Leu Val Val Lys Pro Asp Gln Leu Ile Lys
    50                  55                  60

Arg Arg Gly Lys Leu Gly Leu Val Gly Val Asn Leu Thr Leu Asp Gly
65                  70                  75                  80

Val Lys Ser Trp Leu Lys Pro Arg Leu Gly Gln Glu Ala Thr Val Gly
                85                  90                  95

Lys Ala Thr Gly Phe Leu Lys Asn Phe Leu Ile Glu Pro Phe Val Pro
            100                 105                 110

His Ser Gln Ala Glu Glu Phe Tyr Val Cys Ile Tyr Ala Thr Arg Glu
        115                 120                 125

Gly Asp Tyr Val Leu Phe His His Glu Gly Gly Val Asp Val Gly Asp
    130                 135                 140

Val Asp Ala Lys Ala Gln Lys Leu Leu Val Gly Val Asp Glu Lys Leu
145                 150                 155                 160

Asn Pro Glu Asp Ile Lys Lys His Leu Leu Val His Ala Pro Glu Asp
                165                 170                 175

Lys Lys Glu Ile Leu Ala Ser Phe Ile Ser Gly Leu Phe Asn Phe Tyr
            180                 185                 190

Glu Asp Leu Tyr Phe Thr Tyr Leu Glu Ile Asn Pro Leu Val Val Thr
        195                 200                 205

Lys Asp Gly Val Tyr Val Leu Asp Leu Ala Ala Lys Val Asp Ala Thr
    210                 215                 220

Ala Asp Tyr Ile Cys Lys Val Lys Trp Gly Asp Ile Glu Phe Pro Pro
225                 230                 235                 240

Pro Phe Gly Arg Glu Ala Tyr Pro Glu Glu Ala Tyr Ile Ala Asp Leu
                245                 250                 255

Asp Ala Lys Ser Gly Ala Ser Leu Lys Leu Thr Leu Leu Asn Pro Lys
```

```
            260                 265                 270

Gly Arg Ile Trp Thr Met Val Ala Gly Gly Gly Ala Ser Val Val Tyr
        275                 280                 285

Ser Asp Thr Ile Cys Asp Leu Gly Gly Val Asn Glu Leu Ala Asn Tyr
    290                 295                 300

Gly Glu Tyr Ser Gly Ala Pro Ser Glu Gln Gln Thr Tyr Asp Tyr Ala
305                 310                 315                 320

Lys Thr Ile Leu Ser Leu Met Thr Arg Glu Lys His Pro Asp Gly Lys
                325                 330                 335

Ile Leu Ile Ile Gly Gly Ser Ile Ala Asn Phe Thr Asn Val Ala Ala
            340                 345                 350

Thr Phe Lys Gly Ile Val Arg Ala Ile Arg Asp Tyr Gln Gly Pro Leu
        355                 360                 365

Lys Glu His Glu Val Thr Ile Phe Val Arg Arg Gly Gly Pro Asn Tyr
    370                 375                 380

Gln Glu Gly Leu Arg Val Met Gly Glu Val Gly Lys Thr Thr Gly Ile
385                 390                 395                 400

Pro Ile His Val Phe Gly Thr Glu Thr His Met Thr Ala Ile Val Gly
                405                 410                 415

Met Ala Leu Gly His Arg Pro Ile Pro Asn Gln Pro Pro Thr Ala Ala
            420                 425                 430

His Thr Ala Asn Phe Leu Leu Asn Ala Ser Gly Ser Thr Ser Thr Pro
        435                 440                 445

Ala Pro Ser Arg Thr Ala Ser Phe Ser Glu Ser Arg Ala Asp Glu Val
    450                 455                 460

Ala Pro Ala Lys Lys Ala Lys Pro Ala Met Pro Gln Asp Ser Val Pro
465                 470                 475                 480

Ser Pro Arg Ser Leu Gln Gly Lys Ser Thr Thr Leu Phe Ser Arg His
                485                 490                 495
```

```
Thr Lys Ala Ile Val Trp Gly Met Gln Thr Arg Ala Val Gln Gly Met
            500                 505                 510

Leu Asp Phe Asp Tyr Val Cys Ser Arg Asp Glu Pro Ser Val Ala Ala
        515                 520                 525

Met Val Tyr Pro Phe Thr Gly Asp His Lys Gln Lys Phe Tyr Trp Gly
    530                 535                 540

His Lys Glu Ile Leu Ile Pro Val Phe Lys Asn Met Ala Asp Ala Met
545                 550                 555                 560

Arg Lys His Pro Glu Val Asp Val Leu Ile Asn Phe Ala Ser Leu Arg
                565                 570                 575

Ser Ala Tyr Asp Ser Thr Met Glu Thr Met Asn Tyr Ala Gln Ile Arg
            580                 585                 590

Thr Ile Ala Ile Ile Ala Glu Gly Ile Pro Glu Ala Leu Thr Arg Lys
        595                 600                 605

Leu Ile Lys Lys Ala Asp Gln Lys Gly Val Thr Ile Ile Gly Pro Ala
    610                 615                 620

Thr Val Gly Gly Ile Lys Pro Gly Cys Phe Lys Ile Gly Asn Thr Gly
625                 630                 635                 640

Gly Met Leu Asp Asn Ile Leu Ala Ser Lys Leu Tyr Arg Pro Gly Ser
                645                 650                 655

Val Ala Tyr Val Ser Arg Ser Gly Gly Met Ser Asn Glu Leu Asn Asn
            660                 665                 670

Ile Ile Ser Arg Thr Thr Asp Gly Val Tyr Glu Gly Val Ala Ile Gly
        675                 680                 685

Gly Asp Arg Tyr Pro Gly Ser Thr Phe Met Asp His Val Leu Arg Tyr
    690                 695                 700

Gln Asp Thr Pro Gly Val Lys Met Ile Val Val Leu Gly Glu Ile Gly
705                 710                 715                 720
```

Gly Thr Glu Glu Tyr Lys Ile Cys Arg Gly Ile Lys Glu Gly Arg Leu
725 730 735

Thr Lys Pro Ile Val Cys Trp Cys Ile Gly Thr Cys Ala Thr Met Phe
740 745 750

Ser Ser Glu Val Gln Phe Gly His Ala Gly Ala Cys Ala Asn Gln Ala
755 760 765

Ser Glu Thr Ala Val Ala Lys Asn Gln Ala Leu Lys Glu Ala Gly Val
770 775 780

Phe Val Pro Arg Ser Phe Asp Glu Leu Gly Glu Ile Ile Gln Ser Val
785 790 795 800

Tyr Glu Asp Leu Val Ala Asn Gly Val Ile Val Pro Ala Gln Glu Val
805 810 815

Pro Pro Pro Thr Val Pro Met Asp Tyr Ser Trp Ala Arg Glu Leu Gly
820 825 830

Leu Ile Arg Lys Pro Ala Ser Phe Met Thr Ser Ile Cys Asp Glu Arg
835 840 845

Gly Gln Glu Leu Ile Tyr Ala Gly Met Pro Ile Thr Glu Val Phe Lys
850 855 860

Glu Glu Met Gly Ile Gly Gly Val Leu Gly Leu Leu Trp Phe Gln Lys
865 870 875 880

Arg Leu Pro Lys Tyr Ser Cys Gln Phe Ile Glu Met Cys Leu Met Val
885 890 895

Thr Ala Asp His Gly Pro Ala Val Ser Gly Ala His Asn Thr Ile Ile
900 905 910

Cys Ala Arg Ala Gly Lys Asp Leu Val Ser Ser Leu Thr Ser Gly Leu
915 920 925

Leu Thr Ile Gly Asp Arg Phe Gly Gly Ala Leu Asp Ala Ala Ala Lys
930 935 940

```
Met Phe Ser Lys Ala Phe Asp Ser Gly Ile Ile Pro Met Glu Phe Val
945                 950                 955                 960

Asn Lys Met Lys Lys Glu Gly Lys Leu Ile Met Gly Ile Gly His Arg
                965                 970                 975

Val Lys Ser Ile Asn Asn Pro Asp Met Arg Val Gln Ile Leu Lys Asp
            980                 985                 990

Tyr Val Arg Gln His Phe Pro Ala  Thr Pro Leu Leu Asp  Tyr Ala
Leu
        995                 1000                1005

Glu Val  Glu Lys Ile Thr Thr  Ser Lys Lys Pro Asn  Leu Ile Leu
    1010                1015                1020

Asn Val  Asp Gly Leu Ile Gly  Val Ala Phe Val Asp  Met Leu Arg
    1025                1030                1035

Asn Cys  Gly Ser Phe Thr Arg  Glu Glu Ala Asp Glu  Tyr Ile Asp
    1040                1045                1050

Ile Gly  Ala Leu Asn Gly Ile  Phe Val Leu Gly Arg  Ser Met Gly
    1055                1060                1065

Phe Ile  Gly His Tyr Leu Asp  Gln Lys Arg Leu Lys  Gln Gly Leu
    1070                1075                1080

Tyr Arg  His Pro Trp Asp Asp  Ile Ser Tyr Val Leu  Pro Glu His
    1085                1090                1095

Met Ser  Met
    1100
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<210> 7009
<211> 109
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1494; "

<220>
<221> source
<223> /note="Gene Symbol: ACLY; "

<220>
<221> source
<223> /note="Gene Name:
ATP citrate lyase; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000468705"

<400> 7009
Met Ser Ala Lys Ala Ile Ser Glu Gln Thr Gly Lys Glu Leu Leu Tyr
1 5 10 15

Lys Phe Ile Cys Thr Thr Ser Ala Ile Gln Asn Arg Phe Lys Tyr Ala
20 25 30

Arg Val Thr Pro Asp Thr Asp Trp Ala Arg Leu Leu Gln Asp His Pro
35 40 45

Trp Leu Leu Ser Gln Asn Leu Val Val Lys Pro Asp Gln Leu Ile Lys
50 55 60

Arg Arg Gly Lys Leu Gly Leu Val Gly Val Asn Leu Thr Leu Asp Gly
65 70 75 80

Val Lys Ser Trp Leu Lys Pro Arg Leu Gly Gln Glu Ala Thr Val Gly
85 90 95

Lys Ala Thr Gly Phe Leu Lys Asn Phe Leu Ile Glu Pro
100 105

<210> 7010
<211> 283
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1495; "

<220>
<221> source
<223> /note="Gene Symbol: ATPAF1; "

<220>
<221> source
<223> /note="Gene Name:
ATP synthase mitochondrial F1 complex assembly factor
1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000330685"

<400> 7010
Met Glu Arg Ala Arg Gly Pro Arg Ala Glu Ala Asp Ala Pro Glu Glu
1   5   10   15

Glu Glu Glu Ala Gly Ala Ala Met Ala Ala Val Val Val Ala Ala Ala
            20   25   30

Gly Gly Ala Gly Pro Ala Val Leu Gln Val Ala Gly Leu Tyr Arg Gly
        35   40   45

Leu Cys Ala Val Arg Ser Arg Ala Leu Gly Leu Gly Leu Val Ser Pro
    50   55   60

Ala Gln Leu Arg Val Phe Pro Val Arg Pro Gly Ser Gly Arg Pro Glu
65   70   75   80

Gly Gly Ala Asp Ser Ser Gly Val Gly Ala Glu Ala Glu Leu Gln Ala
                85   90   95

Asn Pro Phe Tyr Asp Arg Tyr Arg Asp Lys Ile Gln Leu Leu Arg Arg
            100   105   110

Ser Asp Pro Ala Ala Phe Glu Ser Arg Leu Glu Lys Arg Ser Glu Phe
        115   120   125

Arg Lys Gln Pro Val Gly His Ser Arg Gln Gly Asp Phe Ile Lys Cys
    130   135   140

Val Glu Gln Lys Thr Asp Ala Leu Gly Lys Gln Ser Val Asn Arg Gly
145   150   155   160

Phe Thr Lys Asp Lys Thr Leu Ser Ser Ile Phe Asn Ile Glu Met Val
                165   170   175

Lys Glu Lys Thr Ala Glu Glu Ile Lys Gln Ile Trp Gln Gln Tyr Phe
            180   185   190

Ala Ala Lys Asp Thr Val Tyr Ala Val Ile Pro Ala Glu Lys Phe Asp
        195   200   205

```
Leu Ile Trp Asn Arg Ala Gln Ser Cys Pro Thr Asn Val Ala Glu Ala
    210                 215                 220

Gln Cys Ile Ala Asn Gln Val Gln Leu Phe Tyr Ala Thr Asp Arg Lys
225                 230                 235                 240

Glu Thr Tyr Gly Leu Val Glu Thr Phe Asn Leu Arg Pro Asn Glu Phe
                245                 250                 255

Lys Tyr Met Ser Val Ile Ala Glu Leu Glu Gln Ser Gly Leu Gly Ala
            260                 265                 270

Glu Leu Lys Cys Ala Gln Asn Gln Asn Lys Thr
        275                 280


<210> 7011
<211> 351
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1495; "

<220>
<221> source
<223> /note="Gene Symbol: ATPAF1; "

<220>
<221> source
<223> /note="Gene Name:
      ATP synthase mitochondrial F1 complex assembly  factor
      1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000361005"

<400> 7011
Met Glu Arg Ala Arg Gly Pro Arg Ala Glu Ala Asp Ala Pro Glu Glu
1               5                   10                  15

Glu Glu Glu Ala Gly Ala Ala Met Ala Ala Val Val Val Ala Ala Ala
            20                  25                  30

Gly Gly Ala Gly Pro Ala Val Leu Gln Val Ala Gly Leu Tyr Arg Gly
        35                  40                  45
```

```
Leu Cys Ala Val Arg Ser Arg Ala Leu Gly Leu Gly Leu Val Ser Pro
    50                  55                  60

Ala Gln Leu Arg Val Phe Pro Val Arg Pro Gly Ser Gly Arg Pro Glu
65                  70                  75                  80

Gly Gly Ala Asp Ser Ser Gly Val Gly Ala Glu Ala Glu Leu Gln Ala
                85                  90                  95

Asn Pro Phe Tyr Asp Arg Tyr Arg Asp Lys Ile Gln Leu Leu Arg Arg
            100                 105                 110

Ser Asp Pro Ala Ala Phe Glu Ser Arg Leu Glu Lys Arg Ser Glu Phe
        115                 120                 125

Arg Lys Gln Pro Val Gly His Ser Arg Gln Gly Asp Phe Ile Lys Cys
    130                 135                 140

Val Glu Gln Lys Thr Asp Ala Leu Gly Lys Gln Ser Val Asn Arg Gly
145                 150                 155                 160

Phe Thr Lys Asp Lys Thr Leu Ser Ser Ile Phe Asn Ile Glu Met Val
                165                 170                 175

Lys Glu Lys Thr Ala Glu Glu Ile Lys Gln Ile Trp Gln Gln Tyr Phe
            180                 185                 190

Ala Ala Lys Asp Thr Val Tyr Ala Val Ile Pro Ala Glu Lys Phe Asp
        195                 200                 205

Leu Ile Trp Asn Arg Ala Gln Ser Cys Pro Thr Phe Leu Cys Ala Leu
    210                 215                 220

Pro Arg Arg Glu Gly Tyr Glu Phe Phe Val Gly Gln Trp Thr Gly Thr
225                 230                 235                 240

Glu Leu His Phe Thr Ala Leu Ile Asn Ile Gln Thr Arg Gly Glu Ala
                245                 250                 255

Ala Ala Ser Gln Leu Ile Leu Tyr His Tyr Pro Glu Leu Lys Glu Glu
            260                 265                 270

Lys Gly Ile Val Leu Met Thr Ala Glu Met Asp Ser Thr Phe Leu Asn
```

```
        275                 280                 285

Val Ala Glu Ala Gln Cys Ile Ala Asn Gln Val Gln Leu Phe Tyr Ala
    290                 295                 300

Thr Asp Arg Lys Glu Thr Tyr Gly Leu Val Glu Thr Phe Asn Leu Arg
305                 310                 315                 320

Pro Asn Glu Phe Lys Tyr Met Ser Val Ile Ala Glu Leu Glu Gln Ser
                325                 330                 335

Gly Leu Gly Ala Glu Leu Lys Cys Ala Gln Asn Gln Asn Lys Thr
            340                 345                 350


<210> 7012
<211> 113
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1495; "

<220>
<221> source
<223> /note="Gene Symbol: ATPAF1; "

<220>
<221> source
<223> /note="Gene Name:
      ATP synthase mitochondrial F1 complex assembly  factor
      1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000431258"

<400> 7012
Phe Leu Cys Ala Leu Pro Arg Arg Glu Gly Tyr Glu Phe Phe Val Gly
1               5                   10                  15

Gln Trp Thr Gly Thr Glu Leu His Phe Thr Ala Leu Ile Asn Ile Gln
            20                  25                  30

Thr Arg Gly Glu Ala Ala Ala Ser Gln Leu Ile Leu Tyr His Tyr Pro
        35                  40                  45

Glu Leu Lys Glu Glu Lys Gly Ile Val Leu Met Thr Ala Glu Met Asp
    50                  55                  60
```

```
Ser Thr Phe Leu Asn Val Ala Glu Ala Gln Cys Ile Ala Asn Gln Val
65                  70                  75                  80


Gln Leu Phe Tyr Ala Thr Asp Arg Lys Glu Thr Tyr Gly Trp Ala Gln
                85                  90                  95


Leu Leu Ala Ile His Ser Thr Leu Ile His Leu His Gln Arg Val Arg
            100                 105                 110


Lys



<210> 7013
<211> 183
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1495; "

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<221> source
<223> /note="Gene Symbol: ATPAF1; "

<220>
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      1; "

<220>
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<223> /note="ENSP ID: ENSP00000432771"


<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 7013
Xaa Gly Lys Gln Ser Val Asn Arg Gly Phe Thr Lys Asp Lys Thr Leu
1               5                   10                  15


Ser Ser Ile Phe Asn Ile Glu Met Val Lys Glu Lys Thr Ala Glu Glu
            20                  25                  30


Ile Lys Gln Ala Glu Lys Phe Asp Leu Ile Trp Asn Arg Ala Gln Ser
```

```
        35                  40                  45

Cys Pro Thr Phe Leu Cys Ala Leu Pro Arg Arg Glu Gly Tyr Glu Phe
    50                  55                  60

Phe Val Gly Gln Trp Thr Gly Thr Glu Leu His Phe Thr Ala Leu Ile
65                  70                  75                  80

Asn Ile Gln Thr Arg Gly Glu Ala Ala Ala Ser Gln Leu Ile Leu Tyr
                85                  90                  95

His Tyr Pro Glu Leu Lys Glu Glu Lys Gly Ile Val Leu Met Thr Ala
            100                 105                 110

Glu Met Asp Ser Thr Phe Leu Asn Val Ala Glu Ala Gln Cys Ile Ala
        115                 120                 125

Asn Gln Val Gln Leu Phe Tyr Ala Thr Asp Arg Lys Glu Thr Tyr Gly
    130                 135                 140

Leu Val Glu Thr Phe Asn Leu Arg Pro Asn Glu Phe Lys Tyr Met Ser
145                 150                 155                 160

Val Ile Ala Glu Leu Glu Gln Ser Gly Leu Gly Ala Glu Leu Lys Cys
                165                 170                 175

Ala Gln Asn Gln Asn Lys Thr
            180


<210> 7014
<211> 86
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<220>
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      1; "
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<220>
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<223> /note="ENSP ID: ENSP00000433437"

<220>
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<222> (1)..(1)
<223> Any amino acid

<400> 7014
Xaa Val Arg Pro Gly Ser Gly Arg Pro Glu Gly Gly Ala Asp Ser Ser
1 5 10 15

Gly Val Gly Ala Glu Ala Glu Leu Gln Ala Asn Pro Phe Tyr Asp Arg
20 25 30

Tyr Arg Asp Lys Ile Gln Leu Leu Arg Arg Ser Asp Pro Ala Ala Phe
35 40 45

Glu Ser Arg Leu Glu Lys Arg Ser Glu Phe Arg Lys Gln Pro Val Gly
50 55 60

His Ser Arg Gln Gly Asp Phe Ile Lys Cys Val Glu Gln Lys Asp Gly
65 70 75 80

Ala Gln Asn Lys Leu Val
85

<210> 7015
<211> 240
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<220>
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<223> /note="Uniprot ID: Q5TC12; "

<220>
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<223> /note="ENSP ID: ENSP00000435732"

<400> 7015

```
Met Ser Asp Pro Ala Ala Phe Glu Ser Arg Leu Glu Lys Arg Ser Glu
1               5                  10                  15

Phe Arg Lys Gln Pro Val Gly His Ser Arg Gln Gly Asp Phe Ile Lys
            20                  25                  30

Cys Val Glu Gln Lys Thr Asp Ala Leu Gly Lys Gln Ser Val Asn Arg
        35                  40                  45

Gly Phe Thr Lys Asp Lys Thr Leu Ser Ser Ile Phe Asn Ile Glu Met
    50                  55                  60

Val Lys Glu Lys Thr Ala Glu Glu Ile Lys Gln Ile Trp Gln Gln Tyr
65                  70                  75                  80

Phe Ala Ala Lys Asp Thr Val Tyr Ala Val Ile Pro Ala Glu Lys Phe
                85                  90                  95

Asp Leu Ile Trp Asn Arg Ala Gln Ser Cys Pro Thr Phe Leu Cys Ala
            100                 105                 110

Leu Pro Arg Arg Glu Gly Tyr Glu Phe Phe Val Gly Gln Trp Thr Gly
        115                 120                 125

Thr Glu Leu His Phe Thr Ala Leu Ile Asn Ile Gln Thr Arg Gly Glu
    130                 135                 140

Ala Ala Ala Ser Gln Leu Ile Leu Tyr His Tyr Pro Glu Leu Lys Glu
145                 150                 155                 160

Glu Lys Gly Ile Val Leu Met Thr Ala Glu Met Asp Ser Thr Phe Leu
                165                 170                 175

Asn Val Ala Glu Ala Gln Cys Ile Ala Asn Gln Val Gln Leu Phe Tyr
            180                 185                 190

Ala Thr Asp Arg Lys Glu Thr Tyr Gly Leu Val Glu Thr Phe Asn Leu
        195                 200                 205
```

```
Arg Pro Asn Glu Phe Lys Tyr Met Ser Val Ile Ala Glu Leu Glu Gln
    210                 215                 220

Ser Gly Leu Gly Ala Glu Leu Lys Cys Ala Gln Asn Gln Asn Lys Thr
225                 230                 235                 240
```

<210> 7016
<211> 45
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
ATP synthase mitochondrial F1 complex assembly factor
1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000436267"

<400> 7016

```
Met Ser Asp Pro Ala Ala Phe Glu Ser Arg Leu Glu Lys Arg Ser Glu
1               5                   10                  15

Phe Arg Lys Gln Pro Val Gly His Ser Arg Gln Gly Asp Phe Ile Lys
            20                  25                  30

Cys Val Glu Gln Lys Asp Gly Ala Gln Asn Lys Leu Val
        35                  40                  45
```

<210> 7017
<211> 174
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATPAF1; "

<220>
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ATP synthase mitochondrial F1 complex assembly factor
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000436690"

<400> 7017

```
Leu Ile Arg Ser Asp Pro Ala Ala Phe Glu Ser Arg Leu Glu Lys Arg
1               5                  10                  15

Ser Glu Phe Arg Lys Gln Pro Val Gly His Ser Arg Gln Gly Asp Phe
            20                  25                  30

Ile Lys Cys Val Glu Gln Lys Thr Asp Ala Leu Gly Lys Gln Ser Val
        35                  40                  45

Asn Arg Gly Phe Thr Lys Asp Lys Thr Leu Ser Ser Ile Phe Asn Ile
    50                  55                  60

Glu Met Val Lys Glu Lys Thr Ala Glu Glu Ile Lys Gln Ile Trp Gln
65                  70                  75                  80

Gln Tyr Phe Ala Ala Lys Asp Thr Val Tyr Ala Val Ile Pro Ala Glu
                85                  90                  95

Lys Phe Asp Leu Ile Trp Asn Arg Ala Gln Ser Cys Pro Thr Asn Val
            100                 105                 110

Ala Glu Ala Gln Cys Ile Ala Asn Gln Val Gln Leu Phe Tyr Ala Thr
        115                 120                 125

Asp Arg Lys Glu Thr Tyr Gly Leu Val Glu Thr Phe Asn Leu Arg Pro
    130                 135                 140

Asn Glu Phe Lys Tyr Met Ser Val Ile Ala Glu Leu Glu Gln Ser Gly
145                 150                 155                 160

Leu Gly Ala Glu Leu Lys Cys Ala Gln Asn Gln Asn Lys Thr
                165                 170
```

<210> 7018
<211> 177
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
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<220>
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ATP synthase mitochondrial F1 complex assembly factor
1; "

<220>
<221> source
<223> /note="Uniprot ID: Q5TC12; "

<220>
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<223> /note="ENSP ID: ENSP00000443588"

<400> 7018
Met Val Lys Glu Lys Thr Ala Glu Glu Ile Lys Gln Ile Trp Gln Gln
1 5 10 15

Tyr Phe Ala Ala Lys Asp Thr Val Tyr Ala Val Ile Pro Ala Glu Lys
20 25 30

Phe Asp Leu Ile Trp Asn Arg Ala Gln Ser Cys Pro Thr Phe Leu Cys
35 40 45

Ala Leu Pro Arg Arg Glu Gly Tyr Glu Phe Phe Val Gly Gln Trp Thr
50 55 60

Gly Thr Glu Leu His Phe Thr Ala Leu Ile Asn Ile Gln Thr Arg Gly
65 70 75 80

Glu Ala Ala Ala Ser Gln Leu Ile Leu Tyr His Tyr Pro Glu Leu Lys
85 90 95

Glu Glu Lys Gly Ile Val Leu Met Thr Ala Glu Met Asp Ser Thr Phe
100 105 110

Leu Asn Val Ala Glu Ala Gln Cys Ile Ala Asn Gln Val Gln Leu Phe

```
        115                 120                 125

Tyr Ala Thr Asp Arg Lys Glu Thr Tyr Gly Leu Val Glu Thr Phe Asn
    130                 135                 140

Leu Arg Pro Asn Glu Phe Lys Tyr Met Ser Val Ile Ala Glu Leu Glu
145                 150                 155                 160

Gln Ser Gly Leu Gly Ala Glu Leu Lys Cys Ala Gln Asn Gln Asn Lys
                165                 170                 175

Thr
```

<210> 7019
<211> 328
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1495; "

<220>
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<220>
<221> source
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ATP synthase mitochondrial F1 complex assembly factor
1; "

<220>
<221> source
<223> /note="Uniprot ID: Q5TC12; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000459167"

<400> 7019

```
Met Ala Ala Val Val Val Ala Ala Ala Gly Gly Ala Gly Pro Ala Val
1               5                  10                  15

Leu Gln Val Ala Gly Leu Tyr Arg Gly Leu Cys Ala Val Arg Ser Arg
            20                  25                  30

Ala Leu Gly Leu Gly Leu Val Ser Pro Ala Gln Leu Arg Val Phe Pro
        35                  40                  45
```

```
Val Arg Pro Gly Ser Gly Arg Pro Glu Gly Gly Ala Asp Ser Ser Gly
    50                  55                  60

Val Gly Ala Glu Ala Glu Leu Gln Ala Asn Pro Phe Tyr Asp Arg Tyr
65                  70                  75                  80

Arg Asp Lys Ile Gln Leu Leu Arg Arg Ser Asp Pro Ala Ala Phe Glu
                85                  90                  95

Ser Arg Leu Glu Lys Arg Ser Glu Phe Arg Lys Gln Pro Val Gly His
            100                 105                 110

Ser Arg Gln Gly Asp Phe Ile Lys Cys Val Glu Gln Lys Thr Asp Ala
        115                 120                 125

Leu Gly Lys Gln Ser Val Asn Arg Gly Phe Thr Lys Asp Lys Thr Leu
    130                 135                 140

Ser Ser Ile Phe Asn Ile Glu Met Val Lys Glu Lys Thr Ala Glu Glu
145                 150                 155                 160

Ile Lys Gln Ile Trp Gln Gln Tyr Phe Ala Ala Lys Asp Thr Val Tyr
                165                 170                 175

Ala Val Ile Pro Ala Glu Lys Phe Asp Leu Ile Trp Asn Arg Ala Gln
            180                 185                 190

Ser Cys Pro Thr Phe Leu Cys Ala Leu Pro Arg Arg Glu Gly Tyr Glu
        195                 200                 205

Phe Phe Val Gly Gln Trp Thr Gly Thr Glu Leu His Phe Thr Ala Leu
    210                 215                 220

Ile Asn Ile Gln Thr Arg Gly Glu Ala Ala Ala Ser Gln Leu Ile Leu
225                 230                 235                 240

Tyr His Tyr Pro Glu Leu Lys Glu Glu Lys Gly Ile Val Leu Met Thr
                245                 250                 255

Ala Glu Met Asp Ser Thr Phe Leu Asn Val Ala Glu Ala Gln Cys Ile
            260                 265                 270
```

```
Ala Asn Gln Val Gln Leu Phe Tyr Ala Thr Asp Arg Lys Glu Thr Tyr
        275                 280                 285

Gly Leu Val Glu Thr Phe Asn Leu Arg Pro Asn Glu Phe Lys Tyr Met
    290                 295                 300

Ser Val Ile Ala Glu Leu Glu Gln Ser Gly Leu Gly Ala Glu Leu Lys
305                 310                 315                 320

Cys Ala Gln Asn Gln Asn Lys Thr
                325
```

<210> 7020
<211> 351
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1495; "

<220>
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<220>
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ATP synthase mitochondrial F1 complex assembly factor
1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000460964"

<400> 7020

```
Met Glu Arg Ala Arg Gly Pro Arg Ala Glu Ala Asp Ala Pro Glu Glu
1               5                   10                  15

Glu Glu Glu Ala Gly Ala Ala Met Ala Ala Val Val Val Ala Ala Ala
            20                  25                  30

Gly Gly Ala Gly Pro Ala Val Leu Gln Val Ala Gly Leu Tyr Arg Gly
        35                  40                  45

Leu Cys Ala Val Arg Ser Arg Ala Leu Gly Leu Gly Leu Val Ser Pro
    50                  55                  60
```

```
Ala Gln Leu Arg Val Phe Pro Val Arg Pro Gly Ser Gly Arg Pro Glu
65                  70                  75                  80

Gly Gly Ala Asp Ser Ser Gly Val Gly Ala Glu Ala Glu Leu Gln Ala
                85                  90                  95

Asn Pro Phe Tyr Asp Arg Tyr Arg Asp Lys Ile Gln Leu Leu Arg Arg
            100                 105                 110

Ser Asp Pro Ala Ala Phe Glu Ser Arg Leu Glu Lys Arg Ser Glu Phe
        115                 120                 125

Arg Lys Gln Pro Val Gly His Ser Arg Gln Gly Asp Phe Ile Lys Cys
    130                 135                 140

Val Glu Gln Lys Thr Asp Ala Leu Gly Lys Gln Ser Val Asn Arg Gly
145                 150                 155                 160

Phe Thr Lys Asp Lys Thr Leu Ser Ser Ile Phe Asn Ile Glu Met Val
                165                 170                 175

Lys Glu Lys Thr Ala Glu Glu Ile Lys Gln Ile Trp Gln Gln Tyr Phe
            180                 185                 190

Ala Ala Lys Asp Thr Val Tyr Ala Val Ile Pro Ala Glu Lys Phe Asp
        195                 200                 205

Leu Ile Trp Asn Arg Ala Gln Ser Cys Pro Thr Phe Leu Cys Ala Leu
    210                 215                 220

Pro Arg Arg Glu Gly Tyr Glu Phe Phe Val Gly Gln Trp Thr Gly Thr
225                 230                 235                 240

Glu Leu His Phe Thr Ala Leu Ile Asn Ile Gln Thr Arg Gly Glu Ala
                245                 250                 255

Ala Ala Ser Gln Leu Ile Leu Tyr His Tyr Pro Glu Leu Lys Glu Glu
            260                 265                 270

Lys Gly Ile Val Leu Met Thr Ala Glu Met Asp Ser Thr Phe Leu Asn
        275                 280                 285

Val Ala Glu Ala Gln Cys Ile Ala Asn Gln Val Gln Leu Phe Tyr Ala
```

```
    290                 295                 300

Thr Asp Arg Lys Glu Thr Tyr Gly Leu Val Glu Thr Phe Asn Leu Arg
305                 310                 315                 320

Pro Asn Glu Phe Lys Tyr Met Ser Val Ile Ala Glu Leu Glu Gln Ser
                325                 330                 335

Gly Leu Gly Ala Glu Leu Lys Cys Ala Gln Asn Gln Asn Lys Thr
            340                 345                 350


<210> 7021
<211> 205
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1496; "

<220>
<221> source
<223> /note="Gene Symbol: ATPAF2; "

<220>
<221> source
<223> /note="Gene Name:
      ATP synthase mitochondrial F1 complex assembly  factor
      2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000397198"

<400> 7021
Met Trp Arg Ser Cys Leu Arg Leu Arg Asp Gly Gly Arg Arg Leu Leu
1               5                   10                  15

Asn Arg Pro Ala Gly Gly Pro Ser Ala Ser Met Ser Pro Gly Pro Thr
            20                  25                  30

Ile Pro Ser Pro Ala Arg Ala Tyr Ala Pro Pro Thr Glu Arg Lys Arg
        35                  40                  45

Phe Tyr Gln Asn Val Ser Ile Thr Gln Gly Glu Gly Gly Phe Glu Ile
    50                  55                  60

Asn Leu Asp His Arg Lys Leu Lys Thr Pro Gln Ala Lys Leu Phe Thr
65                  70                  75                  80
```

```
Val Pro Ser Glu Ala Leu Ala Ile Ala Val Ala Thr Glu Trp Asp Ser
                85                  90                  95

Gln Gln Asp Thr Ile Lys Tyr Tyr Thr Met His Leu Thr Thr Leu Cys
            100                 105                 110

Asn Thr Ser Leu Asp Asn Pro Thr Gln Arg Asn Lys Asp Gln Leu Ile
        115                 120                 125

Arg Ala Ala Val Lys Phe Leu Asp Thr Asp Thr Ile Cys Tyr Arg Val
    130                 135                 140

Glu Glu Pro Glu Thr Leu Val Glu Leu Gln Arg Asn Glu Trp Asp Pro
145                 150                 155                 160

Ile Ile Glu Trp Ala Glu Lys Arg Tyr Gly Val Glu Ile Ser Ser Ser
                165                 170                 175

Thr Ser Ile Met Gly Pro Ser Ile Pro Ala Lys Thr Arg Glu Val Leu
            180                 185                 190

Val Ser His Leu Ala Ser Tyr Asn Thr Trp Ala Leu Gln
        195                 200                 205


<210> 7022
<211> 289
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ATPAF2; "

<220>
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<223> /note="Gene Name:
      ATP synthase mitochondrial F1 complex assembly  factor
      2; "

<220>
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<223> /note="Uniprot ID:  Q8N5M1; "
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<220>
<221> source
<223> /note="ENSP ID: ENSP00000417190"

<400> 7022
Met Trp Arg Ser Cys Leu Arg Leu Arg Asp Gly Gly Arg Arg Leu Leu
1   5   10   15

Asn Arg Pro Ala Gly Gly Pro Ser Ala Ser Met Ser Pro Gly Pro Thr
            20   25   30

Ile Pro Ser Pro Ala Arg Ala Tyr Ala Pro Pro Thr Glu Arg Lys Arg
        35   40   45

Phe Tyr Gln Asn Val Ser Ile Thr Gln Gly Glu Gly Gly Phe Glu Ile
    50   55   60

Asn Leu Asp His Arg Lys Leu Lys Thr Pro Gln Ala Lys Leu Phe Thr
65   70   75   80

Val Pro Ser Glu Ala Leu Ala Ile Ala Val Ala Thr Glu Trp Asp Ser
                85   90   95

Gln Gln Asp Thr Ile Lys Tyr Tyr Thr Met His Leu Thr Thr Leu Cys
            100   105   110

Asn Thr Ser Leu Asp Asn Pro Thr Gln Arg Asn Lys Asp Gln Leu Ile
        115   120   125

Arg Ala Ala Val Lys Phe Leu Asp Thr Asp Thr Ile Cys Tyr Arg Val
    130   135   140

Glu Glu Pro Glu Thr Leu Val Glu Leu Gln Arg Asn Glu Trp Asp Pro
145   150   155   160

Ile Ile Glu Trp Ala Glu Lys Arg Tyr Gly Val Glu Ile Ser Ser Ser
                165   170   175

Thr Ser Ile Met Gly Pro Ser Ile Pro Ala Lys Thr Arg Glu Val Leu
            180   185   190

Val Ser His Leu Ala Ser Tyr Asn Thr Trp Ala Leu Gln Gly Ile Glu
        195   200   205

```
Phe Val Ala Ala Gln Leu Lys Ser Met Val Leu Thr Leu Gly Leu Ile
    210                 215                 220

Asp Leu Arg Leu Thr Val Glu Gln Ala Val Leu Leu Ser Arg Leu Glu
225                 230                 235                 240

Glu Glu Tyr Gln Ile Gln Lys Trp Gly Asn Ile Glu Trp Ala His Asp
                245                 250                 255

Tyr Glu Leu Gln Glu Leu Arg Ala Arg Thr Ala Ala Gly Thr Leu Phe
            260                 265                 270

Ile His Leu Cys Ser Glu Ser Thr Thr Val Lys His Lys Leu Leu Lys
        275                 280                 285

Glu
```

<210> 7023
<211> 107
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ATPAF2; "

<220>
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<223> /note="Gene Name:
ATP synthase mitochondrial F1 complex assembly factor
2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000462899"

<400> 7023

```
Met Trp Arg Ser Cys Leu Arg Leu Arg Asp Gly Gly Arg Arg Leu Leu
1               5                   10                  15

Asn Arg Pro Ala Gly Gly Pro Ser Ala Ser Met Ser Pro Gly Pro Thr
            20                  25                  30

Ile Pro Ser Pro Ala Arg Ala Tyr Ala Pro Pro Thr Glu Arg Lys Arg
```

```
        35                  40                  45

Phe Tyr Gln Asn Val Ser Ile Thr Gln Gly Glu Asp His Ile Val Gln
    50                  55                  60

His Ile Ile Gly Gln Pro Asn Pro Glu Lys Gln Gly Ser Ala Asp Pro
65                  70                  75                  80

Gly Ser Arg Glu Val Ser Gly His Arg His His Leu Leu Gln Gly Gly
                85                  90                  95

Gly Ala Arg Asp Ile Ser Gly Thr Ser Lys Glu
            100                 105


<210> 7024
<211> 107
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1496; "

<220>
<221> source
<223> /note="Gene Symbol: ATPAF2; "

<220>
<221> source
<223> /note="Gene Name:
      ATP synthase mitochondrial F1 complex assembly  factor
      2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000463861"

<400> 7024
Met Trp Arg Ser Cys Leu Arg Leu Arg Asp Gly Gly Arg Arg Leu Leu
1               5                   10                  15

Asn Arg Pro Ala Gly Gly Pro Ser Ala Ser Met Ser Pro Gly Pro Thr
            20                  25                  30

Ile Pro Ser Pro Ala Arg Ala Tyr Ala Pro Pro Thr Glu Arg Lys Arg
        35                  40                  45

Phe Tyr Gln Asn Val Ser Ile Thr Gln Gly Glu Asp His Ile Val Gln
    50                  55                  60
```

```
His Ile Ile Gly Gln Pro Asn Pro Glu Lys Gln Gly Ser Ala Asp Pro
65                  70                  75                  80


Gly Ser Arg Glu Val Ser Gly His Arg His His Leu Leu Gln Gly Gly
                85                  90                  95


Gly Ala Arg Asp Ile Ser Gly Thr Ser Lys Glu
            100                 105


<210> 7025
<211> 107
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1496; "

<220>
<221> source
<223> /note="Gene Symbol: ATPAF2; "

<220>
<221> source
<223> /note="Gene Name:
      ATP synthase mitochondrial F1 complex assembly  factor
      2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000463920"

<400> 7025
Met Trp Arg Ser Cys Leu Arg Leu Arg Asp Gly Gly Arg Arg Leu Leu
1               5                   10                  15


Asn Arg Pro Ala Gly Gly Pro Ser Ala Ser Met Ser Pro Gly Pro Thr
            20                  25                  30


Ile Pro Ser Pro Ala Arg Ala Tyr Ala Pro Pro Thr Glu Arg Lys Arg
        35                  40                  45


Phe Tyr Gln Asn Val Ser Ile Thr Gln Gly Glu Asp His Ile Val Gln
    50                  55                  60


His Ile Ile Gly Gln Pro Asn Pro Glu Lys Gln Gly Ser Ala Asp Pro
65                  70                  75                  80
```

```
Gly Ser Arg Glu Val Ser Gly His Arg His His Leu Leu Gln Gly Gly
                85                  90                  95


Gly Ala Arg Asp Ile Ser Gly Thr Ser Lys Glu
            100                 105


<210> 7026
<211> 59
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1496; "

<220>
<221> source
<223> /note="Gene Symbol: ATPAF2; "

<220>
<221> source
<223> /note="Gene Name:
      ATP synthase mitochondrial F1 complex assembly  factor
      2; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466008"


<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7026
Xaa Leu Gln Arg Asn Glu Trp Asp Pro Ile Ile Glu Trp Ala Glu Lys
1               5                   10                  15


Arg Ser Arg Ser Gly Ala Thr Leu Ser Gly Pro Met Thr Met Ser Cys
            20                  25                  30


Arg Ser Cys Gly Pro Ala Pro Pro Pro Ala Pro Ser Ser Ser Ile Ser
        35                  40                  45


Ala Pro Arg Ala Pro Gln Ser Ser Thr Ser Ser
    50                  55


<210> 7027
<211> 553
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<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1497; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5A1; "

<220>
<221> source
<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial F1 complex,
alpha
subunit 1, cardiac muscle; "

<220>
<221> source
<223> /note="Uniprot ID: P25705; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000282050"

<400> 7027

```
Met Leu Ser Val Arg Val Ala Ala Ala Val Val Arg Ala Leu Pro Arg
1               5                  10                  15

Arg Ala Gly Leu Val Ser Arg Asn Ala Leu Gly Ser Ser Phe Ile Ala
            20                  25                  30

Ala Arg Asn Phe His Ala Ser Asn Thr His Leu Gln Lys Thr Gly Thr
        35                  40                  45

Ala Glu Met Ser Ser Ile Leu Glu Glu Arg Ile Leu Gly Ala Asp Thr
    50                  55                  60

Ser Val Asp Leu Glu Glu Thr Gly Arg Val Leu Ser Ile Gly Asp Gly
65                  70                  75                  80

Ile Ala Arg Val His Gly Leu Arg Asn Val Gln Ala Glu Glu Met Val
                85                  90                  95

Glu Phe Ser Ser Gly Leu Lys Gly Met Ser Leu Asn Leu Glu Pro Asp
            100                 105                 110

Asn Val Gly Val Val Val Phe Gly Asn Asp Lys Leu Ile Lys Glu Gly
        115                 120                 125
```

```
Asp Ile Val Lys Arg Thr Gly Ala Ile Val Asp Val Pro Val Gly Glu
    130                 135                 140

Glu Leu Leu Gly Arg Val Val Asp Ala Leu Gly Asn Ala Ile Asp Gly
145                 150                 155                 160

Lys Gly Pro Ile Gly Ser Lys Thr Arg Arg Arg Val Gly Leu Lys Ala
                165                 170                 175

Pro Gly Ile Ile Pro Arg Ile Ser Val Arg Glu Pro Met Gln Thr Gly
            180                 185                 190

Ile Lys Ala Val Asp Ser Leu Val Pro Ile Gly Arg Gly Gln Arg Glu
        195                 200                 205

Leu Ile Ile Gly Asp Arg Gln Thr Gly Lys Thr Ser Ile Ala Ile Asp
    210                 215                 220

Thr Ile Ile Asn Gln Lys Arg Phe Asn Asp Gly Ser Asp Glu Lys Lys
225                 230                 235                 240

Lys Leu Tyr Cys Ile Tyr Val Ala Ile Gly Gln Lys Arg Ser Thr Val
                245                 250                 255

Ala Gln Leu Val Lys Arg Leu Thr Asp Ala Asp Ala Met Lys Tyr Thr
            260                 265                 270

Ile Val Val Ser Ala Thr Ala Ser Asp Ala Ala Pro Leu Gln Tyr Leu
        275                 280                 285

Ala Pro Tyr Ser Gly Cys Ser Met Gly Glu Tyr Phe Arg Asp Asn Gly
    290                 295                 300

Lys His Ala Leu Ile Ile Tyr Asp Asp Leu Ser Lys Gln Ala Val Ala
305                 310                 315                 320

Tyr Arg Gln Met Ser Leu Leu Leu Arg Arg Pro Pro Gly Arg Glu Ala
                325                 330                 335

Tyr Pro Gly Asp Val Phe Tyr Leu His Ser Arg Leu Leu Glu Arg Ala
            340                 345                 350
```

```
Ala Lys Met Asn Asp Ala Phe Gly Gly Gly Ser Leu Thr Ala Leu Pro
        355                 360                 365

Val Ile Glu Thr Gln Ala Gly Asp Val Ser Ala Tyr Ile Pro Thr Asn
    370                 375                 380

Val Ile Ser Ile Thr Asp Gly Gln Ile Phe Leu Glu Thr Glu Leu Phe
385                 390                 395                 400

Tyr Lys Gly Ile Arg Pro Ala Ile Asn Val Gly Leu Ser Val Ser Arg
                405                 410                 415

Val Gly Ser Ala Ala Gln Thr Arg Ala Met Lys Gln Val Ala Gly Thr
            420                 425                 430

Met Lys Leu Glu Leu Ala Gln Tyr Arg Glu Val Ala Ala Phe Ala Gln
        435                 440                 445

Phe Gly Ser Asp Leu Asp Ala Ala Thr Gln Gln Leu Leu Ser Arg Gly
    450                 455                 460

Val Arg Leu Thr Glu Leu Leu Lys Gln Gly Gln Tyr Ser Pro Met Ala
465                 470                 475                 480

Ile Glu Glu Gln Val Ala Val Ile Tyr Ala Gly Val Arg Gly Tyr Leu
                485                 490                 495

Asp Lys Leu Glu Pro Ser Lys Ile Thr Lys Phe Glu Asn Ala Phe Leu
            500                 505                 510

Ser His Val Val Ser Gln His Gln Ala Leu Leu Gly Thr Ile Arg Ala
        515                 520                 525

Asp Gly Lys Ile Ser Glu Gln Ser Asp Ala Lys Leu Lys Glu Ile Val
    530                 535                 540

Thr Asn Phe Leu Ala Gly Phe Glu Ala
545                 550
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<210> 7028
<211> 553
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ATP5A1; "

<220>
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<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial F1 complex,
alpha
subunit 1, cardiac muscle; "

<220>
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<223> /note="Uniprot ID: P25705; "

<220>
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<400> 7028
Met Leu Ser Val Arg Val Ala Ala Ala Val Val Arg Ala Leu Pro Arg
1   5   10   15

Arg Ala Gly Leu Val Ser Arg Asn Ala Leu Gly Ser Ser Phe Ile Ala
            20   25   30

Ala Arg Asn Phe His Ala Ser Asn Thr His Leu Gln Lys Thr Gly Thr
        35   40   45

Ala Glu Met Ser Ser Ile Leu Glu Glu Arg Ile Leu Gly Ala Asp Thr
    50   55   60

Ser Val Asp Leu Glu Glu Thr Gly Arg Val Leu Ser Ile Gly Asp Gly
65   70   75   80

Ile Ala Arg Val His Gly Leu Arg Asn Val Gln Ala Glu Glu Met Val
                85   90   95

Glu Phe Ser Ser Gly Leu Lys Gly Met Ser Leu Asn Leu Glu Pro Asp
            100   105   110

Asn Val Gly Val Val Val Phe Gly Asn Asp Lys Leu Ile Lys Glu Gly
        115   120   125

```
Asp Ile Val Lys Arg Thr Gly Ala Ile Val Asp Val Pro Val Gly Glu
    130                 135                 140

Glu Leu Leu Gly Arg Val Val Asp Ala Leu Gly Asn Ala Ile Asp Gly
145                 150                 155                 160

Lys Gly Pro Ile Gly Ser Lys Thr Arg Arg Arg Val Gly Leu Lys Ala
                165                 170                 175

Pro Gly Ile Ile Pro Arg Ile Ser Val Arg Glu Pro Met Gln Thr Gly
            180                 185                 190

Ile Lys Ala Val Asp Ser Leu Val Pro Ile Gly Arg Gly Gln Arg Glu
        195                 200                 205

Leu Ile Ile Gly Asp Arg Gln Thr Gly Lys Thr Ser Ile Ala Ile Asp
    210                 215                 220

Thr Ile Ile Asn Gln Lys Arg Phe Asn Asp Gly Ser Asp Glu Lys Lys
225                 230                 235                 240

Lys Leu Tyr Cys Ile Tyr Val Ala Ile Gly Gln Lys Arg Ser Thr Val
                245                 250                 255

Ala Gln Leu Val Lys Arg Leu Thr Asp Ala Asp Ala Met Lys Tyr Thr
            260                 265                 270

Ile Val Val Ser Ala Thr Ala Ser Asp Ala Ala Pro Leu Gln Tyr Leu
        275                 280                 285

Ala Pro Tyr Ser Gly Cys Ser Met Gly Glu Tyr Phe Arg Asp Asn Gly
    290                 295                 300

Lys His Ala Leu Ile Ile Tyr Asp Asp Leu Ser Lys Gln Ala Val Ala
305                 310                 315                 320

Tyr Arg Gln Met Ser Leu Leu Leu Arg Arg Pro Pro Gly Arg Glu Ala
                325                 330                 335

Tyr Pro Gly Asp Val Phe Tyr Leu His Ser Arg Leu Leu Glu Arg Ala
            340                 345                 350

Ala Lys Met Asn Asp Ala Phe Gly Gly Gly Ser Leu Thr Ala Leu Pro
```

```
        355                 360                 365

Val Ile Glu Thr Gln Ala Gly Asp Val Ser Ala Tyr Ile Pro Thr Asn
    370                 375                 380

Val Ile Ser Ile Thr Asp Gly Gln Ile Phe Leu Glu Thr Glu Leu Phe
385                 390                 395                 400

Tyr Lys Gly Ile Arg Pro Ala Ile Asn Val Gly Leu Ser Val Ser Arg
                405                 410                 415

Val Gly Ser Ala Ala Gln Thr Arg Ala Met Lys Gln Val Ala Gly Thr
            420                 425                 430

Met Lys Leu Glu Leu Ala Gln Tyr Arg Glu Val Ala Ala Phe Ala Gln
        435                 440                 445

Phe Gly Ser Asp Leu Asp Ala Ala Thr Gln Gln Leu Leu Ser Arg Gly
    450                 455                 460

Val Arg Leu Thr Glu Leu Leu Lys Gln Gly Gln Tyr Ser Pro Met Ala
465                 470                 475                 480

Ile Glu Glu Gln Val Ala Val Ile Tyr Ala Gly Val Arg Gly Tyr Leu
                485                 490                 495

Asp Lys Leu Glu Pro Ser Lys Ile Thr Lys Phe Glu Asn Ala Phe Leu
            500                 505                 510

Ser His Val Val Ser Gln His Gln Ala Leu Leu Gly Thr Ile Arg Ala
        515                 520                 525

Asp Gly Lys Ile Ser Glu Gln Ser Asp Ala Lys Leu Lys Glu Ile Val
    530                 535                 540

Thr Asn Phe Leu Ala Gly Phe Glu Ala
545                 550
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<210> 7029
<211> 144
<212> PRT
<213> Homo sapiens

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ATP synthase, H+ transporting, mitochondrial F1 complex,
alpha
subunit 1, cardiac muscle; "

<220>
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<223> /note="ENSP ID: ENSP00000465259"

<400> 7029
Met Ser Ser Ile Leu Glu Glu Arg Ile Leu Gly Ala Asp Thr Ser Val
1 5 10 15

Asp Leu Glu Glu Thr Gly Arg Val Leu Ser Ile Gly Asp Gly Ile Ala
20 25 30

Arg Val His Gly Leu Arg Asn Val Gln Ala Glu Glu Met Val Glu Phe
35 40 45

Ser Ser Gly Leu Lys Gly Met Ser Leu Asn Leu Glu Pro Asp Asn Val
50 55 60

Gly Val Val Val Phe Gly Asn Asp Lys Leu Ile Lys Glu Gly Asp Ile
65 70 75 80

Val Lys Arg Thr Gly Ala Ile Val Asp Val Pro Val Gly Glu Glu Leu
85 90 95

Leu Gly Arg Val Val Asp Ala Leu Gly Asn Ala Ile Asp Gly Lys Gly
100 105 110

Pro Ile Gly Ser Lys Thr Arg Arg Arg Val Gly Leu Lys Ala Pro Gly
115 120 125

Ile Ile Pro Arg Ile Ser Val Arg Glu Pro Met Gln Thr Gly Ile Lys
130 135 140

<210> 7030
<211> 503

<212> PRT
<213> Homo sapiens

<220>
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<220>
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ATP synthase, H+ transporting, mitochondrial F1 complex,
alpha
subunit 1, cardiac muscle; "

<220>
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<223> /note="Uniprot ID: P25705; "

<220>
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<223> /note="ENSP ID: ENSP00000465477"

<400> 7030
Met Ser Ser Ile Leu Glu Glu Arg Ile Leu Gly Ala Asp Thr Ser Val
1   5   10   15

Asp Leu Glu Glu Thr Gly Arg Val Leu Ser Ile Gly Asp Gly Ile Ala
            20   25   30

Arg Val His Gly Leu Arg Asn Val Gln Ala Glu Glu Met Val Glu Phe
        35   40   45

Ser Ser Gly Leu Lys Gly Met Ser Leu Asn Leu Glu Pro Asp Asn Val
    50   55   60

Gly Val Val Val Phe Gly Asn Asp Lys Leu Ile Lys Glu Gly Asp Ile
65   70   75   80

Val Lys Arg Thr Gly Ala Ile Val Asp Val Pro Val Gly Glu Glu Leu
                85   90   95

Leu Gly Arg Val Val Asp Ala Leu Gly Asn Ala Ile Asp Gly Lys Gly
            100   105   110

Pro Ile Gly Ser Lys Thr Arg Arg Arg Val Gly Leu Lys Ala Pro Gly
        115   120   125

```
Ile Ile Pro Arg Ile Ser Val Arg Glu Pro Met Gln Thr Gly Ile Lys
    130                 135                 140

Ala Val Asp Ser Leu Val Pro Ile Gly Arg Gly Gln Arg Glu Leu Ile
145                 150                 155                 160

Ile Gly Asp Arg Gln Thr Gly Lys Thr Ser Ile Ala Ile Asp Thr Ile
                165                 170                 175

Ile Asn Gln Lys Arg Phe Asn Asp Gly Ser Asp Glu Lys Lys Lys Leu
            180                 185                 190

Tyr Cys Ile Tyr Val Ala Ile Gly Gln Lys Arg Ser Thr Val Ala Gln
        195                 200                 205

Leu Val Lys Arg Leu Thr Asp Ala Asp Ala Met Lys Tyr Thr Ile Val
    210                 215                 220

Val Ser Ala Thr Ala Ser Asp Ala Ala Pro Leu Gln Tyr Leu Ala Pro
225                 230                 235                 240

Tyr Ser Gly Cys Ser Met Gly Glu Tyr Phe Arg Asp Asn Gly Lys His
                245                 250                 255

Ala Leu Ile Ile Tyr Asp Asp Leu Ser Lys Gln Ala Val Ala Tyr Arg
            260                 265                 270

Gln Met Ser Leu Leu Leu Arg Arg Pro Pro Gly Arg Glu Ala Tyr Pro
        275                 280                 285

Gly Asp Val Phe Tyr Leu His Ser Arg Leu Leu Glu Arg Ala Ala Lys
    290                 295                 300

Met Asn Asp Ala Phe Gly Gly Gly Ser Leu Thr Ala Leu Pro Val Ile
305                 310                 315                 320

Glu Thr Gln Ala Gly Asp Val Ser Ala Tyr Ile Pro Thr Asn Val Ile
                325                 330                 335

Ser Ile Thr Asp Gly Gln Ile Phe Leu Glu Thr Glu Leu Phe Tyr Lys
            340                 345                 350
```

```
Gly Ile Arg Pro Ala Ile Asn Val Gly Leu Ser Val Ser Arg Val Gly
        355                 360                 365

Ser Ala Ala Gln Thr Arg Ala Met Lys Gln Val Ala Gly Thr Met Lys
    370                 375                 380

Leu Glu Leu Ala Gln Tyr Arg Glu Val Ala Ala Phe Ala Gln Phe Gly
385                 390                 395                 400

Ser Asp Leu Asp Ala Ala Thr Gln Gln Leu Leu Ser Arg Gly Val Arg
                405                 410                 415

Leu Thr Glu Leu Leu Lys Gln Gly Gln Tyr Ser Pro Met Ala Ile Glu
            420                 425                 430

Glu Gln Val Ala Val Ile Tyr Ala Gly Val Arg Gly Tyr Leu Asp Lys
        435                 440                 445

Leu Glu Pro Ser Lys Ile Thr Lys Phe Glu Asn Ala Phe Leu Ser His
    450                 455                 460

Val Val Ser Gln His Gln Ala Leu Leu Gly Thr Ile Arg Ala Asp Gly
465                 470                 475                 480

Lys Ile Ser Glu Gln Ser Asp Ala Lys Leu Lys Glu Ile Val Thr Asn
                485                 490                 495

Phe Leu Ala Gly Phe Glu Ala
            500


<210> 7031
<211> 207
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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ATP synthase, H+ transporting, mitochondrial F1 complex, alpha
subunit 1, cardiac muscle; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000465497"

<400> 7031

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Met Ser Ser Ile Leu Glu Glu Arg Ile Leu Gly Ala Asp Thr Ser Val
1               5                  10                  15

Asp Leu Glu Glu Thr Gly Arg Val Leu Ser Ile Gly Asp Gly Ile Ala
            20                  25                  30

Arg Val His Gly Leu Arg Asn Val Gln Ala Glu Glu Met Val Glu Phe
        35                  40                  45

Ser Ser Gly Leu Lys Gly Met Ser Leu Asn Leu Glu Pro Asp Asn Val
    50                  55                  60

Gly Val Val Val Phe Gly Asn Asp Lys Leu Ile Lys Glu Gly Asp Ile
65                  70                  75                  80

Val Lys Arg Thr Gly Ala Ile Val Asp Val Pro Val Gly Glu Glu Leu
                85                  90                  95

Leu Gly Arg Val Val Asp Ala Leu Gly Asn Ala Ile Asp Gly Lys Gly
            100                 105                 110

Pro Ile Gly Ser Lys Thr Arg Arg Arg Val Gly Leu Lys Ala Pro Gly
        115                 120                 125

Ile Ile Pro Arg Ile Ser Val Arg Glu Pro Met Gln Thr Gly Ile Lys
    130                 135                 140

Ala Val Asp Ser Leu Val Pro Ile Gly Arg Gly Gln Arg Glu Leu Ile
145                 150                 155                 160

Ile Gly Asp Arg Gln Thr Gly Lys Thr Ser Ile Ala Ile Asp Thr Ile
                165                 170                 175

Ile Asn Gln Lys Arg Phe Asn Asp Gly Ser Asp Glu Lys Lys Lys Leu
            180                 185                 190
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Tyr Cys Ile Tyr Val Ala Ile Gly Gln Lys Arg Ser Thr Val Ala
195 200 205

<210> 7032
<211> 44
<212> PRT
<213> Homo sapiens

<220>
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<221> source
<223> /note="Gene Symbol: ATP5A1; "

<220>
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<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial F1 complex, alpha
subunit 1, cardiac muscle; "

<220>
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<223> /note="ENSP ID: ENSP00000465805"

<400> 7032
Met Leu Ser Val Arg Val Ala Ala Ala Val Val Arg Ala Leu Pro Arg
1 5 10 15

Arg Ala Gly Leu Asn Thr Phe Ala Leu Gly Leu Gln Lys Cys Phe Gly
20 25 30

Phe Ile Phe His Cys Cys Lys Glu Leu Pro Cys Leu
35 40

<210> 7033
<211> 90
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1497; "

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<220>
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<223> /note="Gene Name:

ATP synthase, H+ transporting, mitochondrial F1 complex, alpha
subunit 1, cardiac muscle; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466275"

<400> 7033
Met Leu Ser Val Arg Val Ala Ala Ala Val Val Arg Ala Leu Pro Arg
1 5 10 15

Arg Ala Gly Leu Val Ser Thr Glu Gly Arg His Asp Ala Gly Gly Arg
20 25 30

Val Gly Leu Gln Gly Gly Gly Ala Pro Ala Arg Ala Leu Ser Ala Gly
35 40 45

Gly Arg Gly Ala Val Ala Asn Ala Ala Ile Leu His Pro Trp Leu Leu
50 55 60

Arg Leu Asp Arg Ala Gly Asp Thr Gly Ala Leu Leu Leu Val Thr Cys
65 70 75 80

Ala Glu Ala Glu Trp Tyr Arg Ala Asp Ser
85 90

<210> 7034
<211> 58
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial F1 complex, alpha
subunit 1, cardiac muscle; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466309"

<400> 7034
Met Leu Ser Val Arg Val Ala Ala Ala Val Val Arg Ala Leu Pro Arg
1   5   10   15

Arg Ala Gly Leu Val Ser Arg Asn Ala Leu Gly Ser Ser Phe Ile Ala
            20   25   30

Ala Arg Asn Phe His Ala Ser Asn Thr His Leu Gln Lys Thr Gly Lys
        35   40   45

Leu Leu Phe Leu Ser Leu Arg Arg Thr Tyr
    50   55

<210> 7035
<211> 199
<212> PRT
<213> Homo sapiens

<220>
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<220>
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ATP synthase, H+ transporting, mitochondrial F1 complex,
alpha
subunit 1, cardiac muscle; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000466975"

<400> 7035
Met Leu Ser Val Arg Val Ala Ala Ala Val Val Arg Ala Leu Pro Arg
1   5   10   15

Arg Ala Gly Leu Val Ser Arg Asn Ala Leu Gly Ser Ser Phe Ile Ala
            20   25   30

Ala Arg Asn Phe His Ala Ser Asn Thr His Leu Gln Lys Thr Ala Ile
        35   40   45

Val Asp Val Pro Val Gly Glu Glu Leu Leu Gly Arg Val Val Asp Ala
    50   55   60

```
Leu Gly Asn Ala Ile Asp Gly Lys Gly Pro Ile Gly Ser Lys Thr Arg
65                  70                  75                  80

Arg Arg Val Gly Leu Lys Ala Pro Gly Ile Ile Pro Arg Ile Ser Val
                85                  90                  95

Arg Glu Pro Met Gln Thr Gly Ile Lys Ala Val Asp Ser Leu Val Pro
            100                 105                 110

Ile Gly Arg Gly Gln Arg Glu Leu Ile Ile Gly Asp Arg Gln Thr Gly
        115                 120                 125

Lys Thr Ser Ile Ala Ile Asp Thr Ile Ile Asn Gln Lys Arg Phe Asn
    130                 135                 140

Asp Gly Ser Asp Glu Lys Lys Lys Leu Tyr Cys Ile Tyr Val Ala Ile
145                 150                 155                 160

Gly Gln Lys Arg Ser Thr Val Ala Gln Leu Val Lys Arg Leu Thr Asp
                165                 170                 175

Ala Asp Ala Met Lys Tyr Thr Ile Val Val Ser Ala Thr Ala Ser Asp
            180                 185                 190

Ala Ala Pro Leu Gln Tyr Leu
        195


<210> 7036
<211> 531
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1497; "

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<220>
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      ATP synthase, H+ transporting, mitochondrial F1 complex,
      alpha
      subunit 1, cardiac muscle; "
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<220>
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<223> /note="Uniprot ID: P25705; "

<220>
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<223> /note="ENSP ID: ENSP00000467037"

<400> 7036
Met Leu Ser Val Arg Val Ala Ala Ala Val Val Arg Ala Leu Pro Arg
1   5   10   15

Arg Ala Gly Leu Val Ser Arg Asn Ala Leu Gly Ser Ser Phe Ile Ala
            20   25   30

Ala Arg Asn Phe His Ala Ser Asn Thr His Leu Gln Lys Thr Gly Thr
        35   40   45

Ala Glu Met Ser Ser Ile Leu Glu Glu Arg Ile Leu Gly Ala Asp Thr
    50   55   60

Ser Val Asp Leu Glu Glu Thr Gly Arg Val Leu Ser Ile Gly Asp Gly
65   70   75   80

Ile Ala Arg Val His Gly Leu Arg Asn Val Gln Ala Glu Glu Met Val
                85   90   95

Glu Phe Ser Ser Gly Leu Lys Gly Met Ser Leu Asn Leu Glu Pro Asp
            100   105   110

Asn Val Gly Val Val Val Phe Gly Asn Asp Lys Leu Ile Lys Glu Gly
        115   120   125

Asp Ile Val Lys Arg Thr Gly Ala Ile Val Asp Gly Pro Ile Gly Ser
    130   135   140

Lys Thr Arg Arg Arg Val Gly Leu Lys Ala Pro Gly Ile Ile Pro Arg
145   150   155   160

Ile Ser Val Arg Glu Pro Met Gln Thr Gly Ile Lys Ala Val Asp Ser
                165   170   175

Leu Val Pro Ile Gly Arg Gly Gln Arg Glu Leu Ile Ile Gly Asp Arg
            180   185   190

```
Gln Thr Gly Lys Thr Ser Ile Ala Ile Asp Thr Ile Ile Asn Gln Lys
        195                 200                 205

Arg Phe Asn Asp Gly Ser Asp Glu Lys Lys Lys Leu Tyr Cys Ile Tyr
    210                 215                 220

Val Ala Ile Gly Gln Lys Arg Ser Thr Val Ala Gln Leu Val Lys Arg
225                 230                 235                 240

Leu Thr Asp Ala Asp Ala Met Lys Tyr Thr Ile Val Val Ser Ala Thr
                245                 250                 255

Ala Ser Asp Ala Ala Pro Leu Gln Tyr Leu Ala Pro Tyr Ser Gly Cys
            260                 265                 270

Ser Met Gly Glu Tyr Phe Arg Asp Asn Gly Lys His Ala Leu Ile Ile
        275                 280                 285

Tyr Asp Asp Leu Ser Lys Gln Ala Val Ala Tyr Arg Gln Met Ser Leu
    290                 295                 300

Leu Leu Arg Arg Pro Pro Gly Arg Glu Ala Tyr Pro Gly Asp Val Phe
305                 310                 315                 320

Tyr Leu His Ser Arg Leu Leu Glu Arg Ala Ala Lys Met Asn Asp Ala
                325                 330                 335

Phe Gly Gly Gly Ser Leu Thr Ala Leu Pro Val Ile Glu Thr Gln Ala
            340                 345                 350

Gly Asp Val Ser Ala Tyr Ile Pro Thr Asn Val Ile Ser Ile Thr Asp
        355                 360                 365

Gly Gln Ile Phe Leu Glu Thr Glu Leu Phe Tyr Lys Gly Ile Arg Pro
    370                 375                 380

Ala Ile Asn Val Gly Leu Ser Val Ser Arg Val Gly Ser Ala Ala Gln
385                 390                 395                 400

Thr Arg Ala Met Lys Gln Val Ala Gly Thr Met Lys Leu Glu Leu Ala
                405                 410                 415

Gln Tyr Arg Glu Val Ala Ala Phe Ala Gln Phe Gly Ser Asp Leu Asp
```

```
            420                 425                 430

Ala Ala Thr Gln Gln Leu Leu Ser Arg Gly Val Arg Leu Thr Glu Leu
        435                 440                 445

Leu Lys Gln Gly Gln Tyr Ser Pro Met Ala Ile Glu Glu Gln Val Ala
    450                 455                 460

Val Ile Tyr Ala Gly Val Arg Gly Tyr Leu Asp Lys Leu Glu Pro Ser
465                 470                 475                 480

Lys Ile Thr Lys Phe Glu Asn Ala Phe Leu Ser His Val Val Ser Gln
                485                 490                 495

His Gln Ala Leu Leu Gly Thr Ile Arg Ala Asp Gly Lys Ile Ser Glu
            500                 505                 510

Gln Ser Asp Ala Lys Leu Lys Glu Ile Val Thr Asn Phe Leu Ala Gly
        515                 520                 525

Phe Glu Ala
    530


<210> 7037
<211> 111
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Name:
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      alpha
      subunit 1, cardiac muscle; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467830"

<400> 7037
Met Ser Ser Ile Leu Glu Glu Arg Ile Leu Gly Ala Asp Thr Ser Val
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1 5 10 15

Asp Leu Glu Glu Thr Gly Arg Val Leu Ser Ile Gly Asp Gly Ile Ala
20 25 30

Arg Val His Gly Leu Arg Asn Val Gln Ala Glu Glu Met Val Glu Phe
35 40 45

Ser Ser Gly Leu Lys Gly Met Ser Leu Asn Leu Glu Pro Asp Asn Val
50 55 60

Gly Val Val Val Phe Gly Asn Asp Lys Leu Ile Lys Glu Gly Asp Ile
65 70 75 80

Val Lys Arg Thr Gly Ala Ile Val Asp Val Pro Val Gly Glu Glu Leu
85 90 95

Leu Gly Arg Val Val Asp Ala Leu Gly Asn Ala Ile Asp Gly Lys
100 105 110

<210> 7038
<211> 78
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Gene Symbol: ATP5A1; "

<220>
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ATP synthase, H+ transporting, mitochondrial F1 complex,
alpha
subunit 1, cardiac muscle; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000467983"

<400> 7038
Met Val Ile Leu Trp Arg Lys Lys Lys Ser Pro Ser Arg Ser Pro Glu
1 5 10 15

Met Leu Trp Val His Leu Ser Leu Leu Gln Gly Thr Ser Met Pro Leu

20 25 30

Thr Leu Ile Phe Lys Arg Leu Arg Trp Asp Phe Ala Val Leu Ala Arg
35 40 45

Leu Val Gln Thr Leu Gly Leu Lys Trp Ser Ala Arg Leu Pro Lys Cys
50 55 60

Trp Tyr Tyr Trp Arg Glu Pro Leu His Pro Thr Pro Val Cys
65 70 75

<210> 7039
<211> 205
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial F1 complex,
alpha
subunit 1, cardiac muscle; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000468458"

<400> 7039
Met Leu Ser Val Arg Val Ala Ala Ala Val Val Arg Ala Leu Pro Arg
1 5 10 15

Arg Ala Gly Leu Val Ser Arg Asn Ala Leu Gly Ser Ser Phe Ile Ala
20 25 30

Ala Arg Asn Phe His Ala Ser Asn Thr His Leu Gln Lys Thr Gly Thr
35 40 45

Ala Glu Met Ser Ser Ile Leu Glu Glu Arg Ile Leu Gly Ala Asp Thr
50 55 60

Ser Val Asp Leu Glu Glu Thr Gly Arg Val Leu Ser Ile Gly Asp Gly

```
65                  70                  75                  80

Ile Ala Arg Val His Gly Leu Arg Asn Val Gln Ala Glu Glu Met Val
                85                  90                  95

Glu Phe Ser Ser Gly Leu Lys Gly Met Ser Leu Asn Leu Glu Pro Asp
            100                 105                 110

Asn Val Gly Val Val Val Phe Gly Asn Asp Lys Leu Ile Lys Glu Gly
        115                 120                 125

Asp Ile Val Lys Arg Thr Gly Ala Ile Val Asp Val Pro Val Gly Glu
    130                 135                 140

Glu Leu Leu Gly Arg Val Val Asp Ala Leu Gly Asn Ala Ile Asp Gly
145                 150                 155                 160

Lys Gly Pro Ile Gly Ser Lys Thr Arg Arg Arg Val Gly Leu Lys Ala
                165                 170                 175

Pro Gly Ile Ile Pro Arg Ile Ser Val Arg Glu Pro Met Gln Thr Gly
            180                 185                 190

Ile Lys Ala Val Asp Ser Leu Val Pro Ile Gly Arg Gly
        195                 200                 205


<210> 7040
<211> 77
<212> PRT
<213> Homo sapiens

<220>
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<220>
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      subunit 1, cardiac muscle; "

<220>
<221> source
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<223> /note="ENSP ID: ENSP00000468618"

<400> 7040
Met Leu Ser Val Arg Val Ala Ala Ala Val Val Arg Ala Leu Pro Arg
1   5   10   15

Arg Ala Gly Leu Val Ser Arg Asn Ala Leu Gly Ser Ser Phe Ile Ala
            20   25   30

Ala Arg Asn Phe His Ala Ser Asn Thr His Leu Gln Lys Thr Gly Thr
        35   40   45

Ala Glu Met Ser Ser Ile Leu Glu Glu Arg Ile Leu Gly Ala Asp Thr
    50   55   60

Ser Val Asp Leu Glu Glu Thr Gly Arg Val Leu Ser Trp
65   70   75

<210> 7041
<211> 529
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1498; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5B; "

<220>
<221> source
<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial F1 complex,
beta
polypeptide; "

<220>
<221> source
<223> /note="Uniprot ID: P06576; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000262030"

<400> 7041
Met Leu Gly Phe Val Gly Arg Val Ala Ala Ala Pro Ala Ser Gly Ala
1   5   10   15

Leu Arg Arg Leu Thr Pro Ser Ala Ser Leu Pro Pro Ala Gln Leu Leu

```
            20                  25                  30

Leu Arg Ala Ala Pro Thr Ala Val His Pro Val Arg Asp Tyr Ala Ala
        35                  40                  45

Gln Thr Ser Pro Ser Pro Lys Ala Gly Ala Ala Thr Gly Arg Ile Val
    50                  55                  60

Ala Val Ile Gly Ala Val Val Asp Val Gln Phe Asp Glu Gly Leu Pro
65                  70                  75                  80

Pro Ile Leu Asn Ala Leu Glu Val Gln Gly Arg Glu Thr Arg Leu Val
                85                  90                  95

Leu Glu Val Ala Gln His Leu Gly Glu Ser Thr Val Arg Thr Ile Ala
            100                 105                 110

Met Asp Gly Thr Glu Gly Leu Val Arg Gly Gln Lys Val Leu Asp Ser
        115                 120                 125

Gly Ala Pro Ile Lys Ile Pro Val Gly Pro Glu Thr Leu Gly Arg Ile
    130                 135                 140

Met Asn Val Ile Gly Glu Pro Ile Asp Glu Arg Gly Pro Ile Lys Thr
145                 150                 155                 160

Lys Gln Phe Ala Pro Ile His Ala Glu Ala Pro Glu Phe Met Glu Met
                165                 170                 175

Ser Val Glu Gln Glu Ile Leu Val Thr Gly Ile Lys Val Val Asp Leu
            180                 185                 190

Leu Ala Pro Tyr Ala Lys Gly Gly Lys Ile Gly Leu Phe Gly Gly Ala
        195                 200                 205

Gly Val Gly Lys Thr Val Leu Ile Met Glu Leu Ile Asn Asn Val Ala
    210                 215                 220

Lys Ala His Gly Gly Tyr Ser Val Phe Ala Gly Val Gly Glu Arg Thr
225                 230                 235                 240

Arg Glu Gly Asn Asp Leu Tyr His Glu Met Ile Glu Ser Gly Val Ile
                245                 250                 255
```

```
Asn Leu Lys Asp Ala Thr Ser Lys Val Ala Leu Val Tyr Gly Gln Met
            260                 265                 270

Asn Glu Pro Pro Gly Ala Arg Ala Arg Val Ala Leu Thr Gly Leu Thr
        275                 280                 285

Val Ala Glu Tyr Phe Arg Asp Gln Glu Gly Gln Asp Val Leu Leu Phe
    290                 295                 300

Ile Asp Asn Ile Phe Arg Phe Thr Gln Ala Gly Ser Glu Val Ser Ala
305                 310                 315                 320

Leu Leu Gly Arg Ile Pro Ser Ala Val Gly Tyr Gln Pro Thr Leu Ala
                325                 330                 335

Thr Asp Met Gly Thr Met Gln Glu Arg Ile Thr Thr Thr Lys Lys Gly
            340                 345                 350

Ser Ile Thr Ser Val Gln Ala Ile Tyr Val Pro Ala Asp Asp Leu Thr
        355                 360                 365

Asp Pro Ala Pro Ala Thr Thr Phe Ala His Leu Asp Ala Thr Thr Val
    370                 375                 380

Leu Ser Arg Ala Ile Ala Glu Leu Gly Ile Tyr Pro Ala Val Asp Pro
385                 390                 395                 400

Leu Asp Ser Thr Ser Arg Ile Met Asp Pro Asn Ile Val Gly Ser Glu
                405                 410                 415

His Tyr Asp Val Ala Arg Gly Val Gln Lys Ile Leu Gln Asp Tyr Lys
            420                 425                 430

Ser Leu Gln Asp Ile Ile Ala Ile Leu Gly Met Asp Glu Leu Ser Glu
        435                 440                 445

Glu Asp Lys Leu Thr Val Ser Arg Ala Arg Lys Ile Gln Arg Phe Leu
    450                 455                 460

Ser Gln Pro Phe Gln Val Ala Glu Val Phe Thr Gly His Met Gly Lys
465                 470                 475                 480
```

Leu Val Pro Leu Lys Glu Thr Ile Lys Gly Phe Gln Gln Ile Leu Ala
485 490 495

Gly Glu Tyr Asp His Leu Pro Glu Gln Ala Phe Tyr Met Val Gly Pro
500 505 510

Ile Glu Glu Ala Val Ala Lys Ala Asp Lys Leu Ala Glu Glu His Ser
515 520 525

Ser

<210> 7042
<211> 362
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1498; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5B; "

<220>
<221> source
<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial F1 complex,
beta
polypeptide; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000446489"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7042
Xaa Phe Val Gly Arg Val Ala Ala Ala Pro Ala Ser Gly Ala Leu Arg
1 5 10 15

Arg Leu Thr Pro Ser Ala Ser Leu Pro Pro Ala Gln Leu Leu Leu Arg
20 25 30

Ala Ala Pro Thr Ala Val His Pro Gly Glu Ser Thr Val Arg Thr Ile

```
        35                  40                  45

Ala Met Asp Gly Thr Glu Gly Leu Val Arg Gly Gln Lys Val Leu Asp
    50                  55                  60

Ser Gly Ala Pro Ile Lys Ile Pro Val Gly Pro Glu Thr Leu Gly Arg
65                  70                  75                  80

Ile Met Asn Val Ile Gly Glu Pro Ile Asp Glu Arg Gly Pro Ile Lys
                85                  90                  95

Thr Lys Gln Phe Ala Pro Ile His Ala Glu Ala Pro Glu Phe Met Glu
            100                 105                 110

Met Ser Val Glu Gln Glu Ile Leu Val Thr Gly Ile Lys Val Val Asp
        115                 120                 125

Leu Leu Ala Pro Tyr Ala Lys Gly Gly Lys Ile Gly Leu Phe Gly Gly
    130                 135                 140

Ala Gly Val Gly Lys Thr Val Leu Ile Met Glu Leu Ile Asn Asn Val
145                 150                 155                 160

Ala Lys Ala His Gly Gly Tyr Ser Val Phe Ala Gly Val Gly Glu Arg
                165                 170                 175

Thr Arg Glu Gly Asn Asp Leu Tyr His Glu Met Ile Glu Ser Gly Val
            180                 185                 190

Ile Asn Leu Lys Asp Ala Thr Ser Lys Val Ala Leu Val Tyr Gly Gln
        195                 200                 205

Met Asn Glu Pro Pro Gly Ala Arg Ala Arg Val Ala Leu Thr Gly Leu
    210                 215                 220

Thr Val Ala Glu Tyr Phe Arg Asp Gln Glu Gly Gln Asp Val Leu Leu
225                 230                 235                 240

Phe Ile Asp Asn Ile Phe Arg Phe Thr Gln Ala Gly Ser Glu Val Ser
                245                 250                 255

Ala Leu Leu Gly Arg Ile Pro Ser Ala Val Gly Tyr Gln Pro Thr Leu
            260                 265                 270
```

```
Ala Thr Asp Met Gly Thr Met Gln Glu Arg Ile Thr Thr Thr Lys Lys
        275                 280                 285

Gly Ser Ile Thr Ser Val Gln Ala Ile Tyr Val Pro Ala Asp Asp Leu
    290                 295                 300

Thr Asp Pro Ala Pro Ala Thr Thr Phe Ala His Leu Asp Ala Thr Thr
305                 310                 315                 320

Val Leu Ser Arg Ala Ile Ala Glu Leu Gly Ile Tyr Pro Ala Val Asp
                325                 330                 335

Pro Leu Asp Ser Thr Ser Arg Ile Met Asp Pro Asn Ile Val Gly Ser
            340                 345                 350

Glu His Tyr Asp Val Ala Arg Gly Val Gln
        355                 360


<210> 7043
<211> 284
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1498; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5B; "

<220>
<221> source
<223> /note="Gene Name:
      ATP synthase, H+ transporting, mitochondrial F1 complex,
      beta
      polypeptide; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000446677"

<400> 7043
Met Leu Gly Phe Val Gly Arg Val Ala Ala Ala Pro Ala Ser Gly Ala
1               5                   10                  15

Leu Arg Arg Leu Thr Pro Ser Ala Ser Leu Pro Pro Ala Gln Leu Leu
            20                  25                  30
```

```
Leu Arg Ala Ala Pro Thr Ala Val His Pro Gly Glu Ser Thr Val Arg
        35                  40                  45

Thr Ile Ala Met Asp Gly Thr Glu Gly Leu Val Arg Gly Gln Lys Val
    50                  55                  60

Leu Asp Ser Gly Ala Pro Ile Lys Ile Pro Val Gly Pro Glu Thr Leu
65                  70                  75                  80

Gly Arg Ile Met Asn Val Ile Gly Glu Pro Ile Asp Glu Arg Gly Pro
                85                  90                  95

Ile Lys Thr Lys Gln Phe Ala Pro Ile His Ala Glu Ala Pro Glu Phe
            100                 105                 110

Met Glu Met Ser Val Glu Gln Glu Ile Leu Val Thr Gly Ile Lys Val
        115                 120                 125

Val Asp Leu Leu Ala Pro Tyr Ala Lys Gly Gly Lys Ile Gly Leu Phe
    130                 135                 140

Gly Gly Ala Gly Val Gly Lys Thr Val Leu Ile Met Glu Leu Ile Asn
145                 150                 155                 160

Asn Val Ala Lys Ala His Gly Gly Tyr Ser Val Phe Ala Gly Val Gly
                165                 170                 175

Glu Arg Thr Arg Glu Gly Asn Asp Leu Tyr His Glu Met Ile Glu Ser
            180                 185                 190

Gly Val Ile Asn Leu Lys Asp Ala Thr Ser Lys Val Ser Ala Leu Leu
        195                 200                 205

Gly Arg Ile Pro Ser Ala Val Gly Tyr Gln Pro Thr Leu Ala Thr Asp
    210                 215                 220

Met Gly Thr Met Gln Glu Arg Ile Thr Thr Thr Lys Lys Gly Ser Ile
225                 230                 235                 240

Thr Ser Val Gln Asp Tyr Lys Ser Leu Gln Asp Ile Ile Ala Ile Leu
                245                 250                 255
```

```
Gly Met Asp Glu Leu Ser Glu Glu Asp Lys Leu Thr Val Ser Arg Ala
            260                 265                 270


Arg Lys Ile Gln Arg Phe Leu Ser Gln Pro Phe Gln
        275                 280


<210> 7044
<211> 270
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1498; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5B; "

<220>
<221> source
<223> /note="Gene Name:
      ATP synthase, H+ transporting, mitochondrial F1 complex,
      beta
      polypeptide; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000447571"

<400> 7044
Met Leu Gly Phe Val Gly Arg Val Ala Ala Ala Pro Ala Ser Gly Ala
1               5                   10                  15


Leu Arg Arg Leu Thr Pro Ser Ala Ser Leu Pro Pro Ala Gln Leu Leu
            20                  25                  30


Leu Arg Ala Ala Pro Thr Ala Val His Pro Val Arg Asp Tyr Ala Ala
        35                  40                  45


Gln Thr Ser Pro Ser Pro Lys Ala Gly Ala Ala Thr Gly Arg Ile Val
    50                  55                  60


Ala Val Ile Gly Ala Val Val Asp Val Gln Phe Asp Glu Gly Leu Pro
65                  70                  75                  80


Pro Ile Leu Asn Ala Leu Glu Val Gln Gly Arg Glu Thr Arg Leu Val
                85                  90                  95
```

```
Leu Glu Val Ala Gln His Leu Gly Leu Phe Gly Gly Ala Gly Val Gly
            100                 105                 110

Lys Thr Val Leu Ile Met Glu Leu Ile Asn Asn Val Ala Lys Ala His
        115                 120                 125

Gly Gly Tyr Ser Val Phe Ala Gly Val Gly Glu Arg Thr Arg Glu Gly
    130                 135                 140

Asn Asp Leu Tyr His Glu Met Ile Glu Ser Gly Val Ile Asn Leu Lys
145                 150                 155                 160

Asp Ala Thr Ser Lys Val Ala Leu Val Tyr Gly Gln Met Asn Glu Pro
                165                 170                 175

Pro Gly Ala Arg Ala Arg Val Ala Leu Thr Gly Leu Thr Val Ala Glu
            180                 185                 190

Tyr Phe Arg Asp Gln Glu Gly Gln Asp Val Leu Leu Phe Ile Asp Asn
        195                 200                 205

Ile Phe Arg Phe Thr Gln Ala Gly Ser Glu Val Ser Ala Leu Leu Gly
    210                 215                 220

Arg Ile Pro Ser Ala Val Gly Tyr Gln Pro Thr Leu Ala Thr Asp Met
225                 230                 235                 240

Gly Thr Met Gln Glu Arg Ile Thr Thr Thr Lys Lys Gly Ser Ile Thr
                245                 250                 255

Ser Val Gln Ala Ile Tyr Val Pro Ala Asp Asp Leu Thr Asp
            260                 265                 270


<210> 7045
<211> 133
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1498; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5B; "
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<220>
<221> source
<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial F1 complex,
beta
polypeptide; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000448428"

<400> 7045
Ala Gly Val Gly Lys Thr Val Leu Ile Met Glu Leu Ile Asn Asn Val
1 5 10 15

Ala Lys Ala His Gly Gly Tyr Ser Val Phe Ala Gly Val Gly Glu Arg
20 25 30

Thr Arg Glu Gly Asn Asp Leu Tyr His Glu Met Ile Glu Ser Gly Val
35 40 45

Ile Asn Leu Lys Asp Ala Thr Ser Lys Ala Gly Ser Glu Val Ser Ala
50 55 60

Leu Leu Gly Arg Ile Pro Ser Ala Val Gly Tyr Gln Pro Thr Leu Ala
65 70 75 80

Thr Asp Met Gly Thr Met Gln Glu Arg Ile Thr Thr Thr Lys Lys Gly
85 90 95

Ser Ile Thr Ser Val Gln Ala Ile Tyr Val Pro Ala Asp Asp Leu Thr
100 105 110

Asp Pro Ala Pro Ala Thr Thr Phe Ala His Leu Asp Ala Thr Thr Val
115 120 125

Leu Ser Arg Ala Ile
130

<210> 7046
<211> 168
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1499; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5D; "

<220>
<221> source
<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial F1 complex,
delta
subunit; "

<220>
<221> source
<223> /note="Uniprot ID: P30049; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000215375"

<400> 7046
Met Leu Pro Ala Ala Leu Leu Arg Arg Pro Gly Leu Gly Arg Leu Val
1   5   10   15

Arg His Ala Arg Ala Tyr Ala Glu Ala Ala Ala Ala Pro Ala Ala Ala
            20   25   30

Ser Gly Pro Asn Gln Met Ser Phe Thr Phe Ala Ser Pro Thr Gln Val
        35   40   45

Phe Phe Asn Gly Ala Asn Val Arg Gln Val Asp Val Pro Thr Leu Thr
    50   55   60

Gly Ala Phe Gly Ile Leu Ala Ala His Val Pro Thr Leu Gln Val Leu
65   70   75   80

Arg Pro Gly Leu Val Val Val His Ala Glu Asp Gly Thr Thr Ser Lys
                85   90   95

Tyr Phe Val Ser Ser Gly Ser Ile Ala Val Asn Ala Asp Ser Ser Val
            100   105   110

Gln Leu Leu Ala Glu Glu Ala Val Thr Leu Asp Met Leu Asp Leu Gly
        115   120   125

Ala Ala Lys Ala Asn Leu Glu Lys Ala Gln Ala Glu Leu Val Gly Thr
    130   135   140

```
Ala Asp Glu Ala Thr Arg Ala Glu Ile Gln Ile Arg Ile Glu Ala Asn
145                 150                 155                 160


Glu Ala Leu Val Lys Ala Leu Glu
                165


<210> 7047
<211> 168
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1499; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5D; "

<220>
<221> source
<223> /note="Gene Name:
      ATP synthase, H+ transporting, mitochondrial F1 complex,
      delta
      subunit; "

<220>
<221> source
<223> /note="Uniprot ID:  P30049; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000378995"

<400> 7047
Met Leu Pro Ala Ala Leu Leu Arg Arg Pro Gly Leu Gly Arg Leu Val
1               5                   10                  15


Arg His Ala Arg Ala Tyr Ala Glu Ala Ala Ala Ala Pro Ala Ala Ala
            20                  25                  30


Ser Gly Pro Asn Gln Met Ser Phe Thr Phe Ala Ser Pro Thr Gln Val
        35                  40                  45


Phe Phe Asn Gly Ala Asn Val Arg Gln Val Asp Val Pro Thr Leu Thr
    50                  55                  60


Gly Ala Phe Gly Ile Leu Ala Ala His Val Pro Thr Leu Gln Val Leu
65                  70                  75                  80
```

```
Arg Pro Gly Leu Val Val Val His Ala Glu Asp Gly Thr Thr Ser Lys
                85                  90                  95

Tyr Phe Val Ser Ser Gly Ser Ile Ala Val Asn Ala Asp Ser Ser Val
            100                 105                 110

Gln Leu Leu Ala Glu Glu Ala Val Thr Leu Asp Met Leu Asp Leu Gly
        115                 120                 125

Ala Ala Lys Ala Asn Leu Glu Lys Ala Gln Ala Glu Leu Val Gly Thr
    130                 135                 140

Ala Asp Glu Ala Thr Arg Ala Glu Ile Gln Ile Arg Ile Glu Ala Asn
145                 150                 155                 160

Glu Ala Leu Val Lys Ala Leu Glu
                165


<210> 7048
<211> 168
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1499; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5D; "

<220>
<221> source
<223> /note="Gene Name:
      ATP synthase, H+ transporting, mitochondrial F1 complex,
      delta
      subunit; "

<220>
<221> source
<223> /note="Uniprot ID:  P30049; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000464863"

<400> 7048
Met Leu Pro Ala Ala Leu Leu Arg Arg Pro Gly Leu Gly Arg Leu Val
1               5                   10                  15
```

```
Arg His Ala Arg Ala Tyr Ala Glu Ala Ala Ala Ala Pro Ala Ala Ala
            20                  25                  30

Ser Gly Pro Asn Gln Met Ser Phe Thr Phe Ala Ser Pro Thr Gln Val
        35                  40                  45

Phe Phe Asn Gly Ala Asn Val Arg Gln Val Asp Val Pro Thr Leu Thr
    50                  55                  60

Gly Ala Phe Gly Ile Leu Ala Ala His Val Pro Thr Leu Gln Val Leu
65                  70                  75                  80

Arg Pro Gly Leu Val Val Val His Ala Glu Asp Gly Thr Thr Ser Lys
                85                  90                  95

Tyr Phe Val Ser Ser Gly Ser Ile Ala Val Asn Ala Asp Ser Ser Val
            100                 105                 110

Gln Leu Leu Ala Glu Glu Ala Val Thr Leu Asp Met Leu Asp Leu Gly
        115                 120                 125

Ala Ala Lys Ala Asn Leu Glu Lys Ala Gln Ala Glu Leu Val Gly Thr
    130                 135                 140

Ala Asp Glu Ala Thr Arg Ala Glu Ile Gln Ile Arg Ile Glu Ala Asn
145                 150                 155                 160

Glu Ala Leu Val Lys Ala Leu Glu
                165
```

<210> 7049
<211> 99
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1499; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5D; "

<220>
<221> source
<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial F1 complex,

delta
subunit; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000477964"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7049
Xaa Gly Ala Phe Gly Ile Leu Ala Ala His Val Pro Thr Leu Gln Val
1 5 10 15

Leu Arg Pro Gly Leu Val Val Val His Ala Glu Asp Gly Thr Thr Ser
20 25 30

Lys Tyr Phe Val Ser Ser Gly Ser Ile Ala Val Asn Ala Asp Ser Ser
35 40 45

Val Gln Leu Leu Ala Glu Glu Ala Val Thr Leu Asp Met Leu Asp Leu
50 55 60

Gly Pro Arg Gln Thr Trp Arg Arg Pro Arg Arg Ser Trp Trp Gly Gln
65 70 75 80

Leu Thr Arg Pro Arg Gly Gln Arg Ser Arg Ser Glu Ser Arg Pro Thr
85 90 95

Arg Pro Trp

<210> 7050
<211> 51
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1500; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5E; "

<220>
<221> source

<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial F1 complex,
epsilon
subunit; "

<220>
<221> source
<223> /note="Uniprot ID: P56381; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000243997"

<400> 7050
Met Val Ala Tyr Trp Arg Gln Ala Gly Leu Ser Tyr Ile Arg Tyr Ser
1   5   10   15

Gln Ile Cys Ala Lys Ala Val Arg Asp Ala Leu Lys Thr Glu Phe Lys
            20   25   30

Ala Asn Ala Glu Lys Thr Ser Gly Ser Asn Val Lys Ile Val Lys Val
        35   40   45

Lys Lys Glu
    50

<210> 7051
<211> 51
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1500; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5E; "

<220>
<221> source
<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial F1 complex,
epsilon
subunit; "

<220>
<221> source
<223> /note="Uniprot ID: P56381; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000379019"

<400> 7051
Met Val Ala Tyr Trp Arg Gln Ala Gly Leu Ser Tyr Ile Arg Tyr Ser
1 5 10 15

Gln Ile Cys Ala Lys Ala Val Arg Asp Ala Leu Lys Thr Glu Phe Lys
20 25 30

Ala Asn Ala Glu Lys Thr Ser Gly Ser Asn Val Lys Ile Val Lys Val
35 40 45

Lys Lys Glu
50

<210> 7052
<211> 51
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1500; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5E; "

<220>
<221> source
<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial F1 complex,
epsilon
subunit; "

<220>
<221> source
<223> /note="Uniprot ID: P56381; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000379023"

<400> 7052
Met Val Ala Tyr Trp Arg Gln Ala Gly Leu Ser Tyr Ile Arg Tyr Ser
1 5 10 15

Gln Ile Cys Ala Lys Ala Val Arg Asp Ala Leu Lys Thr Glu Phe Lys
20 25 30

Ala Asn Ala Glu Lys Thr Ser Gly Ser Asn Val Lys Ile Val Lys Val
35 40 45

Lys Lys Glu
    50

<210> 7053
<211> 51
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1501; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5EP2; "

<220>
<221> source
<223> /note="Gene Name:
      ATP synthase, H+ transporting, mitochondrial F1 complex,
      epsilon
      subunit pseudogene 2; "

<220>
<221> source
<223> /note="Uniprot ID: Q5VTU8; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000370414"

<400> 7053
Met Val Ala Tyr Trp Arg Gln Ala Gly Leu Ser Tyr Ile Arg Tyr Ser
1   5   10   15

Gln Ile Cys Ala Lys Val Val Arg Asp Ala Leu Lys Thr Glu Phe Lys
            20   25   30

Ala Asn Ala Lys Lys Thr Ser Gly Asn Ser Val Lys Ile Val Lys Val
        35   40   45

Lys Lys Glu
    50

<210> 7054
<211> 297
<212> PRT
<213> Homo sapiens

<220>

<221> source
<223> /note="Payload ID: 1502; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5C1; "

<220>
<221> source
<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial F1 complex,
gamma polypeptide 1; "

<220>
<221> source
<223> /note="Uniprot ID: P36542; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000338568"

<400> 7054

```
Met Phe Ser Arg Ala Gly Val Ala Gly Leu Ser Ala Trp Thr Leu Gln
1               5                   10                  15


Pro Gln Trp Ile Gln Val Arg Asn Met Ala Thr Leu Lys Asp Ile Thr
            20                  25                  30


Arg Arg Leu Lys Ser Ile Lys Asn Ile Gln Lys Ile Thr Lys Ser Met
        35                  40                  45


Lys Met Val Ala Ala Ala Lys Tyr Ala Arg Ala Glu Arg Glu Leu Lys
    50                  55                  60


Pro Ala Arg Ile Tyr Gly Leu Gly Ser Leu Ala Leu Tyr Glu Lys Ala
65                  70                  75                  80


Asp Ile Lys Gly Pro Glu Asp Lys Lys Lys His Leu Leu Ile Gly Val
                85                  90                  95


Ser Ser Asp Arg Gly Leu Cys Gly Ala Ile His Ser Ser Ile Ala Lys
            100                 105                 110


Gln Met Lys Ser Glu Val Ala Thr Leu Thr Ala Ala Gly Lys Glu Val
        115                 120                 125


Met Leu Val Gly Ile Gly Asp Lys Ile Arg Gly Ile Leu Tyr Arg Thr
    130                 135                 140
```

```
His Ser Asp Gln Phe Leu Val Ala Phe Lys Glu Val Gly Arg Lys Pro
145                 150                 155                 160

Pro Thr Phe Gly Asp Ala Ser Val Ile Ala Leu Glu Leu Leu Asn Ser
                165                 170                 175

Gly Tyr Glu Phe Asp Glu Gly Ser Ile Ile Phe Asn Lys Phe Arg Ser
            180                 185                 190

Val Ile Ser Tyr Lys Thr Glu Glu Lys Pro Ile Phe Ser Leu Asn Thr
        195                 200                 205

Val Ala Ser Ala Asp Ser Met Ser Ile Tyr Asp Asp Ile Asp Ala Asp
    210                 215                 220

Val Leu Gln Asn Tyr Gln Glu Tyr Asn Leu Ala Asn Ile Ile Tyr Tyr
225                 230                 235                 240

Ser Leu Lys Glu Ser Thr Thr Ser Glu Gln Ser Ala Arg Met Thr Ala
                245                 250                 255

Met Asp Asn Ala Ser Lys Asn Ala Ser Glu Met Ile Asp Lys Leu Thr
            260                 265                 270

Leu Thr Phe Asn Arg Thr Arg Gln Ala Val Ile Thr Lys Glu Leu Ile
        275                 280                 285

Glu Ile Ile Ser Gly Ala Ala Ala Leu
    290                 295


<210> 7055
<211> 298
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1502; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5C1; "

<220>
<221> source
<223> /note="Gene Name:
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ATP synthase, H+ transporting, mitochondrial F1 complex, gamma polypeptide 1; "

<220>
<221> source
<223> /note="Uniprot ID: P36542; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000349142"

<400> 7055

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Met Phe Ser Arg Ala Gly Val Ala Gly Leu Ser Ala Trp Thr Leu Gln
1               5                  10                  15

Pro Gln Trp Ile Gln Val Arg Asn Met Ala Thr Leu Lys Asp Ile Thr
            20                  25                  30

Arg Arg Leu Lys Ser Ile Lys Asn Ile Gln Lys Ile Thr Lys Ser Met
        35                  40                  45

Lys Met Val Ala Ala Ala Lys Tyr Ala Arg Ala Glu Arg Glu Leu Lys
    50                  55                  60

Pro Ala Arg Ile Tyr Gly Leu Gly Ser Leu Ala Leu Tyr Glu Lys Ala
65                  70                  75                  80

Asp Ile Lys Gly Pro Glu Asp Lys Lys Lys His Leu Leu Ile Gly Val
                85                  90                  95

Ser Ser Asp Arg Gly Leu Cys Gly Ala Ile His Ser Ser Ile Ala Lys
            100                 105                 110

Gln Met Lys Ser Glu Val Ala Thr Leu Thr Ala Ala Gly Lys Glu Val
        115                 120                 125

Met Leu Val Gly Ile Gly Asp Lys Ile Arg Gly Ile Leu Tyr Arg Thr
    130                 135                 140

His Ser Asp Gln Phe Leu Val Ala Phe Lys Glu Val Gly Arg Lys Pro
145                 150                 155                 160

Pro Thr Phe Gly Asp Ala Ser Val Ile Ala Leu Glu Leu Leu Asn Ser
                165                 170                 175

Gly Tyr Glu Phe Asp Glu Gly Ser Ile Ile Phe Asn Lys Phe Arg Ser
```

```
            180                 185                 190

Val Ile Ser Tyr Lys Thr Glu Glu Lys Pro Ile Phe Ser Leu Asn Thr
        195                 200                 205

Val Ala Ser Ala Asp Ser Met Ser Ile Tyr Asp Asp Ile Asp Ala Asp
    210                 215                 220

Val Leu Gln Asn Tyr Gln Glu Tyr Asn Leu Ala Asn Ile Ile Tyr Tyr
225                 230                 235                 240

Ser Leu Lys Glu Ser Thr Thr Ser Glu Gln Ser Ala Arg Met Thr Ala
                245                 250                 255

Met Asp Asn Ala Ser Lys Asn Ala Ser Glu Met Ile Asp Lys Leu Thr
            260                 265                 270

Leu Thr Phe Asn Arg Thr Arg Gln Ala Val Ile Thr Lys Glu Leu Ile
        275                 280                 285

Glu Ile Ile Ser Gly Ala Ala Ala Leu Asp
    290                 295


<210> 7056
<211> 213
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ATP5O; "

<220>
<221> source
<223> /note="Gene Name:
      ATP synthase, H+ transporting, mitochondrial F1 complex,
      O
      subunit; "

<220>
<221> source
<223> /note="Uniprot ID:  P48047; "

<220>
<221> source
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<223> /note="ENSP ID: ENSP00000290299"

<400> 7056

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Met Ala Ala Pro Ala Val Ser Gly Leu Ser Arg Gln Val Arg Cys Phe
1               5                  10                  15

Ser Thr Ser Val Val Arg Pro Phe Ala Lys Leu Val Arg Pro Pro Val
            20                  25                  30

Gln Val Tyr Gly Ile Glu Gly Arg Tyr Ala Thr Ala Leu Tyr Ser Ala
        35                  40                  45

Ala Ser Lys Gln Asn Lys Leu Glu Gln Val Glu Lys Glu Leu Leu Arg
    50                  55                  60

Val Ala Gln Ile Leu Lys Glu Pro Lys Val Ala Ala Ser Val Leu Asn
65                  70                  75                  80

Pro Tyr Val Lys Arg Ser Ile Lys Val Lys Ser Leu Asn Asp Ile Thr
                85                  90                  95

Ala Lys Glu Arg Phe Ser Pro Leu Thr Thr Asn Leu Ile Asn Leu Leu
            100                 105                 110

Ala Glu Asn Gly Arg Leu Ser Asn Thr Gln Gly Val Val Ser Ala Phe
        115                 120                 125

Ser Thr Met Met Ser Val His Arg Gly Glu Val Pro Cys Thr Val Thr
    130                 135                 140

Ser Ala Ser Pro Leu Glu Glu Ala Thr Leu Ser Glu Leu Lys Thr Val
145                 150                 155                 160

Leu Lys Ser Phe Leu Ser Gln Gly Gln Val Leu Lys Leu Glu Ala Lys
                165                 170                 175

Thr Asp Pro Ser Ile Leu Gly Gly Met Ile Val Arg Ile Gly Glu Lys
            180                 185                 190

Tyr Val Asp Met Ser Val Lys Thr Lys Ile Gln Lys Leu Gly Arg Ala
        195                 200                 205

Met Arg Glu Ile Val
    210
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<210> 7057
<211> 86
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ATP5O; "

<220>
<221> source
<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial F1 complex,
O
subunit; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000393211"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7057
Xaa Thr Asn Leu Ile Asn Leu Leu Ala Glu Asn Gly Arg Leu Ser Asn
1 5 10 15

Thr Gln Gly Val Val Ser Ala Phe Ser Thr Met Met Ser Val His Arg
20 25 30

Gly Glu Val Pro Cys Thr Val Thr Ser Ala Ser Pro Leu Glu Glu Ala
35 40 45

Thr Leu Ser Glu Leu Lys Thr Val Leu Lys Ser Phe Leu Ser Gln Gly
50 55 60

Gln Val Leu Lys Leu Glu Ala Lys Ser Tyr Phe Phe Cys Arg Leu Ile
65 70 75 80

Arg Gln Ser Trp Val Glu
85

<210> 7058
<211> 74
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ATP5O; "

<220>
<221> source
<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial F1 complex,
O
subunit; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000393496"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7058
Xaa Ala Ala Pro Ala Val Ser Gly Leu Ser Arg Gln Val Arg Cys Phe
1 5 10 15

Ser Thr Ser Val Val Arg Pro Phe Ala Lys Leu Val Arg Pro Pro Val
20 25 30

Gln Val Tyr Gly Ile Glu Gly Arg Tyr Ala Thr Ala Leu Tyr Ser Ala
35 40 45

Ala Ser Lys Gln Asn Lys Leu Glu Gln Val Glu Lys Glu Leu Leu Arg
50 55 60

Val Ala Ile Cys Leu Leu Lys Met Val Asp
65 70

<210> 7059
<211> 26
<212> PRT
<213> Homo sapiens

<220>

<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ATP5O; "

<220>
<221> source
<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial F1 complex,
O
subunit; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000403964"

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Any amino acid

<400> 7059
Xaa Gly Val Val Ser Ala Phe Ser Thr Met Met Ser Val His Arg Gly
1 5 10 15

Glu Val Pro Cys Thr Val Thr Ser Ala Ser
20 25

<210> 7060
<211> 40
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1503; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5O; "

<220>
<221> source
<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial F1 complex,
O
subunit; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000407220"

<400> 7060
Val Val Ser Ala Phe Ser Thr Met Met Ser Val His Arg Gly Glu Val
1   5   10   15

Pro Cys Thr Val Thr Ser Ala Ser Ala Cys Leu Glu Leu Leu Gly Ser
            20   25   30

Ser Asp Pro Pro Ala Leu Ala Ser
        35   40

<210> 7061
<211> 256
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1504; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5F1; "

<220>
<221> source
<223> /note="Gene Name:
      ATP synthase, H+ transporting, mitochondrial Fo
      complex,
      subunit B1; "

<220>
<221> source
<223> /note="Uniprot ID: P24539; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000358737"

<400> 7061
Met Leu Ser Arg Val Val Leu Ser Ala Ala Ala Thr Ala Ala Pro Ser
1   5   10   15

Leu Lys Asn Ala Ala Phe Leu Gly Pro Gly Val Leu Gln Ala Thr Arg
            20   25   30

Thr Phe His Thr Gly Gln Pro His Leu Val Pro Val Pro Pro Leu Pro
        35   40   45

Glu Tyr Gly Gly Lys Val Arg Tyr Gly Leu Ile Pro Glu Glu Phe Phe
    50   55   60

```
Gln Phe Leu Tyr Pro Lys Thr Gly Val Thr Gly Pro Tyr Val Leu Gly
65                  70                  75                  80

Thr Gly Leu Ile Leu Tyr Ala Leu Ser Lys Glu Ile Tyr Val Ile Ser
                85                  90                  95

Ala Glu Thr Phe Thr Ala Leu Ser Val Leu Gly Val Met Val Tyr Gly
            100                 105                 110

Ile Lys Lys Tyr Gly Pro Phe Val Ala Asp Phe Ala Asp Lys Leu Asn
        115                 120                 125

Glu Gln Lys Leu Ala Gln Leu Glu Glu Ala Lys Gln Ala Ser Ile Gln
    130                 135                 140

His Ile Gln Asn Ala Ile Asp Thr Glu Lys Ser Gln Gln Ala Leu Val
145                 150                 155                 160

Gln Lys Arg His Tyr Leu Phe Asp Val Gln Arg Asn Asn Ile Ala Met
                165                 170                 175

Ala Leu Glu Val Thr Tyr Arg Glu Arg Leu Tyr Arg Val Tyr Lys Glu
            180                 185                 190

Val Lys Asn Arg Leu Asp Tyr His Ile Ser Val Gln Asn Met Met Arg
        195                 200                 205

Arg Lys Glu Gln Glu His Met Ile Asn Trp Val Glu Lys His Val Val
    210                 215                 220

Gln Ser Ile Ser Thr Gln Gln Glu Lys Glu Thr Ile Ala Lys Cys Ile
225                 230                 235                 240

Ala Asp Leu Lys Leu Leu Ala Lys Lys Ala Gln Ala Gln Pro Val Met
                245                 250                 255


<210> 7062
<211> 195
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1504; "
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<220>
<221> source
<223> /note="Gene Symbol: ATP5F1; "

<220>
<221> source
<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial Fo
complex,
subunit B1; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000420366"

<400> 7062
Met Leu Ser Arg Val Val Leu Ser Ala Ala Ala Thr Ala Gly Pro Tyr
1 5 10 15

Val Leu Gly Thr Gly Leu Ile Leu Tyr Ala Leu Ser Lys Glu Ile Tyr
20 25 30

Val Ile Ser Ala Glu Thr Phe Thr Ala Leu Ser Val Leu Gly Val Met
35 40 45

Val Tyr Gly Ile Lys Lys Tyr Gly Pro Phe Val Ala Asp Phe Ala Asp
50 55 60

Lys Leu Asn Glu Gln Lys Leu Ala Gln Leu Glu Glu Ala Lys Gln Ala
65 70 75 80

Ser Ile Gln His Ile Gln Asn Ala Ile Asp Thr Glu Lys Ser Gln Gln
85 90 95

Ala Leu Val Gln Lys Arg His Tyr Leu Phe Asp Val Gln Arg Asn Asn
100 105 110

Ile Ala Met Ala Leu Glu Val Thr Tyr Arg Glu Arg Leu Tyr Arg Val
115 120 125

Tyr Lys Glu Val Lys Asn Arg Leu Asp Tyr His Ile Ser Val Gln Asn
130 135 140

Met Met Arg Arg Lys Glu Gln Glu His Met Ile Asn Trp Val Glu Lys
145 150 155 160

```
His Val Val Gln Ser Ile Ser Thr Gln Gln Glu Lys Glu Thr Ile Ala
                165                 170                 175


Lys Cys Ile Ala Asp Leu Lys Leu Leu Ala Lys Lys Ala Gln Ala Gln
            180                 185                 190


Pro Val Met
        195


<210> 7063
<211> 136
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1505; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5G1; "

<220>
<221> source
<223> /note="Gene Name:
      ATP synthase, H+ transporting, mitochondrial Fo
      complex,
      subunit C1 (subunit 9); "

<220>
<221> source
<223> /note="Uniprot ID:  P05496; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000348205"

<400> 7063
Met Gln Thr Ala Gly Ala Leu Phe Ile Ser Pro Ala Leu Ile Arg Cys
1               5                   10                  15


Cys Thr Arg Gly Leu Ile Arg Pro Val Ser Ala Ser Phe Leu Asn Ser
            20                  25                  30


Pro Val Asn Ser Ser Lys Gln Pro Ser Tyr Ser Asn Phe Pro Leu Gln
        35                  40                  45


Val Ala Arg Arg Glu Phe Gln Thr Ser Val Val Ser Arg Asp Ile Asp
    50                  55                  60
```

```
Thr Ala Ala Lys Phe Ile Gly Ala Gly Ala Ala Thr Val Gly Val Ala
65                  70                  75                  80


Gly Ser Gly Ala Gly Ile Gly Thr Val Phe Gly Ser Leu Ile Ile Gly
                85                  90                  95


Tyr Ala Arg Asn Pro Ser Leu Lys Gln Gln Leu Phe Ser Tyr Ala Ile
            100                 105                 110


Leu Gly Phe Ala Leu Ser Glu Ala Met Gly Leu Phe Cys Leu Met Val
        115                 120                 125


Ala Phe Leu Ile Leu Phe Ala Met
    130                 135


<210> 7064
<211> 136
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1505; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5G1; "

<220>
<221> source
<223> /note="Gene Name:
      ATP synthase, H+ transporting, mitochondrial Fo
      complex,
      subunit C1 (subunit 9); "

<220>
<221> source
<223> /note="Uniprot ID:  P05496; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000377033"

<400> 7064
Met Gln Thr Ala Gly Ala Leu Phe Ile Ser Pro Ala Leu Ile Arg Cys
1               5                   10                  15


Cys Thr Arg Gly Leu Ile Arg Pro Val Ser Ala Ser Phe Leu Asn Ser
            20                  25                  30
```

```
Pro Val Asn Ser Ser Lys Gln Pro Ser Tyr Ser Asn Phe Pro Leu Gln
        35                  40                  45

Val Ala Arg Arg Glu Phe Gln Thr Ser Val Val Ser Arg Asp Ile Asp
    50                  55                  60

Thr Ala Ala Lys Phe Ile Gly Ala Gly Ala Ala Thr Val Gly Val Ala
65                  70                  75                  80

Gly Ser Gly Ala Gly Ile Gly Thr Val Phe Gly Ser Leu Ile Ile Gly
                85                  90                  95

Tyr Ala Arg Asn Pro Ser Leu Lys Gln Gln Leu Phe Ser Tyr Ala Ile
            100                 105                 110

Leu Gly Phe Ala Leu Ser Glu Ala Met Gly Leu Phe Cys Leu Met Val
        115                 120                 125

Ala Phe Leu Ile Leu Phe Ala Met
    130                 135


<210> 7065
<211> 99
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1505; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5G1; "

<220>
<221> source
<223> /note="Gene Name:
      ATP synthase, H+ transporting, mitochondrial Fo
      complex,
      subunit C1 (subunit 9); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000422086"

<400> 7065
Met Gln Thr Ala Gly Ala Leu Phe Ile Ser Pro Ala Leu Ile Arg Cys
1               5                   10                  15
```

```
Cys Thr Arg Gly Leu Ile Arg Pro Val Ser Ala Ser Phe Leu Asn Ser
            20                  25                  30

Pro Val Asn Ser Ser Lys Gln Pro Ser Tyr Ser Asn Phe Pro Leu Gln
        35                  40                  45

Val Ala Arg Arg Glu Phe Gln Thr Ser Val Val Ser Arg Asp Ile Asp
    50                  55                  60

Thr Ala Ala Lys Phe Ile Gly Ala Gly Ala Ala Thr Val Gly Val Ala
65                  70                  75                  80

Gly Ser Gly Ala Gly Ile Gly Thr Val Phe Gly Ser Leu Ile Ile Gly
                85                  90                  95

Tyr Ala Arg
```

<210> 7066
<211> 110
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1505; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5G1; "

<220>
<221> source
<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial Fo
complex,
subunit C1 (subunit 9); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000422950"

<400> 7066

```
Met Gln Thr Ala Gly Ala Leu Phe Ile Ser Pro Ala Leu Pro Ser Tyr
1               5                   10                  15

Ser Asn Phe Pro Leu Gln Val Ala Arg Arg Glu Phe Gln Thr Ser Val
            20                  25                  30
```

```
Val Ser Arg Asp Ile Asp Thr Ala Ala Lys Phe Ile Gly Ala Gly Ala
        35                  40                  45

Ala Thr Val Gly Val Ala Gly Ser Gly Ala Gly Ile Gly Thr Val Phe
    50                  55                  60

Gly Ser Leu Ile Ile Gly Tyr Ala Arg Asn Pro Ser Leu Lys Gln Gln
65                  70                  75                  80

Leu Phe Ser Tyr Ala Ile Leu Gly Phe Ala Leu Ser Glu Ala Met Gly
                85                  90                  95

Leu Phe Cys Leu Met Val Ala Phe Leu Ile Leu Phe Ala Met
            100                 105                 110


<210> 7067
<211> 127
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1505; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5G1; "

<220>
<221> source
<223> /note="Gene Name:
      ATP synthase, H+ transporting, mitochondrial Fo
      complex,
      subunit C1 (subunit 9); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000426094"

<400> 7067
Met Gln Thr Ala Gly Ala Leu Phe Ile Ser Pro Ala Leu Ile Arg Cys
1               5                   10                  15

Cys Thr Arg Gly Leu Ile Arg Pro Val Ser Ala Ser Phe Leu Asn Ser
            20                  25                  30

Pro Val Asn Ser Ser Lys Gln Val Ala Arg Arg Glu Phe Gln Thr Ser
        35                  40                  45
```

```
Val Val Ser Arg Asp Ile Asp Thr Ala Ala Lys Phe Ile Gly Ala Gly
    50                  55                  60

Ala Ala Thr Val Gly Val Ala Gly Ser Gly Ala Gly Ile Gly Thr Val
65                  70                  75                  80

Phe Gly Ser Leu Ile Ile Gly Tyr Ala Arg Asn Pro Ser Leu Lys Gln
                85                  90                  95

Gln Leu Phe Ser Tyr Ala Ile Leu Gly Phe Ala Leu Ser Glu Ala Met
            100                 105                 110

Gly Leu Phe Cys Leu Met Val Ala Phe Leu Ile Leu Phe Ala Met
        115                 120                 125


<210> 7068
<211> 98
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1505; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5G1; "

<220>
<221> source
<223> /note="Gene Name:
      ATP synthase, H+ transporting, mitochondrial Fo
      complex,
      subunit C1 (subunit 9); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000458423"

<400> 7068
Met Gln Thr Ala Gly Ala Leu Phe Ile Ser Pro Ala Leu Ile Arg Cys
1               5                   10                  15

Cys Thr Arg Gly Leu Ile Arg Pro Val Ser Ala Ser Phe Leu Asn Ser
            20                  25                  30

Pro Val Asn Ser Ser Lys Gln Pro Ser Tyr Ser Asn Phe Pro Leu Gln
        35                  40                  45
```

```
Val Ala Arg Arg Glu Phe Gln Thr Ser Val Val Ser Arg Asp Ile Asp
    50                  55                  60

Thr Ala Ala Lys Phe Ile Gly Ala Gly Ala Ala Thr Val Gly Val Ala
65                  70                  75                  80

Gly Ser Gly Ala Gly Ile Gly Thr Val Phe Gly Ser Leu Ile Ile Gly
                85                  90                  95

Tyr Ala



<210> 7069
<211> 157
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1506; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5G2; "

<220>
<221> source
<223> /note="Gene Name:
      ATP synthase, H+ transporting, mitochondrial Fo
      complex,
      subunit C2 (subunit 9); "

<220>
<221> source
<223> /note="Uniprot ID:  Q06055; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000340315"

<400> 7069
Met Pro Glu Leu Ile Leu Ser Pro Ala Thr Ala Pro His Pro Leu Lys
1               5                   10                  15

Met Phe Ala Cys Ser Lys Phe Val Ser Thr Pro Ser Leu Val Lys Ser
            20                  25                  30

Thr Ser Gln Leu Leu Ser Arg Pro Leu Ser Ala Val Val Leu Lys Arg
        35                  40                  45
```

```
Pro Glu Ile Leu Thr Asp Glu Ser Leu Ser Ser Leu Ala Val Ser Cys
    50                  55                  60

Pro Leu Thr Ser Leu Val Ser Ser Arg Ser Phe Gln Thr Ser Ala Ile
65                  70                  75                  80

Ser Arg Asp Ile Asp Thr Ala Ala Lys Phe Ile Gly Ala Gly Ala Ala
                85                  90                  95

Thr Val Gly Val Ala Gly Ser Gly Ala Gly Ile Gly Thr Val Phe Gly
            100                 105                 110

Ser Leu Ile Ile Gly Tyr Ala Arg Asn Pro Ser Leu Lys Gln Gln Leu
        115                 120                 125

Phe Ser Tyr Ala Ile Leu Gly Phe Ala Leu Ser Glu Ala Met Gly Leu
    130                 135                 140

Phe Cys Leu Met Val Ala Phe Leu Ile Leu Phe Ala Met
145                 150                 155


<210> 7070
<211> 198
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1506; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5G2; "

<220>
<221> source
<223> /note="Gene Name:
      ATP synthase, H+ transporting, mitochondrial Fo
      complex,
      subunit C2 (subunit 9); "

<220>
<221> source
<223> /note="Uniprot ID:  Q06055; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000377878"

<400> 7070
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```
Met Pro Glu Leu Ile Leu Tyr Val Ala Ile Thr Leu Ser Val Ala Glu
1               5                  10                  15

Arg Leu Val Gly Pro Gly His Ala Cys Ala Glu Pro Ser Phe Arg Ser
            20                  25                  30

Ser Arg Cys Ser Ala Pro Leu Cys Leu Leu Cys Ser Gly Ser Ser Ser
        35                  40                  45

Pro Ala Thr Ala Pro His Pro Leu Lys Met Phe Ala Cys Ser Lys Phe
    50                  55                  60

Val Ser Thr Pro Ser Leu Val Lys Ser Thr Ser Gln Leu Leu Ser Arg
65                  70                  75                  80

Pro Leu Ser Ala Val Val Leu Lys Arg Pro Glu Ile Leu Thr Asp Glu
                85                  90                  95

Ser Leu Ser Ser Leu Ala Val Ser Cys Pro Leu Thr Ser Leu Val Ser
            100                 105                 110

Ser Arg Ser Phe Gln Thr Ser Ala Ile Ser Arg Asp Ile Asp Thr Ala
        115                 120                 125

Ala Lys Phe Ile Gly Ala Gly Ala Ala Thr Val Gly Val Ala Gly Ser
    130                 135                 140

Gly Ala Gly Ile Gly Thr Val Phe Gly Ser Leu Ile Ile Gly Tyr Ala
145                 150                 155                 160

Arg Asn Pro Ser Leu Lys Gln Gln Leu Phe Ser Tyr Ala Ile Leu Gly
                165                 170                 175

Phe Ala Leu Ser Glu Ala Met Gly Leu Phe Cys Leu Met Val Ala Phe
            180                 185                 190

Leu Ile Leu Phe Ala Met
        195
```

<210> 7071
<211> 141
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1506; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5G2; "

<220>
<221> source
<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial Fo
complex,
subunit C2 (subunit 9); "

<220>
<221> source
<223> /note="Uniprot ID: Q06055; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000447317"

<400> 7071
Met Phe Ala Cys Ser Lys Phe Val Ser Thr Pro Ser Leu Val Lys Ser
1   5   10   15

Thr Ser Gln Leu Leu Ser Arg Pro Leu Ser Ala Val Val Leu Lys Arg
            20   25   30

Pro Glu Ile Leu Thr Asp Glu Ser Leu Ser Ser Leu Ala Val Ser Cys
        35   40   45

Pro Leu Thr Ser Leu Val Ser Ser Arg Ser Phe Gln Thr Ser Ala Ile
    50   55   60

Ser Arg Asp Ile Asp Thr Ala Ala Lys Phe Ile Gly Ala Gly Ala Ala
65   70   75   80

Thr Val Gly Val Ala Gly Ser Gly Ala Gly Ile Gly Thr Val Phe Gly
                85   90   95

Ser Leu Ile Ile Gly Tyr Ala Arg Asn Pro Ser Leu Lys Gln Gln Leu
            100   105   110

Phe Ser Tyr Ala Ile Leu Gly Phe Ala Leu Ser Glu Ala Met Gly Leu
        115   120   125

Phe Cys Leu Met Val Ala Phe Leu Ile Leu Phe Ala Met

130 135 140

<210> 7072
<211> 16
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1506; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5G2; "

<220>
<221> source
<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial Fo
complex,
subunit C2 (subunit 9); "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000447643"

<400> 7072
Met Gly Leu Phe Cys Leu Met Val Ala Phe Leu Ile Leu Phe Ala Met
1 5 10 15

<210> 7073
<211> 141
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1506; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5G2; "

<220>
<221> source
<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial Fo
complex,
subunit C2 (subunit 9); "

<220>
<221> source
<223> /note="Uniprot ID: Q06055; "

<220>

<221> source
<223> /note="ENSP ID: ENSP00000448801"

<400> 7073
Met Phe Ala Cys Ser Lys Phe Val Ser Thr Pro Ser Leu Val Lys Ser
1   5   10   15

Thr Ser Gln Leu Leu Ser Arg Pro Leu Ser Ala Val Val Leu Lys Arg
            20   25   30

Pro Glu Ile Leu Thr Asp Glu Ser Leu Ser Ser Leu Ala Val Ser Cys
        35   40   45

Pro Leu Thr Ser Leu Val Ser Ser Arg Ser Phe Gln Thr Ser Ala Ile
    50   55   60

Ser Arg Asp Ile Asp Thr Ala Ala Lys Phe Ile Gly Ala Gly Ala Ala
65   70   75   80

Thr Val Gly Val Ala Gly Ser Gly Ala Gly Ile Gly Thr Val Phe Gly
                85   90   95

Ser Leu Ile Ile Gly Tyr Ala Arg Asn Pro Ser Leu Lys Gln Gln Leu
            100   105   110

Phe Ser Tyr Ala Ile Leu Gly Phe Ala Leu Ser Glu Ala Met Gly Leu
        115   120   125

Phe Cys Leu Met Val Ala Phe Leu Ile Leu Phe Ala Met
    130   135   140

<210> 7074
<211> 141
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1506; "

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<223> /note="Gene Symbol: ATP5G2; "

<220>
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<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial Fo

complex,
subunit C2 (subunit 9); "

<220>
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<223> /note="Uniprot ID: Q06055; "

<220>
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<223> /note="ENSP ID: ENSP00000473535"

<400> 7074
Met Phe Ala Cys Ser Lys Phe Val Ser Thr Pro Ser Leu Val Lys Ser
1   5   10   15

Thr Ser Gln Leu Leu Ser Arg Pro Leu Ser Ala Val Val Leu Lys Arg
            20   25   30

Pro Glu Ile Leu Thr Asp Glu Ser Leu Ser Ser Leu Ala Val Ser Cys
        35   40   45

Pro Leu Thr Ser Leu Val Ser Ser Arg Ser Phe Gln Thr Ser Ala Ile
    50   55   60

Ser Arg Asp Ile Asp Thr Ala Ala Lys Phe Ile Gly Ala Gly Ala Ala
65   70   75   80

Thr Val Gly Val Ala Gly Ser Gly Ala Gly Ile Gly Thr Val Phe Gly
                85   90   95

Ser Leu Ile Ile Gly Tyr Ala Arg Asn Pro Ser Leu Lys Gln Gln Leu
            100   105   110

Phe Ser Tyr Ala Ile Leu Gly Phe Ala Leu Ser Glu Ala Met Gly Leu
        115   120   125

Phe Cys Leu Met Val Ala Phe Leu Ile Leu Phe Ala Met
    130   135   140

<210> 7075
<211> 142
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1507; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5G3; "

<220>
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<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial Fo
complex,
subunit C3 (subunit 9); "

<220>
<221> source
<223> /note="Uniprot ID: P48201; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000284727"

<400> 7075

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Met Phe Ala Cys Ala Lys Leu Ala Cys Thr Pro Ser Leu Ile Arg Ala
1               5                   10                  15


Gly Ser Arg Val Ala Tyr Arg Pro Ile Ser Ala Ser Val Leu Ser Arg
            20                  25                  30


Pro Glu Ala Ser Arg Thr Gly Glu Gly Ser Thr Val Phe Asn Gly Ala
        35                  40                  45


Gln Asn Gly Val Ser Gln Leu Ile Gln Arg Glu Phe Gln Thr Ser Ala
    50                  55                  60


Ile Ser Arg Asp Ile Asp Thr Ala Ala Lys Phe Ile Gly Ala Gly Ala
65                  70                  75                  80


Ala Thr Val Gly Val Ala Gly Ser Gly Ala Gly Ile Gly Thr Val Phe
                85                  90                  95


Gly Ser Leu Ile Ile Gly Tyr Ala Arg Asn Pro Ser Leu Lys Gln Gln
            100                 105                 110


Leu Phe Ser Tyr Ala Ile Leu Gly Phe Ala Leu Ser Glu Ala Met Gly
        115                 120                 125


Leu Phe Cys Leu Met Val Ala Phe Leu Ile Leu Phe Ala Met
    130                 135                 140
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<210> 7076

<211> 142
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1507; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5G3; "

<220>
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<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial Fo
complex,
subunit C3 (subunit 9); "

<220>
<221> source
<223> /note="Uniprot ID: P48201; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000376324"

<400> 7076

Met	Phe	Ala	Cys	Ala	Lys	Leu	Ala	Cys	Thr	Pro	Ser	Leu	Ile	Arg	Ala
1				5				10					15		
Gly	Ser	Arg	Val	Ala	Tyr	Arg	Pro	Ile	Ser	Ala	Ser	Val	Leu	Ser	Arg
			20					25					30		
Pro	Glu	Ala	Ser	Arg	Thr	Gly	Glu	Gly	Ser	Thr	Val	Phe	Asn	Gly	Ala
		35					40					45			
Gln	Asn	Gly	Val	Ser	Gln	Leu	Ile	Gln	Arg	Glu	Phe	Gln	Thr	Ser	Ala
	50					55					60				
Ile	Ser	Arg	Asp	Ile	Asp	Thr	Ala	Ala	Lys	Phe	Ile	Gly	Ala	Gly	Ala
65					70					75					80
Ala	Thr	Val	Gly	Val	Ala	Gly	Ser	Gly	Ala	Gly	Ile	Gly	Thr	Val	Phe
				85					90					95	
Gly	Ser	Leu	Ile	Ile	Gly	Tyr	Ala	Arg	Asn	Pro	Ser	Leu	Lys	Gln	Gln
			100					105					110		
Leu	Phe	Ser	Tyr	Ala	Ile	Leu	Gly	Phe	Ala	Leu	Ser	Glu	Ala	Met	Gly

```
        115                 120                 125

Leu Phe Cys Leu Met Val Ala Phe Leu Ile Leu Phe Ala Met
    130                 135                 140


<210> 7077
<211> 142
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<220>
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      subunit C3 (subunit 9); "

<220>
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<223> /note="Uniprot ID:  P48201; "

<220>
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<223> /note="ENSP ID: ENSP00000387317"

<400> 7077
Met Phe Ala Cys Ala Lys Leu Ala Cys Thr Pro Ser Leu Ile Arg Ala
1               5                   10                  15


Gly Ser Arg Val Ala Tyr Arg Pro Ile Ser Ala Ser Val Leu Ser Arg
            20                  25                  30


Pro Glu Ala Ser Arg Thr Gly Glu Gly Ser Thr Val Phe Asn Gly Ala
        35                  40                  45


Gln Asn Gly Val Ser Gln Leu Ile Gln Arg Glu Phe Gln Thr Ser Ala
    50                  55                  60


Ile Ser Arg Asp Ile Asp Thr Ala Ala Lys Phe Ile Gly Ala Gly Ala
65                  70                  75                  80


Ala Thr Val Gly Val Ala Gly Ser Gly Ala Gly Ile Gly Thr Val Phe
```

```
                85                  90                  95

Gly Ser Leu Ile Ile Gly Tyr Ala Arg Asn Pro Ser Leu Lys Gln Gln
            100                 105                 110

Leu Phe Ser Tyr Ala Ile Leu Gly Phe Ala Leu Ser Glu Ala Met Gly
        115                 120                 125

Leu Phe Cys Leu Met Val Ala Phe Leu Ile Leu Phe Ala Met
    130                 135                 140


<210> 7078
<211> 161
<212> PRT
<213> Homo sapiens

<220>
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<223> /note="Payload ID: 1508; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5H; "

<220>
<221> source
<223> /note="Gene Name:
      ATP synthase, H+ transporting, mitochondrial Fo
      complex,
      subunit d; "

<220>
<221> source
<223> /note="Uniprot ID:  O75947; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000301587"

<400> 7078
Met Ala Gly Arg Lys Leu Ala Leu Lys Thr Ile Asp Trp Val Ala Phe
1               5                   10                  15

Ala Glu Ile Ile Pro Gln Asn Gln Lys Ala Ile Ala Ser Ser Leu Lys
            20                  25                  30

Ser Trp Asn Glu Thr Leu Thr Ser Arg Leu Ala Ala Leu Pro Glu Asn
        35                  40                  45

Pro Pro Ala Ile Asp Trp Ala Tyr Tyr Lys Ala Asn Val Ala Lys Ala
```

```
    50                  55                  60

Gly Leu Val Asp Asp Phe Glu Lys Lys Phe Asn Ala Leu Lys Val Pro
65                  70                  75                  80

Val Pro Glu Asp Lys Tyr Thr Ala Gln Val Asp Ala Glu Glu Lys Glu
                85                  90                  95

Asp Val Lys Ser Cys Ala Glu Trp Val Ser Leu Ser Lys Ala Arg Ile
            100                 105                 110

Val Glu Tyr Glu Lys Glu Met Glu Lys Met Lys Asn Leu Ile Pro Phe
        115                 120                 125

Asp Gln Met Thr Ile Glu Asp Leu Asn Glu Ala Phe Pro Glu Thr Lys
    130                 135                 140

Leu Asp Lys Lys Lys Tyr Pro Tyr Trp Pro His Gln Pro Ile Glu Asn
145                 150                 155                 160

Leu
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<210> 7079
<211> 137
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1508; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5H; "

<220>
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ATP synthase, H+ transporting, mitochondrial Fo
complex,
subunit d; "

<220>
<221> source
<223> /note="Uniprot ID: O75947; "

<220>
<221> source

<223> /note="ENSP ID: ENSP00000344230"

<400> 7079
Met Ala Gly Arg Lys Leu Ala Leu Lys Thr Ile Asp Trp Val Ala Phe
1 5 10 15

Ala Glu Ile Ile Pro Gln Asn Gln Lys Ala Ile Ala Ser Ser Leu Lys
20 25 30

Ser Trp Asn Glu Thr Leu Thr Ser Arg Leu Ala Ala Leu Pro Glu Asn
35 40 45

Pro Pro Ala Ile Asp Trp Ala Tyr Tyr Lys Ala Asn Val Ala Lys Ala
50 55 60

Gly Leu Val Asp Asp Phe Glu Lys Lys Val Lys Ser Cys Ala Glu Trp
65 70 75 80

Val Ser Leu Ser Lys Ala Arg Ile Val Glu Tyr Glu Lys Glu Met Glu
85 90 95

Lys Met Lys Asn Leu Ile Pro Phe Asp Gln Met Thr Ile Glu Asp Leu
100 105 110

Asn Glu Ala Phe Pro Glu Thr Lys Leu Asp Lys Lys Lys Tyr Pro Tyr
115 120 125

Trp Pro His Gln Pro Ile Glu Asn Leu
130 135

<210> 7080
<211> 81
<212> PRT
<213> Homo sapiens

<220>
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<220>
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<223> /note="Gene Symbol: ATP5H; "

<220>
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<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial Fo
complex,

subunit d; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000437996"

<400> 7080
Met Ala Gly Arg Lys Leu Ala Leu Lys Thr Ile Asp Trp Val Ala Phe
1   5   10   15

Ala Glu Ile Ile Pro Gln Asn Gln Lys Ala Ile Ala Ser Ser Leu Lys
            20   25   30

Ser Trp Asn Glu Thr Leu Thr Ser Arg Leu Ala Ala Leu Pro Glu Asn
        35   40   45

Pro Pro Ala Ile Asp Trp Ala Tyr Tyr Lys Ala Asn Val Ala Lys Ala
    50   55   60

Gly Leu Val Asp Asp Phe Glu Lys Lys Leu Ser Ile Ile Ala Lys Leu
65   70   75   80

Ser

<210> 7081
<211> 69
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1509; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5I; "

<220>
<221> source
<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial Fo
complex,
subunit E; "

<220>
<221> source
<223> /note="Uniprot ID: P56385; "

<220>
<221> source

<223> /note="ENSP ID: ENSP00000306003"

<400> 7081
Met Val Pro Pro Val Gln Val Ser Pro Leu Ile Lys Leu Gly Arg Tyr
1   5   10   15

Ser Ala Leu Phe Leu Gly Val Ala Tyr Gly Ala Thr Arg Tyr Asn Tyr
            20   25   30

Leu Lys Pro Arg Ala Glu Glu Glu Arg Arg Ile Ala Ala Glu Glu Lys
        35   40   45

Lys Lys Gln Asp Glu Leu Lys Arg Ile Ala Arg Glu Leu Ala Glu Asp
    50   55   60

Asp Ser Ile Leu Lys
65

<210> 7082
<211> 94
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1510; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5J2; "

<220>
<221> source
<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial Fo
complex,
subunit F2; "

<220>
<221> source
<223> /note="Uniprot ID: P56134; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000292475"

<400> 7082
Met Ala Ser Val Gly Glu Cys Pro Ala Pro Val Pro Val Lys Asp Lys
1   5   10   15

Lys Leu Leu Glu Val Lys Leu Gly Glu Leu Pro Ser Trp Ile Leu Met

```
            20                  25                  30

Arg Asp Phe Ser Pro Ser Gly Ile Phe Gly Ala Phe Gln Arg Gly Tyr
        35                  40                  45

Tyr Arg Tyr Tyr Asn Lys Tyr Ile Asn Val Lys Lys Gly Ser Ile Ser
    50                  55                  60

Gly Ile Thr Met Val Leu Ala Cys Tyr Val Leu Phe Ser Tyr Ser Phe
65                  70                  75                  80

Ser Tyr Lys His Leu Lys His Glu Arg Leu Arg Lys Tyr His
                85                  90


<210> 7083
<211> 55
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<223> /note="Gene Symbol: ATP5J2; "

<220>
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<223> /note="Gene Name:
      ATP synthase, H+ transporting, mitochondrial Fo
      complex,
      subunit F2; "

<220>
<221> source
<223> /note="Uniprot ID:  P56134; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000352890"

<400> 7083
Met Ala Ser Val Gly Glu Cys Pro Ala Pro Val Pro Val Lys Asp Lys
1               5                   10                  15

Lys Leu Leu Glu Val Lys Leu Gly Glu Leu Pro Ser Trp Ile Leu Met
            20                  25                  30

Arg Asp Phe Ser Pro Ser Gly Ile Phe Gly Ala Phe Gln Arg Glu His
```

```
        35                  40                  45

Glu Arg Leu Arg Lys Tyr His
    50                  55


<210> 7084
<211> 88
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
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<223> /note="Gene Symbol: ATP5J2; "

<220>
<221> source
<223> /note="Gene Name:
      ATP synthase, H+ transporting, mitochondrial Fo
      complex,
      subunit F2; "

<220>
<221> source
<223> /note="Uniprot ID:  P56134; "

<220>
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<223> /note="ENSP ID: ENSP00000377740"

<400> 7084
Met Ala Ser Val Val Pro Val Lys Asp Lys Lys Leu Leu Glu Val Lys
1               5                  10                  15


Leu Gly Glu Leu Pro Ser Trp Ile Leu Met Arg Asp Phe Ser Pro Ser
            20                  25                  30


Gly Ile Phe Gly Ala Phe Gln Arg Gly Tyr Tyr Arg Tyr Tyr Asn Lys
        35                  40                  45


Tyr Ile Asn Val Lys Lys Gly Ser Ile Ser Gly Ile Thr Met Val Leu
    50                  55                  60


Ala Cys Tyr Val Leu Phe Ser Tyr Ser Phe Ser Tyr Lys His Leu Lys
65                  70                  75                  80


His Glu Arg Leu Arg Lys Tyr His
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<210> 7085
<211> 98
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1510; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5J2; "

<220>
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<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial Fo
complex,
subunit F2; "

<220>
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<223> /note="ENSP ID: ENSP00000407540"

<400> 7085
Met Ala Ser Val Val Gly Ile Phe Ser His Ser Ser Val Ser Val Pro
1 5 10 15

Val Lys Asp Lys Lys Leu Leu Glu Val Lys Leu Gly Glu Leu Pro Ser
20 25 30

Trp Ile Leu Met Arg Asp Phe Ser Pro Ser Gly Ile Phe Gly Ala Phe
35 40 45

Gln Arg Gly Tyr Tyr Arg Tyr Tyr Asn Lys Tyr Ile Asn Val Lys Lys
50 55 60

Gly Ser Ile Ser Gly Ile Thr Met Val Leu Ala Cys Tyr Val Leu Phe
65 70 75 80

Ser Tyr Ser Phe Ser Tyr Lys His Leu Lys His Glu Arg Leu Arg Lys
85 90 95

Tyr His

<210> 7086

<211> 49
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1510; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5J2; "

<220>
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<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial Fo
complex,
subunit F2; "

<220>
<221> source
<223> /note="Uniprot ID: P56134; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000412149"

<400> 7086
Met Ala Ser Val Val Pro Val Lys Asp Lys Lys Leu Leu Glu Val Lys
1   5   10   15

Leu Gly Glu Leu Pro Ser Trp Ile Leu Met Arg Asp Phe Ser Pro Ser
            20   25   30

Gly Ile Phe Gly Ala Phe Gln Arg Glu His Glu Arg Leu Arg Lys Tyr
        35   40   45

His

<210> 7087
<211> 49
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1510; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5J2; "

<220>
<221> source
<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial Fo
complex,
subunit F2; "

<220>
<221> source
<223> /note="Uniprot ID: P56134; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000418197"

<400> 7087
Met Ala Ser Val Val Pro Val Lys Asp Lys Lys Leu Leu Glu Val Lys
1   5   10   15

Leu Gly Glu Leu Pro Ser Trp Ile Leu Met Arg Asp Phe Ser Pro Ser
            20   25   30

Gly Ile Phe Gly Ala Phe Gln Arg Glu His Glu Arg Leu Arg Lys Tyr
        35   40   45

His

<210> 7088
<211> 19
<212> PRT
<213> Homo sapiens

<220>
<221> source
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<220>
<221> source
<223> /note="Gene Symbol: ATP5J2; "

<220>
<221> source
<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial Fo
complex,
subunit F2; "

<220>
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<223> /note="ENSP ID: ENSP00000430398"

<400> 7088

Met Ala Ser Val Gly Glu Cys Pro Ala Pro Gly Tyr Tyr Arg Tyr Tyr
1 5 10 15

Asn Lys Tyr

<210> 7089
<211> 108
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1511; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5J; "

<220>
<221> source
<223> /note="Gene Name:
ATP synthase, H+ transporting, mitochondrial Fo
complex,
subunit F6; "

<220>
<221> source
<223> /note="Uniprot ID: P18859; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000284971"

<400> 7089
Met Ile Leu Gln Arg Leu Phe Arg Phe Ser Ser Val Ile Arg Ser Ala
1 5 10 15

Val Ser Val His Leu Arg Arg Asn Ile Gly Val Thr Ala Val Ala Phe
20 25 30

Asn Lys Glu Leu Asp Pro Ile Gln Lys Leu Phe Val Asp Lys Ile Arg
35 40 45

Glu Tyr Lys Ser Lys Arg Gln Thr Ser Gly Gly Pro Val Asp Ala Ser
50 55 60

Ser Glu Tyr Gln Gln Glu Leu Glu Arg Glu Leu Phe Lys Leu Lys Gln
65 70 75 80

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Met Phe Gly Asn Ala Asp Met Asn Thr Phe Pro Thr Phe Lys Phe Glu
                85                  90                  95


Asp Pro Lys Phe Glu Val Ile Glu Lys Pro Gln Ala
            100                 105


<210> 7090
<211> 108
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1511; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5J; "

<220>
<221> source
<223> /note="Gene Name:
      ATP synthase, H+ transporting, mitochondrial Fo
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      subunit F6; "

<220>
<221> source
<223> /note="Uniprot ID:  P18859; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000382959"

<400> 7090
Met Ile Leu Gln Arg Leu Phe Arg Phe Ser Ser Val Ile Arg Ser Ala
1               5                   10                  15


Val Ser Val His Leu Arg Arg Asn Ile Gly Val Thr Ala Val Ala Phe
            20                  25                  30


Asn Lys Glu Leu Asp Pro Ile Gln Lys Leu Phe Val Asp Lys Ile Arg
        35                  40                  45


Glu Tyr Lys Ser Lys Arg Gln Thr Ser Gly Gly Pro Val Asp Ala Ser
    50                  55                  60


Ser Glu Tyr Gln Gln Glu Leu Glu Arg Glu Leu Phe Lys Leu Lys Gln
65                  70                  75                  80
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Met Phe Gly Asn Ala Asp Met Asn Thr Phe Pro Thr Phe Lys Phe Glu
                85                  90                  95


Asp Pro Lys Phe Glu Val Ile Glu Lys Pro Gln Ala
            100                 105


<210> 7091
<211> 108
<212> PRT
<213> Homo sapiens

<220>
<221> source
<223> /note="Payload ID: 1511; "

<220>
<221> source
<223> /note="Gene Symbol: ATP5J; "

<220>
<221> source
<223> /note="Gene Name:
      ATP synthase, H+ transporting, mitochondrial Fo
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      subunit F6; "

<220>
<221> source
<223> /note="Uniprot ID:  P18859; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000382962"

<400> 7091
Met Ile Leu Gln Arg Leu Phe Arg Phe Ser Ser Val Ile Arg Ser Ala
1               5                   10                  15


Val Ser Val His Leu Arg Arg Asn Ile Gly Val Thr Ala Val Ala Phe
            20                  25                  30


Asn Lys Glu Leu Asp Pro Ile Gln Lys Leu Phe Val Asp Lys Ile Arg
        35                  40                  45


Glu Tyr Lys Ser Lys Arg Gln Thr Ser Gly Gly Pro Val Asp Ala Ser
    50                  55                  60


Ser Glu Tyr Gln Gln Glu Leu Glu Arg Glu Leu Phe Lys Leu Lys Gln
65                  70                  75                  80
```

```
Met Phe Gly Asn Ala Asp Met Asn Thr Phe Pro Thr Phe Lys Phe Glu
                85                  90                  95


Asp Pro Lys Phe Glu Val Ile Glu Lys Pro Gln Ala
            100                 105


<210> 7092
<211> 108
<212> PRT
<213> Homo sapiens

<220>
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<220>
<221> source
<223> /note="Gene Symbol: ATP5J; "

<220>
<221> source
<223> /note="Gene Name:
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      subunit F6; "

<220>
<221> source
<223> /note="Uniprot ID:  P18859; "

<220>
<221> source
<223> /note="ENSP ID: ENSP00000382965"

<400> 7092
Met Ile Leu Gln Arg Leu Phe Arg Phe Ser Ser Val Ile Arg Ser Ala
1               5                   10                  15


Val Ser Val His Leu Arg Arg Asn Ile Gly Val Thr Ala Val Ala Phe
            20                  25                  30


Asn Lys Glu Leu Asp Pro Ile Gln Lys Leu Phe Val Asp Lys Ile Arg
        35                  40                  45


Glu Tyr Lys Ser Lys Arg Gln Thr Ser Gly Gly Pro Val Asp Ala Ser
    50                  55                  60


Ser Glu Tyr Gln Gln Glu Leu Glu Arg Glu Leu Phe Lys Leu Lys Gln
65                  70                  75                  80
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